1. Legal Ad

    Documents:

        PB LEGAL AD 7-17-18.PDF

2. Agenda

    Documents:

        PB AGENDA 7-17-18.PDF

3. 100 Sewall Street

    Documents:

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

4. 130 Bancroft Street

    Documents:

        BANCROFT ST. - 130 (REPORT AND REPORT ATTACHMENTS).PDF
        BANCROFT ST. - 130 (APPLICANTS SUBMITTAL).PDF
        BANCROFT ST. - 130 (PUBLIC COMMENT).PDF
        BANCROFT ST. - 130 (PLANS).PDF

5. 56 Hampshire Street (This Item Is Being Tabled To The August 14, 2018 Meeting)

    Documents:

        HAMPSHIRE ST. - 56 (TABLING MEMO).PDF

6. 4 Russell Street And Hill Street

    Documents:

        RUSSELL ST. - 4 (REPORT AND REPORT ATTACHMENTS).PDF
        RUSSELL ST. - 4 (APPLICANTS SUBMITTAL).PDF
        RUSSELL ST. - 4 (PLANS).PDF

7. Thompson's Point

    Documents:

        THOMPSONS POINT (REPORT AND ATTACHMENTS).PDF
        THOMPSONS POINT (APPLICANTS SUBMITTAL).PDF
        THOMPSONS POINT (PLANS).PDF

8. 765 Congress Street

    Documents:

CONGRESS ST. - 765 (REPORT).PDF
CONGRESS ST. - 765 (REPORT ATTACHMENTS).PDF
CONGRESS ST. - 765 (APPLICANTS SUBMITTAL).PDF
CONGRESS ST. - 765 (PLANS).PDF

8.I. Public Comment

Documents:

PC2 CHRIS HOME 7-13-18.PDF
PC1 RICHARD JULIO 7-13-18.PDF

LEGAL ADVERTISEMENT
PORTLAND PLANNING BOARD

The Portland Planning Board will hold a meeting on Tuesday, July 17, 2018, **Room 24, Basement Level**, City Hall, 389 Congress Street. Public comments will be taken for each item on the agenda during the estimated allotted time and written comments should be submitted to planningboard@portlandmaine.gov

Workshop – 4:30 p.m.

i. Level III Site Plan and Site Location of Development Act; 100 Sewall Street (Thompson's Point Connector); Langdon Street Real Estate, Applicant. (4:30 – 5:30 p.m. estimated time) The Board will hold a workshop on a proposal to expand the surface parking lot. The proposed 8.8 acre site currently has 157,616 sf of impervious surface and the proposal is to expand the parking lot with an additional 116,450 sf for approximately 300 vehicle parking spaces. The site is located in the B-5 zone and the Resource Protection Zone. The project is subject to review under Portland's site plan ordinance and under the City's delegated review for Site Location Development.

ii. Level III Site Plan and Subdivision; 130 Bancroft Street; Joshua Wagner, representing WB Group, Inc., Applicant. (5:30 – 6:30 p.m. estimated time) The Board will hold a workshop on a proposal to subdivide 117,258 sf site (approximately 2.9 acres) into seven new single family lots ranging in size from 8,787 sf to 13,575 sf. The site is in the Residential R-3 zone and is subject to review under Portland's subdivision standards.

Public Hearing – 7:00 p.m.

i. Level III Subdivision/Site Plan and Conditional Use Applications ; 56 Hampshire Street; New Height Group LLC, Applicant. **This item is being tabled to the August 14, 2018 meeting.**

ii. Level III Site Plan and Subdivision; 4 Russell Street and Hill Street; New Day Farm, LLC, Applicant. (7:45-8:15 p.m. estimated time) The Board will hold a public hearing to consider a proposal for a four-story building to include three residential units with an efficiency unit and a parking garage for 3 vehicles on the ground floor. Two additional units are located on the second and third floors with a mezzanine on the fourth floor. The site has 1,899 square feet and is located in the R-6 zone. The proposal is subject to review under the site plan and subdivision standards.

iii. Level III Site Plan; Thompson's Point Hotel; Thompson's Point; Forefront Hoteliers, LLC., Applicant. (8:15-9:00 p.m. estimated time) The Board will hold a public hearing to consider a proposal for a five-story, 148 room, full service hotel with a building footprint of 19,000 sq. ft. and total floor area of 90,000 sq. ft. The hotel will be 54 feet in height and is zoned B-5 and Resource Protection.

iv. Level III Subdivision and Site Plan; 765 Congress Street; Sam Reiche, representing 415 CA, LLC., Applicant. (9:00 p.m. estimated time) The Board will hold a public hearing for the interior renovation and conversion of 765 Congress Street into four residential units. The proposal is for three (3) two-bedroom

units and one (1) three-bedroom unit. Four leased parking spaces are proposed for the units with access from the existing driveway off Congress Street. The site is in the B-2b zone and is subject to Portland's subdivision and site plan ordinances.

SEAN DUNDON, CHAIR – PORTLAND PLANNING BOARD

CITY OF PORTLAND, MAINE
PLANNING BOARD

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

AGENDA
PORTLAND PLANNING BOARD MEETING

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PUBLIC HEARING - 7:00 p.m.

1. ROLL CALL AND DECLARATION OF QUORUM
2. COMMUNICATIONS AND REPORTS
3. REPORT OF ATTENDANCE AT THE MEETING HELD ON JULY 10, 2018:

Workshop: Mazer, Eaton, Silk, Stanley, and Whited. Dundon and Smith, absent.
Public Hearing: Mazer, Eaton, Silk, Stanley, and Whited. Dundon and Smith, absent.

4. REPORT OF DECISIONS AT THE MEETINGS HELD ON JULY 10, 2018:

i. Conditional Use and Site Plan Review; 128 Cassidy Point Drive; Tod Dana, representing Kennebec Street Properties, Applicant. Stanley moved and Whited seconded a motion to approve the Conditional Use and Site Plan applications. Vote: 5-0, Dundon and Smith absent.

ii. Conditional Use and Administrative Authorization Review; 121 Cassidy Point Drive; Cyrus Hagge, representing Project Management, Inc., Applicant. Stanley moved and Whited seconded a motion to approve the Conditional Use and Site Plan applications with two (2) conditions. Vote: 5-0, Dundon and Smith absent.

5. PUBLIC HEARING

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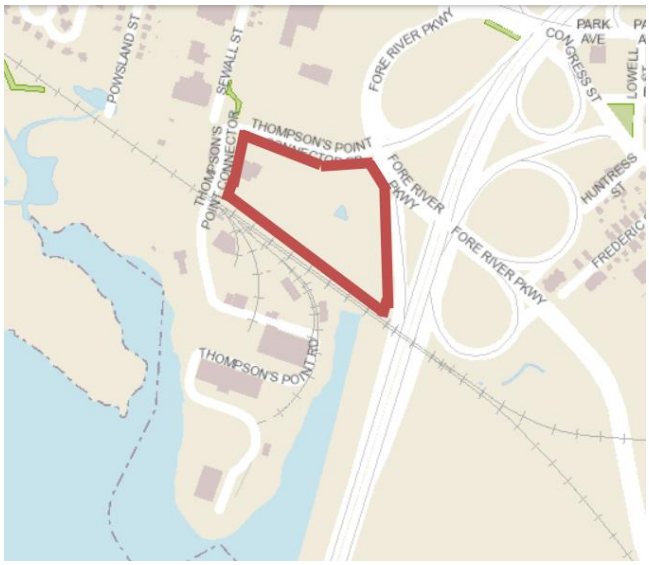
Memorandum
Planning and Urban Development Department
Planning Division

To: Chair Dundon and Members of the Portland Planning Board
From: Jean Fraser, Planner
Date: June 13, 2018
Re: Level III Site Plan and Site Location of Development (SLODA): Portland Transportation Center Parking Expansion
100 Sewell Street (Thompson Point Connector)

Project # PL000002-2018 CBL: 77-A-1
Langdon Street Real Estate (dba as Concord Coach Lines) , Applicant
Meeting Date: June 17th, 2018

I. INTRODUCTION

Sebago Technics Inc, on behalf of Langdon Street Real Estate, requests a Level III Site Plan, Traffic Movement Permit and Site Location of Development (SLODA) review for a proposed expansion of the surface parking associated with the Portland Transportation Center (PTC) near Thompsons Point. The parking expansion area is about 3 acres located to the southwest of the terminal building, comprised largely of wetland and bounded by the railway, I-295 slips and Thompsons Point Connector. The expansion area (in red, to right) is proposed to create approximately 300 new parking spaces, with modified access and circulation.



The background material (WS E Project Description) describes the development of the PTC as the result of public / private partnerships, beginning in 1991 as the small terminal facility for Concord Coach Lines (approximately 200 parking spaces), and then adding just under 500 spaces when the Downeaster Amtrak Service was added in 2001. It outlines the recent growth in use of the facility and associated demand for low cost parking that supports the use of the train and bus transit.

It is understood that the question of increasing PTC parking supply to accommodate future growth in the use of this facility is currently under discussion, with a number of options under consideration including a more intense development of the site currently under review.

Currently up to 300 additional spaces are leased from Thompson's Point to augment the existing supply, but that lease will be terminated next year. Therefore the proposed surface expansion will provide an increased parking supply in the short term and then would offset the loss of the leased spaces.

The expansion would be carried out in two phases:

- Preload phase of 1-2 years to stabilize the filled wetland area, during which a reclaimed asphalt surface will be placed to allow parking over the entire area , with jersey barriers to control parking;
- Final phase, during which the interim drainage etc will be removed and replaced with the permanent stormwater infrastructure and parking lot landscaping/lighting.

A total of 44 notices were sent to property owners within 500 feet of the site and a legal ad ran in the July 6th and 9th, 2018 editions of the Portland Press Herald. In addition, the applicant has held two required Neighborhood meetings, one associated with the SLODA application and one for the site plan application. It is understood that one person attended.

Applicant: Langdon Street Real Estate (dba as Concord Coach Lines)
Consultants: Sebago Technics, Steve Sawyer (Traffic) and Will Conway (Site)

II. REQUIRED REVIEWS

The parking expansion proposals were originally submitted for review in the context of the City Site Plan ordinance and the State Site Location of Development Act (SLODA) regulations. The MDEP determined that the SLODA review would be delegated to the Planning Authority, although as per the regulations the MDEP staff have provided technical assistance, particularly regarding the way the Chapter 500 requirements would be applied on a site of this scale with a substantial preload period during which the site would also be in used for public parking.

During the staff review, it was determined that the PTC needed a Traffic Movement Permit for the current levels of trip generation and impacts on the associated intersection operation, and that permit is currently being progressed.

Review	**Applicable Standards**
Site Plan	Section 14-526 City's land Use Code
Traffic Movement Permit (delegated from State)	State Regulations
Site Location of Development (delegated from State)	Section 14-Technical Manual and State Regulations

III. PROJECT DATA

Existing Zoning	B5, with the "toe' of the site also in the Stream Protection Zone
Existing Use	Vacant, with vegetation and stormwater treatment basin for the existing parking area
Proposed Use	Surface parking, with associated stormwater management and treatment devices
Parcel Size	8.74 acres including 1.92 acres of MDOT land along the south edge

	Existing	*Proposed*	*Net Change*
Wetlands	2.03	0	(2.03 acres)
Impervious Surface Area	8.74 acres	11.6 acres	2.86
Parking Spaces (on site)	Approx 700 Incl Park & Ride)	300+/-	Approx 1000 (incl Park & ride)
Bicycle Parking Spaces	25	36 (?37)	11
Estimated Cost of Project	tbc		

IV. EXISTING CONDITIONS

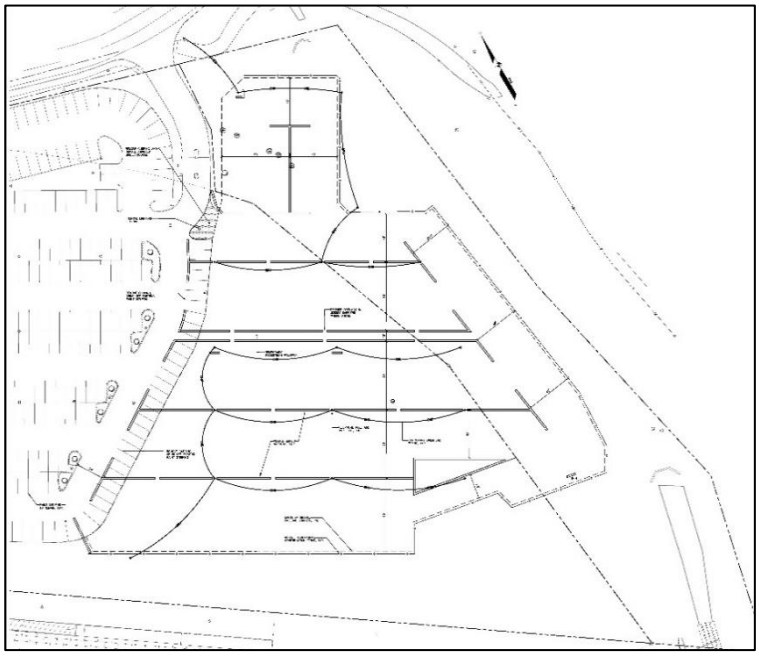
The 3 acre site for the parking expansion is the triangle of land in the foreground of the aerial photograph below, looking north (courtesy of GOOGLE), with the 2 acres of "brown" wetlands in the southwest corner. As illustrated on the Plan 2 Existing Conditions, there are two stormwater structures on the site:

- A detension basin that was installed some years ago to provide detension and treatment for the adjacent existing parking lot near the terminal; it does not meet current Chapter 500 standards;
- Steel culverts at the southwest corner and under the railway tracks that discharge into the Fore River.

V. PROPOSED DEVELOPMENT

A. *Preload Phase*

This phase is necessary to stabilize the 60,000 sq yards of fill that would be brought in to fill the wetland area. The fill will settle and the applicants Soils Report (Attachment WS S-2) recommends a period of 12-18 months for this process, during which time there could not be any utilities within the fill soils nor any final site work.



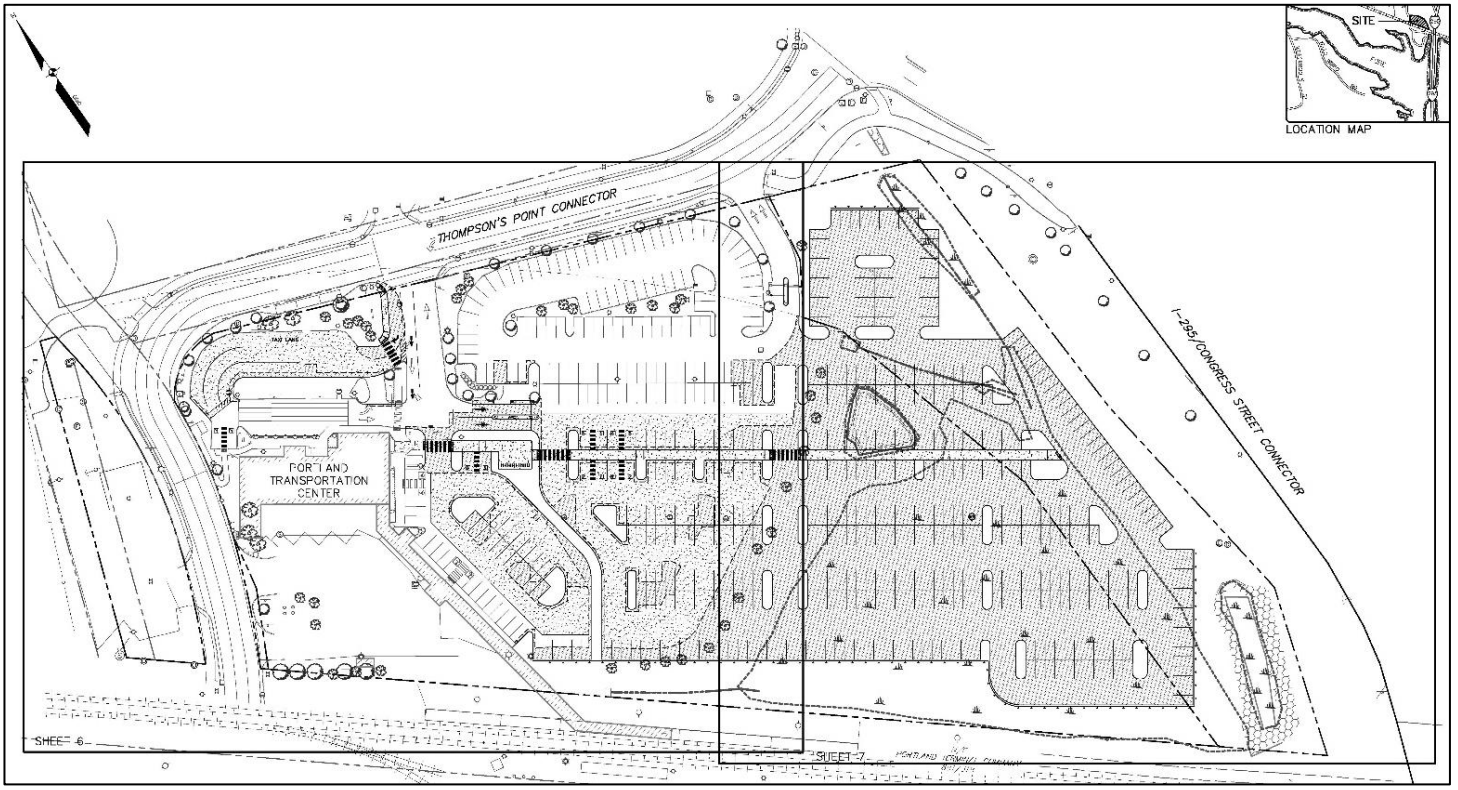
The applicant proposes to remove the existing detention basin and introduce interim stormwater management structures within the fill level. A reclaimed asphalt surface and jersey barrier controls (and what appears to be temporary lighting; see right) would allow parking on this area during the preload phase.

Peripheral landscaping is proposed as part of this phase (see Plan 9C Preload Landscape) but it is not clear whether the proposed modification of the circulation and parking in front of the terminal will be part of this phase.

B. *Permanent Phase*

When the preload is complete, the parking use will be interrupted for several months to allow for the removal of the reclaimed asphalt and the interim stormwater management structures, and new construction of the permanent parking area, including:

- New stormwater system that fully meets Chapter 500 requirements to treat the run-off from both the existing and new parking areas
- Resurfacing and striping
- Revised access to better integrate the existing and new areas of parking
- Modifications to the area in front of the terminal currently used for short term parking (if not done during the *Preload* phase)
- Peripheral and parking lot landscaping, along with islands and pedestrian walkways
- Lighting



VI. STAFF REVIEW

A. ZONING ANALYSIS

The proposed parking area is located in the B5 zone and the PTC, as an "intermodal transportation facility", is a permitted use in this zone; the expanded parking is an ancillary use to the PTC although off street parking lots are also allowed as a permitted use in this location. The project complies with the zoning requirements of this zone.

A small part of the site in the southwest corner is also located in the Stream Protection Zone as it is within 75 feet of the Fore River. This zone seeks to conserve stream channel capacity and minimize siltation and stream bank erosion. The ordinance allows filling of material within the zone subject to a site plan review, but requires parking to be set back from the normal high water line of the stream unless the Planning Board approves a reduced setback where it is shown to be the "least extent necessary".

The proposals appear to meet the ordinance setback standard, but as part of the Zoning Analysis (WS D) the applicant should confirm the setback as proposed.

B. SITE LOCATION OF DEVELOPMENT ACT (SLODA) REVIEW (Technical Manual Section 14.3. Standards

a. Financial and technical capacity. The applicant has provided a letter from TD Bank (January 2018) as evidence of financial capacity (Attachment WS G) and noted the technical capacity involved in developing the PTC to date. The standards require that developer has the financial capacity and technical ability to develop the project in a manner consistent with state environmental standards and with the provisions of Portland's Code of Ordinances. The Planning Board may issue a permit that conditions any site alterations upon a developer providing the Planning Board with evidence that the developer has been granted a line of credit or a loan by a financial institution authorized to do business in this State or with evidence of any other form of financial assurance the Planning Board determines to be adequate. The Planning Board shall also assess any such application in accordance with the standards set forth in Chapter 373 of the Maine Department of Environmental Protection Site Law Regulations, as may be amended from time to time.

b. Traffic movement. – The staff review determined that a Traffic Movement Permit was necessary for the PTC facility, although the proposed parking lot expansion did not independently trigger the requirement (Attachment 1). The applicant recently met with the City's Traffic and Transportation staff to clarify the key issues and is currently progressing with the TMP process.

c. No adverse effect on the natural environment - The standard requires that the developer has made adequate provision for fitting the development harmoniously into the existing natural environment and that the development will not adversely affect existing uses, scenic character, air quality, water quality or other natural resources in the municipality or in neighboring municipalities. In making a determination under this subsection, the Planning Board shall apply the standards set forth in Chapter 375 of the Maine Department of Environmental Protection Site Law Regulations, as may be amended from time to time.

The proposal includes the filling of about 2 acres of wetland and the loss of 17 existing trees that surround the southern edge of the existing parking between the access and the railway (some visible in photo right).

Staff suggest that the proposals for the permanent landscape treatment (see Plans 9A and 9B) should be enhanced to replace these trees and provide better integration of the large parking area into this area. The applicant should show whether the parking lot would be visible from Thompsons Point developments and consider additional screen planting if needed to address this standard.

d. Soil types – The stand requires the applicant to provide a map and analysis indicating the location of various soil types on-site, and suitability of such soils and ledge to support the proposed site improvements. The PTC application includes a Soil Report (Attachment WS S-2).

e. Ground Water - In making a determination under this subsection, the Planning Board shall apply the standards set forth in Chapter 500 and 502 of the Maine Department of Environmental Stormwater Management and Direct Watersheds of Waterbodies Most at Risk from New Development Rules as may be amended from time to time. See g. below.

f. Infrastructure. This standard requires that the developer has made adequate provision of utilities, including water supplies, sewerage facilities, solid waste disposal and roadways required for the development and the development will not have an unreasonable adverse effect on the existing or proposed utilities and roadways in the municipality or area served by those services. This standard largely does not apply, except regarding impacts on roadways, which will be addressed by the TMP process.

g. Flooding and Storm water management, erosion, and sedimentation control. The SLOD standards are:
   - The activity will not unreasonably cause or increase the flooding of the alteration area or adjacent properties nor create an unreasonable flood hazard to any structure. In making a determination under this subsection, the Planning Board shall apply the standards set forth in Chapter 500 and 502 of the Maine Department of Environmental Stormwater Management and Direct Watersheds of Waterbodies Most at Risk from New Development Rules as may be amended from time to time.
   - The proposed development meets the standards for storm water management in 38 MRSA §420-D as amended from time to time (See Exhibit 1) and the standard for erosion and sedimentation control in 38 MRSA §420-C as amended from time to time. In making a determination under this subsection, the Planning Board shall apply the standards set forth in Chapter 500 and 502 of the Maine Department of Environmental Stormwater Management and Direct Watersheds of Waterbodies Most at Risk from New Development Rules, as may be amended from time to time.

During the review, the question was raised as to whether the *Preload* phase was required to meet the stormwater standards in full and guidance sought from the MDEP Regional Licensing and Compliance Manager (Bureau of Land Resources). Staff were advised that the Preload phase needed to include stormwater detention and treatment to meet Chapter 500 as far as possible. The applicant submitted additional *Preload* proposals in late May 2018, which are considered broadly acceptable to both the MDEP and the City in terms of the overall approach to stormwater management and treatment.

The MDEP has delegated the SLOD review to the City, and the City's Peer Engineer Reviewer has provided the following comments that take account of the MDEP advice (Attachment 2) :

Peer Engineer Review SLOD Comments

1) *Due to the preload requirements for the site, the project will be completed in phases. The Applicant has provided a phased approach to stormwater management, and has provided grading and utility plans for the preload phase. A site plan showing parking lot layout should also be provided for this phase, as the proposed underdrain soil filters will be located within the parking lot footprint, requiring a differing layout during the preload phase.*
2) *The Applicant has received Army Corps Approval, and we understand that approval from the Maine DEP for wetland impacts is pending.*
3) *The Applicant will be required to provide assurance of the completion of the final parking lot construction with the final stormwater treatment system. This will be a requirement for compliance with the Site Location of Development permit. We understand that the City and*

the MaineDEP will be having further discussion about this, and a condition of approval requiring construction of the final stormwater treatment system within a certain time frame will likely be required as part of the final approval.

4) *The project is being reviewed under the City's Delegated Review Authority for the Site Location of Development Act; as such, the project must show conformance with MaineDEP Chapter 500 Basic, General, and Flooding Standards. Also, in accordance with Section 5 of the City of Portland Technical Manual, a Final Level III development project is required to submit a stormwater management plan pursuant to the regulations of MaineDEP Chapter 500 Stormwater Management Rules, including conformance with the Basic, General, and Flooding Standards. We offer the following comments:*
    a) *Basic Standards: Plans, notes, and details and an erosion and sediment control Inspection, Maintenance, and Housekeeping Plan have been provided to address erosion and sediment control requirements, inspection and maintenance requirements, and good housekeeping practices in general accordance with Appendix A, B, & C of MaineDEP Chapter 500.*
    b) *General Standards: The Applicant is utilizing a subsurface sand filter in combination with a proprietary ADS chamber system to detain and treat storm water collected in the parking area to meet the quality requirements associated with the General Standards in the final condition. During the preload phase, underdrained soil filters are proposed to treat the reclaim parking lot surface. In addition, a subsurface stone drainage system is proposed as a replacement of the existing stormwater pond located within the project area. While this additional system is not in accordance with any specific DEP standards, it provides an improvement over the existing condition, and will provide for adequate treatment of existing developed areas during the short preload phase. We have the following comments on the proposed systems:*
        1. *It appears that a liner may be necessary for the proposed interim underdrain soil filters. The note is missing from the detail.*
        2. *Manholes should be provided at both ends of the proposed isolator row in the final treatment system. The manholes provide access for maintenance of the system.*
        3. *The HydroCAD model should be reviewed versus the plans. Invert elevations for the outlet control structure do not match between the two documents.*
    c) *Flooding Standards: The project discharges directly to the Fore River, and therefore receives a waiver from the Flooding Standard. Please see some additional stormwater comments below.*
5) *The Applicant should review the Inspection and Maintenance Plan. Sections have been provided for post-construction inspection for the preload and final phases, however the stormwater systems listed are not consistent with the final plans.*
6) *The outlet from the proposed stormwater chamber system is to a pipe with a 10% slope. The Applicant is proposing larger rip rap at this outlet, but please provide confirmation that the rip rap is adequately sized (size and thickness of layer) for anticipated velocities.*
7) *While the project is not required to meet the Flooding Standard, the flow is increasing. The Applicant has modeled the existing downstream 36-inch culverts, and the model indicates that they have adequate capacity. Please provide verification of the condition of these culverts to ensure that the full capacity is available as modeled.*
8) *Please provide some additional clarification on the grading at the western entrance to the Thompson's Point Connector Road. It appears that the driveway will be regraded, based on the proposed contour that is shown, however the area is not identified for repaving.*

C. SITE PLAN REVIEW

The proposed parking lot expansion was reviewed by staff for conformance with the relevant review standards of the City of Portland's site plan ordinance. Staff comments below focus on the standards that apply to this project, given that there are no buildings or structures proposed.

There is a key question for the Board to consider: To what extent should the site plan standards apply during the 1-1.5 years that the public are using the *Preload* area for parking. In particular, the CPTED, lighting, parking lot design and landscaping standards may be challenging for the applicant to meet in full during that phase.

1. Transportation Standards

a. Impact on Surrounding Street Systems - this will be addressed by the TMP review as noted above.

b. Access and Circulation

- PRELOAD PHASE: During the *Preload* the layout is a simple extension of the existing parking pattern, though the applicant should clarify whether the parking spaces will be striped and traffic/directional signage will be provided. The Peer Engineer has noted (Attachment 2) that:

  A site plan showing parking lot layout should also be provided for this phase, as the proposed underdrain soil filters will be located within the parking lot footprint, requiring a differing layout during the preload phase.

- PERMANENT PHASE: The Traffic Engineer has noted that the parking lot drive aisles exceed, in some places by more than 5 feet, the Technical Standards. He has suggested that these be narrowed and the space gained be used to provide additional pedestrian spines that would be landscaped as safe pedestrian walkways towards the terminal area.

c. Bicycle access and parking

The Site Plans notes refer to 37 existing and proposed bicycle parking spaces (Plans 5A, 5B & 5C). The applicant should reconsider an increase in the number of parking spaces, together with their placement, in order to encourage bicycle access and use.

2. *Environmental Quality Standards*

a. Preservation of Significant Natural Features **-** covered by the SLODA review above.

b. ***Landscaping and Landscape Preservation*** **-** The SLODA review above noted the loss of existing trees across the site and that the final Landscape Plan should be enhanced to address this loss.

The proposed final landscaping within the parking area is not considered by staff to meet the Site Plan standards for parking lot landscaping. Given the need to maximize the number of parking spaces and the relatively low turnover expected for these spaces, staff suggest that this is a unique project where the Landscape Plan should focus on the following objectives:

- Through the reduction of drive aisle widths, achieve segregated pedestrian walkways with treeplanting and lighting that provides wayfinding/orientation within this large area, and reduces the impervious surface;
- Considers how to maximize public safety through careful lighting design and the avoidance of shrub areas and fencing;
- Possibly include amenities such as benches and information boards;
- Provide screening from Thompsons Point if necessary.

Staff plan to meet with the applicants consultants to consider the landscape issues in more detail, and would welcome direction from the Planning Board.

*c. **Water Quality/Storm Water Management/Erosion Control –*** covered by SLODA review above.

2. Public Infrastructure and Community Safety Standards

a. Public Safety (CPTED)

The layout and detailing for both phases should include measures to address CPTED objectives.

4. *Site Design Standards*

a. Historic Resources

The Maine Historic Preservation Commission has identified the existence of a former canal (Cumberland and Oxford) generally across the southern part of the site. A walkover did not find any remains of the canal, but the Commission has stated that if the proposal requires excavation of the wetland soils, then archaeological monitoring is recommended prior to construction of the parking lot (Attachment WS LC1).

The applicant has confirmed that the Preload and Final proposals would not disturb anything below the current surface, but staff recommend that the final submissions include more detail, especially as related to the Preload interim stormwater system in that part of the site. The final plans should be sent to the Commission so the Commission can confirm, prior to the PB hearing, that they have reviewed the final plans for both phases and are satisfied that they do not require archaeological monitoring.

b. Exterior Lighting and Signage and Wayfinding

Staff are concerned the in both the *Preload* and final phases the parking area should be well lit with clear wayfinding and signage. The plans so not show these proposals for the expanded parking area in detail except for the lighting plan for the final phase (Plan 10). The final submissions should include more detail for both phases to meet these standards.

VII NEXT STEPS - the final submissions should include the following:

- Complete the TMP process
- Confirm compliance with the Stream Protection Zone setbacks
- Revise the final Landscape Plan to address the Memo and Planning Board comments
- Address the Peer Engineer comments regarding stormwater SLOD standards
- Revise and add detail to the *Preload* Site Plan to show parking layout
- Revise both the *Preload* and final site plans to include proposals to address the bicycle parking, CPTED, lighting and wayfinding standards and objectives
- Prepare a detail plan that clarifies that the *Preload* construction, including the interim stormwater system, will not require any excavation of the existing wetland soils
- Address Memo and Planning Board comments.

ATTACHMENTS:

PB MEMO ATTACHMENTS

1. Peer Engineer SLODA comments
2. Traffic Engineer TMP

PUBLIC COMMENT (none)

APPLICANT'S SUBMITTALS

WS A Application Form

WS B Right Title and Interest

WS C - 2 State and Federal Approvals

WS D Zoning Assessment

WS E Project Description

WS F Waivers

WS G Financial and Technical Capability

WS I Construction Management Plan

WS J 1-4 Traffic Studies & Parking information

WS K Natural Features

WS L 1 Stormwatrer Management PLan

WS L 2 incl Preload Stormwater Report 6.22.18

WS LC - 1 Site Location Application

WS LC-2 incl Preload MDEP SLODA Application 6.22.18

WS S-2 Soils Report

PLANS

PLAN 1 COVER SHEET

Plan 2 Existing Conditions

PLAN 4A DEMO

PLAN 4B DEMO

PLAN 5A SITE PLAN

PLAN 5B SITE PLAN

PLAN 5C SITE PLAN

PLAN 5D PRELOAD SITE PLAN

PLAN 7A PRELOAD GRADING

PLAN 7B PRELOAD GRADING

PLAN 7C PRELOAD STORMWATER BMP

PLAN 7D GRADING

PLAN 7E GRADING

PLAN 7F GRADING

PLAN 8A DETAILS

PLAN 8B DETAILS

PLAN 9A LANDSCAPE

PLAN 9B LANDSCAPE

PLAN 9C PRELOAD LANDSCAPE

Plan 10 Lighting Plan

Plan 15A Watershed

Plan 15B Watershed

Plan 15C Watershed

Plan 16 Snow Storage Areas

Portland Maine | Yes. Google's good here.

Jean Fraser <jf@portlandmaine.gov>

100 Sewall Street - Transportation Center Parking Facility

1 message

Tom Errico <thomas.errico@tylin.com> Mon, May 21, 2018 at 9:59 AM
To: Jean Fraser <jf@portlandmaine.gov>
Cc: Keith Gray <kgray@portlandmaine.gov>, Jeremiah Bartlett <JBartlett@portlandmaine.gov>, Bruce Hyman <bhyman@portlandmaine.gov>

Hi Jean – In response to a request to provide an estimate of peak hour traffic volume change over the last 10-years, Sebago Technics has provided an analysis as documented in a May 11, 2018 Memorandum prepared by Steve Sawyer. According to the analysis, the Transportation Center peak hour volume has increased by approximately 125 vehicles between 2006 and 2016. Given this estimate, the Transportation Center appears to require a Traffic Movement Permit. I would note that this conclusion does not endorse methods used for estimating peak hour trip generation. During the Traffic Movement Permit process, additional coordination as it relates to ridership assumptions (particularly future growth), traffic impacts at other times of the day and week, seasonal activity, vehicle occupancy, passenger pick-up and self-parking activity will be required. These items can be discussed at a possible Traffic Movement Permit Scoping Meeting.

If you have any questions, please contact me.

Best regards,

Thomas A. Errico, PE
Senior Associate
Traffic Engineering Director
TY LIN INTERNATIONAL
12 Northbrook Drive
Falmouth, ME 04105
+1.207.781.4721 main
+1.207.347.4354 direct
+1.207.400.0719 mobile
+1.207.781.4753 fax
thomas.errico@tylin.com

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, Project Planner
FROM: Lauren Swett, P.E.
DATE: July 13, 2018
RE: Portland Transportation Center (100 Sewall Street), Site Plan and Site Location of Development Permit Application

---

Woodard & Curran has reviewed the Site Plan and Site Location of Development Permit Application submittals for the Portland Transportation Center Parking Expansion project located at 100 Thompson's Point Road in Portland, Maine. The project involves the construction of approximately 2.86 acres of new parking lot (approximately 290 parking spaces) and construction of a subsurface sand filter storm water treatment system. The project will be performed in two phases, with the first phase involving the preload of the site and the installation of a temporary parking surface with temporary stormwater management.

Documents Reviewed by Woodard & Curran

- Site Plan and Site Location of Development Permit Application: Portland Transportation Center, dated February, 2018, prepared by Sebago Technics on behalf of Langdon Street Real Estate, Inc.
- Response to Comments dated May 10, 2018, prepared by Sebago Technics on behalf of Langdon Street Real Estate, Inc.
- Portland Transportation Center: Thompson's Point Connector Plan, revised June 21, 2018, prepared by Sebago Technics on behalf of Langdon Street Real Estate, Inc.

In addition to the document review, Woodard & Curran attended a meeting with the Applicant and the Maine DEP on June 4, 2018, and attended an application review meeting with the Maine DEP on July 9, 2018. The Applicant has made significant changes to address the comments provided at the June 4 meeting.

Comments

1) Due to the preload requirements for the site, the project will be completed in phases. The Applicant has provided a phased approach to stormwater management, and has provided grading and utility plans for the preload phase. A site plan showing parking lot layout should also be provided for this phase, as the proposed underdrain soil filters will be located within the parking lot footprint, requiring a differing layout during the preload phase.
2) The Applicant has received Army Corps Approval, and we understand that approval from the Maine DEP for wetland impacts is pending.
3) The Applicant will be required to provide assurance of the completion of the final parking lot construction with the final stormwater treatment system. This will be a requirement for compliance with the Site Location of Development permit. We understand that the City and the MaineDEP will be having further discussion about this, and a condition of approval requiring construction of the final stormwater treatment system within a certain time frame will likely be required as part of the final approval.
4) The project is being reviewed under the City's Delegated Review Authority for the Site Location of Development Act; as such, the project must show conformance with MaineDEP Chapter 500 Basic, General, and Flooding Standards. Also, in accordance with Section 5 of the City of Portland Technical Manual, a Final Level III development project is required to submit a stormwater management plan pursuant to the regulations of MaineDEP Chapter 500 Stormwater Management Rules, including conformance with the Basic, General, and Flooding Standards. We offer the following comments:
    a) Basic Standards: Plans, notes, and details and an erosion and sediment control Inspection, Maintenance, and Housekeeping Plan have been provided to address erosion and sediment control requirements, inspection and maintenance requirements, and good housekeeping practices in general accordance with Appendix A, B, & C of MaineDEP Chapter 500.

b) General Standards: The Applicant is utilizing a subsurface sand filter in combination with a proprietary ADS chamber system to detain and treat storm water collected in the parking area to meet the quality requirements associated with the General Standards in the final condition. During the preload phase, underdrained soil filters are proposed to treat the reclaim parking lot surface. In addition, a subsurface stone drainage system is proposed as a replacement of the existing stormwater pond located within the project area. While this additional system is not in accordance with any specific DEP standards, it provides an improvement over the existing condition, and will provide for adequate treatment of existing developed areas during the short preload phase. We have the following comments on the proposed systems:
    1. It appears that a liner may be necessary for the proposed interim underdrain soil filters. The note is missing from the detail.
    2. Manholes should be provided at both ends of the proposed isolator row in the final treatment system. The manholes provide access for maintenance of the system.
    3. The HydroCAD model should be reviewed versus the plans. Invert elevations for the outlet control structure do not match between the two documents.
c) Flooding Standards: The project discharges directly to the Fore River, and therefore receives a waiver from the Flooding Standard. Please see some additional stormwater comments below.

5) The Applicant should review the Inspection and Maintenance Plan. Sections have been provided for post-construction inspection for the preload and final phases, however the stormwater systems listed are not consistent with the final plans.
6) The outlet from the proposed stormwater chamber system is to a pipe with a 10% slope. The Applicant is proposing larger rip rap at this outlet, but please provide confirmation that the rip rap is adequately sized (size and thickness of layer) for anticipated velocities.
7) While the project is not required to meet the Flooding Standard, the flow is increasing. The Applicant has modeled the existing downstream 36-inch culverts, and the model indicates that they have adequate capacity. Please provide verification of the condition of these culverts to ensure that the full capacity is available as modeled.
8) Please provide some additional clarification on the grading at the western entrance to the Thompson's Point Connector Road. It appears that the driveway will be regraded, based on the proposed contour that is shown, however the area is not identified for repaving.

Please contact our office if you have any questions.

Level III – Preliminary and Final Site Plans
Development Review Application
Portland, Maine

Planning and Urban Development Department
Planning Division

Portland's Planning and Urban Development Department coordinates the development review process for site plan, subdivision and other applications under the City's Land Use Code. Attached is the application form for a Level III: Preliminary or Final Site Plan. Please note that Portland has delegated review from the State of Maine for reviews under the Site Location of Development Act, Chapter 500 Stormwater Permits, and Traffic Movement Permits.

Level III: Site Plan Development includes:

- New structures with a total floor area of 10,000 sq. ft. or more except in Industrial Zones.
- New structures with a total floor area of 20,000 sq. ft. or more in Industrial Zones.
- New temporary or permanent parking area(s) or paving of existing unpaved parking areas for more than 75 vehicles.
- Building addition(s) with a total floor area of 10,000 sq. ft. or more (cumulatively within a 3 year period) except in Industrial Zones.
- Building addition(s) with a total floor area of 20,000 sq. ft. or more in Industrial Zones.
- A change in the use of a total floor area of 20,000 sq. ft. or more in any existing building (cumulatively within a 3 year period).
- Multiple family development (3 or more dwelling units) or the addition of any additional dwelling unit if subject to subdivision review.
- Any new major or minor auto business in the B-2 or B-5 Zone, or the construction of any new major or minor auto business greater than 10,000 sq. ft. of building area in any other permitted zone.
- Correctional prerelease facilities.
- Park improvements: New structures greater than 10,000 sq. ft. and/or facilities encompassing 20,000 sq. ft. or more (excludes rehabilitation or replacement of existing facilities); new nighttime outdoor lighting of sports, athletic or recreation facilities not previously illuminated.
- Land disturbance of 3 acres or more (includes stripping, grading, grubbing, filling or excavation).

Portland's development review process and requirements are outlined in the Land Use Code (Chapter 14), Design Manual and Technical Manual.

Planning Division
Fourth Floor, City Hall
389 Congress Street
(207) 874-8719
planning@portlandmaine.gov

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

I. Project Information (Please enter n/a on those fields that are not applicable)

Project Name:	Portland Transportation Center Parking Expansion
Proposed Development Address:	Thompson's Point Connector
Project Description:	Surface Parking Expansion
Chart/Block/Lot:	077 A 001
Preliminary Plan	No
Final Plan	Yes

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

APPLICANT

Name:	Langdon Street Real Estate
Business Name:	
Address:	7 Langdon Street
City/State:	Concord, New Hampshire
Zip Code:	03301
Work #:	603-228-3535
Home #:	
Cell #:	
Fax #:	603-8-3524
E-mail:	BBlunt@ConcordCoachLines.com

OWNER

Name:	Same as Applicant
Address:	
City/State:	
Zip Code:	
Work #:	
Home #:	
Cell #:	
Fax #:	
E-mail:	

AGENT/REPRESENTATIVE

Name:	Stephen S. Sawyer, PE
Address:	Sebago Technics Inc. / 75 John Roberts Road
City/State:	South Portland, Maine
Zip Code:	04106
Work #:	207-200-2082
Home #:	
Cell #:	
Fax #:	
E-mail:	ssawyer@sebagotechnics.com

BILLING (to whom invoices will be forwarded to)

Name:	Same as Applicant
Address:	
City/State:	
Zip Code:	
Work #:	
Home #:	
Cell #:	
Fax #:	
E-mail:	

ENGINEER

Name:	Sebago Technics, Inc.
Address:	
City/State:	
Zip Code:	
Work #:	
Home #:	
Cell #:	
Fax #:	
E-mail:	

SURVEYOR

Name:	Sebago Technics, Inc.
Address:	
City/State:	
Zip Code:	
Work #:	
Home #:	
Cell #:	
Fax #:	
E-mail:	

ARCHITECT

Name:	N/A
Address:	
City/State:	
Zip Code:	
Work #:	
Home #:	
Cell #:	
Fax #:	
E-mail:	

ATTORNEY

Name:	N/A
Address:	
City/State:	
Zip Code:	
Work #:	
Home #:	
Cell #:	
Fax #:	
E-mail:	

DESIGNATED PERSON(S) FOR UPLOADING INTO e-PLAN

Name:	William Conway
E-mail:	wconway@sebagotechnics.com
Name:	
E-mail:	
Name:	
E-mail:	

III. APPLICATION FEES

LEVEL III DEVELOPMENT (check applicable review)

☐	Less than 50,000 sq. ft.	$750.00
☐	50,000 – 100,000 sq. ft.	$1,000.00
☐	100,000 – 200,000 sq. ft.	$2,000.00
☐	200,000 – 300,000 sq. ft.	$3,000.00
☐	Over 300,000 sq. ft.	$5,000.00
☑	Parking lots over 100 spaces	$1,000.00
☐	After-the-fact Review	$1,000.00 + applicable application fee above

PLAN AMENDMENTS (check applicable review)

☐	Planning Staff Review	$250.00
☑	Planning Board Review	$500.00

OTHER REVIEWS (check applicable review)

☐	Traffic Movement	$1,500.00
☑	Stormwater Quality	$250.00
☐	Subdivision	$500.00 + applicable fee for lots/units below
	# of Subdivision Lots/Units [ ] x $25.00 each	$
☑	Site Location	$3,500.00 + applicable fee for lots/units below
	# of Site Location Lots/Units [1] x $200.00 each	$ 3700.00
☐	Change of Use	
☐	Flood Plain	
☑	Shoreland	
☐	Design Review	
☐	Housing Replacement	
☐	Historic Preservation	
	TOTAL APPLICATION FEE DUE:	$ ~~4,500.00~~ 4,200.00

IV. FEES ASSESSED AND INVOICED SEPARATELY

- Notices to abutters (receipt of application, workshop and public hearing meetings) ($.75 each)
- Legal Ad in the Newspaper (% of total ad)
- Planning Review ($52.00 hour)
- Legal Review ($75.00 hour)
- Third Party Review (all outside reviews or analysis, eg. Traffic/Peer Engineer, are the responsibility of the applicant and will be assessed and billed separately)

V. PROJECT DATA (Please enter n/a on those fields that are not applicable)

TOTAL AREA OF SITE	296,535	sq. ft.
PROPOSED DISTURBED AREA OF THE SITE	296,535	sq. ft.
If the proposed disturbance is greater than one acre, then the applicant shall apply for a Maine Construction General Permit (MCGP) with DEP and a Stormwater Management Permit, Chapter 500, with the City of Portland.		
IMPERVIOUS SURFACE AREA		
Impervious Area (Total Existing)	157,616	sq. ft.
Impervious Area (Total Proposed)	274,066	sq. ft.
Building Ground Floor Area and Total Floor		
Building Footprint (Total Existing)	14,189	sq. ft.
Building Footprint (Total Proposed)	14,189	sq. ft.
Building Floor Area (Total Existing)	14,189	sq. ft.
Building Floor Area (Total Proposed)	14,189	sq. ft.
ZONING		
Existing	B5	
Proposed, if applicable		
LAND USE		
Existing	Transportation Center	
Proposed	Transportation Center	
RESIDENTIAL, IF APPLICABLE		
# of Residential Units (Total Existing)		
# of Residential Units (Total Proposed)		
# of Lots (Total Proposed)		
# of Affordable Housing Units (Total Proposed)		
PROPOSED BEDROOM MIX		
# of Efficiency Units (Total Proposed)		
# of One-Bedroom Units (Total Proposed)		
# of Two-Bedroom Units (Total Proposed)		
# of Three-Bedroom Units (Total Proposed)		
PARKING SPACES		
# of Parking Spaces (Total Existing)	322	
# of Parking Spaces (Total Proposed)	612	
# of Handicapped Spaces (Total Proposed)	14	
BICYCLE PARKING SPACES		
# of Bicycle Spaces (Total Existing)	25	
# of Bicycle Spaces (Total Proposed)	36	
ESTIMATED COST OF THE PROJECT	$TBD	

VI. APPLICANT SIGNATURE

By digitally signing the attached document(s), you are signifying your understanding this is a legal document and your electronic signature is considered a *legal signature* per Maine state law.

I hereby certify that I am the Owner of record of the named property, or that the owner of record authorizes the proposed work and that I have been authorized by the owner to make this application as his/her authorized agent. I agree to conform to all applicable laws of this jurisdiction. In addition, if a permit for work described in this application is issued, I certify that the Planning Authority and Code Enforcement's authorized representative shall have the authority to enter all areas covered by this permit at any reasonable hour to enforce the provisions of the codes applicable to this permit.

This application is for a Level III Site Plan review. It is not a permit to begin construction. An approved site plan, a Performance Guarantee, Inspection Fee, Building Permit, and associated fees will be required prior to construction. Other Federal, State or local permits may be required prior to construction, which are the responsibility of the applicant to obtain.

Signature of Applicant:	Benjamin Blunt, VP
Date:	12/29/17

FINAL PLAN - Level III Site Plan			
Applicant Checklist	Planner Checklist	# of Copies	**GENERAL WRITTEN SUBMISSIONS CHECKLIST (* If applicant chooses to submit a Preliminary Plan, then the * items were submitted for that phase and only updates are required)**
X		1	* Completed Application form
X		1	* Application fees
X		1	* Written description of project
X		1	* Evidence of right, title and interest
X		1	* Evidence of state and/or federal permits
X		1	* Written assessment of proposed project's specific compliance with applicable Zoning requirements
N/A		1	* Summary of existing and/or proposed easements, covenants, public or private rights-of-way, or other burdens on the site
X		1	* Evidence of financial and technical capacity
X		1	Construction Management Plan
X		1	A traffic study and other applicable transportation plans in accordance with Section 1 of the technical Manual, where applicable.
X		1	Written summary of significant natural features located on the site (Section 14-526 (b) (a))
X		1	Stormwater management plan and stormwater calculations
N/A		1	Written summary of project's consistency with related city master plans
N/A		1	Evidence of utility capacity to serve
N/A		1	Written summary of solid waste generation and proposed management of solid waste
N/A		1	A code summary referencing NFPA 1 and all Fire Department technical standards
N/A		1	Where applicable, an assessment of the development's consistency with any applicable design standards contained in Section 14-526 and in City of Portland Design Manual
N/A		1	Manufacturer's verification that all proposed HVAC and manufacturing equipment meets applicable state and federal emissions requirements.

Applicant Checklist	Planner Checklist	# of Copies	**SITE PLAN SUBMISSIONS CHECKLIST** **(* If applicant chooses to submit a Preliminary Plan, then the * items were submitted for that phase and only updates are required)**
X		1	* Boundary Survey meeting the requirements of Section 13 of the City of Portland's Technical Manual
		1	**Final Site Plans including the following:**
X			Existing and proposed structures, as applicable, and distance from property line (including location of proposed piers, docks or wharves if in Shoreland Zone);
X			Existing and proposed structures on parcels abutting site;
X			All streets and intersections adjacent to the site and any proposed geometric modifications to those streets or intersections;
X			Location, dimensions and materials of all existing and proposed driveways, vehicle and pedestrian access ways, and bicycle access ways, with corresponding curb lines;
X			Engineered construction specifications and cross-sectional drawings for all proposed driveways, paved areas, sidewalks;
N/A			Location and dimensions of all proposed loading areas including turning templates for applicable design delivery vehicles;
X			Existing and proposed public transit infrastructure with applicable dimensions and engineering specifications;
X			Location of existing and proposed vehicle and bicycle parking spaces with applicable dimensional and engineering information;
X			Location of all snow storage areas and/or a snow removal plan;
N/A			A traffic control plan as detailed in Section 1 of the Technical Manual;
N/A			Proposed buffers and preservation measures for significant natural features, where applicable, as defined in Section 14-526(b)(1);
N/A			Location and proposed alteration to any watercourse;
X			A delineation of wetlands boundaries prepared by a qualified professional as detailed in Section 8 of the Technical Manual;
N/A			Proposed buffers and preservation measures for wetlands;
X			Existing soil conditions and location of test pits and test borings;
X			Existing vegetation to be preserved, proposed site landscaping, screening and proposed street trees, as applicable;
X			A stormwater management and drainage plan, in accordance with Section 5 of the Technical Manual;
X			Grading plan;
N/A			Ground water protection measures;
N/A			Existing and proposed sewer mains and connections;

- Continued on next page -

X		Location of all existing and proposed fire hydrants and a life safety plan in accordance with Section 3 of the Technical Manual;
N/A		Location, sizing, and directional flows of all existing and proposed utilities within the project site and on all abutting streets;
N/A		Location and dimensions of off-premises public or publicly accessible infrastructure immediately adjacent to the site;
N/A		Location and size of all on site solid waste receptacles, including on site storage containers for recyclable materials for any commercial or industrial property;
N/A		Plans showing the location, ground floor area, floor plans and grade elevations for all buildings;
N/A		A shadow analysis as described in Section 11 of the Technical Manual, if applicable;
N/A		A note on the plan identifying the Historic Preservation designation and a copy of the Application for Certificate of Appropriateness, if applicable, as specified in Section Article IX, the Historic Preservation Ordinance;
N/A		Location and dimensions of all existing and proposed HVAC and mechanical equipment and all proposed screening, where applicable;
X		An exterior lighting plan in accordance with Section 12 of the Technical Manual;
X		A signage plan showing the location, dimensions, height and setback of all existing and proposed signs;
N/A		Location, dimensions and ownership of easements, public or private rights of way, both existing and proposed.

LEVEL III SITE PLAN APPLICATION
PORTLAND TRANSPORTATION CENTER

WRITTEN SUBMISSION B RIGHT TITLE AND INTEREST

THE LOCUS DEED FOR PROPERTY CURRENTLTY OWNED BY THE APPLICANT IS ATTACHED.

IN ORDER TO ACCOMPLISH THE PARKING EXPANSION, THE APPLICANT PROPOSES TO AQUIRE APPROXIMATELY 1.92 ACRES OF ADJACENT PROPERTY FROM THE MAINE DEPARTMENT OF TRANSPORTATION, IN ACCORDANCE WITH THE ATTACHED OPTION AGREEMENT.

BK12719PG277

54320

QUITCLAIM DEED WITH COVENANT
(Maine Statutory Short Form)

MAINE REAL ESTATE TAX PAID

PETERSEN CORP., a Massachusetts corporation, of Andover, Massachusetts, grants to LANGDON STREET REAL ESTATE, INC., a New Hampshire corporation with a place of business and mailing address at 7 Langdon Street, Concord, New Hampshire 03301, with quitclaim covenants, the land situated in Portland, County of Cumberland and State of Maine, with all buildings and improvements thereon, if any, being more fully described on the attached Exhibit A.

Meaning and intending to convey and hereby conveying the same premises conveyed to Petersen Corp. by deed of Glen G. Grant dated September 25, 1995 and recorded in the Cumberland County Registry of Deeds in Book 12302, Page 130.

In Witness Whereof, Petersen Corp. has caused this instrument to be executed by Glen G. Grant, its President, thereunto duly authorized, this 12th day of September, 1996.

WITNESS

PETERSEN CORP.

By: _____
Glen G. Grant
Its President

STATE OF MAINE
COUNTY OF CUMBERLAND, ss. September 12, 1996

Personally appeared the above-named Glen G. Grant, President of Petersen Corp., and acknowledged the foregoing to be his free act and deed in his said capacity and the free act and deed of Petersen Corp.

Before me

_____
Notary Public/Attorney at Law

Print Name RICHARD A. SHINAY

78487.1

EXHIBIT A

Two certain lots or parcels of land, with all buildings and improvements thereon, situated in the City of Portland, Cumberland County, State of Maine, bounded and described as follows:

Parcel 1

Beginning on the east side of Sewall Street at a point on the northerly sideline and right-of-way now or formerly of the Portland Terminal Company, at or near, Valuation Station 43.12± as shown on Valuation Section 1-A, Sheet 1A of Federal Valuation Survey Plan of June 30, 1916. Said Valuation Plans are on file in the office of the Chief Engineer, Maine Central Railroad Company, Administration Building, Rigby Road West, P.O. Box 9701, Portland, Maine 04104, of Portland Terminal Company;

Thence southeasterly in said northerly sideline and right of way of Portland Terminal Company a distance of nine hundred five (905) feet, more or less, to a point;

Thence northerly in a line, along a fence, a distance of three hundred (300) feet, more or less, to a concrete monument, set in the ground;

Thence north-northwesterly in a line, along a fence, a distance of two hundred twenty (220) feet, more or less, to a concrete monument, set in the ground;

Thence northwesterly in a line, along a fence, a distance of one hundred twenty (120) feet, more or less, to a concrete monument, set in the ground;

Thence continuing northwesterly on an arc as shown on Valuation Section 1-A, Sheet 1A to the point of intersection with the southerly sideline of Hooper Street, so-called, at a point on a line perpendicular to and projected from Valuation Station 42.03±, as shown on said Valuation Plan;

Thence westerly in the southerly sideline of said Hooper Street, two hundred fifty-five (255) feet, more or less, to the point on intersection with the easterly sideline of Sewall Street;

Thence southerly in the easterly sideline of said Sewall Street to the point of beginning, said parcel containing 281,000 square feet, more or less.

Parcel 2

Beginning on the west side of Sewall Street at a point on the northerly sideline and right-of-way, now or formerly of the Portland Terminal Company, at or near, Valuation Station 43.62± as shown on Valuation Section 1-A, Sheet 1A of Federal Valuation Survey Plan of June 30, 1916. Said Valuation Plans are on file in the office of the Chief Engineer, Maine Central Railroad Company, Administration Building, Rigby Road West, P.O. Box 9701, Portland, Maine 04101, of Portland Terminal Company;

Thence northwesterly in the northerly sideline and right-of-way of Portland Terminal Company a distance of forty (40) feet, more or less, to a point;

Thence northerly in a line a distance of two hundred ninety (290) feet, more or less, to the point of intersection with the westerly sideline of said Sewall Street;

Thence southerly in the westerly sideline of said Sewall Street to the point of beginning, said parcel containing 8,900 square feet, more or less.

Further reference is made to a plan entitled "Subdivision Plan - Preliminary of Thompson's Point Subdivision, Sewall Street, Portland, Maine" made by Sebago Technics, 12 Westbrook Common, Westbrook, Maine, dated September 29, 1992, revised October 1, 1992, Project No. 92091.

Also hereby conveying all of the Grantor's right, title and interest, if any, in and to Sewall Street as it is located between Parcel 1 and Parcel 2, Sewall Street as it is located northwest of Parcel 2, and Hooper Street as it is adjacent to Parcel 1, the current location of Sewall Street and Parcel 2, but without any covenants of title with respect thereto.

78487.1

RECEIVED
RECORDED REGISTRY OF DEEDS
95 SEP 12 PM 2:43
CUMBERLAND COUNTY
John B O'Brien

OPTION AGREEMENT

This **OPTION AGREEMENT** (the "Agreement") is entered into this 29 day of January, 20 18, by and between the STATE OF MAINE, acting by and through its DEPARTMENT OF TRANSPORTATION,, an agency of the State of Maine, with headquarters at 16 State House Station, Augusta, Maine ("MaineDOT" or "Seller"), and LANGDON STREET REAL ESTATE, INC. with an address of 7 Langdon Street, Concord, New Hampshire (the "Buyer"),

RECITALS

A. Seller is the owner of a certain parcel of land located adjacent to Interstate 295 ("I-295") in Portland, County of Cumberland, State of Maine, acquired in connection with MaineDOT's construction of the Exit 6A southbound on-ramp accessing I-295.

B. Buyer is the owner of adjacent land improved with a facility commonly known as the Portland Transportation Center, having an address of 100 Thompson's Point, Portland, Maine (the "PTC"). Buyer is seeking to expand its property to allow for the development of additional parking areas to serve the PTC (the "Extended Parking Area").

C. Under the terms and conditions set out below, Seller is willing to grant to Buyer an exclusive option to purchase a portion of the Seller's property consisting of approximately 1.92± acres, as more particularly described in **Exhibit A** attached hereto and generally depicted as the orange shaded area on the plan attached hereto as **Exhibit B** (the "Premises).

AGREEMENT

NOW, THEREFORE, in consideration of the mutual covenants, agreements, and undertakings set out herein, the parties agree as follows:

1. **Option.** Subject to the terms and conditions set forth herein, the Seller hereby grants to the Buyer the exclusive option to purchase the Premises (the "Option") for anticipated uses associated with the development of the Extended Parking Area serving the PTC.

2. **Term.** This Option will remain in effect until five o'clock (5:00) p.m. on December 31, 2018, unless extended in writing by mutual agreement of the parties (the "Option Term") or unless previously terminated as set forth in this Agreement.

3. **Conditions.** During the Option Term, the parties shall proceed with satisfying each of the following conditions (the "Option Conditions"), which must all be completed to the satisfaction of MaineDOT prior to the parties entering into a formal Purchase and Sale Agreement and proceeding to a sale of the Premises:

    a. Buyer shall have completed, at its sole expense and to the satisfaction of the Seller, a full boundary survey and legal property description of the Premises, upon which a conveyance will be based.

b. Buyer shall have sought and secured, at its sole expense, all necessary permits and permissions from the United States Army Corps of Engineers, the Maine Department of Environmental Protection, and any applicable local entities approving the Buyer's development proposal to construct the Extended Parking Area.

c. Buyer shall have submitted to the Seller, at its sole expense, all necessary information required to support the Seller's request that the Federal Highway Administration ("FHWA") review and approve the Seller's proposal to convey the Premises to the Buyer. Required submissions shall include, but may not be limited to, the following:

   i. Identification of the party who will be responsible for developing and operating the development of the Premises;

   ii. A general statement of the proposed use;

   iii. The proposed design for the development of the Premises, including any facilities to be constructed thereon;

   iv. Maps, plans and/or sketches adequately demonstrating the relationship of the proposed use of the Premises to the adjacent I-295 highway improvements;

   v. An acceptable metes and bounds description of the Premises, as well as appropriate plans and/or cross sections clearly defining the vertical use limits of the proposed development.

d. MaineDOT shall have obtained all necessary approvals from FHWA to proceed with conveying the Premises to the Buyer;

e. Buyer shall have developed, at its sole expense and to the satisfaction of MaineDOT, a drainage design that adequately protects the adjacent I-295 highway corridor, and preserves the ability for MaineDOT to maintain, repair and replace its drainage installations serving the adjacent I-295 highway corridor. To this effect, the sale of the Premises shall be subject to the Seller's retention of any drainage easements necessary to support MaineDOT's highway maintenance needs.

f. MaineDOT shall have completed an appraisal determining the fair market value (the "FMV") of the Premises and, therefore, establishing the purchase price in accordance with FHWA's requirement that MaineDOT receive FMV for the sale of the Premises.

4. **Option Price.** Seller will waive establishing and collecting any cash Option Price for the Option Term, instead receiving consideration in the form of the engineering work

referenced herein; provided, however, that if the Option Term is extended beyond December 31, 2018, as set forth above, Seller retains the right to establish and collect an appropriate Option Price in consideration for extending Buyer's exclusive Option on the Premises.

5. **Exercise of Option and Purchase Price.** Upon satisfaction of all Option Conditions, Buyer's exercise of the Option shall be satisfied through delivery to Seller of Buyer's written intent to proceed with purchasing the Premises at the FMV determined by the Seller. Delivery of Buyer's written intent shall be made no later than the expiration of the Option Term via first class mail or hand delivery.

6. **Termination.** If Buyer does not exercise the Option by the end of the Option Term, the Option and this Agreement shall automatically terminate. Seller retains the right to terminate this Option at any time in the unlikely event that the Premises is required for transportation purposes.

7. **Purchase Agreement and Due Diligence.** Upon exercise of the Option, the parties shall promptly enter into a formal Purchase and Sale Agreement that provides for a closing to occur at a time and place mutually agreeable to the parties (the "Closing"). The Purchase and Sale Agreement shall set out the terms of Closing, including but not limited to the following: form of deed; proration of fees, if any; form of payment; appropriate due diligence periods; and conditions of Closing.

8. **Condition of and Access to Premises during Option Term.** Buyer acknowledges that Seller has made no representations or warranties of any kind whatsoever with respect to the condition of the Premises or the compliance of the Premises with any laws, rules, regulations, or ordinances, including (without limitation) any relating to zoning, the environment, or hazardous materials. During the Option Term, Seller will allow Buyer or its representatives access to the Premises upon reasonable advanced notice to MaineDOT, and Buyer or its representatives shall have the right to perform water, soil, septic system and engineering tests (including, without limitation, tests for hazardous wastes, toxic substances and for the existence of any underground tanks) on the Premises and to conduct boundary, resource and topographical surveys; provided, however, that (i) such access does not interfere with Seller's uses of the Premises; (ii) such persons enter on to the Premises at their own risk of loss or harm; and (iii) Buyer or its representatives will restore the Premises to the condition it was in prior to their inspection(s) to the extent reasonably practicable. All tests and survey results shall be made available to Seller upon request and shall become the property of Seller to the extent possible. In the event Buyer is not satisfied with the results of its tests, including water quality, hazardous wastes, underground tanks, or toxic substances, Buyer may terminate and release this Option. All tests and survey results shall be made available to Seller upon request and shall become the property of Seller to the extent possible.

9. **Conditions to Closing.** Buyer acknowledges that conveyance of the Premises will be conditioned on MaineDOT's retention of any drainage easements determined necessary to support MaineDOT's highway maintenance needs.

10. **No Assignment by Buyer.** Buyer may not assign the Option or this Agreement, and Buyer may not convey to any third party any rights under the Option or under this Agreement. Any such purported assignment or conveyance shall be void and of no effect.

11. **Capacity.** Each party represents to the other (a) that such party has full power and authority to perform its obligations hereunder; (b) that any person or entity executing this Agreement by or on behalf of the represented party has the authority to act on the behalf of and bind the represented party; (c) that any person or entity executing any closing documents by or on behalf of the represented party has been and will be duly authorized to act on behalf of the represented party; and, (d) that the performance of this Agreement will not be in violation of any law, ordinance, rule, regulation, order, or agreements to which the represented party is a party or by the terms of which it is bound.

12. **Governing Law.** This Agreement is made pursuant to and shall be governed in accordance with the laws of the State of Maine.

13. **Entire Agreement.** This Agreement contains the entire and only agreement between the parties, and no oral statements or representations or prior written matter not contained in this Agreement shall have any force or effect.

14. **Modification.** No provision of this Agreement may be waived, changed, or modified orally, but only by an agreement in writing signed by the parties.

15. **Notices.** Any communications, requests or notices required or appropriate to be given under this Agreement shall be in writing and mailed via U.S. Mail, Certified or Registered, Return Receipt Requested or sent via a recognized commercial carrier, such as but not limited to Federal Express, that requires a return receipt delivered to the sending party. Alternatively, communication may be sent via email and shall satisfy the delivery requirements of this section through express acknowledgement of receipt by the receiving party. Said communications, requests or notices shall be sent to the other party as follows:

Seller:	Buyer:
Maine Department of Transportation	Langdon Street Real Estate, Inc.
Toni L. Kemmerle, Chief Counsel	Attn: Ben Blunt
16 State House Station	7 Langdon St
Augusta Maine 04333-0016	Concord, NH 03301
E-mail: toni.kemmerle@maine.gov	Email: bblunt@concordcoachlines.com

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

STATE OF MAINE
Department of Transportation

By: _____
David Bernhardt, Commissioner
Duly authorized

LANGDON STREET REAL ESTATE, INC

By: _____
Print Name: Benjamin Blunt
Its: Vice President
Duly authorized

Exhibit A
Proposed Acquisition from the State of Maine

A certain lot or parcel of land situated on the westerly side of Fore River Parkway and the southerly side of Thompson Point Connector, in the City of Portland, County of Cumberland, State of Maine, as depicted on a plan entitled "Exhibit B – Land Acquisition Sketch of Portland Transportation Center, Thompson's Point Connector, Portland, Maine For Langdon Street Real Estate, Inc., 7 Langdon Street, Concord, NH 03301" dated January 12, 2018, and revised January 23, 2018, by Sebago Technics, Inc. (project number 99607), D.O.T. File No. 3-185D, on file at the Property Office of the Maine Department of Transportation, and being more particularly bounded and described as follows:

Beginning at an existing 6-inch square concrete highway monument, being the southerly corner of land now or formerly of Langdon Street Real Estate, Inc., as described in a deed recorded at the Cumberland County Registry of Deeds (CCRD) in Book 12719, Page 277;

Thence N 05°25'20" W, along land of Langdon Street Real Estate, Inc., a distance of 303.20 feet to an existing 6-inch square concrete highway monument;

Thence N 19°32'38" W, along land of Langdon Street Real Estate, Inc., a distance of 222.25 feet to a 6-inch square concrete highway monument at a point of curvature;

Thence along a non-tangent curve concave to the southwest and land of Langdon Street Real Estate, Inc. as defined by the following curve elements: having a radius of 854.53 feet, an arc length of 35.90 feet and a chord which bears N 41°08'09" W, a distance of 35.89 feet to a point;

Thence N 27°24'28" E, along land of Langdon Street Real Estate, Inc., a distance of 53.92 feet to a point;

Thence N 04°37'26" E, along land of Langdon Street Real Estate, Inc., a distance of 64.77 feet to a 5/8-inch rebar with plastic cap inscribed "STI PLS 2009" to be set on the southerly sideline of the Thompson's Point Connector;

Thence S 72°56'09" E, along Thompson's Point Connector and through land of the State of Maine, as described in deeds recorded at the CCRD in Book 3079, Page 336; Book 3153, Page 761 and Book 3367, Page 171, a distance of 143.69 feet to a 5/8-inch rebar with plastic cap inscribed "STI PLS 2009" to be set at the Fore River Parkway;

Thence S 06°38'37" E, along Fore River Parkway and through land of the State of Maine, a distance of 288.62 feet to a 5/8-inch rebar with plastic cap inscribed "STI PLS 2009" to be set;

Thence S 11°42'34" E, along Fore River Parkway and through land of the State of Maine, a distance of 226.50 feet to a 5/8-inch rebar with plastic cap inscribed "STI PLS 2009" to be set;

Thence S 13°20'40" W, along Fore River Parkway and through land of the State of Maine, a distance of 163.34 feet to a 5/8-inch rebar with plastic cap inscribed "STI PLS 2009" to be set at

land now or formerly of the Portland Terminal Company, as described in a deed recorded at the CCRD in Book 881, Page 318;

Thence N 54°30'09" W, along the land of the Portland Terminal Company, a distance of 101.27 feet to the Point of Beginning.

The herein described parcel contains approximately 83,608 square feet, more or less

Bearings herein are based on Grid North, Maine State Plane Coordinate System, West Zone 1802, NAD83.

Meaning and intending to convey a portion of the right of way of State Highway "295" as was acquired from the Portland Terminal Company by condemnation by the State of Maine, as described in a Notice of Layout and Taking recorded in Book 3217, Page 141.

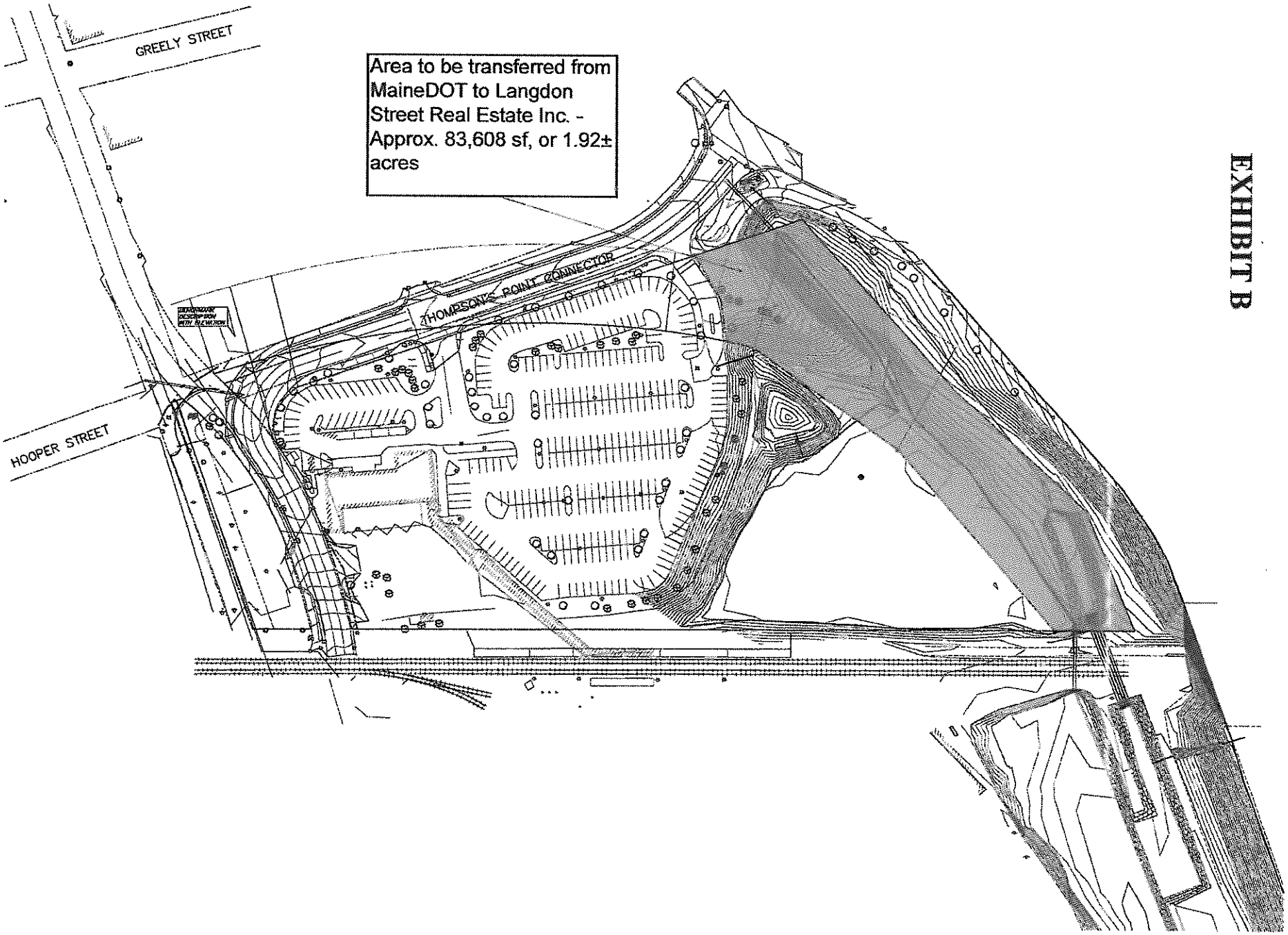

GREELY STREET
Area to be transferred from MaineDOT to Langdon Street Real Estate Inc. - Approx. 83,608 sf, or 1.92± acres
THOMPSONS POINT CONNECTOR
HOOPER STREET

EXHIBIT B

LEVEL III SITE PLAN APPLICATION
PORTLAND TRANSPORTATION CENTER

WRITTEN SUBMISSION C STATE AND FEDERAL APPROVALS

THE PROJECT WILL REQUIRE AN AMENDMENT TO THE CURRENTLY HELD SITE LOCATION OF DEVELOPMENT PERMIT. THIS REVIEW AND AMENDMENT WILL BE DONE VIA CITY DELEGATED REVIEW AUTHORITY.

THE PROJECT WILL ALSO REQUIRE A MAINE DEP NRPA PERMIT AND US ARMY CORPS PERMIT FOR THE PROPOSED WETLAND FILL.

THESE REVIEWS WILL BE CONCURRENT WITH CITY SITE PLAN REVIEW.

LEVEL III SITE PLAN APPLICATION
PORTLAND TRANSPORTATION CENTER

WRITTEN SUBMISSION D ZONING ASSESSMENT

THE PROJECT IS LOCATED IN THE B5 ZONING DISTRICT.

OFF STREET PARKING LOTS ARE PERMITTED USES IN THE B5 DISTRICT.

100% LOT COVERAGE IS ALLOWED, THE PROPOSED SITE PLAN HAS LANDSCAPE AREAS AND THE PROPOSED LOT COVERAGE IS LESS THAN 100%.

DESIGN OF PARKING SPACE LAYOUT, LANDSCAPING AND SITE LIGHTING CONFORMS TO THE CITY TECHNICAL STANDARDS.

PROPOSED STORMWATER MANAGEMENT MEETS THE CITY TECHNICAL STANDARD REQUIREMENTS.

THE PROJECT WILL NOT GENERATE EROSION, FUMES, DUST, NOISE OR OTHER NUISANCES.

99607

Portland Transportation Center

Parking Lot Expansion and Internal Circulation Improvements

Justification Narrative
(Purpose, Need, and Alternatives Analysis)

1.30.18

Purpose and Need Statement

Langdon Street Real Estate, dba as Concord Coach Lines (CCL), the owner and facility manager of the Portland Transportation Center (PTC), seeks to address existing parking and traffic flow constraints in a manner which is economically feasible for the ongoing operations of this public transportation hub. Additionally, this solution must continue to offer convenient, accessible, and price conscious parking options that will maintain the viability of the transit services (bus and train) offered at the PTC as alternatives to the usage of private automobiles for local and regional trip making.

As such, the purpose of this project is to:

- address current and future parking and circulation deficiencies at the site for the next 5-10 years by adding 300+ parking spaces and modifying vehicle access to the terminal entrance in a manner that meets the engineering design criteria as described below (including the provision of convenient, accessible, and affordable parking).

Project History

The PTC was originally constructed on Sewall Street in 1996 as a new terminal facility for CCL. At this time the facility contained 205 long-term parking spaces and 20 short-term spaces. In 2001, the site was redesigned and expanded to serve the new Downeaster Amtrak service operated by the Northern New England Passenger Rail Authority (NNEPRA). This expansion was the result of a partnership between the Maine Department of Transportation (MaineDOT), Langdon Street Real Estate (LSRE, a real estate holding company belonging to the same ownership group as CCL), CCL, and NNEPRA. The construction included:

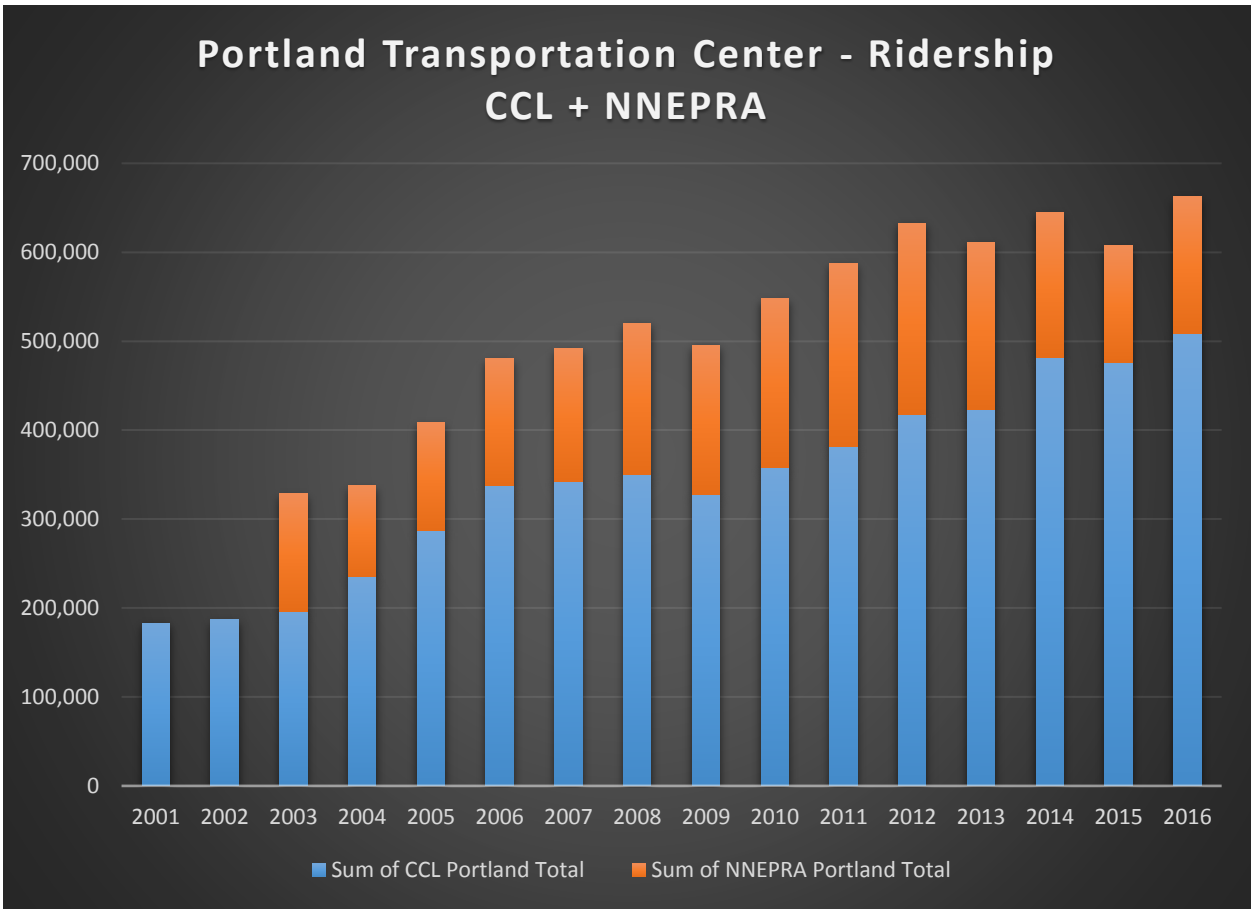
- A new 450-foot long train platform along the Pan Am Mountain Division rail line
- A trainway extending from the terminal building to the platform
- Expanded terminal facilities, including ticketing and waiting space for the train
- An additional 89 parking spaces adjacent to the terminal
- A new 375-space Park & Ride Lot across the Thompson's Point Connector Road on land owned by MaineDOT, which brought the total parking capacity of the PTC to roughly 689 spaces

Since 2001, the PTC has been a model of success. The partnerships that were made between Public and Private entities at the time have created one of the most successful transportation P3 projects in the country. The facility is financially self-sufficient, taking no operating subsidy from the City and instead generating $55,000 in property taxes, and no operating subsidy from MaineDOT or NNEPRA, while generating roughly $190,000 in surplus cash to support other costs of the Downeaster.

The capital costs of constructing the terminal facility were made entirely by the private sector, and while MaineDOT did participate in constructing improvements to their Park and Ride lot and the train platform, their upfront investment was minimal compared to the costs of a new terminal facility.

This model has worked due to the comparatively cheap operating and capital costs of surface parking as opposed to decked parking. The cheaper costs have allowed CCL to keep parking fees reasonable for public transit users (who otherwise would not use transit), while still generating enough revenue to support the ongoing operating costs of a modest terminal facility and large parking lot. The financial model of the facility is one that prioritizes cost efficiency and user experience. As a result, ridership for both services has grown substantially from the early days, making the PTC the busiest ground transportation hub north of Massachusetts. See the chart on the following page.

CCL and NNEPRA Ridership To/From the Portland Terminal



As the above chart shows, the combined patronage for both CCL and NNEPRA services has seen significant growth over the past 15 years. From the initial year's ridership of just under 200,000 passengers to last year's figure of more than 675,000 – this represents an increase of over 330 percent. It's important to remember that CCL and Downeaster ridership numbers are <u>additive</u> in terms of parking needs.

In 2016, Greater Portland Metro Bus added the *Breez* Service from the PTC to downtown Portland and points north, which now makes the PTC a true "pulse point" for travel between all of northern Maine, Coastal Maine, downtown Portland, northern Massachusetts and the rest of the world through connections in Boston. Recent data from Portland Metro indicates that during the first 9 months of 2017 the *Breez* Service picked up and dropped off a total of 2,742 passengers at the PTC, or put another way on 75% of their stops at the PTC they either picked up or dropped off someone. In Metro's view, this data confirms the Breez's viability for their operation. These figures also further document the interest and support the PTC has from area residents, including the recognition by some of the lack of on-site parking today.

This growth in PTC activity has been a boon for the region on a number of fronts. First, it is evident that residents statewide and in particular within the Greater Portland Area have wholeheartedly embraced the notion of choosing public transportation to access Boston and points south for both commuting and recreational purposes. In addition to Greater Portland, the Downeaster service runs to Freeport and Brunswick and CCL connects to hub terminals in Augusta, Auburn, Bangor and the coastal communities of Searsport, Belfast, Lincolnville, Camden, Rockport, Rockland, Waldoboro, Damariscotta, Wiscasset, Bath, and Brunswick. As a result, the I-95 corridor is less congested and the Vehicle Miles Traveled (VMT) within the corridor are reduced. Second, and equally important, is the fact that reductions in private automobiles on I-95 are having a positive impact on our air quality. A 2014 American Bus Association Study[1] indicates that highway motorcoaches and intercity rail use much less fuel and contribute far fewer harmful air emissions than do private automobiles. Data extracted from this Study are shown in the following table.

Mode	Average Passenger-Mile/Gallon	Average Btu/Passenger-Mile	Average CO_2 g/Passenger-Mile
Highway Motorcoach	239.8	575	43
Intercity Rail	85.2	1,619	147
Car Pool – 2 Person	55.9	2,470	184
Car – Average Trip	38.8	3,555	265
Car – 1 Person	27.9	4,939	368

The Applicant

CCL was founded in 1967, has over 50 years of experience, and understands the public transit market in Northern New England very well. Based in Concord, NH, the Company operates intercity bus service from 34 communities in Maine and New Hampshire with service to Boston's South Station and Logan Airport, as well as New York City. In 2016, CCL carried over 750,000 passengers throughout their system, and over 1.5 million if their affiliated companies Dartmouth Coach and Boston Express that operate in New Hampshire are included.

The Economics of Public Ground Transportation

Studies show, and CCL's experience supports, that the viability of public surface transportation is far more susceptible to the cost and convenience of parking and accessibility than that of air transportation. According to TCRP Report 95, "If transit service is to be an effective substitute for driving, it must be direct enough and frequent enough to offer convenient access and competitive travel time, as well as being attractively priced."[2] Patrons are willing to put up with more inconvenience, time delays, and higher rates when they are flying as compared to choosing a surface transportation option. Surface transportation must compete with the private automobile on convenience when the journey is less than a few hundred miles. As such, the time and convenience of the whole trip is taken into account. How

[1] Updated Comparison Energy Use & CO_2 Emissions From Different Transportation Modes, for the ABA Foundation, April 2014 by MJ Bradley and Associates.

[2] Transit Cooperative Research Program (TCRP) Report 95, Traveler Response to Transportation System Changes – Chapter 13 Parking Pricing and Fees, p.13-27.

long will it take the patron to travel from their origin to the departing station, how readily available is parking, how early do they need to be there, if they miss the departure how soon will there be another, how many stops will the schedule make; these are all convenience questions that a traveler will either consciously or subconsciously consider when they decide on whether or not to use a ground transportation alternative to their personal automobile. It is also worth mentioning that these factors along with ticket and parking price are especially critical to commuters, who are invested in making the trip as efficient and cost effective as possible.

Beyond convenience, the cost of parking and ancillary charges is considerably less elastic in the minds of a ground transportation user. The Portland Jetport is able to charge $12/day, and Boston Logan Airport charges $35/day for their regular garage. In downtown Boston, the daily rate is $28 and up. Often, people resort to public transit services like those offered at the PTC as a means of avoiding the inconvenience and expense of parking their vehicle at their destination. The PTC has remained viable because the cost of parking is modest, with a maximum of $5/day. Travelers considering a week-long trip will factor in the $35 charge of parking at the PTC as a major part of their decision to use or not use transit. If these rates were to increase to $12/day (like the JetPort), the additional $49 charge will prompt them to consider other options. The decision process would be similar for commuters, balancing the bus or train ticket price, parking, and convenience with driving and parking in Boston.

Current Parking Conditions at the PTC

In 2016, the PTC accommodated 246,501 "car days" meaning a single instance of a car remaining in a spot for a single day. This equates to a 97.7% utilization rate of the available 252,174 available car days (689 spaces x 366 days). This is obviously an unsustainable number, since typically off-street parking lots with an occupancy rate of 90% or more are considered functionally at capacity.[3]

To combat this situation, CCL has leased 100 spaces a day from the developers on Thompson's Point that adjusts to 300 during the peak travel season of February through April. This overflow lot is relatively inconvenient to the facility, has not been designed for heavy use, and is expensive for the facility operators to lease, staff and maintain. At peak demand, even with the additional 300 spaces, the lots at the PTC are over capacity. The lease from the developers on Thompson's Point for the overflow lot could be terminated at any time and for any reason with 12 months' notice. Given the challenges of many of our potential alternatives, 12 months is a concerning deadline.

The 2011 Portland Station Evaluation Study, conducted for NNEPRA, identified the existing parking at the terminal as deficient. "Both parking lots frequently reach capacity and consequently some people park along Thompson's Point Road."[4] A number of alternative sites were explored elsewhere in the City as part of this Study, but in the end NNEPRA concluded that "on balance, the existing location at the Transportation Center is the preferred location" for the Downeaster terminal.[5] This Study went on to say that it is important for the existing traffic and parking issues to be resolved at this location, but that the advantages of being co-located with CCL, and having close proximity to I-295 with increased opportunities for transit connections are significant.

[3] Parking Supply and Demand Analysis, City of Portsmouth, NH, by Nelson/Nygaard Consulting Associates Inc., January 2012, page 15.
[4] Portland Station Location Evaluation, NNEPRA, October 2011.
[5] Portland Station Location Evaluation, NNEPRA, October 2011

Aside from parking capacity, the original design of the front entrance to the terminal included 22 "short-term" parking spaces. These spaces are intended for 15-minute parking only, and are mainly utilized by patrons that are being picked up or dropped off by a friend or family member, hotel shuttles, cabs, or ridesharing services like Uber and Lyft. The flow through this narrow, saw-toothed lot allows stacking of roughly 10-15 vehicles before the traffic begins to back up onto the Thompson's Point Connector Road, and ultimately out to the Fore River Parkway. This circulation design no longer has sufficient capacity given the success of the PTC. Trains often arrive or depart with up to 100 people, and CCL often has multiple buses carrying up to 50 people each at the same time. As a result, the existing terminal circulation is overtaxed with 50-150 patrons trying to either exit the parking lots or get picked up or dropped off in the short term area. Stacking often occurs at the exit gates of the parking lots, but even more acutely within the short term traffic area, resulting in queue spillback and unsafe congestion on the Thompson's Point Connector Road and sometimes the Fore River Parkway.

As part of this project, CCL is proposing to expand and redesign the traffic flow pattern with added short term parking spaces that allow for additional pickup and drop off capacity and additional, safe stacking.

Design Criteria

To be viable in the minds of CCL, the proposed short term parking expansion and internal circulation improvements need to meet all of the following criteria:

- Provide a minimum of 300-325 spaces.
- Result in a total project development not to exceed $16,000 per parking space, which would require in excess of a $5/day parking price to finance the project. Anything greater would ultimately dissuade transit users from park and riding.
- Provide expansion and redesign of the short term parking lot to meet current demand and avoid unsafe stacking onto adjacent roadways.
- Provide additional parking for patrons so that the facility is in a better position to construct a new terminal on site or a parking garage on the MaineDOT Park-and-Ride Lot across the street from a space and economic standpoint.

Alternatives

The following 8 Alternatives have been explored by CCL as part of their due diligence in preparation of this alternatives analysis:

<u>Alternative 1- No parking expansion or internal circulation improvements.</u> *This No Action Alternative does not address the stated Purpose and Need and thus is unavailable and therefore has been discarded.*

<u>Alternative 2 – Expand upon leased parking space on Thompson's Point or purchase land on Thompson's Point.</u> This alternative has been explored with Parallax Partners, the owners and developers of Thompson's Point. They see the piece of property that abuts the rail line as an integral part of their long-term development plan and therefore have no desire to enter into a long-term lease agreement or sale for the land currently being used by CCL or any additional land on this parcel. Given the uncertainty

of their timeline for development, and the fact that CCL's lease can be terminated at any point within 12 months, it would not be prudent to make substantial lease hold improvements to this property, which is currently used by CCL as overflow parking. *This Alternative is therefore unavailable and thus has been discarded.*

Alternative 3 – Work with MaineDOT to construct a parking garage on their Park & Ride Lot across Thompson's Point Road from the terminal. CCL, NNEPRA, and MaineDOT have been conducting a Feasibility Study with consultants from AECOM on the financial model and potential funding sources for such a project. This Study is still ongoing, but our understanding from MaineDOT is that it has determined that a project of this magnitude is cost prohibitive for them at this time. Furthermore, the Department would need to use all the garage revenues to pay back their initial investment, which would alter the current financial model for funding operations at the PTC. CCL and NNEPRA both depend on the parking revenues that are generated from within their long term lots at the PTC. The revenue from the MaineDOT Park & Ride lot is used to cover NNEPRA's share of operating and capital expenses in the facility, including their lease payments. Beyond covering NNEPRA's cost of being in the facility, this parking revenue nets the Downeaster roughly $50,000/yr. to help offset other expenses. The parking revenue that CCL generates in its existing parking lot helps to support the cost of operating the PTC, albeit not completely. If this parking revenue was used to make bond payments or service debt on the capital cost of a 1,000 space parking garage, CCL and NNEPRA would no longer be able to have the funds to support the ongoing operating costs of the facility without substantially increasing the cost of parking or requiring public subsidies.

Even if the concerns with the parking garage project are sufficiently addressed, it is years away from becoming a reality and nearly 400 parking spaces would be lost during its construction. In addition, this project would do nothing to address the traffic and circulation issues that arise at the PTC as the added capacity would be contained entirely to the other side of the Thompson's Point Connector Road from the terminal facility.

This alternative is available and still being examined as a possible long term strategy. However, it will not address all of the present needs of the PTC and is financially out of reach for the MaineDOT, CCL, and NNEPRA at this time. For these reasons, *it is deemed impracticable and thus has been discarded.*

Alternative 4 – Construct a parking garage on the existing terminal site over the current parking lot without expanding the current footprint. This would be problematic from a construction standpoint, because during the construction of the garage, the existing spaces in this lot would have to be eliminated, which would exacerbate the current parking situation. Furthermore, at a cost of $28,000 per space, the parking revenue generated by the garage spaces could not pay off the capital investment at $5 per day. Rates would have to be raised to $10-$12 per day, which is not feasible for the surface transportation market. Therefore, while this alternative is available it is not practicable for financial and constructability reasons, and thus *this alternative has been discarded.*

Alternative 5 – Institute Valet Parking. This concept involves patrons giving up their keys to a terminal employee who double stacks their car in an aisle somewhere on the property until the patron returns

from their trip. This strategy has been employed at other CCL terminals and on occasion at the Portland site on the Thompson's Point overflow site. There are increased operational costs associated with this concept and the volume of additional parking spaces is not adequate to meet current and future needs. It is our experience that customers are very anxious about leaving their vehicle in the hands of valet for an extended period of time. What seems like a convenience is actually a concern, and is a barrier to passengers that would otherwise use public transit. Furthermore, continued development at Thompsons Point will further reduce available space. CCL views this more as a short-term solution to minimize peaks, but not a long-term strategy for addressing their current baseline parking space deficiencies. *Therefore, this alternative, while seemly available, does not meet the project purpose and thus has been deemed impracticable and thus has been discarded.*

Alternative 6 – Develop a satellite parking lot and shuttle people to the terminal. Satellite lots with shuttle service work well at congested airports, where time is somewhat less of an issue for travelers. As has been mentioned previously, convenience is critical to motorist decision making in the surface transportation business. If patrons have to go to a parking lot away from the terminal and then transfer to a shuttle to get to the terminal, this may add too much extra time to their trip, which will cause them to make a different choice in travel mode.

Despite this assessment, we did undertake some research into the possibility of creating such a lot off-site. We first looked to see if other operations in the area have successfully done this that we could replicate. We found that the Chebeague Transportation Company (CTC) operates a satellite parking lot off Route 1 in Yarmouth, ME, due to the lack of parking available on Cousins Island where the Chebeague Island Ferry docks. While this is not exactly similar to the PTC service, we thought the logistics of this operation were worth reviewing. The CTC runs buses to and from Route 1 to Cousins Island - a distance of about 7 miles. Their website indicates that the bus leaves the satellite lot 30 minutes before the Ferry departs Cousins Island. This allows for the 15 minute drive and a 15 minute buffer to insure patrons arrive in time for their Ferry. The operation also suggests that patrons arrive at the satellite lot 10 minutes in advance of their bus departure time. By example then, if you wanted to catch the 12:15 Ferry to Chebeague Island, you would need to arrive at the satellite lot 30-40 minutes in advance to be able to make the appropriate shuttle bus schedule. This arrangement works for the CTC because local patrons have no other choice to get to the island on public transportation. This fact supersedes the issue of being at the satellite lot 30-40 minutes before the ferry departure time. In the case of the PTC, though, this extra time added to the trip length on both ends would likely have an effect on current ridership.

Nevertheless, though, we did conduct a search of potential properties within a 5-10 minute drive radius of the PTC that were 5 acres or more and could be developed into a satellite parking lot. We chose a 5-10 minute drive radius because a patron would have to go to the terminal first to find out that the on-site lots were full and then drive to the satellite lot, drop off their car, and ride a shuttle back to the terminal. Given that patrons often are last minute arrivals (not like air travelers) anything more than a 10-20 minute round trip would be too great. Hence we felt that a 10-minute drive radius was the practical maximum. We selected 5 acres in size because that is what would accommodate between 300-325 spaces, which would make this venture viable from a parking perspective. The parcel shown on the next page off Congress Street illustrates the sole location we were able to find meeting this criteria

within a 5-minute drive. This site is owned by the State of Maine Department of Transportation, currently undeveloped, and is roughly 6 acres in size, with a large wetland in the center. However, upon further investigation, we learned that this parcel was acquired by the DOT to allow the construction of a "wye" track configuration to facilitate Downeaster trains traveling to and from the north out of the PTC. As such, this site is not an available alternative for our consideration.

We did not conclude our search there, though. Figure 1 on the next page shows several other vacant parcels that we identified within a 10-minute drive (or 2-mile radius) of the PTC. All of these would necessitate purchasing land and developing a parking area of suitable size. Therefore, the alternative to create a feasible satellite parking lot to serve the PTC is available, but we weren't sure it would be practicable due to cost.

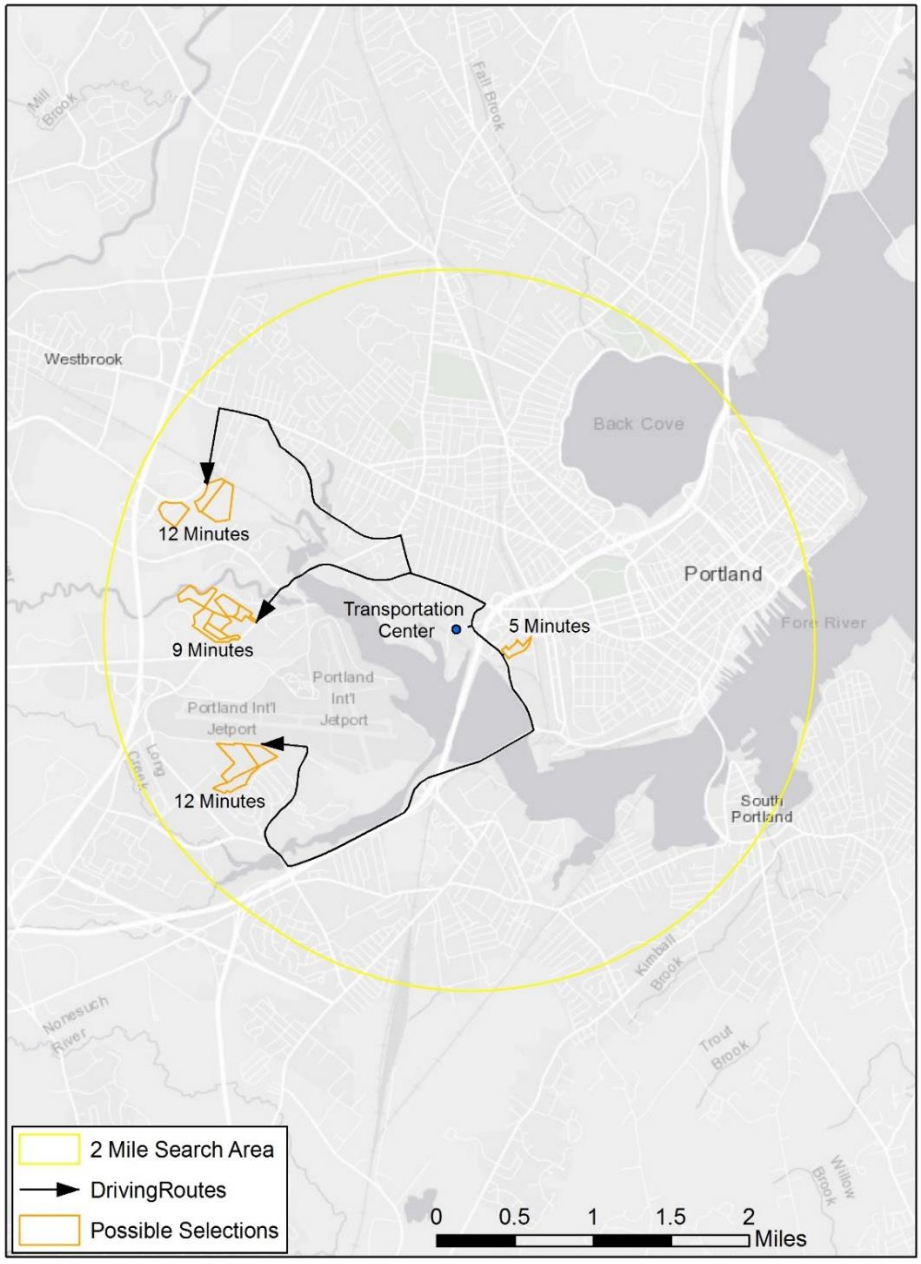
According to published data we could find on the subject, satellite parking lots must be significantly cheaper than parking at a consumer's destination or else they won't be used.[6]

This fact led us to undertake a comparative cost comparison among several alternatives under consideration to determine their relative costs per space, which would provide an indication what the charge rate would need to be to cover these costs. For this exercise, we examined three scenarios:

1. A surface parking lot at the terminal site
2. A parking garage at the terminal site
3. An off-site satellite lot

[6] Parking Management, Strategies, Evaluation and Planning, September 12, 2016, Victoria Transport Policy Institute.

FIGURE 1



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Scenario 1 – Expand the existing surface parking at the existing terminal site by 325 spaces

Assumptions:	Construction Cost	=	$4,000,000
	Additional Land Cost	=	$ 250,000
	In Lieu Fee (DEP)	=	$ 765,000
	Engineering	=	$ 300,000
	Total Initial Cost	=	$5,315,000
20 year Loan on $5,315,000 at 5% interest			
	Annual Payments	=	$ 412,489
	Daily Cost (Annual/365)	=	$ 1,130
Cost per space (Daily Cost/325 spaces)		**=**	**$ 3.48/day/space**

Note: For simplicity sake, this analysis does not include the cost of regular maintenance.

Scenario 2 – Build 1,000 space parking garage at the existing terminal site

Assumptions:	Construction Cost	=	$28,000,000
	Engineering	=	$ 750,000
	Total Cost	=	$28,750,000
20 year Loan on $28,750,000 at 5% interest			
	Annual Payments	=	$2,306,975
	Daily Cost (Annual/365)	=	$ 6,320
Cost per space (Daily Cost/1,000)		**=**	**$ 6.32/day/space**

Note: For simplicity sake, this analysis does not include the cost of regular maintenance.

Scenario 3 – Off-Site Satellite Lot operation with 400 spaces

Assumptions:	20-hour per day operation to match bus and train schedules		
	2 new vehicles at $75,000 each		
	operational cost/hour = $92 (includes driver and vehicle maintenance)		
3 year loan $150,000 for 2 vehicles at 5% interest			
	Annual Payments	=	$ 55,081
	Daily Cost (Annual/365)	=	$ 151
Operational Cost per Day (Cost/Hour x 20 x2)			$ 3,680
Total Daily Cost			$ 3,831
Cost per space (Total Daily Cost/400)			**$ 9.58/day/space**

Note: For simplicity sake, this analysis does not include the cost of regular maintenance.

It is apparent from the above figures presented that Scenarios 2 and 3 would cost more than could be reasonably paid for by the current parking charge of $5/day per space. Interestingly, the off-site satellite operation is the most expensive by far and this doesn't even include the initial capital expense of buying the land and constructing the parking lot – the analysis presented only deals with the operational costs once the lot is available. For these reasons, *Alternative 6 is available but not practicable, and thus has been discarded.*

Alternative 7 – Relocate the CCL Terminal to a new site. In 2011 NNEPRA conducted a site search in Portland for a new terminal[7]. Only two Alternative sites were deemed potentially feasible at the time and included:

- A site on West Commercial Street on an underutilized rail yard west of the Casco Bay Bridge. This site has since been developed by MaineDOT as an expansion to the Port of Portland.
- The Union Station site on St. John Street where the original railroad station existed. This site would take the place of an existing shopping center.

The Study evaluated each of these sites in comparison to the existing PTC on the basis of 5 criteria. These were:

- Operational Compatibility – Was the site suited to meet the future needs of NNEPRA?
- Connectivity – How did the site meet the overall multi-modal needs of the Region?
- Economic Development Potential – How does the site compliment the future development initiatives of the City/Region?
- Financial Impacts – How do the operating and capital costs compare with the existing facility?
- Ease of Implementation – What were the challenges associated with developing a new facility at each location?

The Study concluded that the existing PTC site was NNEPRA's optimum location. However, there were caveats, which included the need for additional parking, which is the focus of this project.

In addition to NNEPRA, CCL has considered relocating their operations to another site in the region that has similar access to the interstate. However, the site on Thompson's Point is ideal in that it is on the southern edge of the city, and is easily accessible to the broader travelshed with its proximity to I-295. The most common destinations for travel through the PTC are to the south, that being the case, having the terminal on the southern side of the city is beneficial as people are reluctant to travel north in order to reach a destination to the south. Separating the two modes (rail and bus), apart from the obvious public transportation drawbacks, would impact the operating efficiencies of both services. Even if these drawbacks were put aside, CCL's searches have found no viable options north of Saco. In addition, from the beginning the PTC has been viewed as a multi-modal hub for inter- and intra-city ground

[7] Portland Station Location Evaluation, by Gannett Fleming Inc., 2011.

transportation. If CCL were to relocate their bus service, this vision would no longer be viable. *As such, this alternative is not available and thus has been discarded.*

Alternative 8 – Construct additional parking on the undeveloped area adjacent to the existing terminal building. Given the above alternatives, it appears that the only available and practicable alternative for the present time is to create additional parking supply at the existing terminal site by converting the undeveloped land, which includes wetlands into surface parking. This 3-4 acre area can provide an additional 300-325 spaces, bringing the total adjacent to the terminal to between 600-625 spaces. These added spaces will address the PTC's current parking shortfall. Furthermore, this additional developed area adjacent to the terminal will provide an opportunity to redesign the site's circulation in order to better manage the increased traffic demand at peak travel times, and to better accommodate parking space losses should a new terminal or parking structure be constructed in the future.

Environmental Impacts

Alternatives 1, 2, 3, 4, and 5 all do not have any wetland impacts. However, as has been mentioned these alternatives are either unavailable or not feasible for logistical, operational and cost reasons.

Alternative 6, the satellite lot option has been deemed impracticable for cost reasons.

Alternative 7 was explored by both CCL and NNEPRA and the existing terminal site was found to be optimal given all their considerations, so moving to another site is not an available alternative.

This leaves Alternative 8, which will impact a total of 2.03 acres of wetland and a stream. If the applicant tried to minimize this resource impact by constructing fewer parking spaces, the project purpose would not be met. Instead, the applicant will be doing its best through responsible engineering design to provide on-site, underground stormwater storage and water quality treatment, as well as compensatory mitigation to replicate the current functions and values of the lost wetland area.

Preferred and Only Feasible Alternative

After careful consideration of the alternatives presented above, CCL has concluded that to address current parking space and site circulation deficiencies that are being experienced presently, their only available and practicable alternative is to construct 300-325 additional parking spaces on land adjacent to the existing terminal (Alternative 8). Although this alternative has environmental impacts, it is clearly the only practicable alternative, therefore it is the least environmentally damaging practicable alternative. The PTC is strongly committed to offsetting the unavoidable wetland impacts due to the parking lot expansion by construction of on-site stormwater abatement to replace the water quality improvement function and compensatory mitigation for the wetland impacts through the State of Maine's In-Lieu-Fee process.

LEVEL III SITE PLAN APPLICATION
PORTLAND TRANSPORTATION CENTER

WRITTEN SUBMISSION F WAIVERS

THE APPLICANT IS REQUESTING A WAIVER OF THE REQUIRED NUMBER OF BICYCLE RACKS. THE TOTAL NUMBER OF PROPOSED PARKING SPACES IS 603 SPACES . PER LAND USE CODE SECTION 14 – 526 (a) 4 (B) , 45 BICYCLE RACKS ARE REQUIRED. THERE ARE CURRENTLY 25 BICYCLE RACKS ON THE SITE, WHICH ARE UNDERUTILIZED. THE APPLICANT IS PROPOSING TO INSTALL 12 ADDITIONAL BICYCLE RACKS, BRINGING THE TOTAL NUMBER TO 37 RACKS.

LEVEL III SITE PLAN APPLICATION
PORTLAND TRANSPORTATION CENTER

WRITTEN SUBMISSION G FINANCIAL AND TECHNICAL CAPACITY

THE APPLICANT HAS A BANKING RELATIONSHIP WITH TD BANK, A LETTER OF COMMITMENT IS ATTACHED. THE APPLICANT HAS THE TECHNICAL CAPACITY TO MANAGE THE PLANNING AND DESIGN OF THIS PROJECT, HAVING DONE SO TO CREAT THE EXISTING FACILKITY, AND OTHER TRANSPORTATION CENTERS IN NEW ENGLAND. SW COLE HAS BEEN RETAINED TO PROVIDE GEOTECHNICAL CONSULTING, AND SEBAG TECHNICS HAS BEEN RETAINED TO PROVIDE LAND SURVEY, LANSDCAPE ARCHITECTURE AND CIVIL ENGINEERING DESIGN.

.

TD Bank
America's Most Convenient Bank®
143 North Main Street
Concord, NH 03301

City of Portland

January 23, 2018

To Whom it May Concern:

Per the request Langdon Street Real Estate, Inc. (LSRE) of Concord, NH, please accept this letter as confirmation that LSRE and Concord Coach Lines, Inc. (CCL) of Concord, NH have a banking relationship with TD Bank. They have multiple financings with the Bank including lines of credit with aggregate availability in the medium seven (7) figure range. Additionally, the companies maintain a depository relationship with the Bank with current available balances in the moderate seven (7) figure range.

It is my understanding is that LSRE is contemplating funding an expansion of their Portland, ME terminal facility utilizing their current resources, to include the above referenced lines of credit and deposits and without the need for additional financing. In the event that project did require additional funding TD Bank would be more than willing to review the request, subject to our normal underwriting guidelines.

TD has enjoyed a long time relationship with the companies and their obligations have always been handled in an exemplary manner. Should you require additional information I would be pleased to provide upon the request of LSRE.

Sincerely,

Thomas Potter | Vice President | Commercial Lending
TD Bank, America's Most Convenient Bank
NH1-080-000 | 143 North Main Street, Concord, NH 03301
T: 603 229 5911| F: 603 229 5949
E Mail: Thomas.Potter@td.com

Confidential

Construction Management Plan

Project Location :
Portland Transportation Center
Thompson's Point Connector

Project Description :
The proposed project consists of an expansion of surface parking spaces at the Portland Transportation Center (PTC). Due to the nature of existing unstable wetland soils, the project will be constructed in 3 phases –

- **Phase 1 – import fill materials in the expansion area and install an asphalt reclaim surface. This area will be in a preload condition for approximately one year, and will be used for parking during that time. The perimeter landscaping buffer will be installed during Phase 1.**
- **Phase 2 – in the expansion area, remove reclaim surface, install stormwater infrastructure, new pavement, curbing, sidewalk, landscape islands and site lighting.**
- **Phase 3 – in the existing parking areas, reconfigure vehicular and pedestrian circulation to match with the expansion area.**

Project Team Summary :
Owner – Langdon Street Real Estate
Contractor – Shaw Brothers Construction , Inc.
Civil Engineer – Sebago Technics, Inc.

The owner and contractor will remain responsible for enforcement of and compliance with 1) all Contract plans and specifications and 2) all site working conditions and safety requirements, day and night, for both persons and and property, in each case for the duration of their work. These include all OSHA, NIOSH, US EPA , local ordinance and any applicable governmental regulations.

The contractor shall review all permits and conditions of approval for the project, and will visit the site prior to the start of work to confirm site conditions. The contractor will comply with all of the visual representations of the measure to be taken , in accordance with the approved Construction Management Plan.

The following outline has been developed in accordance with the City of Portland Construction Management Plan General Template and shall be referenced by the contractor during construction.

A. Construction Management Principles

The control of noise, vibrations, ground movement, truck traffic, and other construction related factors will be of the utmost importance. Care shall be taken to minimize these affects in the best interest of neighbors and the general public.

B. Development Review of Construction Management Plan

Logistics and safety program shall be submitted at or prior to the preconstruction meeting with Phil DiPierro by the contractor, with all pertinent information required by the Maine Department of Transportation's Traffic Control Plan Standard Specification 652.3.3.

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

Prior to scheduling a preconstruction meeting and the issuance of any city required permits, The Owner shall meet all of the requirements contained in Section 14-530. Development review fees and post approval requirements and 14-532. General requirements and enforcement of Portland's Land Use Code.

Other permits, as applicable, include

1. **Street Opening and Street Occupancy Permits:** Construction activity in the public right-of-way are controlled by Chapter 25 and sewer and stormwater system connections are controlled by Chapters 24 and 32 of the Land Use Code. All required permits shall be obtained through the Department of Public Works and the requests shall conform with the approved construction management plan.
2. **Blasting:** Blasting, if required, shall conform with all measures of Article VIII. Regulation of Explosives in the Land Use Code and Section 3.7 Standards for Blasting and Regulation of Explosives in Portland's Technical Manual.

D. Construction Administration and Communication

The contractor will work closely with adjacent abutters, businesses and all parties informed, as far in advance as possible, of scheduled work, particularly work anticipated to cause significant noise, vibrations, or dust . Contact information for the project personnel is :

Owner :
Benjamin Blunt
Langdon Street Real Estate
(603) 228-3524

Contractor :
To be determined
Shaw Brothers Construction, Inc.
(207) 839-2552

Civil Engineer :
Will Conway
Sebago Technics, Inc.
(207) 200-2055

E.**Construction Schedule**

1. The contractor shall submit a schedule or time line for the construction project, including any Phasing.
2. Hours of Construction. Construction may occur during the daytime hours as defined in Section 17-18. Construction Activities for Building permit and Section 25-129.

Noise, dust and debris . It is anticipated that the hours of construction will be 7:00 am to 5:00 pm Monday through Friday. Night and weekend work is not anticipated.

3. Extended Hours or Night Work: Extended hours, including nights and weekends are not anticipated. Should the need arise the contractor will give notice of the time and scope of such proposed activity, the notice to be given in a manner approved by the public works authority.
4. Material Deliveries: The site will be able to accommodate storing of items as well as space for delivery vehicles. Deliveries will be scheduled between the hours of 7am to 5:00pm .

E. Security & Public Safety

1. The Construction Management Plan will depict all proposed fencing or other barriers and access gates (with knox locking devices) with the intent of separating pedestrian and vehicle circulation from the construction site.
2. Fire Safety Program. Demolition fire protection and building fire protection is not applicable to this project
3. Blasting, if required, shall conform with all measures of Article VIII. Regulation of Explosives in the Land Use Code and Section 3.7 Standards for Blasting and Regulation of Explosives in Portland's Technical Manual.
4. Any proposed temporary security lighting shall be shown on CMP and all fixtures shall be full cutoffs. The need for temporary lighting is not foreseen at this time.

F. Construction Permitting and Traffic Control Plans

1. Construction Activity in Public Streets: Construction activity in the public right-of-way is controlled by Chapter 25 Article VII of the City Code of Ordinances. Required licenses and permits, restrictions on activity, and fees & area are outlined in that Chapter. Rules and Regulations for Excavation Activity are available through the Street Opening Clerk at the Department of Public Works. At no time can construction activity including delivery vehicles close or block streets or affect public safety access without prior notice and approval of the Department of Public Works.
2. Sewer and Stormwater: Sewer and stormwater water system connections are controlled by Chapters 24 and 32 of the City Code of Ordinance. Required permits for new connections and/or abandonment of existing connections are available through the Street Opening Clerk at the Department of Public Works. Rules and Regulations for these utility systems are available through the City Engineer's office of the Department of Public Works and in Section II of the Technical Manual.

3. Traffic Control Plans: Construction activity that impacts the existing public street system must be controlled to protect the safety of the construction workers and all modes of the traveling public. The contractor shall submit a satisfactory 'maintenance of traffic" (MOT) plan prior to any street opening permit approval. This document shall contain all pertinent information from the Maine Department of Transportation's Traffic Control Plan Standard Specification 652.3.3 and will be consistent with plans submitted by Shaw Brothers in the past.

All existing modes of travel in work zone area shall be accommodated if impacted by the activity. The safe passage of pedestrians, bicyclists, transit providers, and motorists are of equal importance when planning out the work zone; no pre-existing travel mode may be eliminated without the express approval of the Department of Public Works.

- Traffic control of bicycle and pedestrian facilities or routes through work zones shall be maintained until the bicycle and pedestrian facilities or routes are ready for safe operation. Traffic control will not be removed to allow auto travel at the expense of bicycle and pedestrians.
- Barrier systems utilized to separate the construction activity from the public street and /or sidewalk shall not inhibit sight distances, particularly for visibility of pedestrians and bicyclists.
- ADA compliance shall be maintained.

Use of public parking spaces or the blockage of any portion of sidewalk for the purpose of construction activity shall require an occupancy permit and appropriate fee as assessed by the Department of Public Works.

G. Site Management and Controls

The final Construction Management Plan will address maintaining the site in a safe condition and will include the following:

1. Regular trash and debris shall be managed appropriately and its removal shall comply with all local, state, and federal regulations.
2. Street cleaning Street cleaning and sweeping shall be followed as outlined in the erosion and sedimentation control notes and report. Damage to the street shall be avoided and shall be the responsibility of the contractor.
3. Dust controls- The construction shall comply with Portland's requirements under Section 25-129 on Noise, dust and debris .
4. Noise: The construction shall comply with Portland's requirements under Section 17-18 of the City Code and Section 25-129 on Noise, dust and debris .
5. Rodent Control will be provided, if applicable, by a professional exterminator and consistent with Chapter 22 of the City Code.
6. Snow Removal: Pursuant to Section 25-173 Contractors to ensure a safe means of travel within the work zone.
   1) Snow/ice removal shall commence automatically from (1" of snow and up) or Ice
   2) Remove snow as needed within the work zone, including parking spaces & not to block any driveways or sight lines with the piles of snow.
   3) Clear all walks & ramps with the work zone
   4) Sand or Salt as needed
   5) Clear all basin or drainage to help snow melt
   6) This would include Monday-Friday Sat/Sunday/Holidays

H. Erosion Control and Preservation of Trees

1. The contractor shall install all erosion and sedimentation controls as depicted on the approved erosion and sedimentation control plan prior to the pre-construction meeting for inspection by the City. The contractor shall regularly inspect the control measures,

no less than weekly and after significant storm events, and maintain any installed temporary or permanent stormwater management systems in working order. The contractor shall document all inspection activities and corrective actions and be prepared to provide these documents for inspection by the City, Maine Department of Environmental Protection or the U.S. Environmental Protection Agency upon request.

2. The contractor shall maintain all tree and landscaping preservation measures as depicted on the landscaping plan within the area of construction.
3. The storage of materials shall be identified and avoid being located under/near trees. The contractor will store materials (pipe, catch basins etc) within the new parking area boundaries.

I. Construction Staging Area

1. The contractor shall submit a plan with locations depicted for the location of material staging areas, the location of on-site temporary construction trailers, the location of on-site truck delivery holding areas, the location of on-site truck washing stations, the general location of the construction security fence if required and the general location of temporary construction dumpsters. This plan shall be submitted at or prior to the preconstruction meeting with Phil DiPierro. Any open storage areas shall be shown on the plan..
2. Delivery Truck Holding Areas On-Site: The contractor does not anticipate requiring holding areas for delivery trucks. Materials delivered to the site will be scheduled such that they are able to be offloaded immediately. If multiple truck deliveries are required for the site contractor they will be staggered so that there is only 1 truck on site at a time. On days when the construction activities require multiple truck deliveries, these deliveries will be carefully scheduled so that there is always adequate on-site area for the holding of trucks until they can be unloaded. Once at the site all vehicles will be brought within the project boundaries and will make every attempt to avoid queuing on public streets. If on-site holding of the trucks is not feasible, an off-site location will be designated and shown on the submitted plan referenced above in J.1.
3. Delivery Truck Holding Areas Off-Site: It is not anticipated that an off site holding area will be required.

J. Parking During Construction

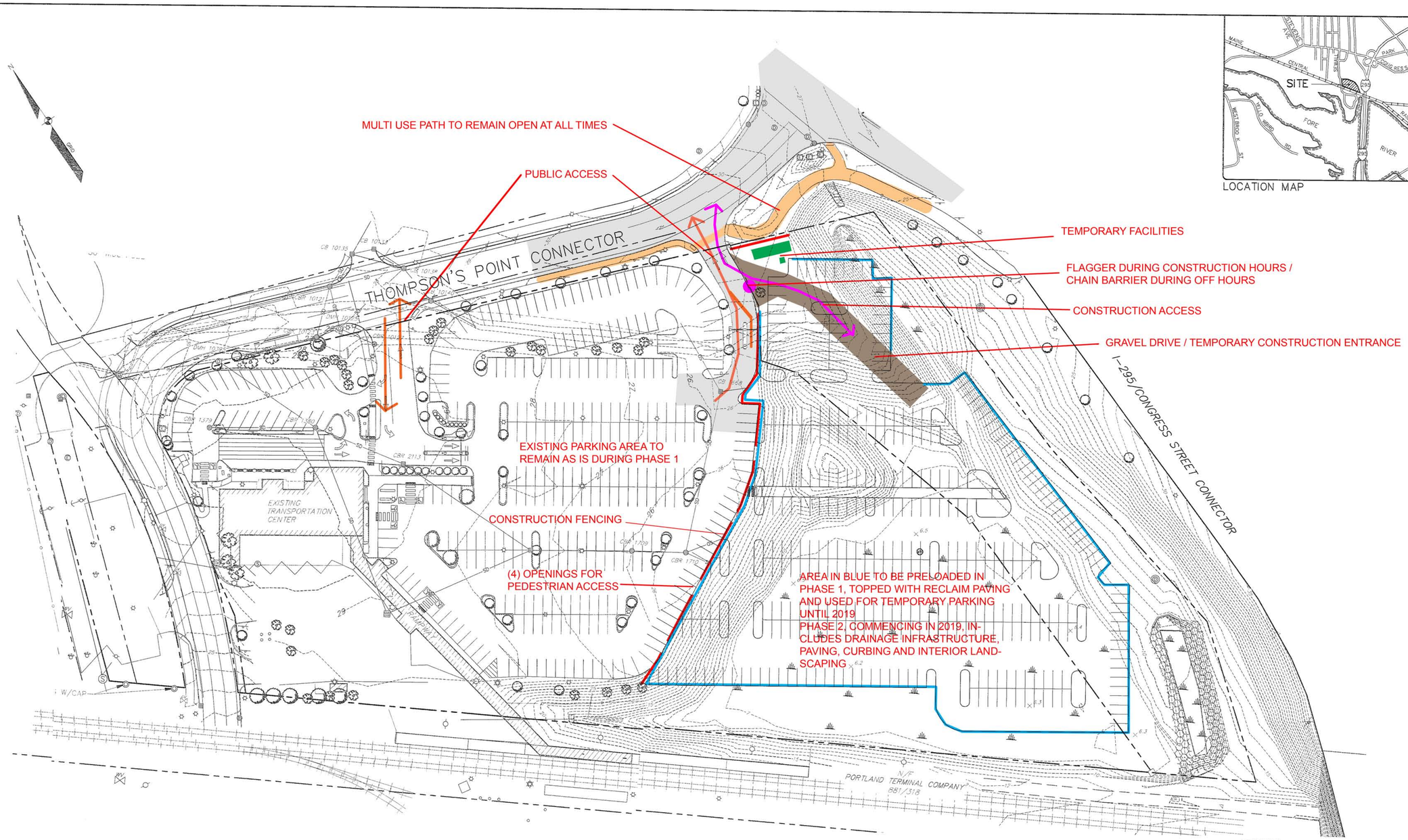
1. Construction Parking: Adequate parking for construction workers shall be provided on site or arrangements for off-street parking at an off-site location shall be provided. The parking arrangements shall be included in the construction management plan. On site parking for the contractor will be
2. Parking: Where existing facilities are remaining in operation during construction, the construction management plan shall identify how the parking for employees and others shall be managed.
3. Truck Routes and Volumes: The Construction Management Plan shall address the designated truck routes and expected truck volumes.
   - Granular Borrow – 9,300 cy. Shaw Brothers S-pit to project. (Brighton Ave, Stevens Ave, Congress St, Fore River Pkway)

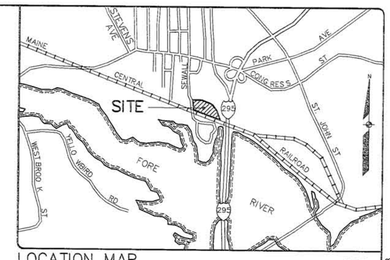
     * Granular Borrow – 53,700 cy. Shaw Brothers S-pit to project (Brighton Ave, Stevens Ave, Congress St, Fore River Pkway

K. Special Measures as Necessary

A pre-construction survey of the adjacent building interior subgrade and above grade accessible walls, ceilings, floors, and visible exterior as viewed from the grade level shall be conducted at a minimum. A pre-construction survey and regular monitoring during construction of the adjacent rail tracks will be conducted to determine if there is any settlement due to the placement of fill. Photographs shall also be taken to further assess any potential damage that may occur as a result of construction activities.

Blasting, major demolition, deep excavation, piling and other special construction techniques are not part of this project





LOCATION MAP N.T.S.

GENERAL NOTES:

1. THE RECORD OWNER OF THE PARCEL IS LANGDON STREET REAL ESTATE, INC. BY DEED DATED SEPTEMBER 12, 1996 AND RECORDED AT THE CUMBERLAND COUNTY REGISTRY OF DEEDS IN BOOK 12719, PAGE 277.
2. THE PROPERTY IS SHOWN AS LOT A-1 ON THE CITY OF PORTLAND TAX MAP 77, LOT C-1 AND LOTS F-8 TO F-13 ON MAP 190 AND IS LOCATED IN THE B5 AND R5 ZONING DISTRICTS.
3. SPACE AND BULK CRITERIA FOR THE B5 AND R5 ZONING DISTRICTS ARE AS FOLLOWS:

	B5	R5 (SEE ORDINANCE)
NET RESIDENTIAL DENSITY:	N/A	6,000 S.F.
MINIMUM LOT SIZE:	NONE	SEE ORDINANCE (SO)
MINIMUM FRONTAGE:	NONE	50 FEET FRONTAGE
MINIMUM FRONT YARD:	NONE	20 FEET
MINIMUM SIDE YARD:	NONE	VARIES (SO)
MINIMUM REAR YARD:	NONE	20 FEET
MAXIMUM BUILDING HEIGHT:	65 FEET	35 FEET
MAXIMUM LOT COVERAGE:	100%	40%

* SEE ORDINANCE FOR MORE PARTICULAR INFORMATION.

4. TOTAL AREA OF PARCEL IS APPROXIMATELY 8.72 ACRES.
   EXISTING LOT COVERAGE IS 3.95 ACRES (45.29%)
   PROPOSED LOT COVERAGE IS 6.87 ACRES (78.78%)
5. BOUNDARY AND TOPOGRAPHIC INFORMATION SHOWN HEREON IS BASED UPON FIELD WORK RECENTLY PERFORMED BY SEBAGO TECHNICS, INC. IN SEPTEMBER & OCTOBER 2017 AS WELL AS PAST PROJECTS PERFORMED OVER MANY YEARS.
6. PLAN REFERENCES: SEE EXISTING CONDITIONS PLAN.
7. UTILITY INFORMATION DEPICTED HEREON IS COMPILED USING PHYSICAL EVIDENCE LOCATED IN THE FIELD, UTILITIES DEPICTED HEREON MAY NOT NECESSARILY REPRESENT ALL EXISTING UTILITIES. CONTRACTORS AND/OR DESIGNERS NEED TO CONTACT DIG-SAFE SYSTEMS, INC. (1-888-DIG-SAFE) AND FIELD VERIFY EXISTING UTILITIES PRIOR TO CONSTRUCTION AND/OR EXCAVATION.
8. A WETLAND DELINEATION WAS PERFORMED ON THIS PROJECT SITE IN OCTOBER, 2016 BY GARY L. FULLERTON, CERTIFIED SOIL SCIENTIST OF NORMANDEAU ASSOCIATES ENVIRONMENTAL CONSULTANTS. THIS DELINEATION CONFORMS TO THE STANDARDS AND METHODS OUTLINED IN THE 1987 WETLANDS DELINEATION MANUAL AND NORTHEAST REGIONAL SUPPLEMENT AUTHORED AND PUBLISHED BY THE U.S. ARMY CORPS OF ENGINEERS. ALL WETLAND FLAGS WERE LOCATED USING GLOBAL POSITIONING SYSTEMS (GPS) TECHNOLOGY CAPABLE OF DECIMETER ACCURACY.
9. SITE DEVELOPMENT AND EARTHWORK CONSTRUCTION WILL CONFORM TO THE EROSION PREVENTION PROVISIONS OUTLINED IN THE "MAINE EROSION AND SEDIMENTATION CONTROL PRACTICES FIELD GUIDE FOR CONTRACTORS" AND "MAINE EROSION AND SEDIMENTATION CONTROL BEST MANAGEMENT PRACTICES" BY MDEP, BUREAU OF LAND AND WATER QUALITY DATED 2014 OR LATEST REVISION.
10. AN APPROVED SET OF PLANS AND ALL APPLICABLE PERMITS MUST BE AVAILABLE AT THE CONSTRUCTION SITE. THE DEVELOPER, OR AN AUTHORIZED AGENT, MUST BE AVAILABLE AT ALL TIMES DURING CONSTRUCTION.
11. THE PROJECT IS LOCATED IN OR WITHIN PROXIMITY TO PROTECTED NATURAL RESOURCES, INCLUDING WETLANDS, STREAMS AND HABITATS. THE CONTRACTOR SHALL WORK IN COMPLIANCE WITH THE NATURAL RESOURCES PROTECTION ACT (NRPA) PERMIT FROM THE MAINE DEPARTMENT OF ENVIRONMENTAL PROTECTION AND PERMIT FROM THE ARMY CORPS OF ENGINEERS. THESE ENVIRONMENTAL PERMIT APPLICATIONS AND CONDITIONS OF APPROVAL ARE INCLUDED IN APPENDIX OF THE SPECIFICATIONS. VARIATION FROM THE WORK DESCRIBED IN THESE PERMITS MUST BE APPROVED IN WRITING FROM THESE REGULATORY AGENCIES PRIOR TO CONSTRUCTION. WETLANDS SHALL NOT BE IMPACTED UNLESS SHOWN ON THIS PLAN. WETLANDS SHALL BE FLAGGED PRIOR TO CONSTRUCTION.
11. ALL EXISTING CATCH BASINS, MANHOLES, CONNECTIONS, CONDUIT AND PIPING SHALL BE CLEANED AND LEFT IN SATISFACTORY OPERATING CONDITION AFTER CONSTRUCTION HAS BEEN COMPLETED. NO SEPARATE PAYMENT WILL BE MADE FOR THIS WORK.
12. ALL LAWN AREAS, WALKWAYS, AND DRIVEWAYS OUTSIDE THE WORK AREA, DAMAGED BY THE CONTRACTOR, SHALL BE REPAIRED BY THE CONTRACTOR AT NO EXPENSE.
13. EXISTING PAVEMENT SHALL BE SAW CUT AND BUTTED TO THE NEW PAVEMENT. NO FEATHERING OF PAVEMENT WILL BE PERMITTED.
14. EXISTING DRAINAGE STRUCTURES SHALL NOT BE DISTURBED UNLESS OTHERWISE NOTED IN THE DRAWINGS OR APPROVED BY THE ENGINEER.
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19. PARKING SUMMARY: EXISTING PARKING SPACES= 324
    PROPOSED PARKING SPACES= 556

Construction Management Plan - Phase 1and 2

GRAPHIC SCALE
0 20 40 80
(IN FEET)
1 INCH = 40 FT.

LEGEND

EXISTING	DESCRIPTION	PROPOSED
	PROPERTY LINE/R.O.W.	
	ABUTTER LINE/R.O.W.	
	SETBACK	
	BUILDING	
	EDGE WETLAND	
	WETLANDS	
	STREAM	
	EDGE PAVEMENT	
	PAVEMENT SAWCUT	
	EDGE CONCRETE	
	PAVEMENT PAINT	
	EDGE GRAVEL	
	CURB LINE	
	EDGE OF WATER	
	TREELINE	
	FENCE	
	GUARD RAIL	
	RETAINING WALL	
	DECIDUOUS TREE	
	CONIFEROUS TREE	
	BOLLARD	
	SIGN	
	GAS GATE VALVE	
	WATER GATE VALVE	
	SANITARY MANHOLE	
	DRAINAGE MANHOLE	
	CATCH BASIN	
	ELECTRICAL MANHOLE	
	LIGHT POLE	
	UTILITY POLE	
	GUY WIRE	

WILLIAM T. CONWAY RLA 108
REGISTERED LANDSCAPE ARCHITECT
STATE OF MAINE

DESIGNED	CHECKED
WTC	WTC

REV. BY:	DATE:	STATUS:
REV. BY:	DATE:	FOR REVIEW

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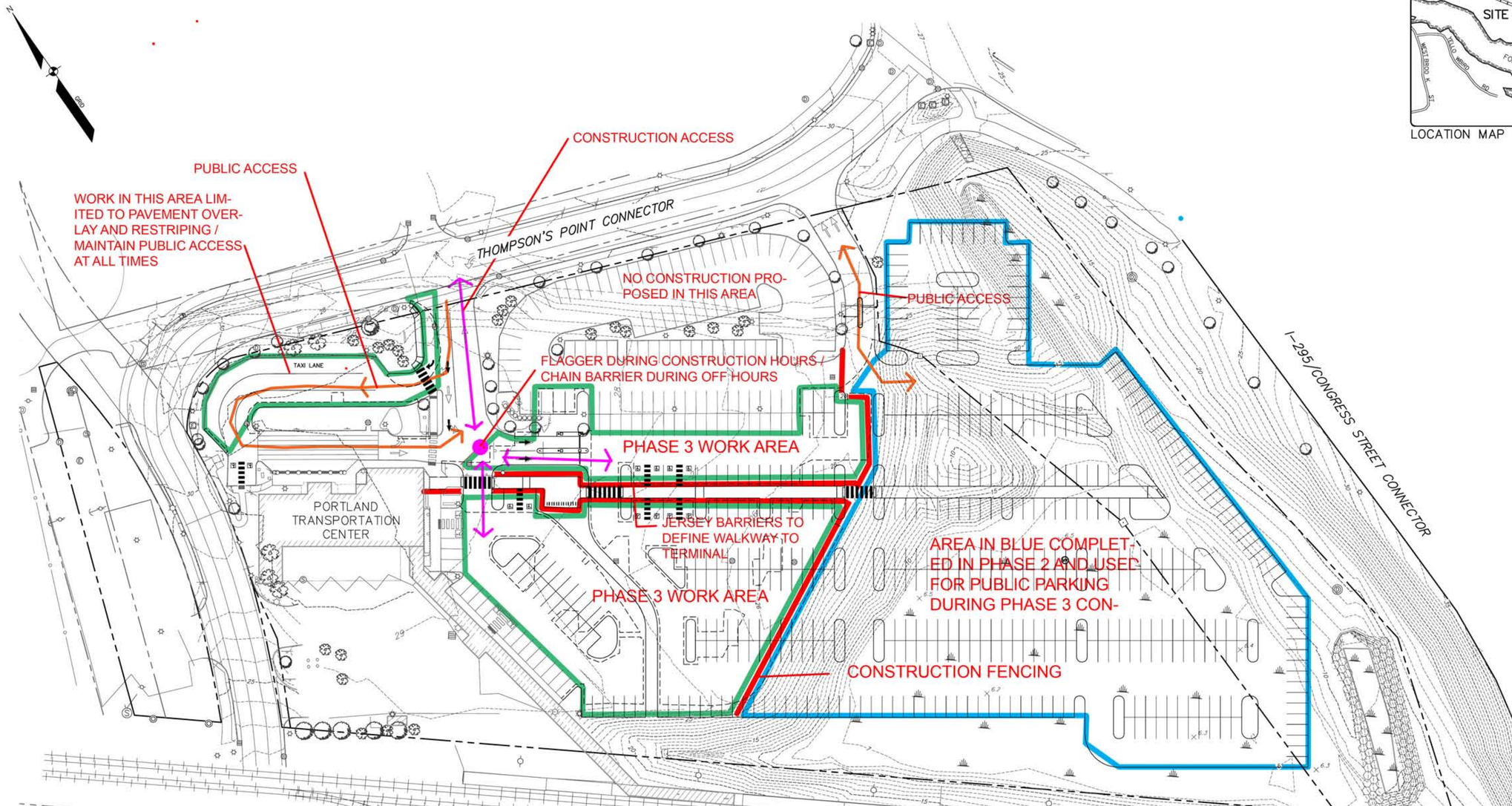
250 Goddard Rd. Suite B Lewiston, ME 04240 Tel. 207-783-9566

OVERALL SITE PLAN
OF:
PORTLAND TRANSPORTION CENTER
THOMPSON'S POINT CONNECTOR
PORTLAND, MAINE
FOR:
LANGDON STREET REAL ESTATE, INC.
7 LANGDON STREET
CONCORD, NH 03301

PROJECT NO.	SCALE
99607	1" = 40'

SHEET 5 OF 16

99607-OVERALL.dwg, TAB:S (2)



LOCATION MAP N.T.S.

GENERAL NOTES:

1. THE RECORD OWNER OF THE PARCEL IS LANGDON STREET REAL ESTATE, INC. BY DEED DATED SEPTEMBER 12, 1996 AND RECORDED AT THE CUMBERLAND COUNTY REGISTRY OF DEEDS IN BOOK 12719, PAGE 277.
2. THE PROPERTY IS SHOWN AS LOT A-1 ON THE CITY OF PORTLAND TAX MAP 77, LOT C-1 AND LOTS F-B TO F-13 ON MAP 190 AND IS LOCATED IN THE B5 AND R5 ZONING DISTRICTS.
3. SPACE AND BULK CRITERIA FOR THE B5 AND R5 ZONING DISTRICTS ARE AS FOLLOWS:

	B5	R5 (SEE ORDINANCE)
NET RESIDENTIAL DENSITY:	N/A	6,000 S.F.
MINIMUM LOT SIZE:	NONE	SEE ORDINANCE (SO)
MINIMUM FRONTAGE:	NONE	50 FEET FRONTAGE
MINIMUM FRONT YARD:	NONE	20 FEET
MINIMUM SIDE YARD:	NONE	VARIES (SO)
MINIMUM REAR YARD:	NONE	20 FEET
MAXIMUM BUILDING HEIGHT:	65 FEET	35 FEET
MAXIMUM LOT COVERAGE:	100%	40%

* SEE ORDINANCE FOR MORE PARTICULAR INFORMATION.

4. TOTAL AREA OF PARCEL IS APPROXIMATELY 8.72 ACRES.
   EXISTING LOT COVERAGE IS 3.95 ACRES (45.29%)
   PROPOSED LOT COVERAGE IS 6.87 ACRES (78.78%)
5. BOUNDARY AND TOPOGRAPHIC INFORMATION SHOWN HEREON IS BASED UPON FIELD WORK RECENTLY PERFORMED BY SEBAGO TECHNICS, INC. IN SEPTEMBER & OCTOBER 2017 AS WELL AS PAST PROJECTS PERFORMED OVER MANY YEARS.
6. PLAN REFERENCES: SEE EXISTING CONDITIONS PLAN.
7. UTILITY INFORMATION DEPICTED HEREON IS COMPILED USING PHYSICAL EVIDENCE LOCATED IN THE FIELD. UTILITIES DEPICTED HEREON MAY NOT NECESSARILY REPRESENT ALL EXISTING UTILITIES. CONTRACTORS AND/OR DESIGNERS NEED TO CONTACT DIG-SAFE SYSTEMS, INC. (1-888-DIG-SAFE) AND FIELD VERIFY EXISTING UTILITIES PRIOR TO CONSTRUCTION AND/OR EXCAVATION.
8. A WETLAND DELINEATION WAS PERFORMED ON THIS PROJECT SITE IN OCTOBER, 2016 BY GARY M. FULLERTON, CERTIFIED SOIL SCIENTIST OF NORMANDEAU ASSOCIATES ENVIRONMENTAL CONSULTANTS. THIS DELINEATION CONFORMS TO THE STANDARDS AND METHODS OUTLINED IN THE 1987 WETLANDS DELINEATION MANUAL AND NORTHEAST REGIONAL SUPPLEMENT AUTHORED AND PUBLISHED BY THE U.S. ARMY CORPS OF ENGINEERS. ALL WETLAND FLAGS WERE LOCATED USING GLOBAL POSITIONING SYSTEMS (GPS) TECHNOLOGY CAPABLE OF DECIMETER ACCURACY.
9. SITE DEVELOPMENT AND EARTHWORK CONSTRUCTION WILL CONFORM TO THE EROSION PREVENTION PROVISIONS OUTLINED IN THE "MAINE EROSION AND SEDIMENTATION CONTROL PRACTICES FIELD GUIDE FOR CONTRACTORS" AND "MAINE EROSION AND SEDIMENTATION CONTROL BEST MANAGEMENT PRACTICES" BY MDEP BUREAU OF LAND AND WATER QUALITY DATED 2014 OR LATEST REVISION.
10. AN APPROVED SET OF PLANS AND ALL APPLICABLE PERMITS MUST BE AVAILABLE AT THE CONSTRUCTION SITE. THE DEVELOPER, OR AN AUTHORIZED AGENT, MUST BE AVAILABLE AT ALL TIMES DURING CONSTRUCTION.
11. THE PROJECT IS LOCATED IN OR WITHIN PROXIMITY TO PROTECTED NATURAL RESOURCES, INCLUDING WETLANDS, STREAMS AND HABITATS. THE CONTRACTOR SHALL WORK IN COMPLIANCE WITH THE NATURAL RESOURCES PROTECTION ACT (NRPA) PERMIT FROM THE MAINE DEPARTMENT OF ENVIRONMENTAL PROTECTION AND PERMIT FROM THE ARMY CORPS OF ENGINEERS. THESE ENVIRONMENTAL PERMIT APPLICATIONS AND CONDITIONS OF APPROVAL ARE INCLUDED IN APPENDIX OF THE SPECIFICATIONS. VARIATION FROM THE WORK DESCRIBED IN THESE PERMITS MUST BE APPROVED IN WRITING FROM THESE REGULATORY AGENCIES PRIOR TO CONSTRUCTION. WETLANDS SHALL NOT BE IMPACTED UNLESS SHOWN ON THIS PLAN. WETLANDS SHALL BE FLAGGED PRIOR TO CONSTRUCTION.
11. ALL EXISTING CATCH BASINS, MANHOLES, CONNECTIONS, CONDUIT AND PIPING SHALL BE CLEANED AND LEFT IN SATISFACTORY OPERATING CONDITION AFTER CONSTRUCTION HAS BEEN COMPLETED. NO SEPARATE PAYMENT WILL BE MADE FOR THIS WORK.
12. ALL LAWN AREAS, WALKWAYS, AND DRIVEWAYS OUTSIDE THE WORK AREA, DAMAGED BY THE CONTRACTOR, SHALL BE REPAIRED BY THE CONTRACTOR AT NO EXPENSE.
13. EXISTING PAVEMENT SHALL BE SAW CUT AND BUTTED TO THE NEW PAVEMENT. NO FEATHERING OF PAVEMENT WILL BE PERMITTED.
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Construction Management Plan - Phase 3

GRAPHIC SCALE
0 15 30 45 60
(IN FEET)
1 INCH = 40 FT.

LEGEND

EXISTING	DESCRIPTION	PROPOSED
	PROPERTY LINE/R.O.W.	
	ABUTTER LINE/R.O.W.	
	SETBACK	
	BUILDING	
	EDGE WETLAND	
	WETLANDS	
	STREAM	
	EDGE PAVEMENT	
	PAVEMENT SAWCUT	
	EDGE CONCRETE	
	PAVEMENT PAINT	
	EDGE GRAVEL	
	CURB LINE	
	EDGE OF WATER	
	TREELINE	
	FENCE	
	GUARD RAIL	
	RETAINING WALL	
	DECIDUOUS TREE	
	CONIFEROUS TREE	
	BOLLARD	
	SIGN	
	GAS GATE VALVE	
	WATER GATE VALVE	
	SANITARY MANHOLE	
	DRAINAGE MANHOLE	
	CATCH BASIN	
	ELECTRICAL MANHOLE	
	LIGHT POLE	
	UTILITY POLE	
	GUY WIRE	

WILLIAM T. CONWAY RLA 108

DESIGNED	CHECKED
WTC	WTC

REV. BY	DATE	STATUS
REV. BY:	DATE:	STATUS:

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OVERALL SITE PLAN
OF:
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FOR:
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CONCORD, NH 03301

PROJECT NO.	SCALE
99607	1" = 40'

SHEET 5 OF 16

99607S-OVERALL.dwg, 11x17 (2)

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Memorandum

99607

To: **Jeremiah Bartlett**

From: **Steve Sawyer**

Date: **January 5, 2018**

Subject: **Traffic History and Evaluation – Portland Transportation Center**

This memorandum is in response to your request for a summary of the potential traffic impacts associated with the proposed parking lot expansion for Concord Coach Lines (CCL) at the Portland Transportation Center (PTC). The PTC was originally constructed in 1996 as a CCL only terminal. It was expanded in 2001 to become what is now known as the PTC in conjunction with the introduction of Amtrak train service to Boston. This expansion was done in partnership with the City, MaineDOT and CCL. Jeff Monroe was the Transportation Director at the time and Paul Bradbury was the City's Project Manager for the expansion. We worked with the City's Planning Department, Sarah Hopkins at the time, to obtain the proper City Planning Board approvals for this construction, which included the parking adjacent to the terminal. The parking lot across the street from the terminal was built as a separate MaineDOT Park-and-Ride lot project. My recollection with this whole process was that the only traffic matter that caused any concern or discussion at the time was whether or not to close off Sewall Street from its connection with the Thompson's Point Connector Road. In the end it was decided we should and we did.

With the terminal expansion in 2001, the total parking capacity was 689 spaces, including those spaces on the MaineDOT Park-and-Ride lot. The PTC is now proposing an additional 300 to 325 spaces on an undeveloped parcel that abuts the current parking to the east of the terminal. The development of this additional parking is to alleviate current shortages experienced, but also to be pre-emptive in designing for parking needs associated with a potential future terminal expansion. The proposed project also includes modifications in front of the terminal that accommodate pick-ups, drop-offs and short-term parking. It is important to note that no building additions or increase in services are proposed in conjunction with this project at this time.

We have included a copy of a Draft justification narrative that we are providing to the MaineDEP and Army Corps that elaborates on the alternatives we investigated prior to reaching a conclusion that the construction of additional on-site parking was our best solution. It also emphasizes the need for additional parking to mitigate existing parking capacity concerns. In 2016, the PTC accommodated 246,501 "car days" or a single instance of a car remaining in a spot for a single day. This equates to a 97.7% utilization rate of the available 252,174 available car days (689 spaces x 366 days). Typically off-street parking lots with a 90% occupancy rate or greater are considered functionally at capacity. To

combat these existing deficiencies the PTC is currently leasing 100 additional spaces that increase to 300 spaces during peak travel periods from the owners of Thompson's Point. Unfortunately, this is only a temporary situation that cannot be made permanent. CCL is also utilizing valet services on occasion to double stack vehicles in order to maximize lot space. The implementation of both of these short-term strategies have demonstrated the more immediate need for a longer-term solution just to satisfy existing demand.

In theory, the additional parking may even reduce overall vehicle miles traveled in a day as a more adequate amount of parking for current conditions would result in fewer vehicles driving for more extended periods looking for parking. The lot would also be in closer proximity to the PTC, versus the more inconvenient distance to the currently leased spaces. Of additional note, one alternative for the parking lot design that was originally considered was the development of a satellite lot at an off-site location. By keeping the additional spaces on site, this also reduces the number of vehicles that would initially travel to the PTC in search of a parking spot and then have to travel off-site to a satellite lot, therefore generating new trips to the adjacent street system. As such, this proposed option would have no off-site impacts on traffic operations, as some of the other options would have.

Given that this project is a response to existing conditions, focus on traffic would generally remain on the operations and safety of the existing site. Deficiencies have been observed with the existing design of the pick-up and drop-off area at the front entrance to the PTC. The current design allows for 22 short-term parking spaces and a drive up queue for pick-ups and drop-offs of approximately 10 to 15 vehicles. Once the queue is at capacity, vehicles spillback onto Thompson's Point Connector Road and subsequently to Fore River Parkway, ultimately causing safety concerns. For this reason, CCL is proposing an expansion and redesign of this area to increase pick-up and drop-off capacity on site.

In terms of permitting, since the original facility was constructed prior to the development of state traffic permitting requirements with MaineDOT (1996 vs. 1997), and the last construction occurred over 10 years ago (2001), one could argue that the current trips are considered grandfathered to the site. Given that the facility is not proposing any changes in square footage or additional services, there are no means to quantify an increase in trip generation and therefore there is no necessity to obtain a Traffic Movement Permit. The addition of just a parking lot also does not require state permitting since an increase in parking spaces is not considered a generator of additional trips to the site and thus on the adjacent roadway system. However, when CCL does proceed with future development in which some of these parking spaces are likely to be utilized for, further permitting and traffic analysis would be warranted.

To summarize, given that the parking lot is being developed to aid in existing parking deficits and for longer range planning purposes and is not due to a current expansion of the facility, significant traffic analysis and permitting do not appear needed at this time. With the addition of a new or expanded terminal that has quantitative impacts on site trip generation, traffic analysis should be completed at that time. In addition, since the PTC has plans to improve the existing circulation and flow impacts on-site, this should be sufficient action in terms of traffic mitigation for the proposed project.

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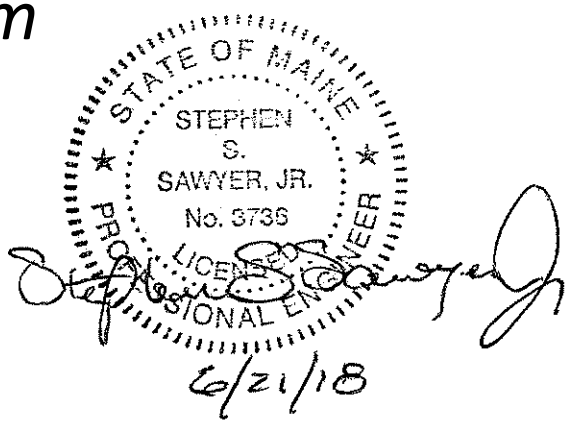
Memorandum



99607

To: **Thomas Errico, P.E.**

From: **Steve Sawyer, P.E.**

Nikki Scott, EI

Date: **June 21, 2018**

Subject: **Updated Traffic Analysis for Portland Transportation Center, Thompsons Point, Portland**

This memorandum is to summarize the results of updated traffic analysis completed for the Portland Transportation Center (PTC) on Thompsons Point Connector Road in Portland, Maine. Based on preliminary information submitted to the City, the facility requires a Traffic Movement Permit (TMP) from the City of Portland, as they have delegated review authority. Initial turning movement counts for trip generation, safety analysis, and capacity analysis were completed to obtain City comments for clarity on what will be required during the TMP process. Those results are summarized as follows.

Existing Traffic Volumes

In order to quantify existing trip generation, turning movement counts were conducted for the PTC during the Friday mid-day peak hour, as this was recommended by PTC as the time period representative of peak activity. Generally, the summer provides a higher volume of peak hour traffic given more passengers are not locals and therefore are being picked up, dropped off, and using ridesharing applications more exclusively. The higher percentage of pick-ups and drop-offs results in a higher peak hour trip generation due to one trip in and one trip out of the facility during the peak hour. During the winter, more of the passengers reside in Maine and are utilizing PTC to travel to other locations via Boston Logan International Airport for longer-term trips. Because the percentage of people parking long-term is likely higher, this reduces the peak hour impact as anyone parking would only generate one trip, versus two, during said peak hour. However, these winter months with more long-term parkers results in the need for more parking spaces, which as you know is the main impetus for this project.

Based on a review of the current bus and train schedule starting at 3:15 AM and concluding at 1:25 AM the following day, the peak number of buses and trains arriving and departing within any one-hour period occurs from 11:30 AM to 12:30 PM, thus coinciding with PTC's recommendation to count the mid-day period. During this hour, four buses and one train drop passengers off and four buses and one train pick passengers up, for a total of 10 possible services.

Given this current schedule, turning movement counts were conducted on Friday, June 8, 2018 during the mid-day period from 10:30 AM to 3:30 PM at the following PTC access points along Thompsons Point Connector Road:

- The exit-only driveway from LOT "B"
- The intersection of the Main Access Drive and LOT "A"
- The LOT "C" access point

In addition, a count was completed at the intersection of Fore River Parkway, the 295 Ramp and the Thompsons Point Connector Road as it provides signalized access to Thompsons Point and ultimately the PTC. The access points for the facility and surrounding roadway network are shown in Figure 1. The volumes at that intersection during the peak of the PTC were factored to 30th highest hour volumes, or peak summer conditions, utilizing MaineDOT's group I urban factor of 1.023 (0.86/0.84 = 1.023). Only the non-Thompson's Point related trips on Fore River Parkway and the I-295 Ramp were factored. The existing 2018 June traffic volumes are shown in Figure 2.

The peak hour for the PTC occurred from 11:15 AM to 12:15 PM, which was expected given the higher volume of incoming and outgoing trains and buses. During that peak hour, 333 trips were generated to and from the three access points, 160 entering and 173 exiting. Given this level of counted traffic, the PTC requires a Traffic Movement Permit (TMP) from the City of Portland.

In order to compare the counted trip generation to ridership, the following information about services and ridership was provided from PTC:

<u>CCL</u>	11:30 AM	30 passengers got off the two arriving buses 29 passengers got on to the two buses for departure
	11:45 AM	32 passengers got off the arriving bus 8 moved to the departing 11:55 bus as a continuation
	11:55 AM	34 passengers got off the arriving bus 16 got on the bus for a continuation (8 from 11:45 bus)
	12:00 PM	29 passengers got on departing bus
<u>Downeaster</u>	11:35 AM	49 passengers got off the train
	11:55 AM	42 passengers got on the train

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Based on this data, 245 passengers were serviced during this peak hour. This does not include the eight passengers that did not exit the PTC and stayed for a continuation. The counts produced a trip distribution as expected by PTC. Given the time of year, a high percentage of drop-offs were expected. By examining the traffic counts, an estimated pick-up/drop-off rate of 85% during the peak hour was determined. This is on the basis that parking lot "B" does not have availability to exit at the main access, meaning the 145 counted right-turns would all be pick-up/drop-off in nature. Taking a reduction from that number for the buses leaving the facility and then doubling that number to account for the entering vehicles equates to 282 trips or 85%. In addition, the mid-day peak also provided an entering and exiting distribution of 48% entering and 52% exiting.

Based on information from the PTC, generally June provides lower ridership than August. This ridership was compared to the previously submitted ridership data for Friday, August 12, 2016 during the same peak hour period:

CCL	11:30 AM	22 passengers got off the two arriving buses 65 passengers got on to the two buses for departure
	11:45 AM	56 passengers got off the arriving bus 12 moved to the departing 11:55 bus as a continuation
	11:55 AM	40 passengers got off the arriving bus 28 got on the bus for a continuation (12 from 11:45 bus)
Downeaster	11:35 AM	60 passengers got off the arriving train
	11:55 AM	30 passengers got on the departing train

In August, ridership during the same peak hour period equated to 277 passengers serviced, again not including the 12 passengers that moved to a through bus continuing on. It should be noted, that the 2016 bus schedule did not include the newly added 12:00 PM bus to New York that was counted in 2018. If this 12:00 PM bus is removed, this would reduce the June 2018 ridership to 216 passengers, thus a 28% approximate difference between June and August ridership.

To be overly conservative, the counted June trips were projected to August conditions by 28% resulting in an estimated peak hour trip generation of 426 trips, 205 entering and 221 exiting, as shown in Figure 3. It is unlikely the facility truly increasing trip generation by this much in this period of time especially given the assumption that the passenger to trip ratio is entirely linear. Predicting an exact trip generation for this facility is difficult as on any given day passenger occupancy of vehicles can differ as well as pick-up and drop-off ratios, and even timing of service arrivals and departures. In addition, human nature is hard to predict and changes through time which makes it incredibly difficult with any certainty to project backwards to the number of trips the PTC may have been generating 10 years ago.

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Additionally, it is important to note that generally traffic analysis is completed for the design hourly volume (DHV). Therefore, the counted trip generation during the first week of June is very close to the actual DHV for the adjacent roadway system (0.86 versus 0.84 for group I). As such, the counted trip generation should not need to be factored up, but was to provide a conservative analysis.

Capacity Analysis

Capacity analysis was performed utilizing Synchro/SimTraffic 10 to calculate the control delay, or the average amount of delay that a vehicle experiences as it travels through an intersection or section of roadway. This is defined by level of service (LOS), in terms of A through F, with A being optimal and F being unacceptable. The LOS and control delay for unsignalized and signalized intersections is depicted in the 2010 Highway Capacity Manual and is shown in Table 1, below:

Table 1 – Level of Service from Control Delay

Level of Service (LOS)	Unsignalized Control Delay (Sec./Vehicle)	Signalized Control Delay (Sec./Vehicle)
A	≤10	≤10
B	>10-≤15	>10-≤20
C	>15-≤25	>20-≤35
D	>25-≤35	>35-≤55
E	>35-≤50	>55-≤80
F	>50	>80

Source: Highway Capacity Manual 2010

Signalized Intersection Analysis

Capacity analysis was completed for the signalized intersection of Fore River Parkway, the I-295 Off-Ramp and Thompsons Point Connector Road utilizing Synchro/SimTraffic 10. Analysis was completed during the peak hour for the PTC to determine existing operations when the PTC is generating the most traffic. Existing traffic signal timings were obtained from the traffic signal controller to assure current operations were being accurately represented. Both the raw counted trips for the June trip generation and the inflated trips to possible August conditions were analyzed. The results are attached to this report and are summarized in the following table:

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Table 2
Traffic Operations (Delay in Seconds)
Intersection of Fore River Parkway, I-295 Off-Ramp, and Thompsons Point Connector Road

Movement	Counted June Volumes	Inflated August Volumes
EB Thompsons Point Lefts	26.8 (C)	29.72 (C)
EB Thompsons Point Rights	19.3 (B)	19.7 (B)
EB Thompsons Point Overall	21.2 (C)	22.4(C)
WB I-295 Lefts	31.0 (C)	32.5 (C)
WB I-295 Throughs	30.9 (C)	31.4 (C)
WB I-295 Rights	2.7 (A)	2.7 (A)
WB I-295 Overall	19.5 (B)	20.8 (C)
NB Fore River Parkway Lefts	36.3 (D)	36.3 (D)
NB Fore River Parkway Throughs	10.9 (B)	12.3 (B)
NB Fore River Parkway Overall	15.4 (B)	17.2 (B)
SB Fore River Parkway Throughs	20.2 (C)	22.4 (C)
SB Fore River Parkway Rights	9.5 (A)	10.3 (B)
SB Fore River Parkway Overall	18.3 (B)	20.0 (B)
Overall Intersection	**18.1 (B)**	**19.8 (B)**

As demonstrated above, the signalized intersection of Fore River Parkway, the I-295 Off-Ramp, and Thompsons Point Connector Road is operating at a good LOS "B" overall under both the counted June volumes (with peak summer conditions for Fore River Parkway and the ramp) and under the inflated volumes for PTC. No capacity constraints were identified for the peak of the existing facility on Thompsons Point Road. Additionally, neither Fore River Parkway nor the ramp are experiencing any operational deficiencies under existing conditions with the current signal timings.

Unsignalized Intersection Analysis

Capacity analysis was also completed for the intersection of Thompson's Point Connector Road, Main Access, and Lot "A" access during the peak period for the PTC utilizing Synchro/SimTraffic 10. The results are attached to this memorandum and summarized below:

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Table 3
Traffic Operations (Delay in Seconds)
Intersection of Thompsons Point Connector Road, Main Access, and Lot "A"

Movement	Counted June Volumes	Inflated August Volumes
EB Thompsons Point Overall	0.3 (A)	0.4 (A)
WB Thompsons Point Lefts	3.1 (A)	3.2 (A)
WB Thompsons Point Overall	2.2 (A)	2.5 (A)
NB Main Access Drive Overall	3.5 (A)	3.7 (A)
SB Lot "A" Access Overall	5.7 (A)	6.3 (A)

The unsignalized intersection of Thompsons Point Connector Road, the Main Access, and lot "A" also is currently operating with all movements at LOS "A" demonstrating no existing capacity constraints.

Queue Analysis

Queue analysis was completed for both eastbound Thompson's Point Connector Road at the signal and westbound Thompson's Point Connector Road at the Main Access to determine any impacts existing queues may have on the roadway network. The results are summarized in the tables below:

Table 4
95th Percentile Queue Lengths
Intersection of Fore River Parkway, I-295 Off-Ramp, and Thompsons Point Connector Road

Movement	Counted June Volumes	Inflated August Volumes
EB Thompsons Point Lefts	92'	107'
EB Thompsons Point Rights	120'	141'

Table
95th Percentile Queue Lengths
Intersection of Thompsons Point Connector Road, Main Access, and Lot "A"

Movement	Counted June Volumes	Inflated August Volumes
WB Thompsons Point Lefts	33'	36'

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As shown in the first table, queues at the signal from Thompsons point do not currently extend more than the 175' of storage available for both lanes and therefore do not impact the Main Access driveway. The exit driveway is approximately 130' from the stop bar at the signal, demonstrating that that drive will be blocked very minimally when the PTC is generating its peak levels of traffic. Additionally, Thompsons Point left-turns into the Main Access are shown as very minimal at one to two vehicles. However, this is deceiving given that spillback traffic from the drop-off/pick-up loop is not represented in the analysis. Long queues from this area have been observed in the past, thus creating longer queues turning left into the Main Access. As such, the PTC is proposing to redevelop the pick-up and drop-off area to remove the existing parking spaces to create for two additional drop-off lanes, one specifically for taxis and other ridesharing related vehicles.

Safety Analysis

The most recent three-year crash data (2015 to 2017) was obtained from MaineDOT for the vicinity of PTC on Thompsons Point Connector Road to determine if there are any high crash locations (HCLs) in the vicinity. An intersection or section of roadway is deemed an HCL if two criteria are met: A Critical Rate Factor (CRF) greater than 1.0 and a minimum of 8 accidents in a three-year period. The obtained data is attached to this memorandum and summarized in the following tables:

Intersections

Thompsons Point Road Intersections	Node	# Accidents	CRF	HCL
I-295 Exit 5A Off-Ramp Right-Turn Slip	59418	2	0.69	No
Fore River Parkway, I-295 Exit 5A Off-Ramp	59413	9	0.39	No

Roadway Sections

Thompsons Point Connector Road Links	Node to Node	# Accidents	CRF	HCL
From Fore River Pkway to Previous Sewell St	59423 – 59417	1	0.16	No

As shown in the tables above, there are no high crash locations in the direct vicinity of the PTC on Thompson's Point Connector Road.

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LOCATION MAP

PORTLAND TRANSPORTATION CENTER

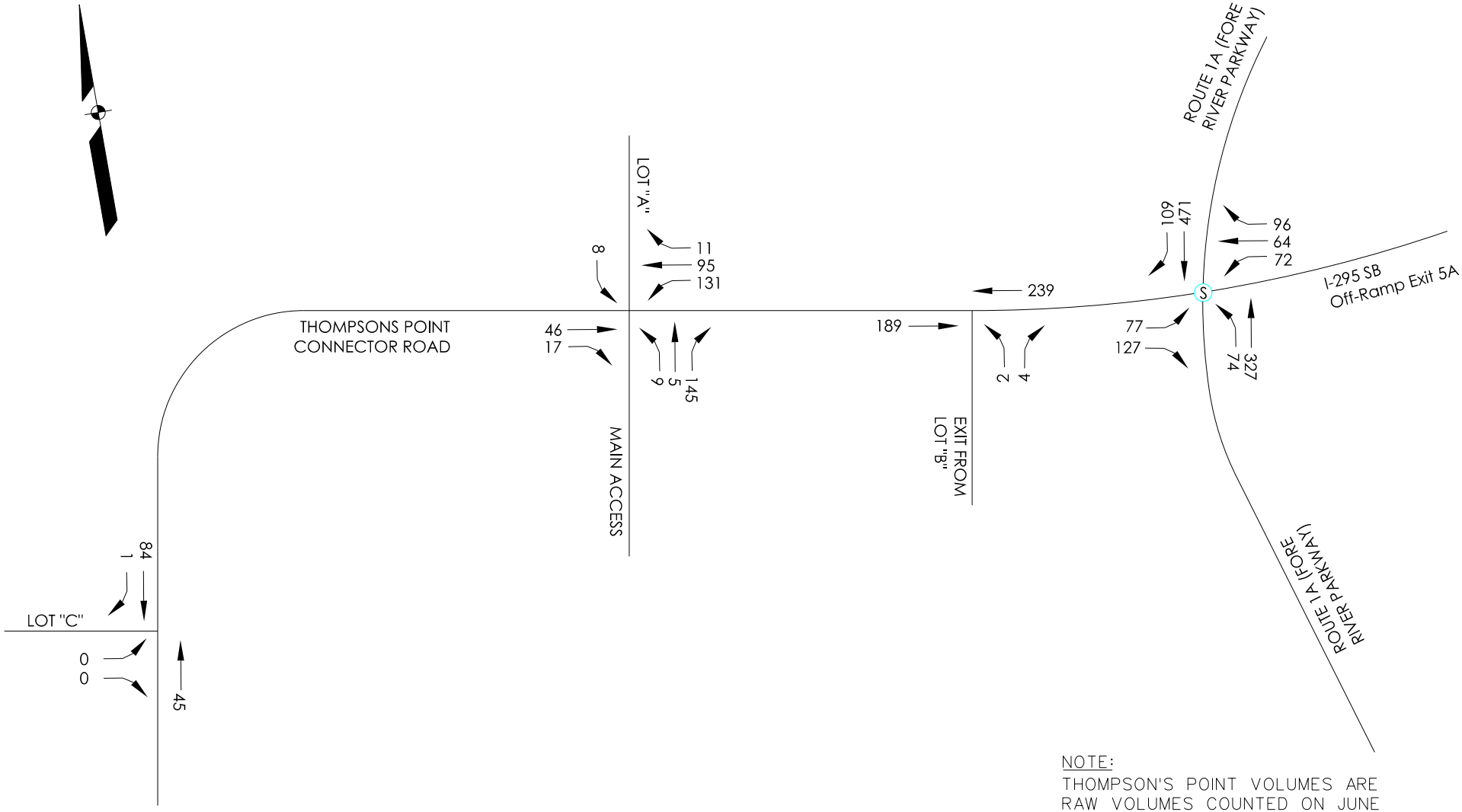
100 THOMPSONS POINT CONNECTOR ROAD
PORTLAND, MAINE 04102

FOR: LANGDON STREET REAL ESTATE
7 LANGDON STREET
CONCORD, NH 03301

SCALE: N.T.S

DATE: 06/21/18

SHEET: 1- OF - 3



NOTE:
THOMPSON'S POINT VOLUMES ARE RAW VOLUMES COUNTED ON JUNE 8, 2018. NON-THOMPSONS POINT VOLUMES AT FORE RIVER PARKWAY WERE FACTORED TO PEAK SUMMER CONDITIONS.

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2018 COUNTED PEAK HOUR VOLUMES

PORTLAND TRANSPORTATION CENTER

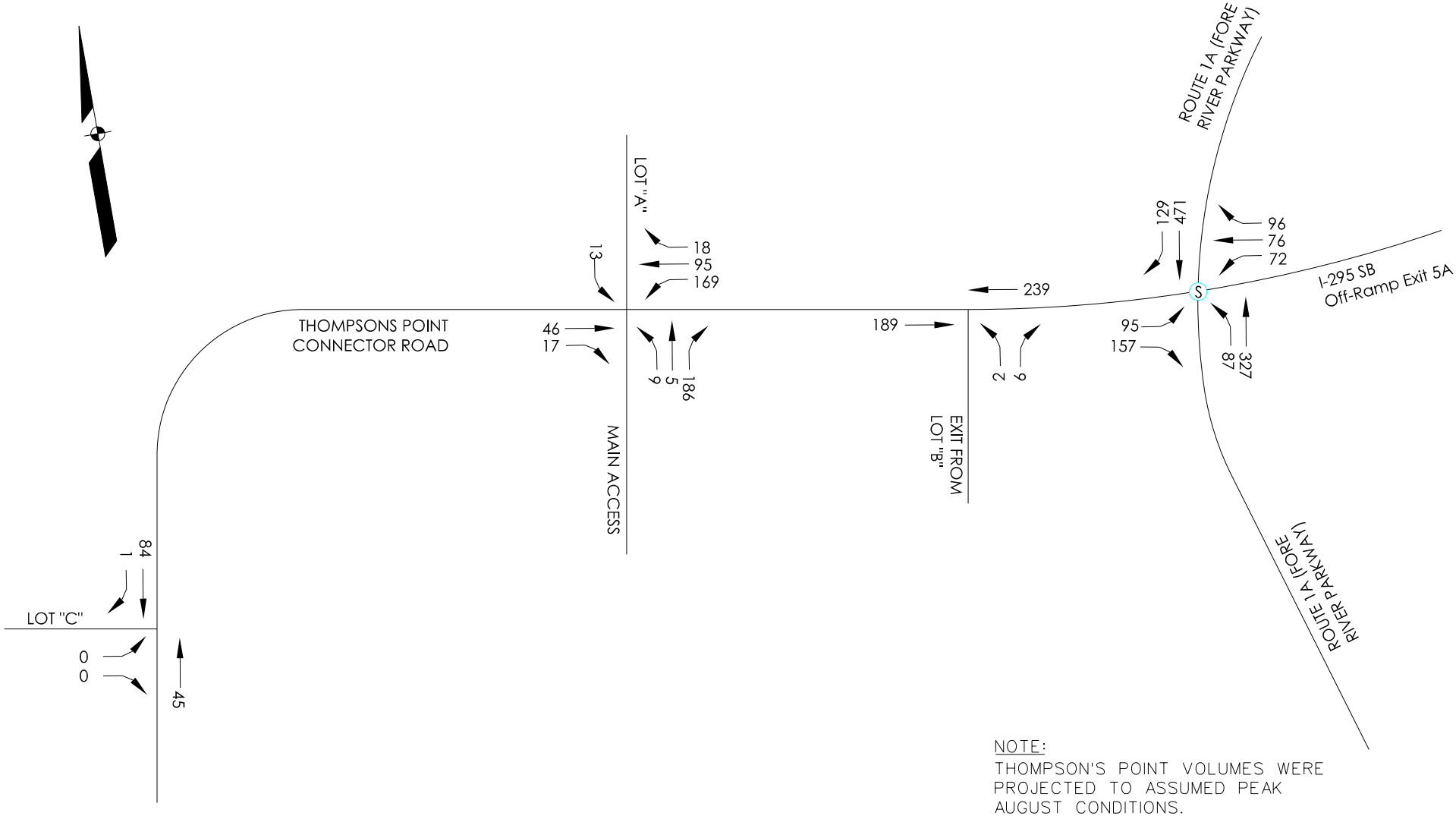
100 THOMPSONS POINT CONNECTOR ROAD
PORTLAND, MAINE 04102

FOR: LANGDON STREET REAL ESTATE
7 LANGDON STREET
CONCORD, NH 03301

SCALE: N.T.S

DATE: 06/21/18

SHEET: 2-OF-3



NOTE:
THOMPSON'S POINT VOLUMES WERE PROJECTED TO ASSUMED PEAK AUGUST CONDITIONS.
NON-THOMPSONS POINT VOLUMES AT FORE RIVER PARKWAY WERE FACTORED TO PEAK SUMMER CONDITIONS.

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2018 ESTIMATED AUGUST TRIP VOLUMES

PORTLAND TRANSPORTATION CENTER

100 THOMPSONS POINT CONNECTOR ROAD
PORTLAND, MAINE 04102

FOR: LANGDON STREET REAL ESTATE
7 LANGDON STREET
CONCORD, NH 03301

SCALE: N.T.S

DATE: 06/21/18

SHEET: 3-OF-3

Accurate Counts

978-664-2565

N/S Street : Fore River Parkway
E/W Street : Thompsons Point Connector
City/State : Portland, ME
Weather : Clear

File Name : 99607001
Site Code : 99607001
Start Date : 6/8/2018

Groups Printed- Cars - Trucks

	Fore River Pkwy From North				Rte 295 Ramp From East			Fore River Pkwy From South				Thompsons Point From West			
Start Time	Left	Thru	Right	U-TR	Left	Thru	Right	Left	Thru	Right	U-TR	Left	Thru	Right	Int. Total
10:30 AM	0	99	2	0	11	5	35	12	85	0	0	6	0	14	269
10:45 AM	0	104	8	0	18	10	39	8	79	0	0	6	0	11	283
Total	0	203	10	0	29	15	74	20	164	0	0	12	0	25	552
11:00 AM	0	83	15	0	16	13	33	18	79	0	2	14	0	14	287
11:15 AM	0	108	19	0	19	16	27	19	67	0	1	15	0	17	308
11:30 AM	0	115	25	0	15	21	21	18	65	0	0	19	0	28	327
11:45 AM	0	123	36	1	13	12	14	16	84	0	2	21	0	40	362
Total	0	429	95	1	63	62	95	71	295	0	5	69	0	99	1284
12:00 PM	0	114	29	0	23	15	32	21	103	0	0	22	0	41	400
12:15 PM	0	139	15	0	26	8	20	17	84	0	0	11	0	28	348
12:30 PM	0	139	18	0	22	10	21	15	97	0	2	17	0	34	375
12:45 PM	0	118	11	1	19	13	26	22	93	0	0	17	0	27	347
Total	0	510	73	1	90	46	99	75	377	0	2	67	0	130	1470
01:00 PM	0	118	14	0	14	15	20	17	93	0	1	16	0	30	338
01:15 PM	0	88	16	0	19	13	30	15	88	0	0	9	0	25	303
01:30 PM	0	111	19	0	25	20	21	16	95	0	0	13	0	31	351
01:45 PM	0	121	21	0	19	21	34	28	83	0	2	19	0	33	381
Total	0	438	70	0	77	69	105	76	359	0	3	57	0	119	1373
02:00 PM	0	86	16	0	16	21	26	26	102	0	0	17	0	43	353
02:15 PM	0	95	17	0	12	5	25	7	86	0	0	10	0	21	278
02:30 PM	0	100	12	0	19	11	21	27	91	0	0	15	0	33	329
02:45 PM	0	120	20	0	23	17	30	14	111	0	0	16	0	29	380
Total	0	401	65	0	70	54	102	74	390	0	0	58	0	126	1340

Accurate Counts

978-664-2565

N/S Street : Fore River Parkway
E/W Street : Thompsons Point Connector
City/State : Portland, ME
Weather : Clear

File Name : 99607001
Site Code : 99607001
Start Date : 6/8/2018

Groups Printed- Cars - Trucks

	Fore River Pkwy From North				Rte 295 Ramp From East			Fore River Pkwy From South				Thompsons Point From West			
Start Time	Left	Thru	Right	U-TR	Left	Thru	Right	Left	Thru	Right	U-TR	Left	Thru	Right	Int. Total
03:00 PM	0	114	17	0	17	19	20	27	120	0	1	18	0	50	403
03:15 PM	0	98	28	0	20	21	20	23	129	0	0	15	0	36	390
Grand Total	0	2193	358	2	366	286	515	366	1834	0	11	296	0	585	6812
Apprch %	0	85.9	14	0.1	31.4	24.5	44.1	16.6	82.9	0	0.5	33.6	0	66.4	
Total %	0	32.2	5.3	0	5.4	4.2	7.6	5.4	26.9	0	0.2	4.3	0	8.6	
Cars	0	2182	355	2	360	277	507	343	1820	0	11	283	0	564	6704
% Cars	0	99.5	99.2	100	98.4	96.9	98.4	93.7	99.2	0	100	95.6	0	96.4	98.4
Trucks	0	11	3	0	6	9	8	23	14	0	0	13	0	21	108
% Trucks	0	0.5	0.8	0	1.6	3.1	1.6	6.3	0.8	0	0	4.4	0	3.6	1.6

Accurate Counts

978-664-2565

N/S Street : Exit Only Driveway
E/W Street : Thompsons Point
City/State : Kennebunk, ME
Weather : Clear

File Name : 99607002
Site Code : 99607002
Start Date : 6/8/2018
Page No : 1

Groups Printed- Cars - Trucks

	Thompsons Point From East		Exit Only From South		Thompsons Point From West		
Start Time	Left	Thru	Left	Right	Thru	Right	Int. Total
10:30 AM	0	14	0	1	17	0	32
10:45 AM	0	31	1	0	19	0	51
Total	0	45	1	1	36	0	83
11:00 AM	0	43	0	0	29	0	72
11:15 AM	0	54	0	0	32	0	86
11:30 AM	0	66	1	1	49	1	118
11:45 AM	0	62	0	2	58	0	122
Total	0	225	1	3	168	1	398
12:00 PM	0	65	1	1	58	0	125
12:15 PM	0	37	0	0	43	0	80
12:30 PM	0	42	0	2	49	0	93
12:45 PM	0	48	1	0	41	0	90
Total	0	192	2	3	191	0	388
01:00 PM	0	48	0	1	45	0	94
01:15 PM	0	40	0	0	39	0	79
01:30 PM	0	61	0	0	42	0	103
01:45 PM	0	67	0	3	53	0	123
Total	0	216	0	4	179	0	399
02:00 PM	0	60	0	1	52	0	113
02:15 PM	0	32	1	1	32	0	66
02:30 PM	0	46	0	0	49	0	95
02:45 PM	0	50	0	4	41	0	95
Total	0	188	1	6	174	0	369
03:00 PM	0	65	0	1	64	1	131
03:15 PM	0	76	0	0	53	0	129
Grand Total	0	1007	5	18	865	2	1897
Apprch %	0	100	21.7	78.3	99.8	0.2	

Accurate Counts

978-664-2565

Total %	0	53.1	0.3	0.9	45.6	0.1	
Cars	0	974	5	18	825	2	1824
% Cars	0	96.7	100	100	95.4	100	96.2
Trucks	0	33	0	0	40	0	73
% Trucks	0	3.3	0	0	4.6	0	3.8

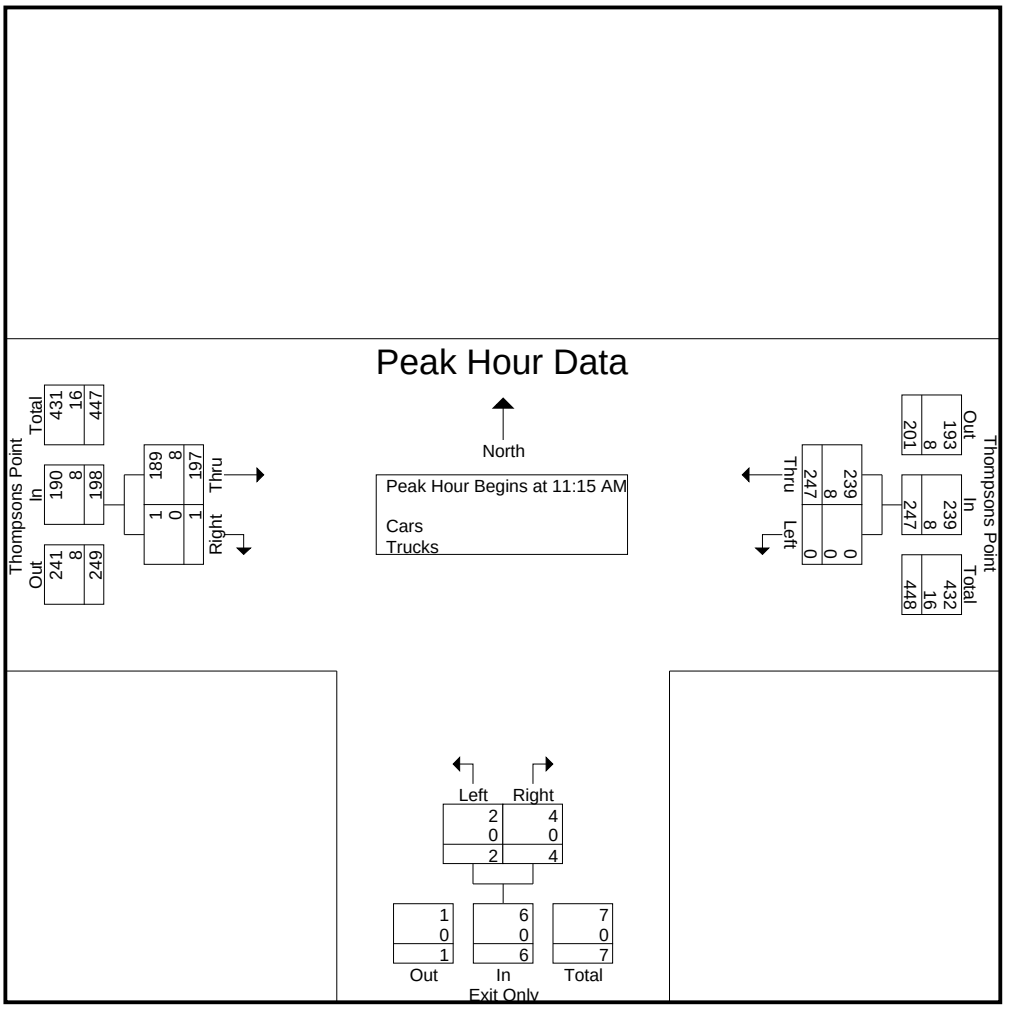
Accurate Counts

978-664-2565

N/S Street : Exit Only Driveway
E/W Street : Thompsons Point
City/State : Kennebunk, ME
Weather : Clear

File Name : 99607002
Site Code : 99607002
Start Date : 6/8/2018
Page No : 3

	Thompsons Point From East			Exit Only From South			Thompsons Point From West			
Start Time	Left	Thru	App. Total	Left	Right	App. Total	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 10:30 AM to 03:15 PM - Peak 1 of 1										
Peak Hour for Entire Intersection Begins at 11:15 AM										
11:15 AM	0	54	54	0	0	0	32	0	32	86
11:30 AM	0	**66**	**66**	**1**	1	**2**	49	**1**	50	118
11:45 AM	0	62	62	0	**2**	2	**58**	0	**58**	122
12:00 PM	0	65	65	1	1	2	58	0	58	**125**
Total Volume	0	247	247	2	4	6	197	1	198	451
% App. Total	0	100		33.3	66.7		99.5	0.5		
PHF	.000	.936	.936	.500	.500	.750	.849	.250	.853	.902
Cars	0	239	239	2	4	6	189	1	190	435
% Cars	0	96.8	96.8	100	100	100	95.9	100	96.0	96.5
Trucks	0	8	8	0	0	0	8	0	8	16
% Trucks	0	3.2	3.2	0	0	0	4.1	0	4.0	3.5



Accurate Counts

978-664-2565

N/S Street : Lot A / Main Access Drive
E/W Street : Thompsons Point
City/State : Kennebunk, ME
Weather : Clear

File Name : 99607003
Site Code : 99607003
Start Date : 6/8/2018

Groups Printed- Cars - Trucks

	Lot A From North			Thompsons Point From East			Main Access From South			Thompsons Point From West			
Start Time	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Int. Total
10:30 AM	0	0	0	11	5	0	0	0	9	0	9	0	34
10:45 AM	0	1	0	9	15	3	0	0	6	0	10	2	46
Total	0	1	0	20	20	3	0	0	15	0	19	2	80
11:00 AM	0	0	0	25	14	4	1	0	13	0	13	1	71
11:15 AM	0	0	0	25	26	2	1	1	25	0	10	4	94
11:30 AM	2	0	0	40	19	4	3	1	39	0	5	4	117
11:45 AM	3	0	0	40	27	2	3	1	46	0	13	5	140
Total	5	0	0	130	86	12	8	3	123	0	41	14	422
12:00 PM	3	0	0	26	33	3	2	2	35	0	25	4	133
12:15 PM	2	0	0	13	22	2	3	4	11	0	26	2	85
12:30 PM	2	0	1	14	28	1	2	2	14	0	33	4	101
12:45 PM	1	0	1	20	25	2	2	0	15	1	25	3	95
Total	8	0	2	73	108	8	9	8	75	1	109	13	414
01:00 PM	3	1	0	17	31	2	1	1	22	0	22	1	101
01:15 PM	1	0	0	11	31	0	0	0	10	1	23	3	80
01:30 PM	0	0	0	20	30	7	2	3	13	0	31	1	107
01:45 PM	1	1	0	28	32	5	0	7	19	2	26	5	126
Total	5	2	0	76	124	14	3	11	64	3	102	10	414
02:00 PM	0	0	0	35	26	5	1	7	33	0	22	1	130
02:15 PM	0	1	0	13	17	0	0	0	10	0	20	0	61
02:30 PM	0	0	0	18	29	0	1	1	13	0	35	2	99
02:45 PM	2	0	0	29	26	1	0	0	22	0	19	2	101
Total	2	1	0	95	98	6	2	8	78	0	96	5	391

Accurate Counts

978-664-2565

N/S Street : Lot A / Main Access Drive
E/W Street : Thompsons Point
City/State : Kennebunk, ME
Weather : Clear

File Name : 99607003
Site Code : 99607003
Start Date : 6/8/2018

Groups Printed- Cars - Trucks

	Lot A From North			Thompsons Point From East			Main Access From South			Thompsons Point From West			
Start Time	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Int. Total
03:00 PM	3	0	0	26	26	4	0	0	36	0	24	3	122
03:15 PM	0	0	0	26	50	1	0	0	18	0	36	5	136
Grand Total	23	4	2	446	512	48	22	30	409	4	427	52	1979
Apprch %	79.3	13.8	6.9	44.3	50.9	4.8	4.8	6.5	88.7	0.8	88.4	10.8	
Total %	1.2	0.2	0.1	22.5	25.9	2.4	1.1	1.5	20.7	0.2	21.6	2.6	
Cars	23	4	2	446	476	48	22	30	409	4	392	52	1908
% Cars	100	100	100	100	93	100	100	100	100	100	91.8	100	96.4
Trucks	0	0	0	0	36	0	0	0	0	0	35	0	71
% Trucks	0	0	0	0	7	0	0	0	0	0	8.2	0	3.6

Accurate Counts

978-664-2565

N/S Street : Lot A / Main Access Drive
E/W Street : Thompsons Point
City/State : Kennebunk, ME
Weather : Clear

File Name : 99607003
Site Code : 99607003
Start Date : 6/8/2018

	Lot A From North				Thompsons Point From East				Main Access From South				Thompsons Point From West				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 10:30 AM to 03:15 PM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 11:15 AM																	
11:15 AM	0	0	0	0	25	26	2	53	1	1	25	27	0	10	4	14	94
11:30 AM	2	0	0	2	**40**	19	**4**	63	**3**	1	39	43	0	5	4	9	117
11:45 AM	**3**	0	0	**3**	40	27	2	**69**	3	1	**46**	**50**	0	13	**5**	18	**140**
12:00 PM	3	0	0	3	26	**33**	3	62	2	**2**	35	39	0	**25**	4	**29**	133
Total Volume	8	0	0	8	131	105	11	247	9	5	145	159	0	53	17	70	484
% App. Total	100	0	0		53	42.5	4.5		5.7	3.1	91.2		0	75.7	24.3		
PHF	.667	.000	.000	.667	.819	.795	.688	.895	.750	.625	.788	.795	.000	.530	.850	.603	.864
Cars	8	0	0	8	131	95	11	237	9	5	145	159	0	46	17	63	467
% Cars	100	0	0	100	100	90.5	100	96.0	100	100	100	100	0	86.8	100	90.0	96.5
Trucks	0	0	0	0	0	10	0	10	0	0	0	0	0	7	0	7	17
% Trucks	0	0	0	0	0	9.5	0	4.0	0	0	0	0	0	13.2	0	10.0	3.5

Accurate Counts

978-664-2565

N/S Street : Thompsons Point
E/W Street : Lot C / Driveway
City/State : Kennebunk, ME
Weather : Clear

File Name : 99607004
Site Code : 99607004
Start Date : 6/8/2018

Groups Printed- Cars - Trucks

	From North			From East			From South			From West			
Start Time	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Int. Total
10:30 AM	0	4	0	0	0	0	0	6	0	0	0	0	10
10:45 AM	0	15	0	0	0	1	0	8	0	0	0	0	24
Total	0	19	0	0	0	1	0	14	0	0	0	0	34
11:00 AM	0	12	1	0	0	1	0	13	0	1	0	0	28
11:15 AM	2	18	1	0	0	0	0	8	0	0	0	0	29
11:30 AM	0	15	0	0	0	2	0	5	0	0	0	0	22
11:45 AM	0	18	0	0	0	0	0	13	0	0	0	0	31
Total	2	63	2	0	0	3	0	39	0	1	0	0	110
12:00 PM	0	33	0	0	0	0	0	19	0	0	0	0	52
12:15 PM	1	17	2	0	0	0	0	25	0	0	0	0	45
12:30 PM	1	27	0	0	0	1	0	28	0	2	0	0	59
12:45 PM	0	20	1	0	0	1	0	23	0	0	0	0	45
Total	2	97	3	0	0	2	0	95	0	2	0	0	201
01:00 PM	0	29	0	0	0	0	0	17	0	0	0	0	46
01:15 PM	0	24	0	0	0	0	0	22	1	0	0	0	47
01:30 PM	0	25	0	0	0	1	0	27	0	0	0	0	53
01:45 PM	0	22	1	0	0	0	0	20	0	0	0	0	43
Total	0	100	1	0	0	1	0	86	1	0	0	0	189
02:00 PM	0	23	0	0	0	0	0	18	0	0	0	0	41
02:15 PM	0	13	0	0	0	1	0	17	0	0	0	0	31
02:30 PM	0	32	0	0	0	0	0	34	0	0	0	0	66
02:45 PM	0	12	0	0	0	0	0	4	0	0	0	0	16
Total	0	80	0	0	0	1	0	73	0	0	0	0	154

Accurate Counts

978-664-2565

N/S Street : Thompsons Point
E/W Street : Lot C / Driveway
City/State : Kennebunk, ME
Weather : Clear

File Name : 99607004
Site Code : 99607004
Start Date : 6/8/2018

Groups Printed- Cars - Trucks

	From North			From East			From South			From West			
Start Time	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Int. Total
03:00 PM	1	17	0	0	0	0	0	22	0	1	0	0	41
03:15 PM	1	38	0	0	0	2	0	27	0	0	0	0	68
Grand Total	6	414	6	0	0	10	0	356	1	4	0	0	797
Apprch %	1.4	97.2	1.4	0	0	100	0	99.7	0.3	100	0	0	
Total %	0.8	51.9	0.8	0	0	1.3	0	44.7	0.1	0.5	0	0	
Cars	6	413	6	0	0	9	0	355	1	4	0	0	794
% Cars	100	99.8	100	0	0	90	0	99.7	100	100	0	0	99.6
Trucks	0	1	0	0	0	1	0	1	0	0	0	0	3
% Trucks	0	0.2	0	0	0	10	0	0.3	0	0	0	0	0.4

1: Fore River Pkwy & Thompsons Point Connector /I-295 Off-Ramp Performance by approach

Approach	EB	WB	NB	SB	All
Denied Delay (hr)	0.0	0.2	0.1	0.0	0.3
Denied Del/Veh (s)	0.1	2.9	0.7	0.1	0.7
Total Delay (hr)	1.3	1.3	1.8	3.0	7.3
Total Del/Veh (s)	21.2	19.5	15.4	18.3	18.1

7: Main Access/Lot "A" & Thompsons Point Connector Performance by approach

Approach	EB	WB	NB	SB	All
Denied Delay (hr)	0.0	0.0	0.0	0.0	0.0
Denied Del/Veh (s)	0.0	0.0	0.2	0.1	0.1
Total Delay (hr)	0.0	0.2	0.2	0.0	0.3
Total Del/Veh (s)	0.3	2.2	3.5	5.7	2.5

Total Network Performance

Denied Delay (hr)	0.3
Denied Del/Veh (s)	0.7
Total Delay (hr)	8.3
Total Del/Veh (s)	20.0

1: Fore River Pkwy & Thompsons Point Connector /I-295 Off-Ramp Performance by movement

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	SBT	SBR	All
Denied Delay (hr)	0.0	0.0	0.0	0.1	0.0	0.1	0.1	0.0	0.0	0.0	0.3
Denied Del/Veh (s)	0.3	0.0	0.0	3.7	0.6	3.7	3.3	0.1	0.1	0.2	0.7
Total Delay (hr)	0.6	0.0	0.7	0.7	0.5	0.1	0.7	1.0	2.7	0.3	7.3
Total Del/Veh (s)	26.8	0.3	19.3	31.0	30.9	2.7	36.3	10.9	20.2	9.5	18.1

7: Main Access/Lot "A" & Thompsons Point Connector Performance by movement

Movement	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	All
Denied Delay (hr)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Denied Del/Veh (s)	0.0	0.0	0.0	0.0	0.0	0.2	0.1	0.2	0.1	0.1
Total Delay (hr)	0.0	0.0	0.1	0.0	0.0	0.0	0.0	0.1	0.0	0.3
Total Del/Veh (s)	0.3	0.0	3.1	1.3	1.1	6.6	7.3	3.2	5.7	2.5

Total Network Performance

Denied Delay (hr)	0.3
Denied Del/Veh (s)	0.7
Total Delay (hr)	8.3
Total Del/Veh (s)	20.0

1: Fore River Pkwy & Thompsons Point Connector /I-295 Off-Ramp Performance by approach

Approach	EB	WB	NB	SB	All
Denied Delay (hr)	0.0	0.2	0.1	0.0	0.3
Denied Del/Veh (s)	0.1	2.8	0.8	0.1	0.7
Total Delay (hr)	1.6	1.5	2.0	3.5	8.5
Total Del/Veh (s)	22.4	20.8	17.2	20.0	19.8

7: Main Access/Lot "A" & Thompsons Point Connector Performance by approach

Approach	EB	WB	NB	SB	All
Denied Delay (hr)	0.0	0.0	0.0	0.0	0.0
Denied Del/Veh (s)	0.0	0.0	0.2	0.1	0.1
Total Delay (hr)	0.0	0.2	0.2	0.0	0.4
Total Del/Veh (s)	0.4	2.5	3.7	6.3	2.8

Total Network Performance

Denied Delay (hr)	0.3
Denied Del/Veh (s)	0.8
Total Delay (hr)	9.7
Total Del/Veh (s)	21.9

1: Fore River Pkwy & Thompsons Point Connector /I-295 Off-Ramp Performance by movement

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	SBT	SBR	All
Denied Delay (hr)	0.0	0.0	0.0	0.1	0.0	0.1	0.1	0.0	0.0	0.0	0.3
Denied Del/Veh (s)	0.2	0.0	0.0	3.8	0.7	3.7	3.4	0.1	0.1	0.2	0.7
Total Delay (hr)	0.7	0.0	0.9	0.7	0.6	0.1	0.9	1.1	3.1	0.4	8.5
Total Del/Veh (s)	29.2	0.7	19.7	32.5	31.4	2.7	36.3	12.3	22.4	10.3	19.8

7: Main Access/Lot "A" & Thompsons Point Connector Performance by movement

Movement	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	All
Denied Delay (hr)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Denied Del/Veh (s)	0.0	0.0	0.0	0.0	0.0	0.2	0.2	0.2	0.1	0.1
Total Delay (hr)	0.0	0.0	0.1	0.0	0.0	0.0	0.0	0.2	0.0	0.4
Total Del/Veh (s)	0.5	0.1	3.2	1.5	1.2	7.5	8.3	3.4	6.3	2.8

Total Network Performance

Denied Delay (hr)	0.3
Denied Del/Veh (s)	0.8
Total Delay (hr)	9.7
Total Del/Veh (s)	21.9

Intersection: 1: Fore River Pkwy & Thompsons Point Connector /I-295 Off-Ramp

Movement	EB	EB	WB	WB	NB	NB	NB	SB	SB
Directions Served	L	R	L	T	L	T	T	T	TR
Maximum Queue (ft)	117	161	120	124	114	151	108	240	228
Average Queue (ft)	48	63	43	43	47	61	28	122	84
95th Queue (ft)	92	120	93	92	90	122	76	199	179
Link Distance (ft)		421		534		767	767	707	707
Upstream Blk Time (%)									
Queuing Penalty (veh)									
Storage Bay Dist (ft)	175		400		200				
Storage Blk Time (%)		0							
Queuing Penalty (veh)		0							

Intersection: 7: Main Access/Lot "A" & Thompsons Point Connector

Movement	WB	NB	SB
Directions Served	L	LTR	LTR
Maximum Queue (ft)	45	75	30
Average Queue (ft)	8	41	6
95th Queue (ft)	33	66	26
Link Distance (ft)		127	119
Upstream Blk Time (%)			
Queuing Penalty (veh)			
Storage Bay Dist (ft)	100		
Storage Blk Time (%)			
Queuing Penalty (veh)			

Network Summary

Network wide Queuing Penalty: 0

Intersection: 1: Fore River Pkwy & Thompsons Point Connector /I-295 Off-Ramp

Movement	EB	EB	WB	WB	NB	NB	NB	SB	SB
Directions Served	L	R	L	T	L	T	T	T	TR
Maximum Queue (ft)	135	168	141	131	125	153	116	217	192
Average Queue (ft)	55	79	48	48	57	66	29	136	97
95th Queue (ft)	107	141	104	100	105	125	76	204	175
Link Distance (ft)		421		534		767	767	707	707
Upstream Blk Time (%)									
Queuing Penalty (veh)									
Storage Bay Dist (ft)	175		400		200				
Storage Blk Time (%)		0			0				
Queuing Penalty (veh)		1			0				

Intersection: 7: Main Access/Lot "A" & Thompsons Point Connector

Movement	WB	NB	SB
Directions Served	L	LTR	LTR
Maximum Queue (ft)	49	77	30
Average Queue (ft)	10	46	10
95th Queue (ft)	36	72	33
Link Distance (ft)		127	119
Upstream Blk Time (%)			
Queuing Penalty (veh)			
Storage Bay Dist (ft)	100		
Storage Blk Time (%)			
Queuing Penalty (veh)			

Network Summary

Network wide Queuing Penalty: 1

Maine Department Of Transportation - Traffic Engineering, Crash Records Section

Crash Summary Report

Report Selections and Input Parameters

REPORT SELECTIONS

☑ Crash Summary I ☐ Section Detail ☑ Crash Summary II ☐ 1320 Public ☐ 1320 Private ☐ 1320 Summary

REPORT DESCRIPTION

Thompsons Point Connector Rd in Portland

REPORT PARAMETERS

Year 2015, Start Month 1 through Year 2017 End Month: 12

Route: 3200149	Start Node: 59413	Start Offset: 0	☐ Exclude First Node
	End Node: 59420	End Offset: 0	☐ Exclude Last Node
Route: 3200556	Start Node: 59413	Start Offset: 0	☑ Exclude First Node
	End Node: 59418	End Offset: 0	☐ Exclude Last Node

Crash Summary I

Nodes

Node	Route - MP	Node Description	U/R	Total Crashes	Injury Crashes K	A	B	C	PD	Percent Injury	Annual M Ent-Veh	Crash Rate	Critical Rate	CRF
59420	3200149 - 0.21	End of THOMPSONS POINT CONNECTOR RD	2	0	0	0	0	0	0	0.0	0.340	0.00	0.60	0.00
												Statewide Crash Rate:	0.14	
59426	3200149 - 0.14	Int of SEWELL ST THOMPSONS POINT CONNECTOR RD	2	0	0	0	0	0	0	0.0	1.112	0.00	0.52	0.00
												Statewide Crash Rate:	0.14	
59413	3200149 - 0	Int of FORE RIVER PKY RAMP OFF 295 SB THOMPSONS F	9	9	0	0	1	2	6	33.3	6.211	0.48	1.23	0.39
												Statewide Crash Rate:	0.74	
59418	3200556 - 0.09	Int of FORE RIVER PKY RINV 3200156	2	2	0	0	0	0	2	0.0	2.770	0.24	0.37	0.65
												Statewide Crash Rate:	0.12	
Study Years: 3.00		NODE TOTALS:		11	0	0	1	2	8	27.3	10.433	0.35	0.80	0.44

Crash Summary I

Sections

Start Node	End Node	Element	Offset Begin - End	Route - MP	Section Length	U/R	Total Crashes	Injury Crashes K	A	B	C	PD	Percent Injury	Annual HMVM	Crash Rate	Critical Rate	CRF
59413	59426	2029332	0 - 0.14	3200149 - 0	0.14	2	1	0	0	0	0	1	0.0	0.00207	161.15	987.49	0.16
Int of FORE RIVER PKY RAMP OFF 295 SB THOMPSONS POINT CONNECTOR RD				RD INV 3200149											Statewide Crash Rate: 407.75		
59426	59420	2029333	0 - 0.07	3200149 - 0.14	0.07	2	0	0	0	0	0	0	0.0	0.00048	0.00	1433.94	0.00
Int of SEWELL ST THOMPSONS POINT CONNECTOR RD				RD INV 3200149											Statewide Crash Rate: 407.75		
59413	59418	3115322	0 - 0.04	3200556 - 0.05	0.04	2	0	0	0	0	0	0	0.0	0.00086	0.00	774.75	0.00
Int of FORE RIVER PKY RAMP OFF 295 SB THOMPSONS POINT CONNECTOR RD				RD INV 3200556											Statewide Crash Rate: 218.73		
Study Years: 3.00				Section Totals:	0.25		1	0	0	0	0	1	0.0	0.00341	97.87	794.52	0.12
				Grand Totals:	0.25		12	0	0	1	2	9	25.0	0.00341	1174.44	964.07	1.22

SEBAGO TECHNICS

CIVIL ENGINEERING • SURVEYING • LANDSCAPE ARCHITECTURE

Memorandum

99607

To: **Jean Fraser, City of Portland**

From: **Steve Sawyer**

Date: **May 10, 2018**

Subject: **Sebago's Comment/Responses to City Of Portland's Email May 4, 2018**
Portland Transportation Center

cc: **File**

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1. Traffic

The City's consultant site plan review engineer (Tom Errico) has commented: "I continue to review the application materials but wanted to request that the Applicant provide an estimate of peak hour traffic volume change (the highest volume peak hour) associated with ridership activity at the Transportation Center over the last 10 years. This estimate will be used to assess the requirement for a Traffic Movement Permit. I would note that according to information provided by the Applicant, annual ridership has increased significantly over the past 10 years and a corresponding increase in traffic volume would be expected." A response is being prepared and will follow as a separate submittal soon.

2. Existing parking provision

Please confirm whether any of the existing parking in the vicinity of the Transportation Center is leased to other parties, or committed to known users, not associated with the Center eg. Doctor's offices on Sewall Street.
A total of 60 parking spaces in the MaineDOT owned parking lot across the street from the PTC are leased to the Doctors on Sewall Street. However, these spaces have blackout dates during peak periods, i.e. weekends, Christmas vacation, and school vacations.

3. Interim situation during phase 1 preloading:

- Will the area of (Phase 1) asphalt reclaim include the entire 2.86 area of final parking lot? Yes
- How will this area be drained in the interim condition and to where? See the response below.

- What stormwater management and treatment will be installed as part of the phase 1 (pre-load) construction? Stormwater will flow as sheet flow to the southeastern corner of the pre-load area. Stormwater will be collected in a temporary sediment basin. A temporary outlet pipe will discharge stormwater toward the existing outlet pipes located under the railroad tracks.
- The project description states an approximately one year pre-load whereas SWCole recommended up to 18 months for the pre-load – do you have a basis for saying approximately one year? The settlement rate that is expected on site is not an exact science. SWCole has given us a 12-18 month timeframe. Our intent is to install monitoring platforms that will be checked regularly to document actual settlement values. Once we achieve the desired results we will move into Phase 2. This will likely be between 12 and 18 months.

4. Excavation in the wetland area (likely location of former canal):

- Please clarify the sequencing of the filling of the wetland area (approximately 2 acres) for the pre-load and then later excavation to install the stormwater system, so we can understand the impacts on the wetland buffer area and water table, and how excavation of the wetlands is avoided (per the MHPC concerns about impacts to archaeological material associated with the former canal). Sand fill will be placed as part of the pre-load directly over the wetland, with no excavation performed. After the pre-load has settled, then we intend to excavate the pre-load material sufficiently to be able to install the proposed stormwater treatment chambers. This operation will not result in the excavation of any subsurface archaeological materials.

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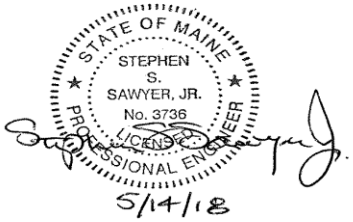
Memorandum

99607



To: **Jean Fraser, City of Portland**

From: **Steve Sawyer**

Date: **May 11, 2018**

Subject: **Sebago's Comment/Responses to City Of Portland's Email May 4, 2018**
Portland Transportation Center – Additional Traffic Information

cc: **File**

1. Traffic

The City's consultant site plan review engineer (Tom Errico) has commented: "I continue to review the application materials but wanted to request that the Applicant provide an estimate of peak hour traffic volume change (the highest volume peak hour) associated with ridership activity at the Transportation Center over the last 10 years. This estimate will be used to assess the requirement for a Traffic Movement Permit. I would note that according to information provided by the Applicant, annual ridership has increased significantly over the past 10 years and a corresponding increase in traffic volume would be expected."

The ridership data presented in the application covered the period 2001 to 2016. More recent passenger volumes were not available for the train and bus services at the time the application was prepared. Therefore, the following 10-year comparison is for the years 2006 and 2016.

1. The first thing to compare among to two time horizons is the active schedules (buses and trains):

   2006 – 42 buses daily (arrivals and departures)
   8 trains (arrivals and departures)

   2016 - 55 buses daily (arrivals and departures) (same as 2018)
   10 trains (arrivals and departures)

   Note: It is clear that the activity (number of buses and trains) have increased between 2006 and 2016, from 50 to 65. The daily coverage is the same, though, for these two time periods (beginning at 3:15AM with the first departure and ending at 1:25AM with the last arrival). The additional bus service is a result of the addition of multiple buses being used for multiple time

periods throughout the day (rather than just one for each scheduled departure) and the addition of a fifth train service. There were only four in 2006.

2. We discussed the matter of a peak hour at the PTC with CCL and they suggested that a mid-day Friday during the summer would be a representative time period for a peak hour of activity at the PTC. In reviewing the current schedules for the bus and train we chose the hour of 11:00AM to 12:00Noon. During this timeframe the PTC has two bus departures at 11:30AM, two bus arrivals at 11:45AM and 11:55AM, a train departure at 11:55AM and a train arrival at 11:35AM.

   In 2006, CCL had one less arrival and the train had only an arrival (no departure) during this same timeframe (11:00AM to 12:00Noon).

3. We checked historical records at the PTC and found the following data for passenger activity on Friday August 12, 2016.

CCL	11:30AM (through bus)		22 passengers got off the arriving bus
			65 passengers got onto the 2 buses for departure
	11:45AM		56 passengers got off the arriving bus
			12 moved to the departing 11:55 bus as a continuation
	11:55AM		40 passengers got off the arriving bus
			28 got on the bus for a continuation (12 from 11:45 bus)
Downeaster		11:35AM	60 passengers got off the train
		11:55AM	30 passengers got on the train

4. **Passenger Profile:** It is assumed that the average bus passenger arrives and departs the PTC in vehicles with an average occupancy of 1.5 per vehicle. Whereas the vehicle occupancy for train passengers is assumed to be 2.0. It is further assumed that during the summertime Friday peak hour we have selected for analysis 50% of bus patrons boarding and arriving at the PTC are dropped off or picked up at the terminal and 50% are parkers. Train patrons arriving during this same timeframe are 75% picked up and 25% are parkers, whereas those boarding are 75% parkers and 25% drop offs (the tendency is for longer trips).

5. **2016 Peak Hour Trip Generation:**

CCL

11:30AM	22 arrivals @ 1.5 per vehicle or 15 vehicles (50% parkers and 50% pick ups) Therefore, 7 parkers @ 1 trip each + 8 pick ups @ 2 trips each = 23 trips
	65 departures @ 1.5 per vehicle or 43 vehicles (50% parkers and 50% drop offs) Therefore, 21 parkers @ 1 trip each + 22 drop offs @ 2 trips each = 65 trips

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11:45AM (56-12) arrivals @ 1.5 per vehicle or 29 vehicles
(50% parkers and 50% pick ups)
Therefore, 14 parkers @ 1 trip each + 15 pick ups @ 2 trips each = 44 trips

11:55AM 40 arrivals @ 1.5 per vehicle or 27 vehicles
(50% parkers and 50% pick ups)
Therefore, 13 parkers @ 1 trip each + 14 pick ups @ 2 trips each = 41 trips

(28-12) departures @ 1.5 per vehicle or 11 vehicles
(50% parkers and 50% drop offs)
Therefore, 5 parkers at 1 trip each + 6 drop offs @ 2 trips each = 12 trips

Downeaster

11:35AM 60 arrivals @ 2 per vehicle or 30 vehicles
(25% parkers and 75% pick ups)
Therefore, 7 parkers at 1 trip each + 23 pick ups @ 2 trips each = 53 trips

11:55AM 30 departures @ 2 per vehicle or 15 vehicles
(75% parkers and 25% drop offs)
Therefore, 11 parkers @ 1 trip each + 4 pick ups @ 2 trips each = 19 trips

Total 2016 Peak Hour Trips **262** (129 Entering and 133 Exiting the PTC)
7+14+13+7=41 exits
21+5+11=37 enters
8+22+15+14+6+23+4=92 enters and 92 exits

6. 2006 Peak Hour Trip Generation:

CCL

11:30AM 55 departures @ 1.5 per vehicle or 37 vehicles
(50% parkers and 50% drop offs)
Therefore, 18 parkers @ 1 trip each + 19 drop offs @ 2 trips each = 56 trips

11:55AM 32 arrivals @ 1.5 per vehicle or 21 vehicles
(50% parkers and 50% pick ups)
Therefore, 10 parkers @ 1 trip each + 11 pick ups @ 2 trips each = 32 trips

Downeaster

12:15PM 52 arrivals @ 2 per vehicle or 28 vehicles
(25% parkers and 75% pick ups)
Therefore, 7 parkers at 1 trip each + 21 pick ups @ 2 trips each = 49 trips

Total 2006 Peak Hour Trips **137** (69 Entering and 68 Exiting the PTC)
18 enters

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17 exits
19+11+21=51 enters and 51 exits

From the data provided herein, it appears that while total annual ridership has increased from 480,110 to 661,712 during the period 2006 to 2016 (or 38%), peak hour traffic activity at the PTC has also grown but at a different rate 137 to 262 or 91%.

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No.	Bus Departures	Bus Arrivals	Train Departures	Train Arrivals
1	3:15 AM			
2	4:45 AM			
3	4:45 AM			
4			5:20 AM	
5	6:00 AM			
6	6:00 AM			
7	7:30 AM			
8	7:30 AM			
9		7:55 AM		
10			8:20 AM	
11	8:30 AM			
12	8:30 AM			
13	9:30 AM			
14	9:30 AM			
15		9:45 AM		
16		9:55 AM		
17	10:30 AM			
18	10:30 AM			
19	11:30 AM			
20	11:30 AM			
21			11:35 AM	
22		11:45 AM		
23		11:55 PM	11:55 AM	
24	12:30 PM			
25	12:30 PM			
26		12:45 PM		
27		12:55 PM		
28	1:30 PM			
29	1:30 PM			
30		1:45 PM		
31		1:55 PM		
32			2:20 PM	
33	2:30 PM			
34	2:30 PM			
35		2:45 PM		
36		2:55 PM		
37	3:30 PM			
38	3:30 PM			
39				3:40 PM
40		3:45 PM		
41		4:10 PM		
42		4:45 PM		
43	5:00 PM			
44	5:00 PM			
45		5:10 PM		
46		5:45 PM		
47	6:00 PM			
48	6:00 PM			
49		6:10 PM		
50			6:15 PM	
51		6:45 PM		
52		7:10 PM		
53	7:30 PM			7:30 PM
54		7:45 PM		
55		8:10 PM		
56		8:45 PM		
57				8:55 PM
58		9:10 PM		
59		9:45 PM		
60		10:10 PM		
61		11:10 PM		
62		12:10 AM		
63				12:55 AM
64		1:25 AM		

LEVEL III SITE PLAN APPLICATION
PORTLAND TRANSPORTATION CENTER

WRITTEN SUBMISSION K NATURAL FEATURES

THE SITE IS LOCATED IN AN URBAN AREA, HOWEVER, IT DOES CONTAIN A SIGNIFICANT AREA OF FRESHWATER WETLANDS. UNFORTUNATELY, THE ENTIRE WETLAND AREA WILL BE FILLED IN ORDER TO ACCOMPLISH THE PROPOSED PARKING EXPANSION. THE APPLICANT CONSIDERED ALTERNATIVES, SUCH AS SATELLITE PARKING AREAS, HOWEVER, THEY DID NOT PROVE TO BE VIABLE ALTERNATIVES. THE APPLICANT HAS SUBMITTED AN NRPA PERMIT TO THE MAINE DEP AND US ARMY CORPS FOR THEIR REVIEW.

SEBAGO TECHNICS

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Stormwater Management Report

To:

Maine Department of Environmental Protection

Portland Transportation Center

Thompson's Point Connector
Portland, Maine

Prepared for:
Langdon Street Real Estate
7 Langdon Street
Concord, NH 03301

Prepared by:
Sebago Technics, Inc.
75 John Roberts Road, Suite 1A
South Portland, Maine 04106

February 2018

Table of Contents

Narrative

Attachment A – Water Quality Calculations
Attachment B – Pre-Development Stormwater Modeling
Attachment C – Post-Development Stormwater Modeling
Attachment D – Inspection, Maintenance, and Housekeeping Plan

Stormwater Management Narrative

A. General

This Stormwater Management Plan has been prepared to address the potential impacts associated with the proposed modification in stormwater runoff characteristics for the proposed development at Portland Transportation Center located at Thompson's Point Connector in Portland. The stormwater management controls that are outlined in this plan have been designed to best suit the proposed development and to comply with applicable regulatory requirements to evaluate the pre- and post-development conditions.

The existing development consist of approximately 8.74 acres of impervious areas and associated vegetated areas. Proposed improvements to the site include the construction of paved surfaces for parking and vehicular traffic with the remaining developed area comprised of vegetated side slopes and landscaped areas. The project will result in a net increase in impervious area of 2.86 acres, for a total impervious area of approximately 6.32 acres.

B. Existing Conditions

The site has been developed in the past dating back to 1996. The existing site includes a building totaling 15,600 square feet accessed by paved parking lot located off of Thompson's Point Connector. The remaining developed land consists of paved areas used for vehicular traffic and parking, landscaped areas and a stormwater detention basin.

Runoff from the existing site generally flows from the western side of the property, where the building is located, across the parking lot to the eastern side of the property where the detention pond. For stormwater calculating purposes, runoff was analyzed at two study points where the runoff exits the subject parcel. Study Point 1 (SP-1) is located at the southeastern corner of the property. Runoff at SP-1 leaving the property enters into the Fore River. Study Point 2 (SP-2) is located along Thompson's Point Connector along the north western sideline of the property. Runoff at this location enters into the existing closed storm drain system.

C. Proposed Site Improvements

Proposed improvements involve the construction of paved surfaces for parking and vehicular traffic. The proposed development will increase the total impervious surfaces by approximately 2.86 acres over the existing impervious areas that exist today. With the development of the site, stormwater BMPs will be constructed to treat runoff prior to entering into the existing drainage system. The proposed stormwater BMP, a proposed Subsurface Sand Filter, has been designed to treat stormwater runoff prior to leaving the site. The proposed stormwater BMP has been designed to conform the Maine Department of Environmental Protection's (MeDEP) Chapter 500 Stormwater Standards.

The stormwater management plan was designed so that existing drainage patterns are not significantly altered at the two study points SP-1, and SP-2.

D. Soils

Soil information for the site was obtained via the USDA United States Department of Agriculture and Natural Resources Conservation Service's Web Soil Survey. The Hydrologic Soil Group (HSG) of the site soils are classified by Technical Release TR-55 of the Soil Conservation Service as follows:

Soil Type	Symbol	HSG	Drainage Class
Belgrade	BgB	B	Moderately Well Drained
Belgrade	BgC2	B	Moderately Well Drained
Cut and Fill	Cu	-	Moderately Well Drained
Tidal Marsh	Tm	-	Very Poorly Drained
Water	W	-	

E. Methodology

The stormwater runoff analysis was developed using the "HydroCAD" computer modeling software, which incorporates the TR-55 and TR-20 methodologies as provided by the Soil Conservation Service of the U.S. Department of Agriculture.

The peak runoff rates were calculated using a 24-hour duration storm event with a Type III rainfall distribution. The rainfall amounts for Cumberland for the 2-year, 10-year and 25-year storm events are as follows:

Storm Frequency	24-hr Duration Rainfall (in.)
2-yr	3.10
10-yr	4.60
25-yr	5.80

F. Pre-Development Watershed Model

The pre-development watershed model consists of nine (9) subcatchments.

Subcatchments 1S through 6S, includes a majority of the subject parcel. The area is graded to discharge runoff easterly through a closed storm drain system located on the property to an existing wet pond. Stormwater flows generally from west to east, designated as Study Point 1 (SP-1).

Subcatchments 7S includes portions of the site east of the existing parking lot with runoff that drains to the existing wetland, designated as Study Point 1 (SP-1).

Subcatchments 8S includes a small portions of the site along the northern property line. This area flows to an existing closed drainage system located in Thompson's Point Connector, designated as Study Point 2 (SP-2).

Subcatchments 9S includes a portion of the site in the southwestern corner of the property. This area flows to an existing culvert that discharges directly into the existing wetland, designated as Study Point 1 (SP-1).

G. Post-Development Watershed Model

The post-development watershed model consists of seventeen (17) subcatchments. Modeling reflects on-site ground cover changes to include proposed landscaping and impervious areas associated with the parking lot and associated sidewalks. Existing drainage patterns will be generally maintained with the proposed stormwater design.

Subcatchments 1S through 7S and 9S through 15S includes the existing parking areas, portions of the existing building, the proposed parking areas and proposed landscape areas associated the expansion. The area is graded to discharge runoff through a closed storm drain system to the proposed Subsurface Sand Filter. Stormwater will then flow through proposed closed storm drain system to the existing culvert, designated as Study Point 1 (SP-1).

Subcatchments 8S includes a small portions of the site along the northern property line. This area flows to an existing closed drainage system located in Thompson's Point Connector, designated as Study Point 2 (SP-2).

Subcatchment 16S and 17S includes a portion of the site in the southwestern corner of the property and portions of the existing vegetated side slopes surrounding the property. This area flows to an existing culvert, designated as Study Point 1 (SP-1).

H. Stormwater Quality Management (General Standard)

Runoff from the existing development that was treated in the wet pond, along with the proposed development will be directed to a subsurface sand filter. The subsurface sand filter is designed in general conformance with Section 7.3 of the BMPs Technical Design Manual. An inlet control structure will distribute flow from a 1 inch rain storm evenly to four isolator rows within the system. Through the isolator rows, flow will disperse equally to exterior chambers so that a consistent water level is maintained throughout the entire system. An outlet control structure will be constructed with a weir installed so that storage is provided for at least the first 1 inch of runoff. Additional runoff from larger storm events will be diverted along the easterly side of the system so that additional flow does not impact conditions upstream. Runoff contained in the chambers will first pass through a media for treatment before discharging to the project's closed storm drainage system.

The new impervious surface combined with the existing impervious areas currently being treated in the wet pond would require a total impervious treatment of 246,946 square feet (SF). The new landscape areas combined with the existing landscape areas currently being treated would require a total landscape treatment of 30,974 square feet (SF). Therefore, the proposed development will treat stormwater to a much greater extent than what is actually required to be treated through a strict interpretation of the MeDEP Stormwater Law regulations.

Test pits were observed within the general area of the proposed development. Test pits indicate the presence of groundwater approximately two feet below existing ground level in the lower area adjacent to the proposed subsurface sand filter. Given the existing topography in the area of the proposed parking lot, the proposed subsurface sand filter will be constructed entirely in fill conditions. This will place the bottom of the proposed subsurface sand filter approximately four feet above groundwater table, which is above the elevation requiring an impermeable liner.

Stormwater management design calculations for the Subsurface Sand Filter, and for General Standard compliance, are enclosed as part of **Attachment A**.

I. Stormwater Quantity Management (Flooding Standard)

The following table summarizes the results of stormwater calculations for the design storm events for the project area. Calculations and computer modeling data sheets are provided with this report.

The HydroCAD model predicts increases in estimated peak flow rates during the 10- and 25-year storm events at SP-1. At SP-2 the model predicts that peaks flows remain constant during the 2- and 10-year storms and decreases slightly during the 25-year storm. Stormwater exiting the site will enter into Fore River.

As permitted under Chapter 500 §4.F(3)(a), the project is eligible for a waiver from the Flooding Standard since it is within the direct watershed of a coastal wetland with adequate capacity and the stormwater is conveyed through a piped system directly to Fore River. Fore River, which separates South Portland and Portland, is a direct tributary to Casco Bay. Due to the proximity to Casco Bay and ultimately the Atlantic Ocean, Fore River is subject to tidal influence, as such, there are no anticipated detrimental impacts to downstream receiving structures, drainage channels, or properties. A waiver from the flooding standards has been requested. Please refer to Attachment B and Attachment C for pre- and post-development stormwater modeling.

Stormwater Peak Discharge Summary Table									
Study Point	**2-Year Storm**			**10-Year Storm**			**25-Year Storm**		
	Pre (cfs)	**Post (cfs)**	**Diff. (cfs)**	**Pre (cfs)**	**Post (cfs)**	**Diff. (cfs)**	**Pre (cfs)**	**Post (cfs)**	**Diff. (cfs)**
SP-1	13.03	10.55	-2.48	19.42	39.32	19.90	26.94	59.99	33.05
SP-2	0.17	0.17	0.00	0.39	0.39	0.00	0.59	0.58	-0.01

J. Inspection & Maintenance

Provisions for periodic inspection and maintenance of the subsurface sand filter are included in the Inspection, Maintenance, and Housekeeping Plan included in this section of the application.

K. Summary

An Erosion and Sedimentation Control Plan has been developed using the Maine Department of Environmental Protection's 2015 Erosion and Sediment Control Field Guide for Contractors for the project site placing emphasis on the installation of sedimentation barriers and revegetation to minimize erosion potential from development activities during and after construction. The Erosion Control Plan is incorporated into the design plans and includes the locations of the erosion control provisions (i.e., silt fence, construction entrance) along with a narrative and construction details for reference by the contractor during construction.

The proposed development will include the construction of a Subsurface Sand Filter to which a majority of runoff from impervious and developed areas will be directed. The construction of the Subsurface Sand Filter will provide water quality treatment of stormwater runoff from the site so that the General Standards are satisfied. Increases in post-development peak flow rates during the 10-year, and 25-year storm events are anticipated to have negligible impact on flow characteristics of Fore River, immediately downstream of the site and further downstream.

With incorporation of these measures, no significant impacts to off-site drainage are anticipated due to the development of the property

Prepared by

SEBAGO TECHNICS, INC.

Brandon Blake
Project Engineer

Craig A. Burgess, P.E.
Project Manager

CAB/BJB

Attachment A

Water Quality Calculations

Table 1: MDEP GENERAL STANDARD CALCULATIONS: Portland Transportation Center, Portland, Maine

AREA ID	WATERSHED SIZE (S.F.)	EXISTING IMPERVIOUS AREA (S.F.)	NEW IMPERVIOUS AREA (S.F.)	EXISTING LANDSCAPED AREA (S.F.)	NEW LANDSCAPED AREA (S.F.)	DEVELOPED AREA (S.F.)	UNDEVELOPED AREAS (S.F.)	TREATMENT PROVIDED?	IMPERVIOUS AREA TREATED* (S.F.)	LANDSCAPED AREA TREATED* (S.F.)	DEVELOPED AREA TREATED* (S.F.)	TREATMENT BMP
1S	28,835	23,704	0	2,853	2,278	28,835	0	YES	23,704	5,131	28,835	SSF-1
2S	27,182	17,707	6,306	1,336	1,833	27,182	0	YES	24,013	3,169	27,182	SSF-1
3S	15,213	12,202	0	1,350	1,661	15,213	0	YES	12,202	3,011	15,213	SSF-1
4S	28,840	27,938	0	902	0	28,840	0	YES	27,938	902	28,840	SSF-1
5S	49,425	40,584	66	8,446	329	49,425	0	YES	40,650	3,693	44,343	SSF-1
6S	15,879	0	12,186	0	3,693	15,879	0	YES	12,186	3,693	15,879	SSF-1
7S	7,643	0	7,066	0	577	7,643	0	YES	7,066	577	7,643	SSF-1
8S	7,438	2,242	122	0	5,074	7,438	0	NO	0	0	0	None
9S	12,873	0	12,563	0	310	12,873	0	YES	12,563	310	12,873	SSF-1
10S	16,424	0	15,649	0	775	16,424	0	YES	15,649	775	16,424	SSF-1
11S	14,521	0	13,900	0	621	14,521	0	YES	13,900	621	14,521	SSF-1
12S	9,667	0	9,667	0	0	9,667	0	YES	9,667	0	9,667	SSF-1
13S	12,123	0	10,776	0	1,347	12,123	0	YES	10,776	1,347	12,123	SSF-1
14S	8,897	0	8,240	0	657	8,897	0	YES	8,240	657	8,897	SSF-1
15S	30,398	0	28,392	0	2,006	30,398	0	YES	28,392	2,006	30,398	SSF-1
16S	91,275	892	0	0	0	892	90,383	NO	0	0	0	None
17S**	34,419	25,344	0	9,075	0	34,419	0	NO	0	0	0	None
SUM	**411,052**	**150,613**	**124,933**	**23,962**	**21,161**	**320,669**	**90,383**	-	**246,946**	**25,892**	**272,838**	-

Designations: SSF= Subsurface Sand Filter

***TOTAL IMPERVIOUS AREA (Ac.)**	**250,202**	***TOTAL DEVELOPED AREA (Ac.)**	**286,250**
TOTAL IMPERVIOUS AREA RECEIVING TREATMENT (Ac.)	**246,946**	**TOTAL DEV. AREA RECEIVING TREATMENT (Ac.)**	**272,838**
% OF IMPERVIOUS AREA RECEIVING TREATMENT	**98.7%**	**% OF DEV. AREA RECEIVING TREATMENT**	**95.3%**

*INCLUDES EXISTING IMPERVIOUS AND DEVELOPED AREAS THAT ARE CURRENTLY RECEIVING TREATEMENT

**INCLUDES EXISTING IMPERVIOUS AND DEVELOPED AREAS THAT ARE NOT CURRENTLY RECEIVING TREATEMENT AND WILL NOT RECEIVE TREATMENT IN POST DEVELOPMENT

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JOB			
SHEET NO.	1	OF	1
CALCULATED BY		DATE	1/15/2018
FILE NAME	99607-WQC.xls	PRNT DATE	2/1/2018

UNDERDRAINED SUBSURFACE SAND FILTER-1

Task: Calculate water quality volume per MDEP chapter 500 regulations

References

1. Maine DEP Chapter 500, Section 4.C.(3)(b)
   "must detain a runoff volume equal to 1.0 inch times the subcatchment's impervious area plus 0.4 inch times the subcatchment's landscaped area"
2. Maine DEP Best Management Practices Stormwater Manual, Section 7.3.2
   a. "detain runoff volume equal to 1.0 inch times the subcatchment's impervious area plus 0.4 inch times the subcatchment's landscaped area"
   b. "surface area of the sand filter bed and chamber system must be at least equal to 5% of the impervious area draining to it and 2% of the landscaped area."
   c. "treatment flow rate for the Stormtech Isolator Row is the projected one year peak flow rate for the drainage area feeding the Isolator Row"

Flow rates:

SC-310	0.10	fs/chamber
SC-740	0.20	fs/chamber
DC-780	0.20	fs/chamber
MC-3500	0.30	fs/chamber
Cultech 150XLHD	0.185	fs/chamber
Cultech 330XLHD	0.227	fs/chamber

Tributary to Subsurface Sand Filter

Landscaped Area	30,974	SF	
Impervious Area	246,946	SF	

Minimum Surface Area for sand filter and chamber system

Required (2% X Landscaped + 5%" X Impervious)

Total Landscaped Area	30,974	SF	Area	619.5	SF	
Total Impervious Area	246,946	SF	Area	12,347.3	SF	
Required Minimum Surface Area				12,966.8	SF	
Provided Surface Area				16,932.0	SF	

Treatment Volume

Required (0.4" X Landscaped + 1.0" X Impervious)

Landscaped Area	30,974	SF	Volume	1,032.5				
Impervious Area	246,946	SF	Volume	20,578.8				
Treatment Volume Required				21,611.3	CF	0.496	AF	
Provided Treatment Volume				24,354.0	CF	Elev.= 13.00		

Sediment Pre-Treatment

Per Reference 2.c above

One year flow rate out put from Hydrocad:		14.28	cfs
ISO Row sizing for:	**SC-740**	**0.2**	cfs
Total number of Isolator Row Chambers required:		72	

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JOB	99607		
SHEET NO.	1	OF	1
CALCULATED BY		DATE	1/29/2018
FILE NAME	99607-WQC.xls	PRNT DATE	2/1/2018

ORIFICE SIZING CALCULATION

SUBSURFACE SAND FILTER #1

Orifice Equation $Q = CA\sqrt{(2gh)}$

Q = Rate of Discharge (cfs)
A = Orifice Area (sf)
G = Gravitational Constant (32.2 ft/s^2)
h = Depth of water above the flow line (center) of the orifice (ft)
C = Orifice coefficient (usually assumed = 0.6)

Average discharge rate required to drawdown the treatment volume in a desired amount of time is:

$$Q = \frac{TV}{tCF}$$

T = Treatment Volume (cf)
t = Recovery Time (hrs)
CF = Conversion Factor = 3600 sec/hr

TV = 24,354 cf
t = 24 hr

$$Q = \frac{TV}{tCF} = 0.28 \text{ cfs}$$

surface area of filter = 16,932 SF

h = 1.44 ft

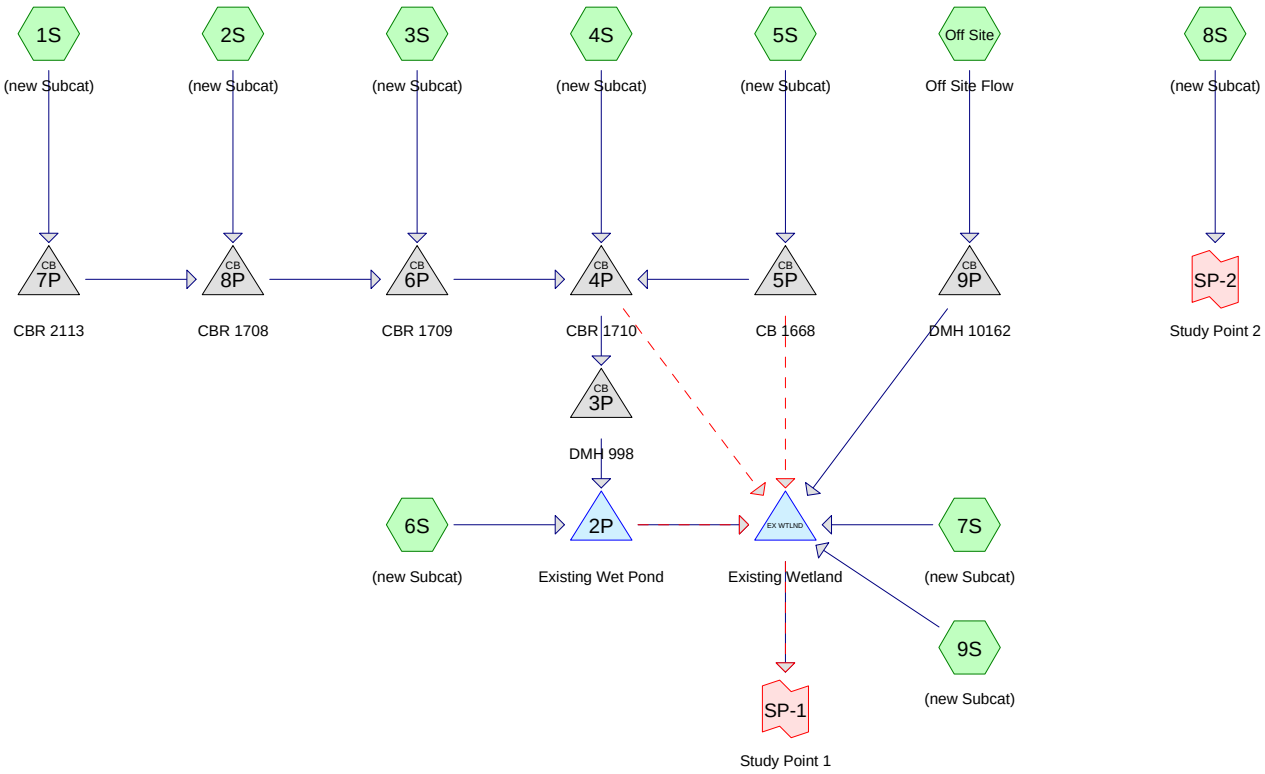
$$A = \frac{Q}{C\sqrt{(2gh)}}$$

A = 0.049 sf = 7.03 sq. in.

Diam = 2.99 in

Attachment B

Pre-Development Stormwater Modeling



Subcat Reach Pond Link

Routing Diagram for 99607 Pre
Prepared by Sebago Techincs, Printed 2/1/2018
HydroCAD® 10.00-18 s/n 01856 © 2016 HydroCAD Software Solutions LLC

Area Listing (all nodes)

Area (sq-ft)	CN	Description (subcatchment-numbers)
492,802	61	>75% Grass cover, Good, HSG B (1S, 2S, 3S, 4S, 5S, 6S, 7S, 8S, 9S, Off Site)
80,663	80	>75% Grass cover, Good, HSG D (6S, 7S)
261,673	98	Paved parking, HSG B (1S, 2S, 3S, 4S, 5S, 8S, 9S, Off Site)
14,924	98	Roofs, HSG B (1S, 2S, 3S, 7S, 9S)
7,169	98	Water Surface, HSG B (7S)
84,579	98	Water Surface, HSG D (6S, 7S)
941,810	**77**	**TOTAL AREA**

Soil Listing (all nodes)

Area (sq-ft)	Soil Group	Subcatchment Numbers
0	HSG A	
776,568	HSG B	1S, 2S, 3S, 4S, 5S, 6S, 7S, 8S, 9S, Off Site
0	HSG C	
165,242	HSG D	6S, 7S
0	Other	
941,810		**TOTAL AREA**

Time span=0.00-48.00 hrs, dt=0.01 hrs, 4801 points x 2
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Dyn-Stor-Ind method - Pond routing by Dyn-Stor-Ind method

Subcatchment 1S: (new Subcat) Runoff Area=28,467 sf 89.98% Impervious Runoff Depth=2.45"
Flow Length=126' Slope=0.0100 '/' Tc=6.0 min CN=94 Runoff=1.80 cfs 5,805 cf

Subcatchment 2S: (new Subcat) Runoff Area=19,045 sf 92.99% Impervious Runoff Depth=2.55"
Flow Length=173' Slope=0.0150 '/' Tc=6.0 min CN=95 Runoff=1.24 cfs 4,042 cf

Subcatchment 3S: (new Subcat) Runoff Area=21,460 sf 93.71% Impervious Runoff Depth=2.65"
Flow Length=190' Slope=0.0150 '/' Tc=6.0 min CN=96 Runoff=1.43 cfs 4,740 cf

Subcatchment 4S: (new Subcat) Runoff Area=29,131 sf 96.64% Impervious Runoff Depth=2.76"
Flow Length=223' Slope=0.0150 '/' Tc=6.0 min CN=97 Runoff=1.98 cfs 6,694 cf

Subcatchment 5S: (new Subcat) Runoff Area=49,032 sf 82.77% Impervious Runoff Depth=2.26"
Flow Length=281' Slope=0.0150 '/' Tc=6.0 min CN=92 Runoff=2.91 cfs 9,217 cf

Subcatchment 6S: (new Subcat) Runoff Area=8,204 sf 38.65% Impervious Runoff Depth=1.33"
Flow Length=48' Slope=0.2500 '/' Tc=6.0 min CN=80 Runoff=0.29 cfs 906 cf

Subcatchment 7S: (new Subcat) Runoff Area=213,488 sf 41.94% Impervious Runoff Depth=1.60"
Flow Length=306' Tc=6.3 min CN=84 Runoff=9.09 cfs 28,446 cf

Subcatchment 8S: (new Subcat) Runoff Area=7,806 sf 28.72% Impervious Runoff Depth=0.87"
Flow Length=49' Slope=0.0800 '/' Tc=6.0 min CN=72 Runoff=0.17 cfs 565 cf

Subcatchment 9S: (new Subcat) Runoff Area=34,419 sf 73.63% Impervious Runoff Depth=1.91"
Flow Length=144' Slope=0.0200 '/' Tc=6.0 min CN=88 Runoff=1.76 cfs 5,471 cf

Subcatchment Off Site: Off Site Flow Runoff Area=530,758 sf 21.83% Impervious Runoff Depth=0.72"
Flow Length=722' Slope=0.0200 '/' Tc=12.2 min CN=69 Runoff=7.21 cfs 32,021 cf

Pond 2P: Existing Wet Pond Peak Elev=14.61' Storage=8,947 cf Inflow=8.75 cfs 30,609 cf
Primary=5.59 cfs 26,082 cf Secondary=0.48 cfs 176 cf Outflow=6.07 cfs 26,257 cf

Pond 3P: DMH 998 Peak Elev=15.55' Inflow=8.47 cfs 29,703 cf
18.0" Round Culvert n=0.013 L=76.0' S=0.0120 '/' Outflow=8.47 cfs 29,703 cf

Pond 4P: CBR 1710 Peak Elev=16.65' Inflow=8.47 cfs 29,703 cf
Primary=8.47 cfs 29,703 cf Secondary=0.01 cfs 0 cf Outflow=8.47 cfs 29,703 cf

Pond 5P: CB 1668 Peak Elev=21.03' Inflow=2.91 cfs 9,217 cf
Primary=2.03 cfs 8,422 cf Secondary=0.88 cfs 795 cf Outflow=2.91 cfs 9,217 cf

Pond 6P: CBR 1709 Peak Elev=17.13' Inflow=4.46 cfs 14,587 cf
18.0" Round Culvert n=0.013 L=48.0' S=0.0029 '/' Outflow=4.46 cfs 14,587 cf

Pond 7P: CBR 2113 Peak Elev=23.84' Inflow=1.80 cfs 5,805 cf
12.0" Round Culvert n=0.013 L=144.0' S=0.0119 '/' Outflow=1.80 cfs 5,805 cf

Pond 8P: CBR 1708 Peak Elev=17.57' Inflow=3.04 cfs 9,847 cf
18.0" Round Culvert n=0.013 L=93.0' S=0.0100 '/' Outflow=3.04 cfs 9,847 cf

Pond 9P: DMH 10162 Peak Elev=10.14' Inflow=7.21 cfs 32,021 cf
42.0" Round Culvert n=0.011 L=115.0' S=0.0090 '/' Outflow=7.21 cfs 32,021 cf

Pond EX WTLND: Existing Wetland Peak Elev=6.50' Storage=9,817 cf Inflow=22.58 cfs 92,990 cf
Primary=13.03 cfs 93,032 cf Secondary=0.00 cfs 0 cf Outflow=13.03 cfs 93,032 cf

Link SP-1: Study Point 1 Inflow=13.03 cfs 93,032 cf
Primary=13.03 cfs 93,032 cf

Link SP-2: Study Point 2 Inflow=0.17 cfs 565 cf
Primary=0.17 cfs 565 cf

Total Runoff Area = 941,810 sf Runoff Volume = 97,907 cf Average Runoff Depth = 1.25"
60.89% Pervious = 573,465 sf 39.11% Impervious = 368,345 sf

Time span=0.00-48.00 hrs, dt=0.01 hrs, 4801 points x 2
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Dyn-Stor-Ind method - Pond routing by Dyn-Stor-Ind method

Subcatchment 1S: (new Subcat) Runoff Area=28,467 sf 89.98% Impervious Runoff Depth=3.91"
Flow Length=126' Slope=0.0100 '/' Tc=6.0 min CN=94 Runoff=2.80 cfs 9,284 cf

Subcatchment 2S: (new Subcat) Runoff Area=19,045 sf 92.99% Impervious Runoff Depth=4.02"
Flow Length=173' Slope=0.0150 '/' Tc=6.0 min CN=95 Runoff=1.90 cfs 6,386 cf

Subcatchment 3S: (new Subcat) Runoff Area=21,460 sf 93.71% Impervious Runoff Depth=4.14"
Flow Length=190' Slope=0.0150 '/' Tc=6.0 min CN=96 Runoff=2.17 cfs 7,395 cf

Subcatchment 4S: (new Subcat) Runoff Area=29,131 sf 96.64% Impervious Runoff Depth=4.25"
Flow Length=223' Slope=0.0150 '/' Tc=6.0 min CN=97 Runoff=2.98 cfs 10,314 cf

Subcatchment 5S: (new Subcat) Runoff Area=49,032 sf 82.77% Impervious Runoff Depth=3.70"
Flow Length=281' Slope=0.0150 '/' Tc=6.0 min CN=92 Runoff=4.66 cfs 15,115 cf

Subcatchment 6S: (new Subcat) Runoff Area=8,204 sf 38.65% Impervious Runoff Depth=2.55"
Flow Length=48' Slope=0.2500 '/' Tc=6.0 min CN=80 Runoff=0.56 cfs 1,741 cf

Subcatchment 7S: (new Subcat) Runoff Area=213,488 sf 41.94% Impervious Runoff Depth=2.91"
Flow Length=306' Tc=6.3 min CN=84 Runoff=16.47 cfs 51,713 cf

Subcatchment 8S: (new Subcat) Runoff Area=7,806 sf 28.72% Impervious Runoff Depth=1.89"
Flow Length=49' Slope=0.0800 '/' Tc=6.0 min CN=72 Runoff=0.39 cfs 1,232 cf

Subcatchment 9S: (new Subcat) Runoff Area=34,419 sf 73.63% Impervious Runoff Depth=3.29"
Flow Length=144' Slope=0.0200 '/' Tc=6.0 min CN=88 Runoff=2.99 cfs 9,438 cf

Subcatchment Off Site: Off Site Flow Runoff Area=530,758 sf 21.83% Impervious Runoff Depth=1.67"
Flow Length=722' Slope=0.0200 '/' Tc=12.2 min CN=69 Runoff=18.76 cfs 73,952 cf

Pond 2P: Existing Wet Pond Peak Elev=14.86' Storage=9,875 cf Inflow=10.63 cfs 47,480 cf
Primary=6.46 cfs 40,990 cf Secondary=2.77 cfs 2,137 cf Outflow=9.23 cfs 43,128 cf

Pond 3P: DMH 998 Peak Elev=16.23' Inflow=10.07 cfs 45,739 cf
18.0" Round Culvert n=0.013 L=76.0' S=0.0120 '/' Outflow=10.07 cfs 45,739 cf

Pond 4P: CBR 1710 Peak Elev=17.59' Inflow=12.83 cfs 46,700 cf
Primary=10.07 cfs 45,739 cf Secondary=2.76 cfs 961 cf Outflow=12.83 cfs 46,700 cf

Pond 5P: CB 1668 Peak Elev=21.19' Inflow=4.66 cfs 15,115 cf
Primary=2.96 cfs 13,320 cf Secondary=1.70 cfs 1,795 cf Outflow=4.66 cfs 15,115 cf

Pond 6P: CBR 1709 Peak Elev=18.25' Inflow=6.88 cfs 23,065 cf
18.0" Round Culvert n=0.013 L=48.0' S=0.0029 '/' Outflow=6.88 cfs 23,065 cf

Pond 7P: CBR 2113 Peak Elev=24.16' Inflow=2.80 cfs 9,284 cf
12.0" Round Culvert n=0.013 L=144.0' S=0.0119 '/' Outflow=2.80 cfs 9,284 cf

Pond 8P: CBR 1708 Peak Elev=18.59' Inflow=4.71 cfs 15,670 cf
18.0" Round Culvert n=0.013 L=93.0' S=0.0100 '/' Outflow=4.71 cfs 15,670 cf

Pond 9P: DMH 10162 Peak Elev=10.79' Inflow=18.76 cfs 73,952 cf
42.0" Round Culvert n=0.011 L=115.0' S=0.0090 '/' Outflow=18.76 cfs 73,952 cf

Pond EX WTLND: Existing Wetland Peak Elev=6.93' Storage=33,508 cf Inflow=47.28 cfs 180,987 cf
Primary=19.42 cfs 181,011 cf Secondary=0.00 cfs 0 cf Outflow=19.42 cfs 181,011 cf

Link SP-1: Study Point 1 Inflow=19.42 cfs 181,011 cf
Primary=19.42 cfs 181,011 cf

Link SP-2: Study Point 2 Inflow=0.39 cfs 1,232 cf
Primary=0.39 cfs 1,232 cf

Total Runoff Area = 941,810 sf Runoff Volume = 186,571 cf Average Runoff Depth = 2.38"
60.89% Pervious = 573,465 sf 39.11% Impervious = 368,345 sf

Time span=0.00-48.00 hrs, dt=0.01 hrs, 4801 points x 2
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Dyn-Stor-Ind method - Pond routing by Dyn-Stor-Ind method

Subcatchment 1S: (new Subcat) Runoff Area=28,467 sf 89.98% Impervious Runoff Depth=5.10"
Flow Length=126' Slope=0.0100 '/' Tc=6.0 min CN=94 Runoff=3.60 cfs 12,095 cf

Subcatchment 2S: (new Subcat) Runoff Area=19,045 sf 92.99% Impervious Runoff Depth=5.21"
Flow Length=173' Slope=0.0150 '/' Tc=6.0 min CN=95 Runoff=2.43 cfs 8,273 cf

Subcatchment 3S: (new Subcat) Runoff Area=21,460 sf 93.71% Impervious Runoff Depth=5.33"
Flow Length=190' Slope=0.0150 '/' Tc=6.0 min CN=96 Runoff=2.76 cfs 9,529 cf

Subcatchment 4S: (new Subcat) Runoff Area=29,131 sf 96.64% Impervious Runoff Depth=5.44"
Flow Length=223' Slope=0.0150 '/' Tc=6.0 min CN=97 Runoff=3.78 cfs 13,217 cf

Subcatchment 5S: (new Subcat) Runoff Area=49,032 sf 82.77% Impervious Runoff Depth=4.87"
Flow Length=281' Slope=0.0150 '/' Tc=6.0 min CN=92 Runoff=6.04 cfs 19,911 cf

Subcatchment 6S: (new Subcat) Runoff Area=8,204 sf 38.65% Impervious Runoff Depth=3.60"
Flow Length=48' Slope=0.2500 '/' Tc=6.0 min CN=80 Runoff=0.79 cfs 2,462 cf

Subcatchment 7S: (new Subcat) Runoff Area=213,488 sf 41.94% Impervious Runoff Depth=4.01"
Flow Length=306' Tc=6.3 min CN=84 Runoff=22.50 cfs 71,335 cf

Subcatchment 8S: (new Subcat) Runoff Area=7,806 sf 28.72% Impervious Runoff Depth=2.83"
Flow Length=49' Slope=0.0800 '/' Tc=6.0 min CN=72 Runoff=0.59 cfs 1,841 cf

Subcatchment 9S: (new Subcat) Runoff Area=34,419 sf 73.63% Impervious Runoff Depth=4.43"
Flow Length=144' Slope=0.0200 '/' Tc=6.0 min CN=88 Runoff=3.98 cfs 12,716 cf

Subcatchment Off Site: Off Site Flow Runoff Area=530,758 sf 21.83% Impervious Runoff Depth=2.56"
Flow Length=722' Slope=0.0200 '/' Tc=12.2 min CN=69 Runoff=29.44 cfs 113,111 cf

Pond 2P: Existing Wet Pond Peak Elev=14.95' Storage=10,235 cf Inflow=11.98 cfs 60,344 cf
Primary=6.78 cfs 51,984 cf Secondary=3.95 cfs 4,008 cf Outflow=10.73 cfs 55,992 cf

Pond 3P: DMH 998 Peak Elev=16.70' Inflow=11.19 cfs 57,882 cf
18.0" Round Culvert n=0.013 L=76.0' S=0.0120 '/' Outflow=11.19 cfs 57,882 cf

Pond 4P: CBR 1710 Peak Elev=18.41' Inflow=16.24 cfs 60,292 cf
Primary=11.19 cfs 57,882 cf Secondary=5.05 cfs 2,410 cf Outflow=16.24 cfs 60,292 cf

Pond 5P: CB 1668 Peak Elev=21.29' Inflow=6.04 cfs 19,911 cf
Primary=3.66 cfs 17,177 cf Secondary=2.38 cfs 2,733 cf Outflow=6.04 cfs 19,911 cf

Pond 6P: CBR 1709 Peak Elev=19.46' Inflow=8.79 cfs 29,897 cf
18.0" Round Culvert n=0.013 L=48.0' S=0.0029 '/' Outflow=8.79 cfs 29,897 cf

Pond 7P: CBR 2113 Peak Elev=24.51' Inflow=3.60 cfs 12,095 cf
12.0" Round Culvert n=0.013 L=144.0' S=0.0119 '/' Outflow=3.60 cfs 12,095 cf

Pond 8P: CBR 1708 Peak Elev=20.04' Inflow=6.03 cfs 20,369 cf
18.0" Round Culvert n=0.013 L=93.0' S=0.0100 '/' Outflow=6.03 cfs 20,369 cf

Pond 9P: DMH 10162 Peak Elev=11.28' Inflow=29.44 cfs 113,111 cf
42.0" Round Culvert n=0.011 L=115.0' S=0.0090 '/' Outflow=29.44 cfs 113,111 cf

Pond EX WTLND: Existing Wetland Peak Elev=7.21' Storage=55,362 cf Inflow=68.25 cfs 258,297 cf
Primary=23.88 cfs 253,608 cf Secondary=3.06 cfs 4,695 cf Outflow=26.94 cfs 258,303 cf

Link SP-1: Study Point 1 Inflow=26.94 cfs 258,303 cf
Primary=26.94 cfs 258,303 cf

Link SP-2: Study Point 2 Inflow=0.59 cfs 1,841 cf
Primary=0.59 cfs 1,841 cf

Total Runoff Area = 941,810 sf Runoff Volume = 264,491 cf Average Runoff Depth = 3.37"
60.89% Pervious = 573,465 sf 39.11% Impervious = 368,345 sf

Summary for Subcatchment 1S: (new Subcat)

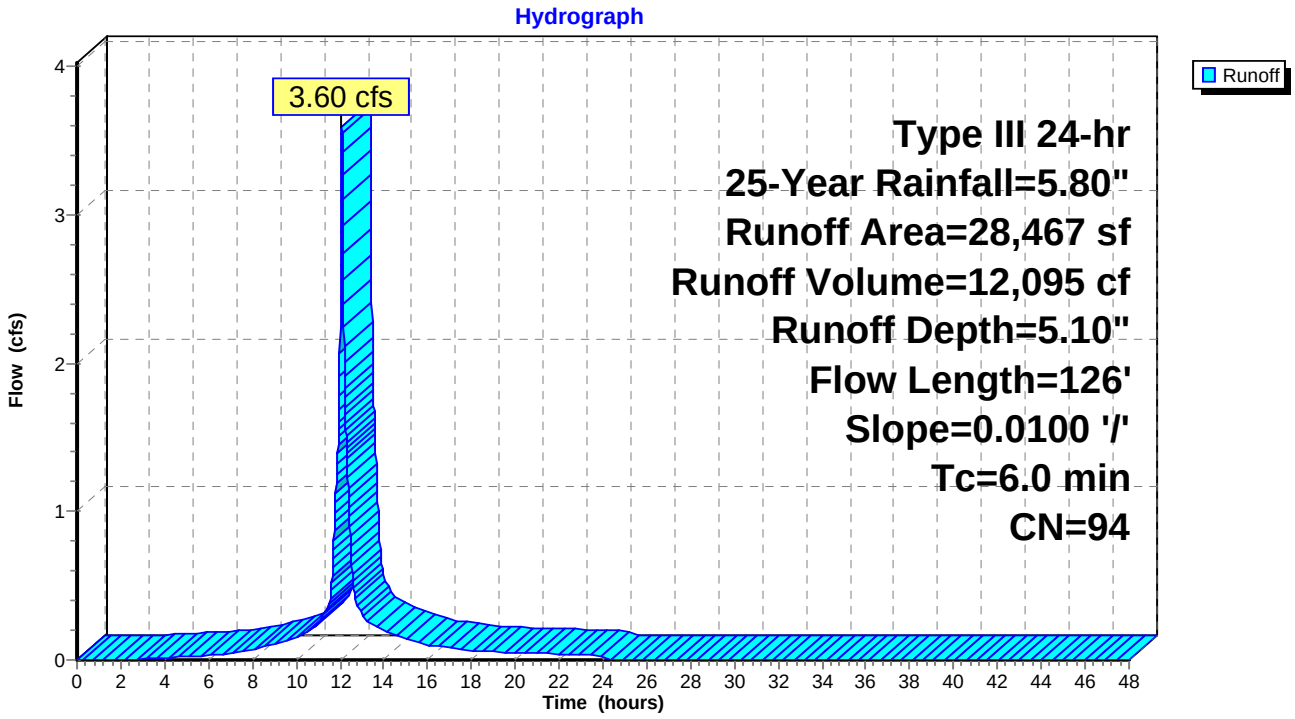
Runoff = 3.60 cfs @ 12.08 hrs, Volume= 12,095 cf, Depth= 5.10"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Type III 24-hr 25-Year Rainfall=5.80"

Area (sf)	CN	Description
4,290	98	Roofs, HSG B
21,324	98	Paved parking, HSG B
2,853	61	>75% Grass cover, Good, HSG B
28,467	94	Weighted Average
2,853		10.02% Pervious Area
25,614		89.98% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.6	100	0.0100	1.03		**Sheet Flow,** Smooth surfaces n= 0.011 P2= 3.10"
0.2	26	0.0100	2.03		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
4.2					**Direct Entry,**
6.0	126	Total			

Subcatchment 1S: (new Subcat)



Summary for Subcatchment 2S: (new Subcat)

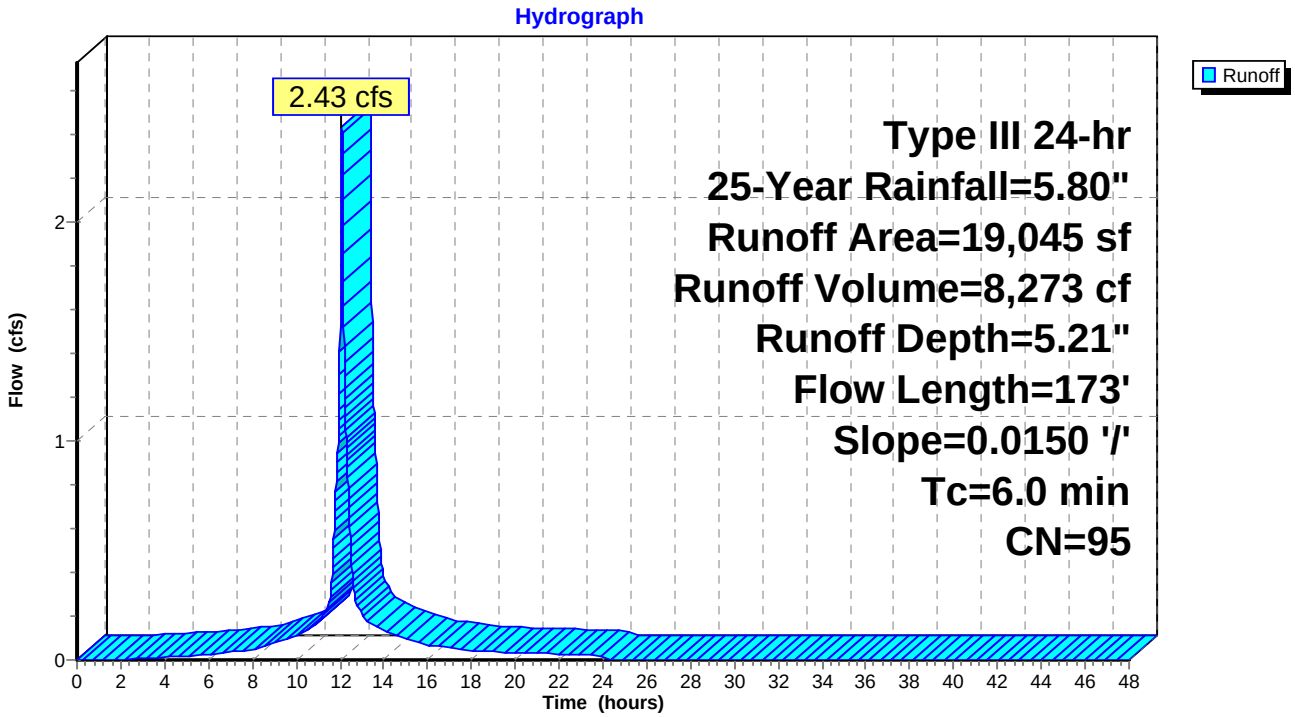
Runoff = 2.43 cfs @ 12.08 hrs, Volume= 8,273 cf, Depth= 5.21"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Type III 24-hr 25-Year Rainfall=5.80"

Area (sf)	CN	Description
1,615	98	Roofs, HSG B
16,094	98	Paved parking, HSG B
1,336	61	>75% Grass cover, Good, HSG B
19,045	95	Weighted Average
1,336		7.01% Pervious Area
17,709		92.99% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.4	100	0.0150	1.21		**Sheet Flow,** Smooth surfaces n= 0.011 P2= 3.10"
0.5	73	0.0150	2.49		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
4.1					**Direct Entry,**
6.0	173	Total			

Subcatchment 2S: (new Subcat)



Summary for Subcatchment 3S: (new Subcat)

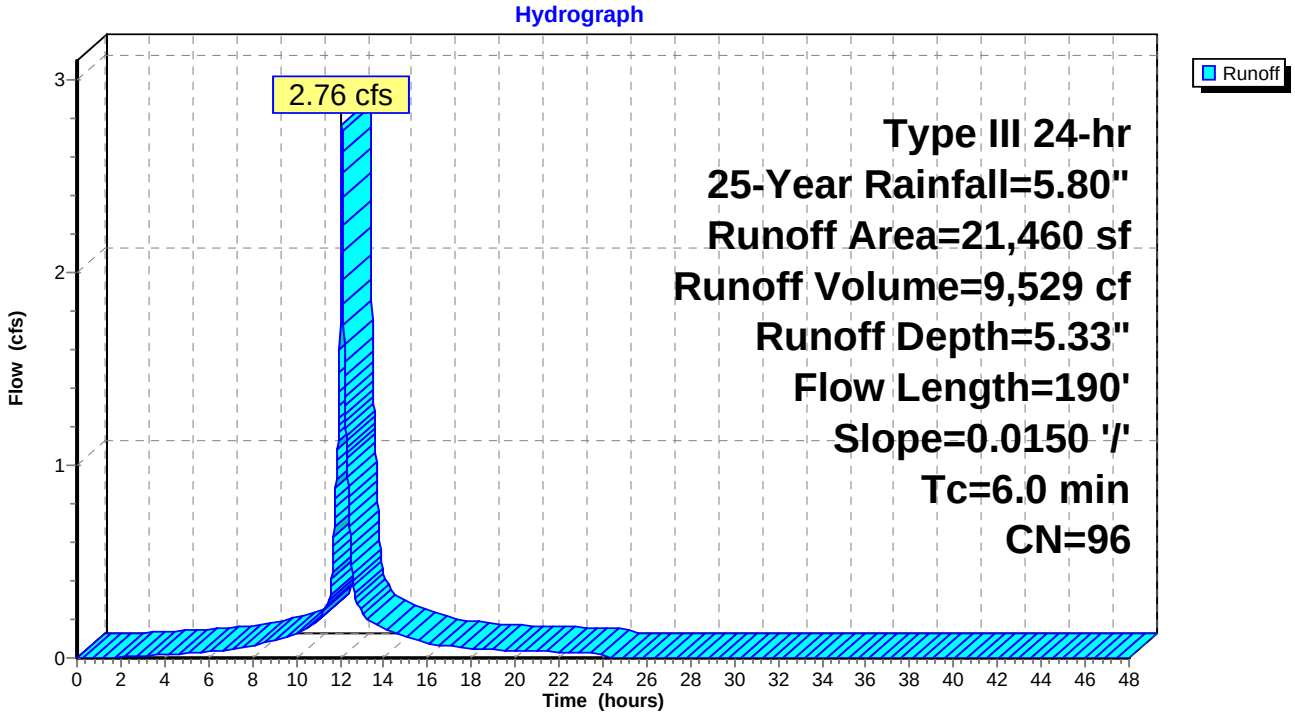
Runoff = 2.76 cfs @ 12.08 hrs, Volume= 9,529 cf, Depth= 5.33"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Type III 24-hr 25-Year Rainfall=5.80"

Area (sf)	CN	Description
259	98	Roofs, HSG B
19,851	98	Paved parking, HSG B
1,350	61	>75% Grass cover, Good, HSG B
21,460	96	Weighted Average
1,350		6.29% Pervious Area
20,110		93.71% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.4	100	0.0150	1.21		**Sheet Flow,** Smooth surfaces n= 0.011 P2= 3.10"
0.6	90	0.0150	2.49		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
4.0					**Direct Entry,**
6.0	190	Total			

Subcatchment 3S: (new Subcat)



Summary for Subcatchment 4S: (new Subcat)

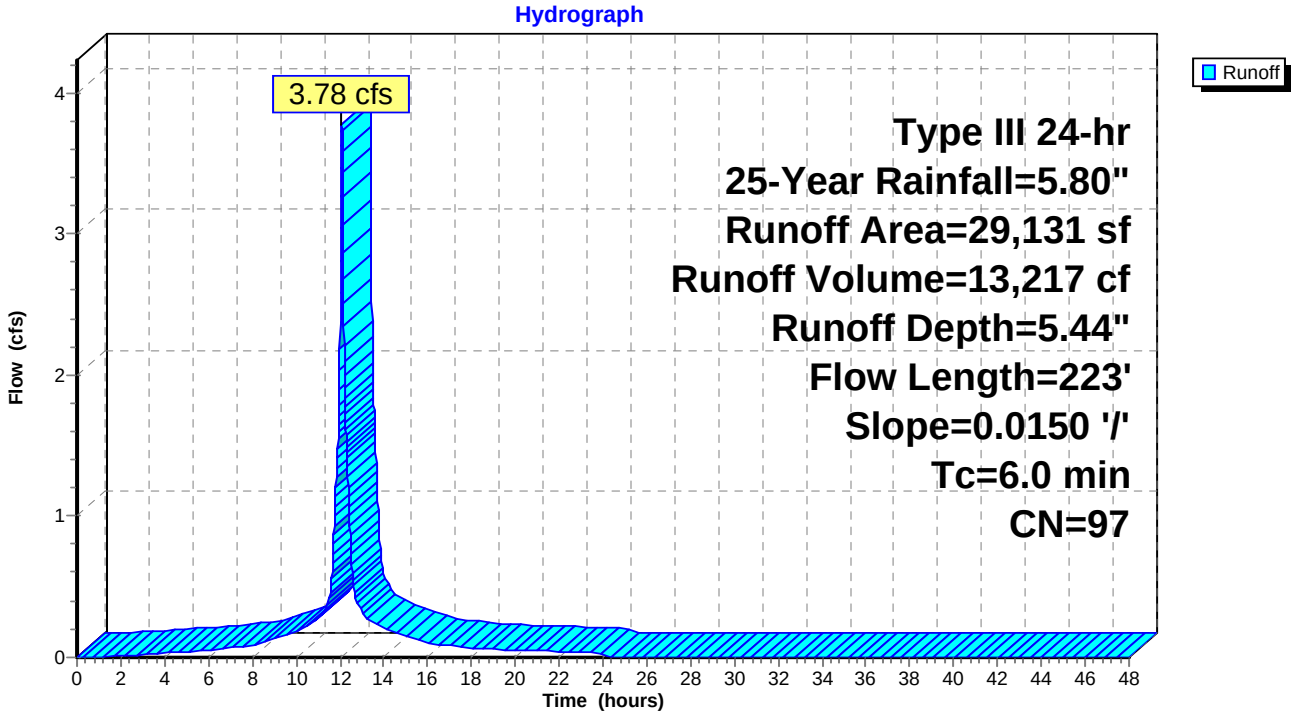
Runoff = 3.78 cfs @ 12.08 hrs, Volume= 13,217 cf, Depth= 5.44"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Type III 24-hr 25-Year Rainfall=5.80"

Area (sf)	CN	Description
28,151	98	Paved parking, HSG B
980	61	>75% Grass cover, Good, HSG B
29,131	97	Weighted Average
980		3.36% Pervious Area
28,151		96.64% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.4	100	0.0150	1.21		**Sheet Flow,** Smooth surfaces n= 0.011 P2= 3.10"
0.8	123	0.0150	2.49		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
3.8					**Direct Entry,**
6.0	223	Total			

Subcatchment 4S: (new Subcat)



Summary for Subcatchment 5S: (new Subcat)

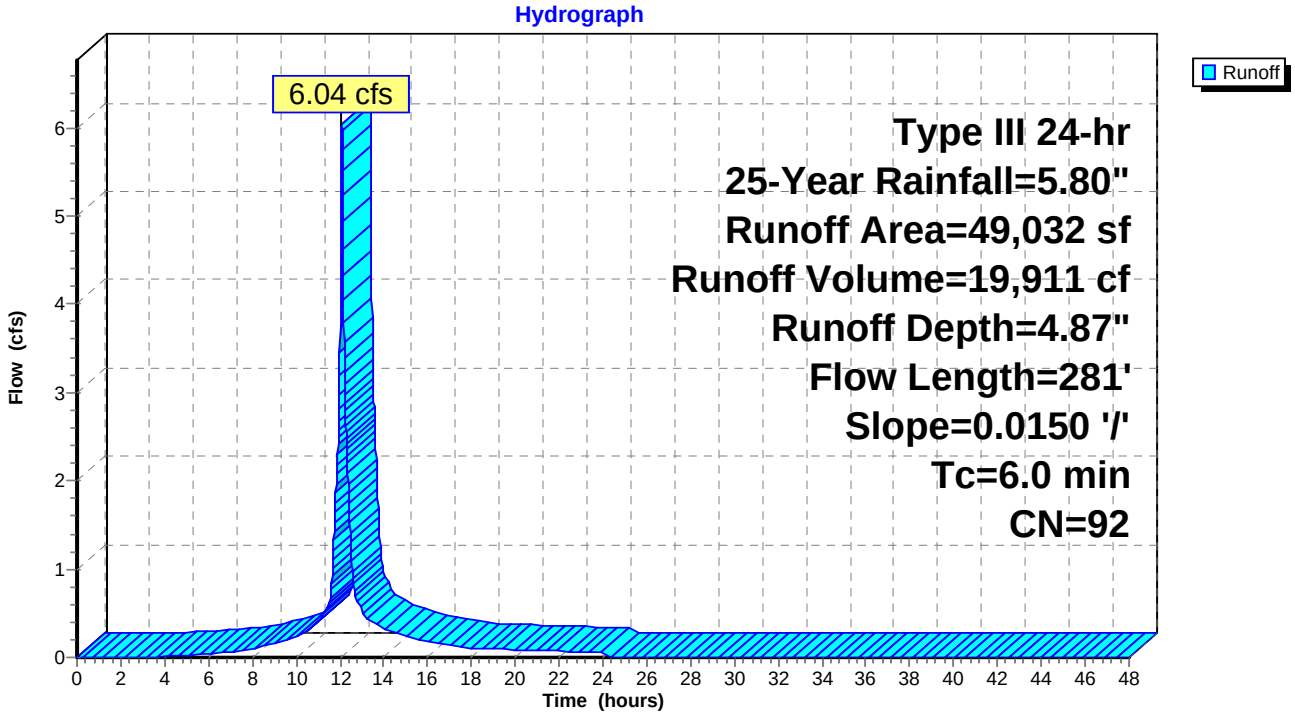
Runoff = 6.04 cfs @ 12.08 hrs, Volume= 19,911 cf, Depth= 4.87"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Type III 24-hr 25-Year Rainfall=5.80"

Area (sf)	CN	Description
40,586	98	Paved parking, HSG B
8,446	61	>75% Grass cover, Good, HSG B
49,032	92	Weighted Average
8,446		17.23% Pervious Area
40,586		82.77% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.4	100	0.0150	1.21		**Sheet Flow,** Smooth surfaces n= 0.011 P2= 3.10"
1.2	181	0.0150	2.49		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
3.4					**Direct Entry,**
6.0	281	Total			

Subcatchment 5S: (new Subcat)



Summary for Subcatchment 6S: (new Subcat)

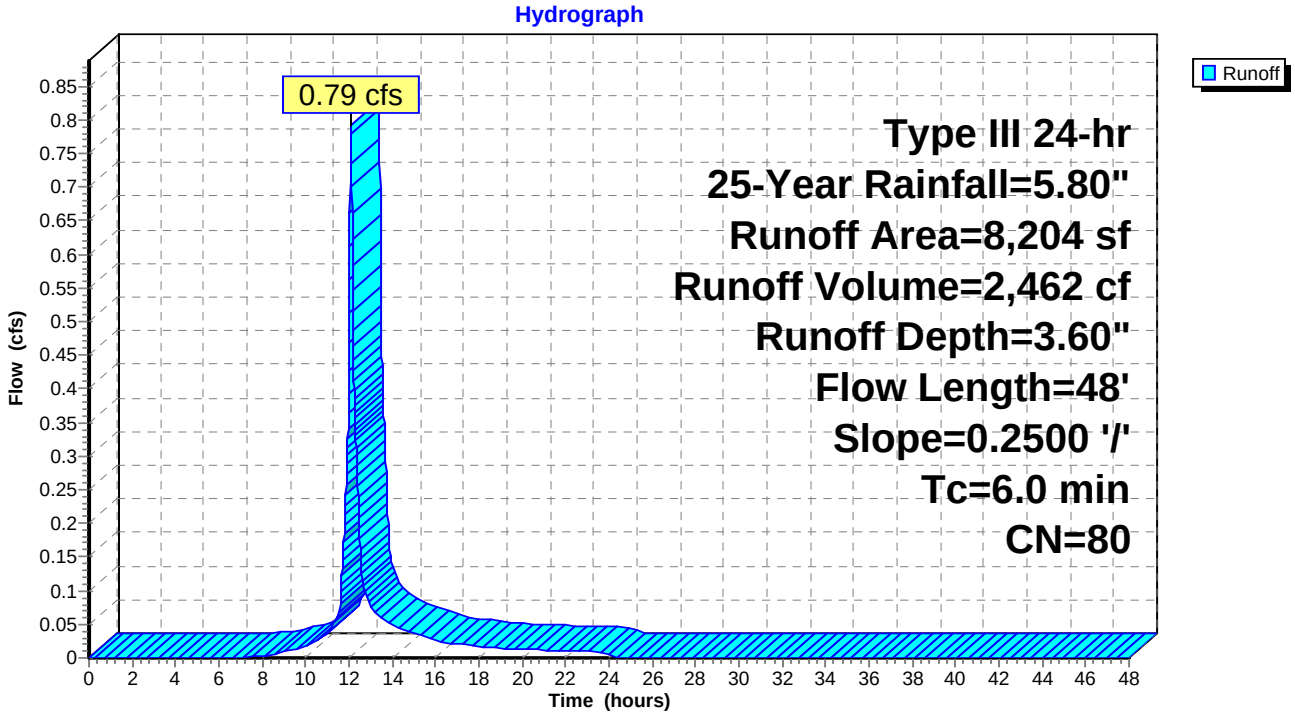
Runoff = 0.79 cfs @ 12.09 hrs, Volume= 2,462 cf, Depth= 3.60"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Type III 24-hr 25-Year Rainfall=5.80"

Area (sf)	CN	Description
3,041	61	>75% Grass cover, Good, HSG B
1,992	80	>75% Grass cover, Good, HSG D
3,171	98	Water Surface, HSG D
8,204	80	Weighted Average
5,033		61.35% Pervious Area
3,171		38.65% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
2.0	48	0.2500	0.40		**Sheet Flow,** Grass: Short n= 0.150 P2= 3.10"
4.0					**Direct Entry,**
6.0	48	Total			

Subcatchment 6S: (new Subcat)



Summary for Subcatchment 7S: (new Subcat)

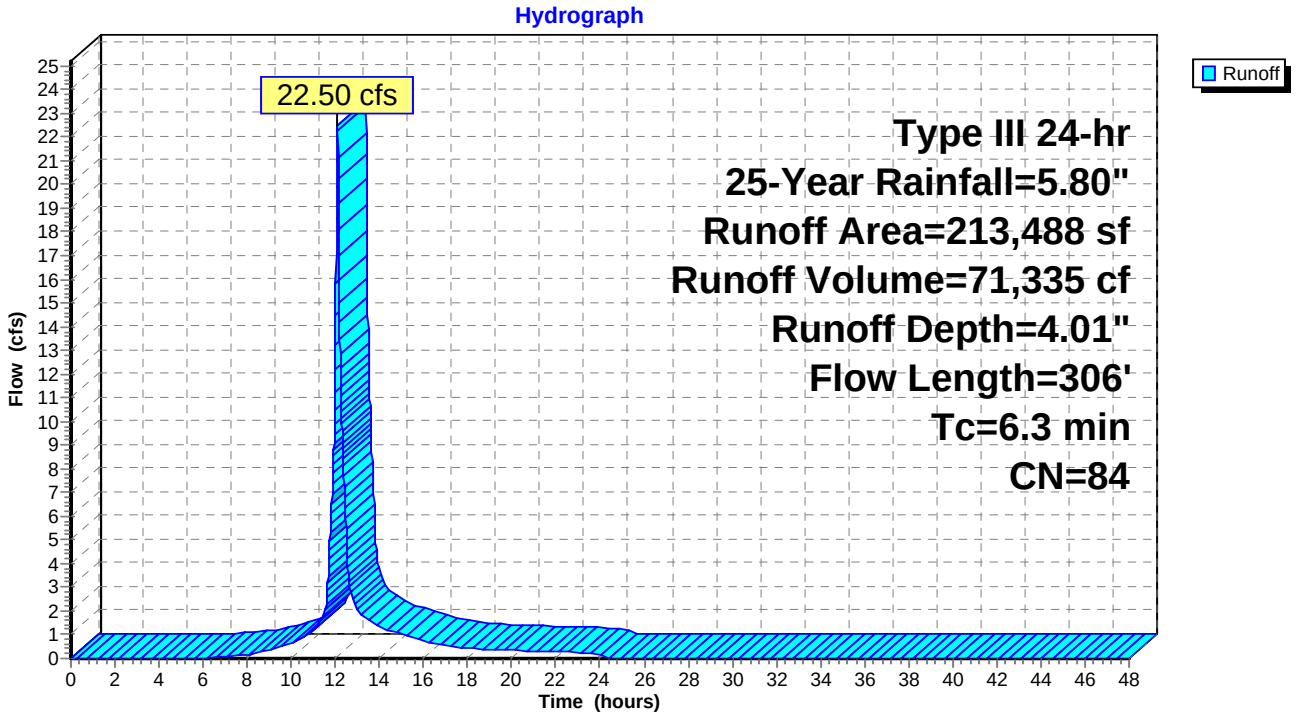
Runoff = 22.50 cfs @ 12.09 hrs, Volume= 71,335 cf, Depth= 4.01"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Type III 24-hr 25-Year Rainfall=5.80"

Area (sf)	CN	Description
45,283	61	>75% Grass cover, Good, HSG B
78,671	80	>75% Grass cover, Good, HSG D
7,169	98	Water Surface, HSG B
81,408	98	Water Surface, HSG D
957	98	Roofs, HSG B
213,488	84	Weighted Average
123,954		58.06% Pervious Area
89,534		41.94% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.3	71	0.0490	0.22		**Sheet Flow,** Grass: Short n= 0.150 P2= 3.10"
0.2	44	0.4300	4.59		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
0.8	191	0.0100	4.15	45.69	**Trap/Vee/Rect Channel Flow,** Bot.W=8.00' D=1.00' Z= 3.0 '/' Top.W=14.00' n= 0.030 Earth, grassed & winding
6.3	306	Total			

Subcatchment 7S: (new Subcat)



Summary for Subcatchment 8S: (new Subcat)

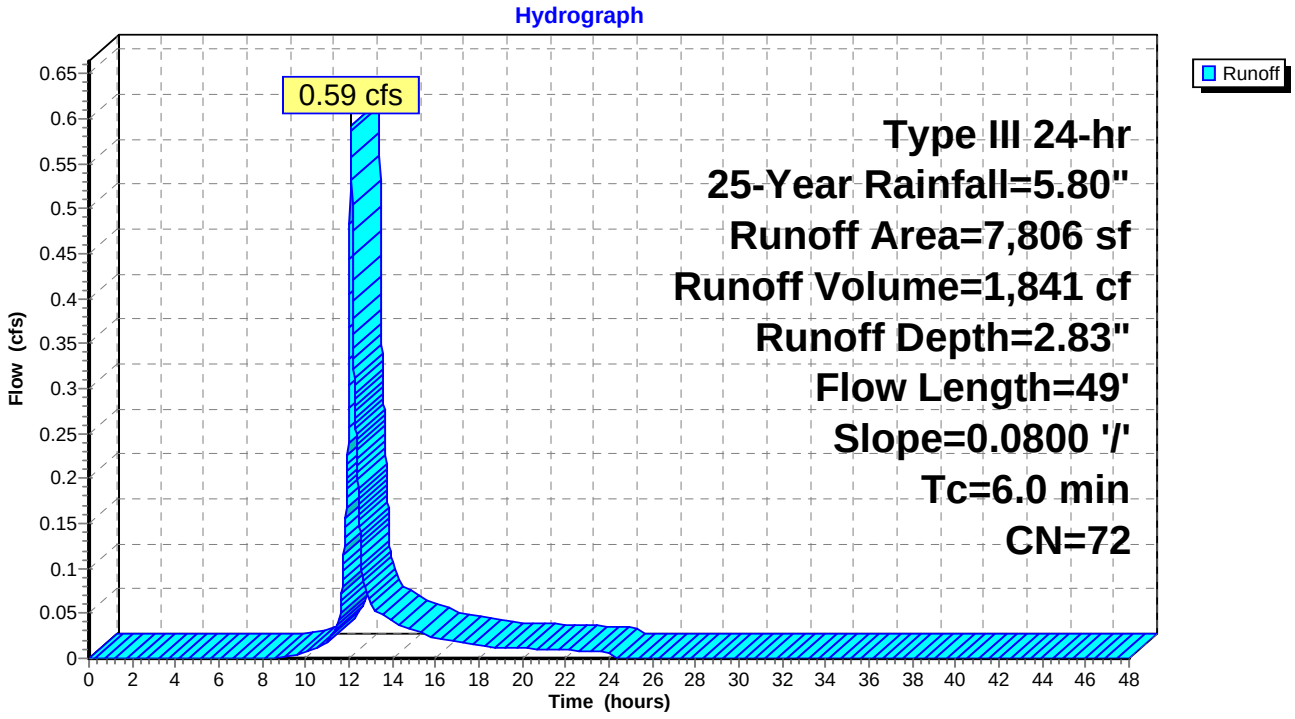
Runoff = 0.59 cfs @ 12.09 hrs, Volume= 1,841 cf, Depth= 2.83"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Type III 24-hr 25-Year Rainfall=5.80"

Area (sf)	CN	Description
2,242	98	Paved parking, HSG B
5,564	61	>75% Grass cover, Good, HSG B
7,806	72	Weighted Average
5,564		71.28% Pervious Area
2,242		28.72% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
3.2	49	0.0800	0.25		**Sheet Flow,** Grass: Short n= 0.150 P2= 3.10"
2.8					**Direct Entry,**
6.0	49	Total			

Subcatchment 8S: (new Subcat)



Summary for Subcatchment 9S: (new Subcat)

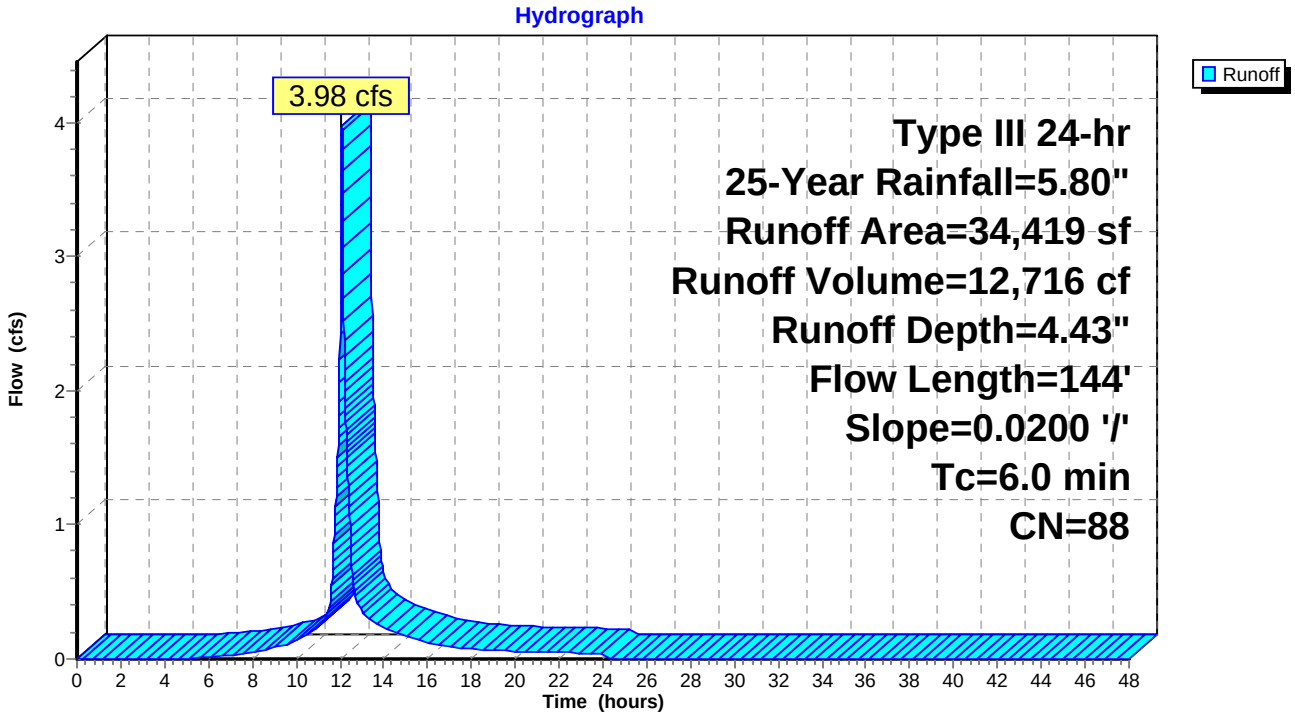
Runoff = 3.98 cfs @ 12.09 hrs, Volume= 12,716 cf, Depth= 4.43"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Type III 24-hr 25-Year Rainfall=5.80"

Area (sf)	CN	Description
17,541	98	Paved parking, HSG B
7,803	98	Roofs, HSG B
9,075	61	>75% Grass cover, Good, HSG B
34,419	88	Weighted Average
9,075		26.37% Pervious Area
25,344		73.63% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.2	100	0.0200	1.35		**Sheet Flow,** Smooth surfaces n= 0.011 P2= 3.10"
0.1	20	0.0200	2.87		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
0.4	24	0.0200	0.99		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
4.3					**Direct Entry,**
6.0	144	Total			

Subcatchment 9S: (new Subcat)



Summary for Subcatchment Off Site: Off Site Flow

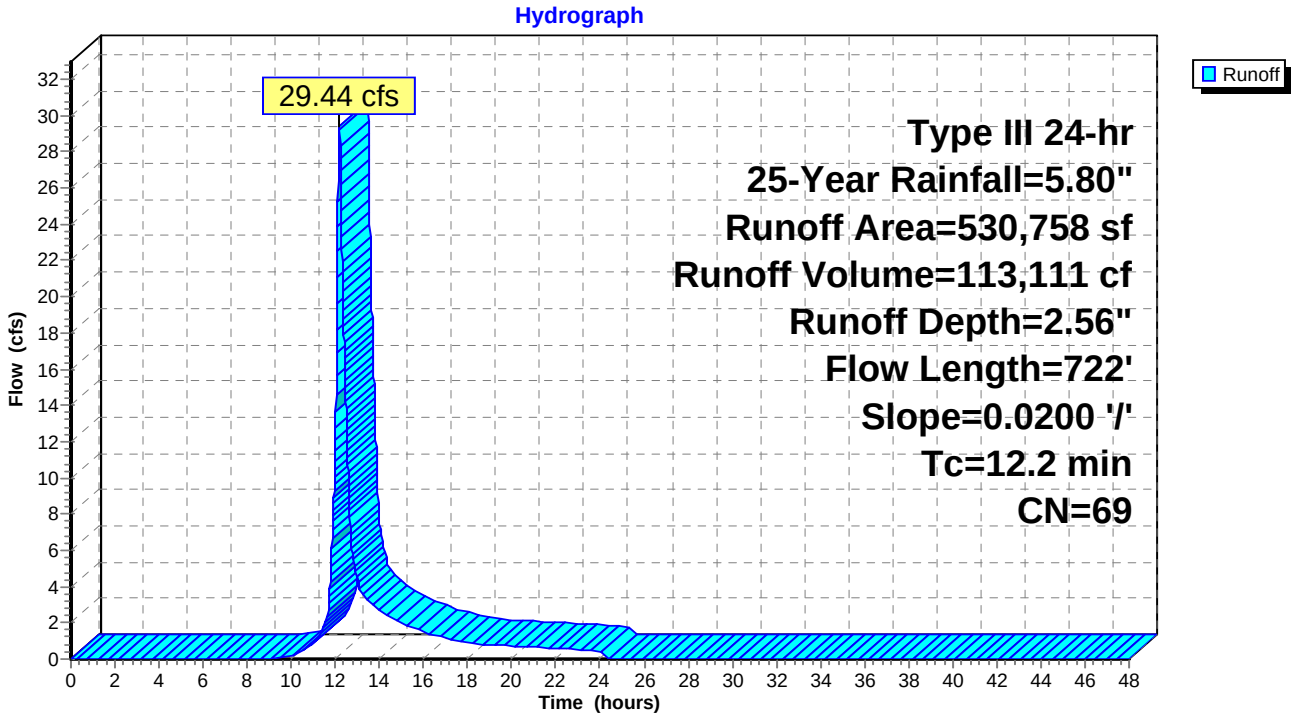
Runoff = 29.44 cfs @ 12.17 hrs, Volume= 113,111 cf, Depth= 2.56"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Type III 24-hr 25-Year Rainfall=5.80"

Area (sf)	CN	Description
414,874	61	>75% Grass cover, Good, HSG B
115,884	98	Paved parking, HSG B
530,758	69	Weighted Average
414,874		78.17% Pervious Area
115,884		21.83% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
12.2	722	0.0200	0.99		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps

Subcatchment Off Site: Off Site Flow



Summary for Pond 2P: Existing Wet Pond

Inflow Area = 155,339 sf, 87.13% Impervious, Inflow Depth = 4.66" for 25-Year event
Inflow = 11.98 cfs @ 12.08 hrs, Volume= 60,344 cf
Outflow = 10.73 cfs @ 12.14 hrs, Volume= 55,992 cf, Atten= 10%, Lag= 3.4 min
Primary = 6.78 cfs @ 12.14 hrs, Volume= 51,984 cf
Secondary = 3.95 cfs @ 12.14 hrs, Volume= 4,008 cf

Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs / 2
Peak Elev= 14.95' @ 12.14 hrs Surf.Area= 3,953 sf Storage= 10,235 cf
Flood Elev= 16.00' Surf.Area= 4,707 sf Storage= 14,792 cf

Plug-Flow detention time= 89.8 min calculated for 55,980 cf (93% of inflow)
Center-of-Mass det. time= 50.8 min (822.8 - 771.9)

Volume	Invert	Avail.Storage	Storage Description
#1	9.00'	14,792 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

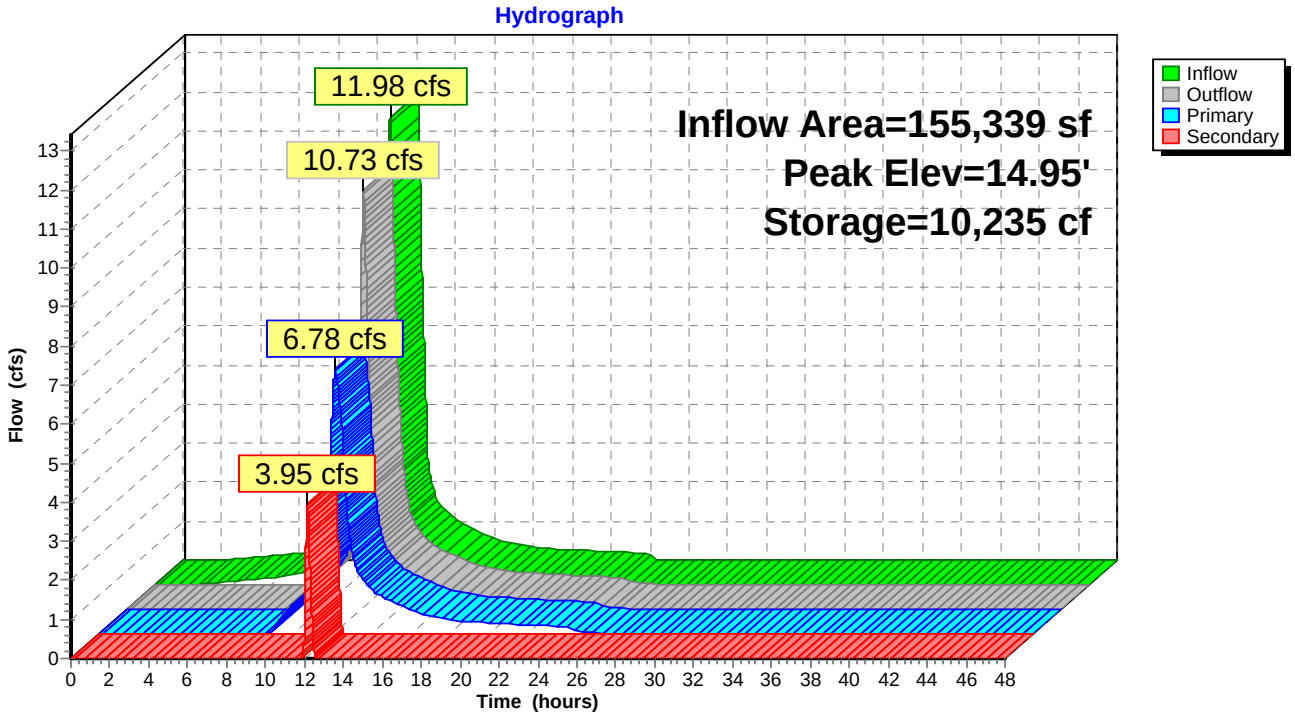
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
9.00	38	0	0
10.00	287	163	163
11.00	765	526	689
12.00	1,474	1,120	1,808
13.00	2,613	2,044	3,852
14.00	3,290	2,952	6,803
15.00	3,990	3,640	10,443
16.00	4,707	4,349	14,792

Device	Routing	Invert	Outlet Devices
#1	Primary	8.16'	**24.0" Round Culvert** L= 19.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 8.16' / 7.78' S= 0.0200 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 3.14 sf
#2	Device 1	13.18'	**18.0" Round Culvert** L= 11.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 13.18' / 12.96' S= 0.0200 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.77 sf
#3	Secondary	14.50'	**5.0' long x 12.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.57 2.62 2.70 2.67 2.66 2.67 2.66 2.64

Primary OutFlow Max=6.78 cfs @ 12.14 hrs HW=14.95' TW=6.91' (Dynamic Tailwater)
↑└**1=Culvert** (Passes 6.78 cfs of 28.73 cfs potential flow)
↑└**2=Culvert** (Inlet Controls 6.78 cfs @ 3.83 fps)

Secondary OutFlow Max=3.95 cfs @ 12.14 hrs HW=14.95' TW=6.91' (Dynamic Tailwater)
↑└**3=Broad-Crested Rectangular Weir** (Weir Controls 3.95 cfs @ 1.77 fps)

Pond 2P: Existing Wet Pond



Summary for Pond 3P: DMH 998

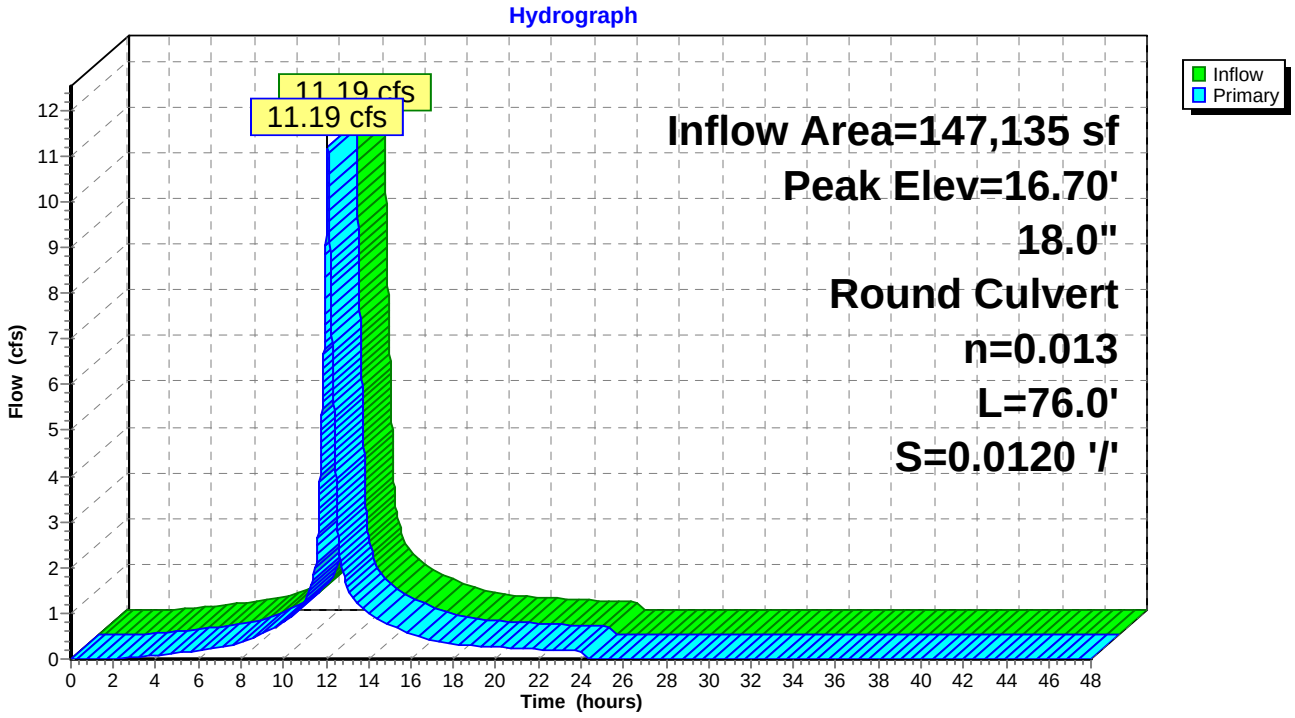
Inflow Area = 147,135 sf, 89.83% Impervious, Inflow Depth = 4.72" for 25-Year event
Inflow = 11.19 cfs @ 12.08 hrs, Volume= 57,882 cf
Outflow = 11.19 cfs @ 12.08 hrs, Volume= 57,882 cf, Atten= 0%, Lag= 0.0 min
Primary = 11.19 cfs @ 12.08 hrs, Volume= 57,882 cf

Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs / 2
Peak Elev= 16.70' @ 12.09 hrs
Flood Elev= 21.94'

Device	Routing	Invert	Outlet Devices
#1	Primary	13.81'	**18.0" Round Culvert** L= 76.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 13.81' / 12.90' S= 0.0120 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.77 sf

Primary OutFlow Max=11.18 cfs @ 12.08 hrs HW=16.69' TW=14.89' (Dynamic Tailwater)
1=Culvert (Outlet Controls 11.18 cfs @ 6.32 fps)

Pond 3P: DMH 998



Summary for Pond 4P: CBR 1710

Inflow Area = 147,135 sf, 89.83% Impervious, Inflow Depth = 4.92" for 25-Year event
Inflow = 16.24 cfs @ 12.08 hrs, Volume= 60,292 cf
Outflow = 16.24 cfs @ 12.08 hrs, Volume= 60,292 cf, Atten= 0%, Lag= 0.0 min
Primary = 11.19 cfs @ 12.08 hrs, Volume= 57,882 cf
Secondary = 5.05 cfs @ 12.08 hrs, Volume= 2,410 cf

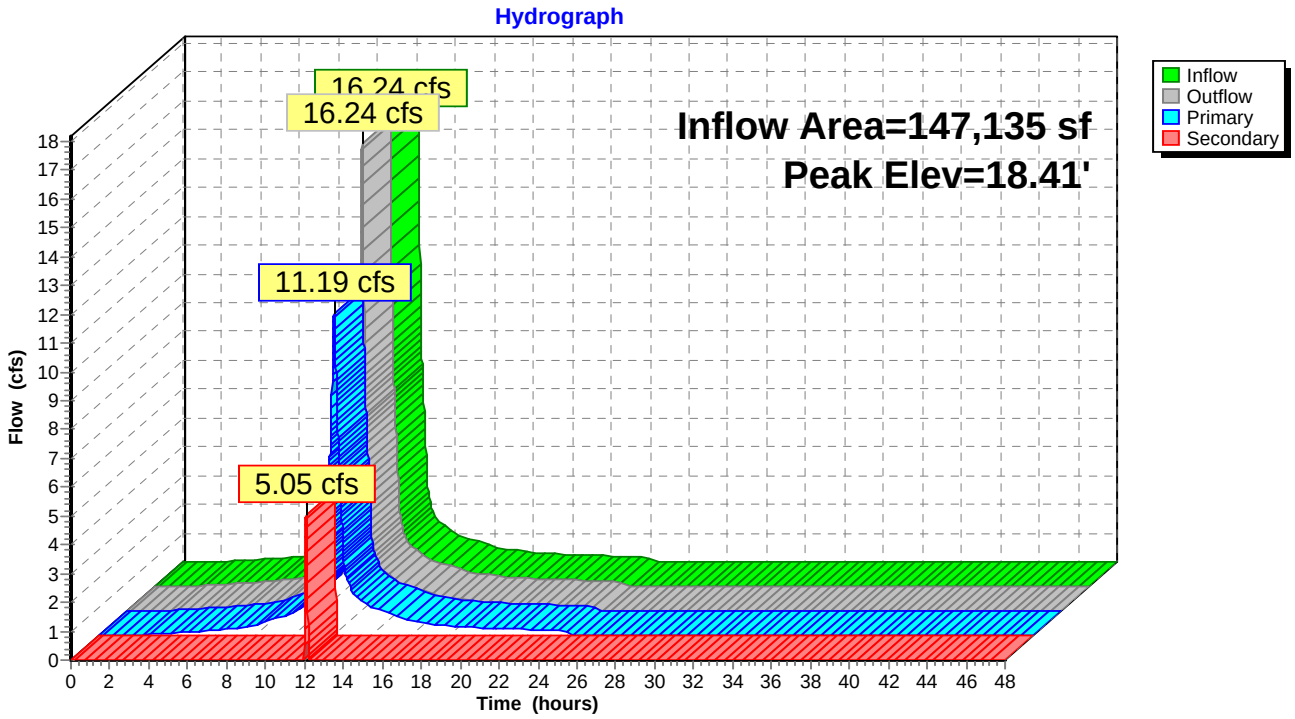
Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs / 2
Peak Elev= 18.41' @ 12.08 hrs
Flood Elev= 25.22'

Device	Routing	Invert	Outlet Devices
#1	Primary	14.91'	**18.0" Round Culvert** L= 50.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 14.91' / 13.91' S= 0.0200 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.77 sf
#2	Secondary	16.61'	**15.0" Round Culvert** L= 85.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 16.61' / 10.60' S= 0.0707 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.23 sf

Primary OutFlow Max=11.14 cfs @ 12.08 hrs HW=18.40' TW=16.69' (Dynamic Tailwater)
└**1=Culvert** (Inlet Controls 11.14 cfs @ 6.30 fps)

Secondary OutFlow Max=5.03 cfs @ 12.08 hrs HW=18.40' TW=6.76' (Dynamic Tailwater)
└**2=Culvert** (Inlet Controls 5.03 cfs @ 4.10 fps)

Pond 4P: CBR 1710



Summary for Pond 5P: CB 1668

Inflow Area = 49,032 sf, 82.77% Impervious, Inflow Depth = 4.87" for 25-Year event
Inflow = 6.04 cfs @ 12.08 hrs, Volume= 19,911 cf
Outflow = 6.04 cfs @ 12.08 hrs, Volume= 19,911 cf, Atten= 0%, Lag= 0.0 min
Primary = 3.66 cfs @ 12.08 hrs, Volume= 17,177 cf
Secondary = 2.38 cfs @ 12.08 hrs, Volume= 2,733 cf

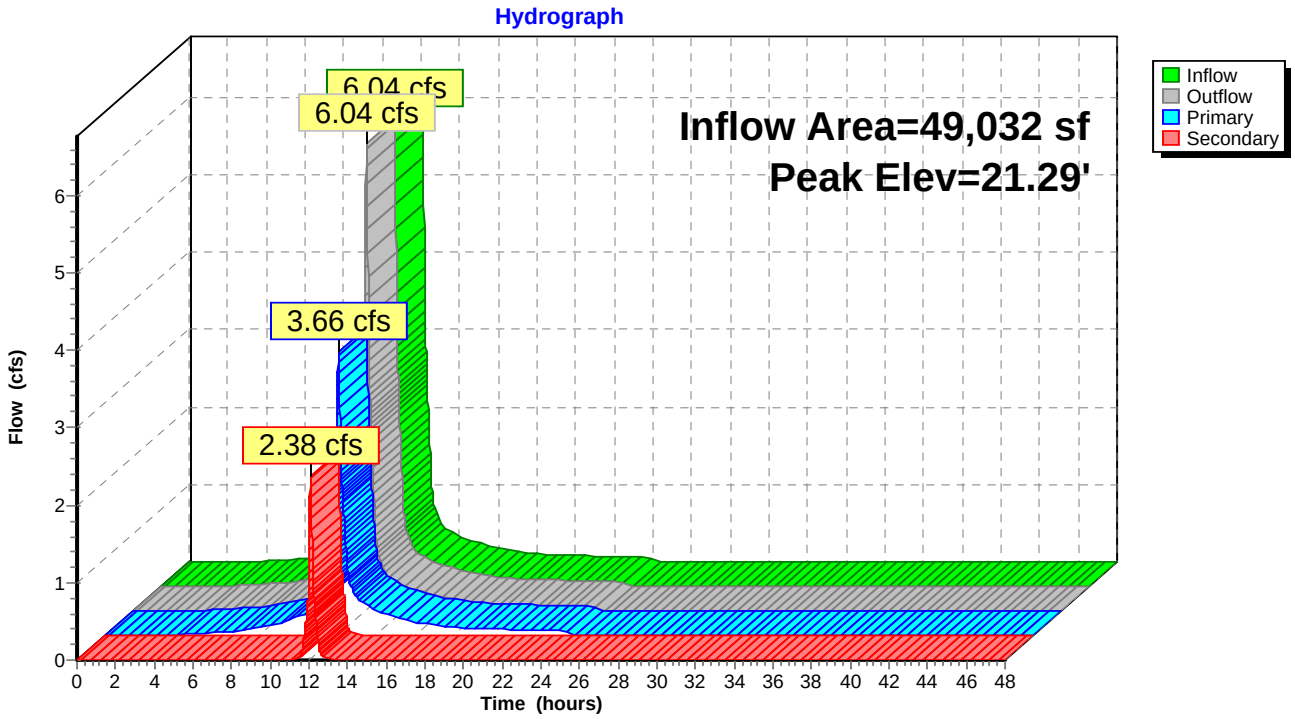
Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs / 2
Peak Elev= 21.29' @ 12.08 hrs
Flood Elev= 25.58'

Device	Routing	Invert	Outlet Devices
#1	Primary	20.38'	**18.0" Round Culvert** L= 155.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 20.38' / 18.30' S= 0.0134 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.77 sf
#2	Secondary	20.65'	**24.0" Round Culvert** L= 70.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 20.65' / 13.39' S= 0.1037 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 3.14 sf

Primary OutFlow Max=3.66 cfs @ 12.08 hrs HW=21.29' TW=18.40' (Dynamic Tailwater)
└**1=Culvert** (Inlet Controls 3.66 cfs @ 3.25 fps)

Secondary OutFlow Max=2.37 cfs @ 12.08 hrs HW=21.29' TW=6.76' (Dynamic Tailwater)
└**2=Culvert** (Inlet Controls 2.37 cfs @ 2.73 fps)

Pond 5P: CB 1668



Summary for Pond 6P: CBR 1709

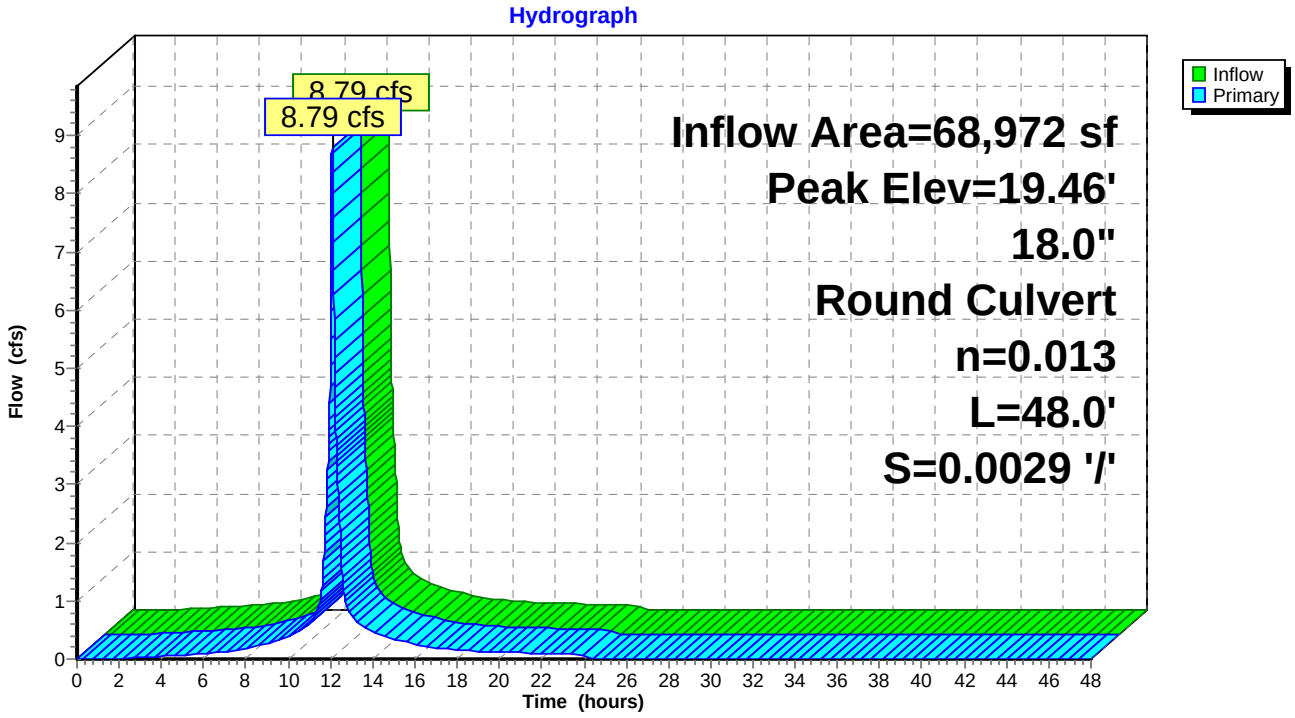
Inflow Area = 68,972 sf, 91.97% Impervious, Inflow Depth = 5.20" for 25-Year event
Inflow = 8.79 cfs @ 12.08 hrs, Volume= 29,897 cf
Outflow = 8.79 cfs @ 12.08 hrs, Volume= 29,897 cf, Atten= 0%, Lag= 0.0 min
Primary = 8.79 cfs @ 12.08 hrs, Volume= 29,897 cf

Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs / 2
Peak Elev= 19.46' @ 12.09 hrs
Flood Elev= 25.90'

Device	Routing	Invert	Outlet Devices
#1	Primary	15.83'	**18.0" Round Culvert** L= 48.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 15.83' / 15.69' S= 0.0029 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.77 sf

Primary OutFlow Max=8.71 cfs @ 12.08 hrs HW=19.45' TW=18.40' (Dynamic Tailwater)
1=Culvert (Inlet Controls 8.71 cfs @ 4.93 fps)

Pond 6P: CBR 1709



Summary for Pond 7P: CBR 2113

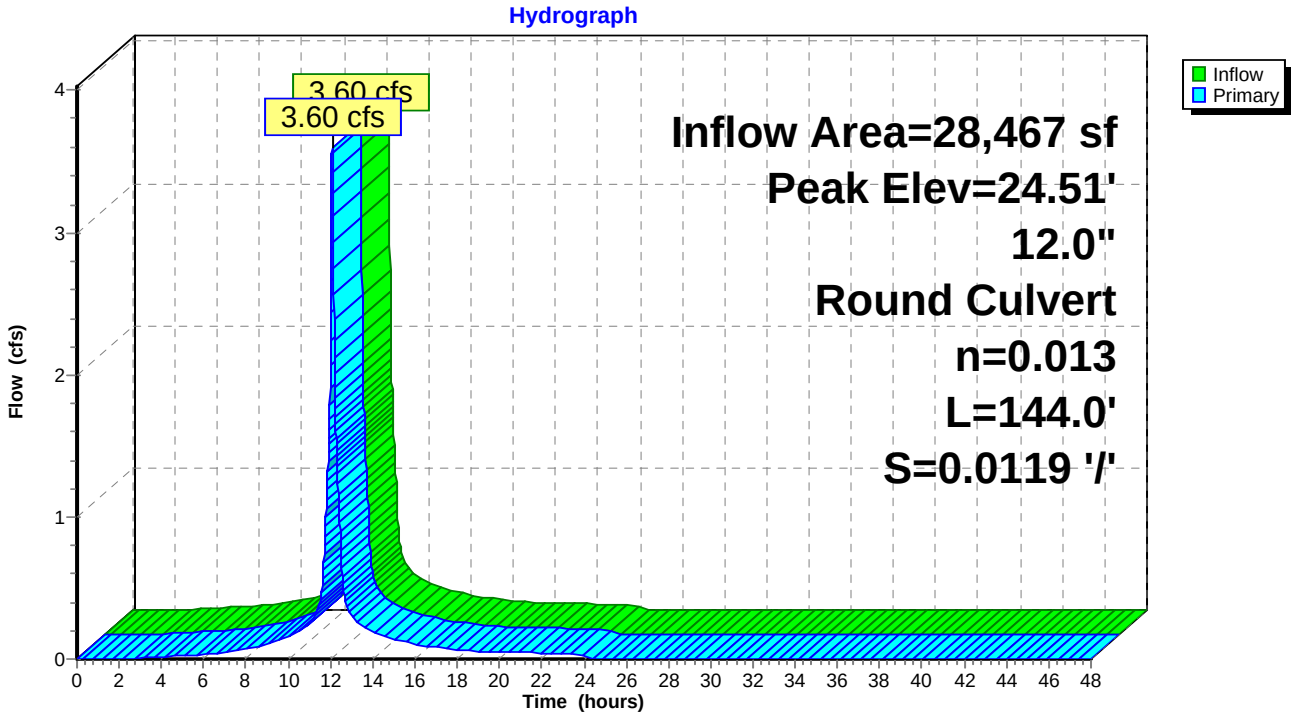
Inflow Area = 28,467 sf, 89.98% Impervious, Inflow Depth = 5.10" for 25-Year event
Inflow = 3.60 cfs @ 12.08 hrs, Volume= 12,095 cf
Outflow = 3.60 cfs @ 12.08 hrs, Volume= 12,095 cf, Atten= 0%, Lag= 0.0 min
Primary = 3.60 cfs @ 12.08 hrs, Volume= 12,095 cf

Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs / 2
Peak Elev= 24.51' @ 12.08 hrs
Flood Elev= 29.47'

Device	Routing	Invert	Outlet Devices
#1	Primary	23.11'	**12.0" Round Culvert** L= 144.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 23.11' / 21.40' S= 0.0119 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.79 sf

Primary OutFlow Max=3.59 cfs @ 12.08 hrs HW=24.51' TW=20.01' (Dynamic Tailwater)
1=Culvert (Inlet Controls 3.59 cfs @ 4.57 fps)

Pond 7P: CBR 2113



Summary for Pond 8P: CBR 1708

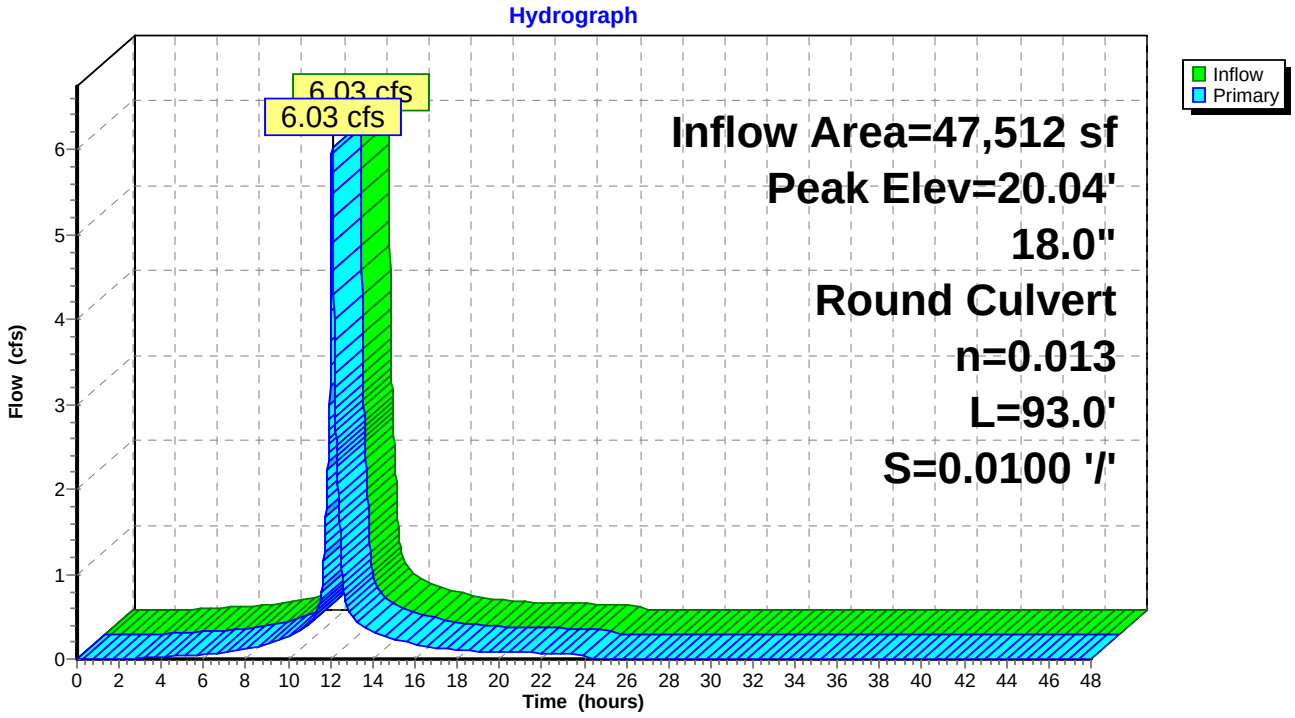
Inflow Area = 47,512 sf, 91.18% Impervious, Inflow Depth = 5.14" for 25-Year event
Inflow = 6.03 cfs @ 12.08 hrs, Volume= 20,369 cf
Outflow = 6.03 cfs @ 12.08 hrs, Volume= 20,369 cf, Atten= 0%, Lag= 0.0 min
Primary = 6.03 cfs @ 12.08 hrs, Volume= 20,369 cf

Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs / 2
Peak Elev= 20.04' @ 12.09 hrs
Flood Elev= 27.09'

Device	Routing	Invert	Outlet Devices
#1	Primary	16.46'	**18.0" Round Culvert** L= 93.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 16.46' / 15.53' S= 0.0100 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.77 sf

Primary OutFlow Max=5.94 cfs @ 12.08 hrs HW=20.01' TW=19.45' (Dynamic Tailwater)
1=Culvert (Outlet Controls 5.94 cfs @ 3.36 fps)

Pond 8P: CBR 1708



Summary for Pond 9P: DMH 10162

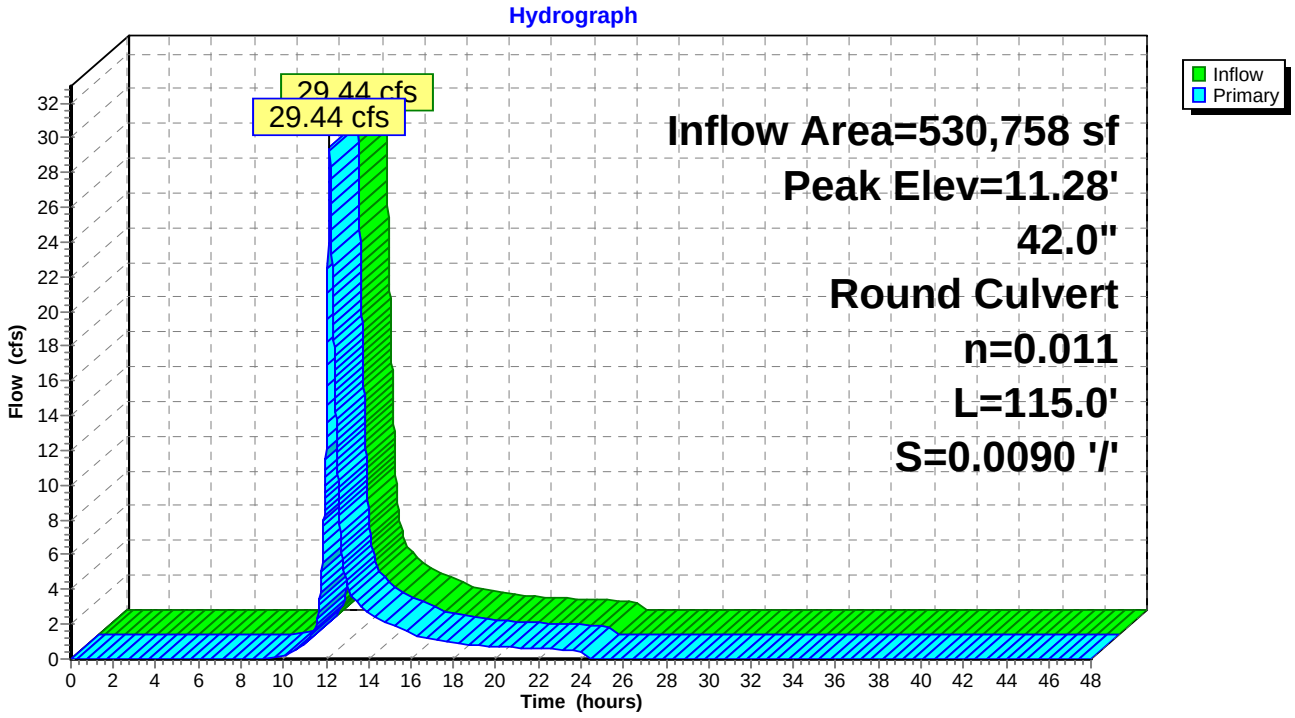
Inflow Area = 530,758 sf, 21.83% Impervious, Inflow Depth = 2.56" for 25-Year event
Inflow = 29.44 cfs @ 12.17 hrs, Volume= 113,111 cf
Outflow = 29.44 cfs @ 12.17 hrs, Volume= 113,111 cf, Atten= 0%, Lag= 0.0 min
Primary = 29.44 cfs @ 12.17 hrs, Volume= 113,111 cf

Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs / 2
Peak Elev= 11.28' @ 12.17 hrs
Flood Elev= 28.14'

Device	Routing	Invert	Outlet Devices
#1	Primary	9.18'	**42.0" Round Culvert** L= 115.0' RCP, sq.cut end projecting, Ke= 0.500 Inlet / Outlet Invert= 9.18' / 8.15' S= 0.0090 '/' Cc= 0.900 n= 0.011 Concrete pipe, straight & clean, Flow Area= 9.62 sf

Primary OutFlow Max=29.42 cfs @ 12.17 hrs HW=11.28' TW=6.98' (Dynamic Tailwater)
1=Culvert (Barrel Controls 29.42 cfs @ 7.01 fps)

Pond 9P: DMH 10162



Summary for Pond EX WTLND: Existing Wetland

Inflow Area = 934,004 sf, 39.20% Impervious, Inflow Depth = 3.32" for 25-Year event
Inflow = 68.25 cfs @ 12.11 hrs, Volume= 258,297 cf
Outflow = 26.94 cfs @ 12.47 hrs, Volume= 258,303 cf, Atten= 61%, Lag= 21.4 min
Primary = 23.88 cfs @ 12.47 hrs, Volume= 253,608 cf
Secondary = 3.06 cfs @ 12.47 hrs, Volume= 4,695 cf

Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs / 2
Peak Elev= 7.21' @ 12.47 hrs Surf.Area= 79,019 sf Storage= 55,362 cf
Flood Elev= 9.00' Surf.Area= 86,688 sf Storage= 120,546 cf

Plug-Flow detention time= (not calculated: outflow precedes inflow)
Center-of-Mass det. time= 15.2 min (840.8 - 825.5)

Volume	Invert	Avail.Storage	Storage Description
#1	6.00'	120,546 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

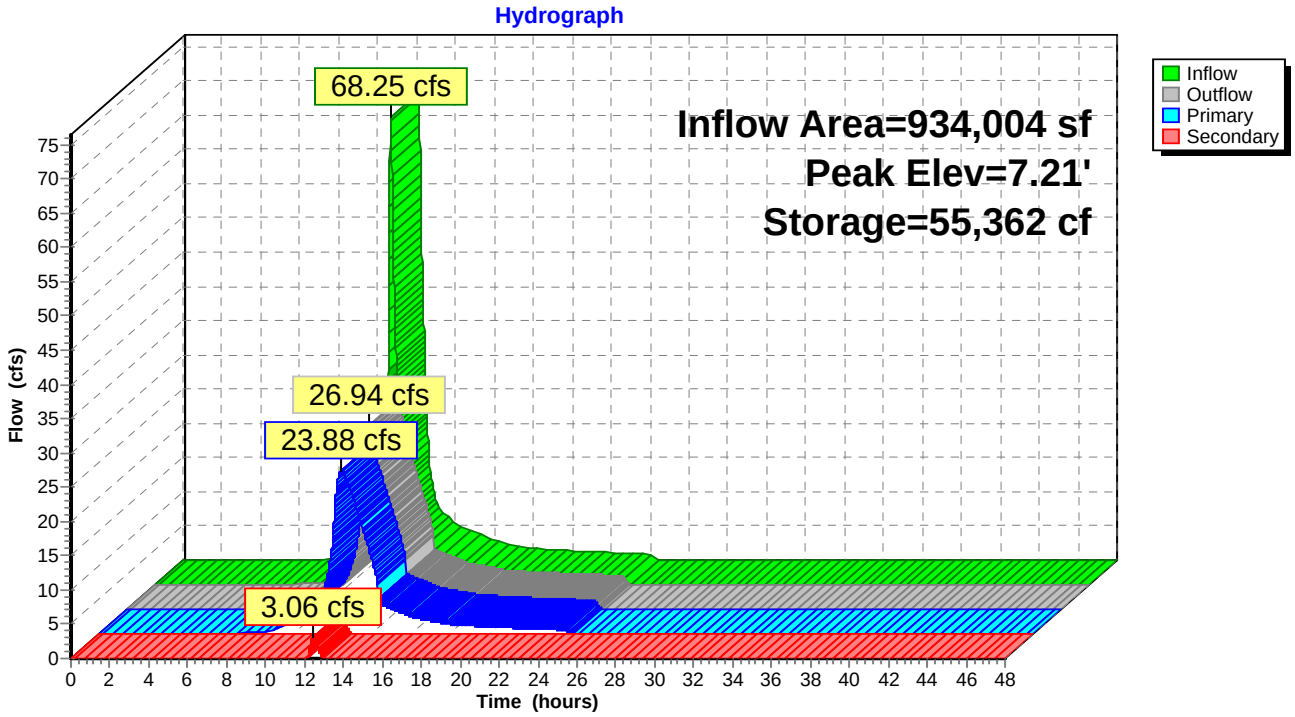
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
6.00	523	0	0
7.00	76,940	38,732	38,732
8.00	86,688	81,814	120,546

Device	Routing	Invert	Outlet Devices
#1	Primary	4.89'	**36.0" Round Culvert** L= 80.0' CMP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 4.89' / 3.61' S= 0.0160 '/' Cc= 0.900 n= 0.025 Corrugated metal, Flow Area= 7.07 sf
#2	Secondary	7.00'	**13.0' long x 4.0' breadth Overflow** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 3.50 4.00 4.50 5.00 5.50 Coef. (English) 2.38 2.54 2.69 2.68 2.67 2.67 2.65 2.66 2.66 2.68 2.72 2.73 2.76 2.79 2.88 3.07 3.32

Primary OutFlow Max=23.88 cfs @ 12.47 hrs HW=7.21' TW=0.00' (Dynamic Tailwater)
└**1=Culvert** (Barrel Controls 23.88 cfs @ 5.61 fps)

Secondary OutFlow Max=3.06 cfs @ 12.47 hrs HW=7.21' TW=0.00' (Dynamic Tailwater)
└**2=Overflow** (Weir Controls 3.06 cfs @ 1.10 fps)

Pond EX WTLND: Existing Wetland

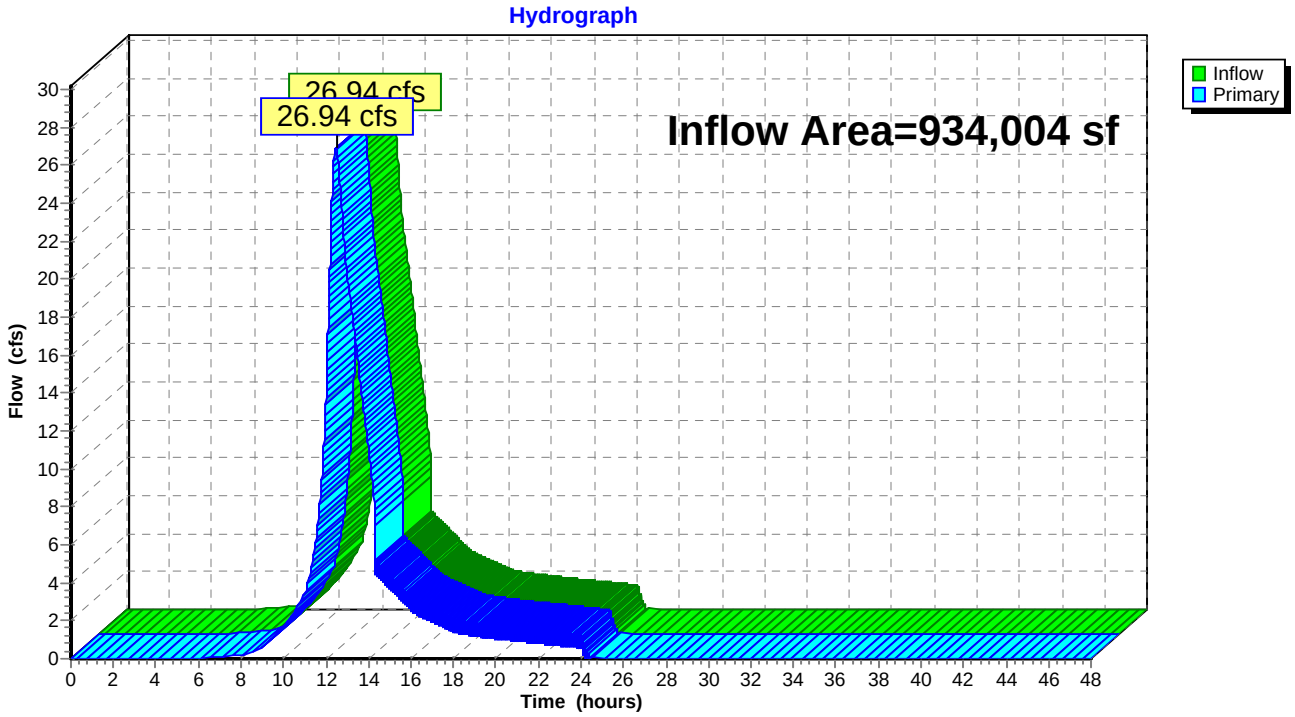


Summary for Link SP-1: Study Point 1

Inflow Area = 934,004 sf, 39.20% Impervious, Inflow Depth = 3.32" for 25-Year event
Inflow = 26.94 cfs @ 12.47 hrs, Volume= 258,303 cf
Primary = 26.94 cfs @ 12.47 hrs, Volume= 258,303 cf, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs

Link SP-1: Study Point 1

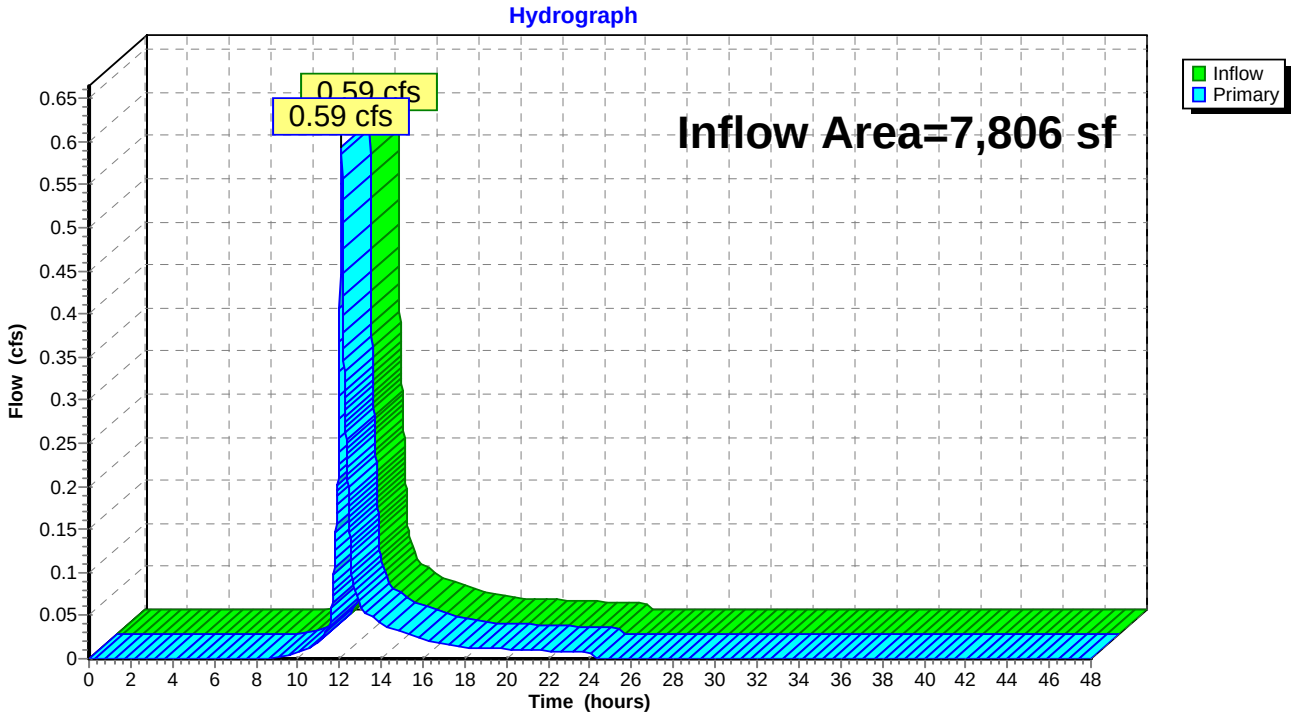


Summary for Link SP-2: Study Point 2

Inflow Area = 7,806 sf, 28.72% Impervious, Inflow Depth = 2.83" for 25-Year event
Inflow = 0.59 cfs @ 12.09 hrs, Volume= 1,841 cf
Primary = 0.59 cfs @ 12.09 hrs, Volume= 1,841 cf, Atten= 0%, Lag= 0.0 min

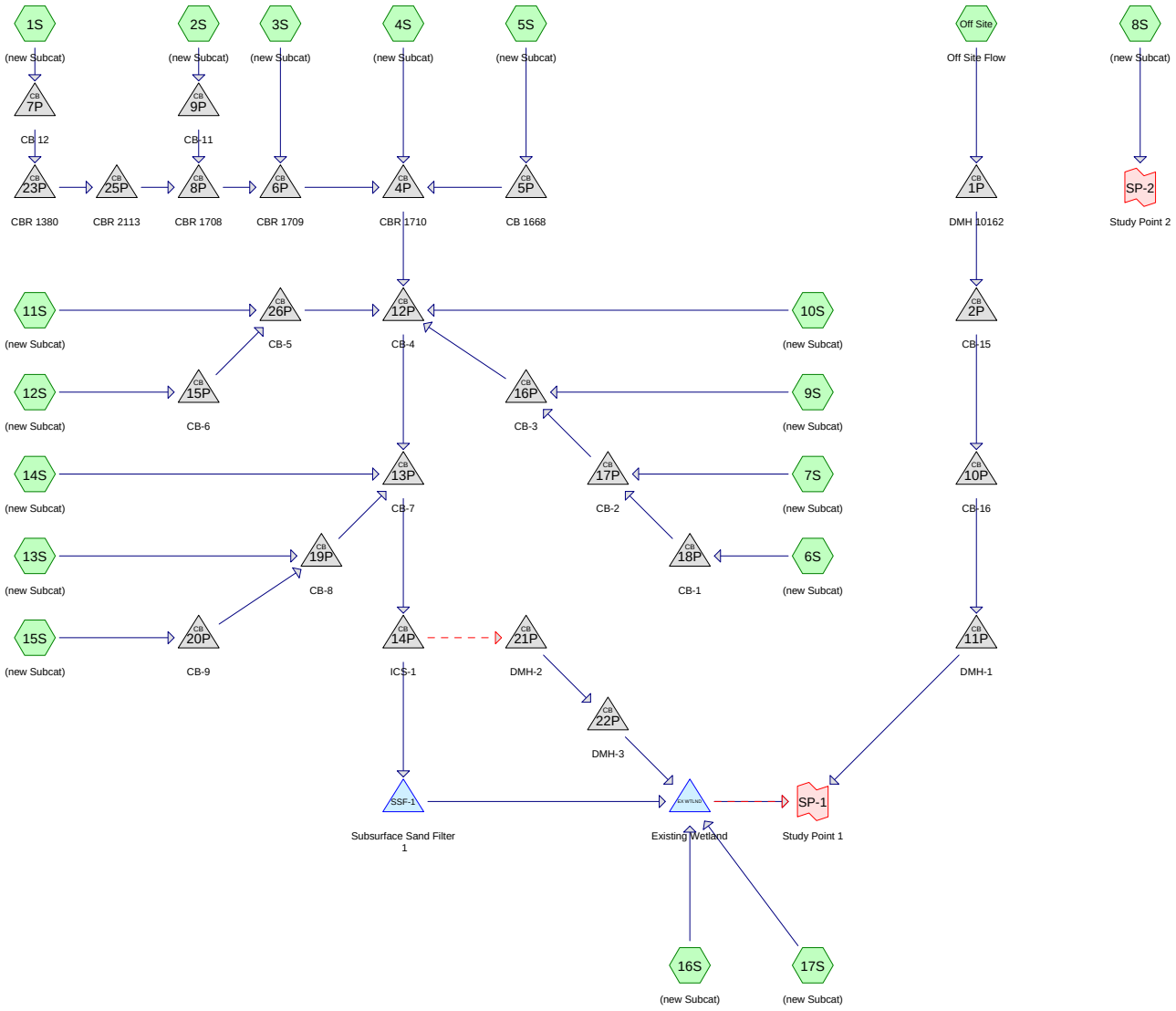
Primary outflow = Inflow, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs

Link SP-2: Study Point 2



Attachment C

Post-Development Stormwater Modeling



Subcat Reach Pond Link

Routing Diagram for 99607 Post
Prepared by Sebago Techincs, Printed 2/1/2018
HydroCAD® 10.00-18 s/n 01856 © 2016 HydroCAD Software Solutions LLC

Area Listing (all nodes)

Area (sq-ft)	CN	Description (subcatchment-numbers)
483,724	61	>75% Grass cover, Good, HSG B (1S, 2S, 3S, 4S, 5S, 6S, 7S, 8S, 9S, 10S, 16S, 17S, Off Site)
66,656	80	>75% Grass cover, Good, HSG D (6S, 7S, 10S, 11S, 13S, 14S, 15S, 16S)
277,920	98	Paved parking, HSG B (1S, 2S, 3S, 4S, 5S, 6S, 7S, 8S, 9S, 10S, 11S, 12S, 15S, 17S, Off Site)
98,586	98	Paved parking, HSG D (6S, 7S, 9S, 10S, 11S, 12S, 13S, 14S, 15S)
14,924	98	Roofs, HSG B (1S, 2S, 16S, 17S)
941,810	**78**	**TOTAL AREA**

Soil Listing (all nodes)

Area (sq-ft)	Soil Group	Subcatchment Numbers
0	HSG A	
776,568	HSG B	1S, 2S, 3S, 4S, 5S, 6S, 7S, 8S, 9S, 10S, 11S, 12S, 15S, 16S, 17S, Off Site
0	HSG C	
165,242	HSG D	6S, 7S, 9S, 10S, 11S, 12S, 13S, 14S, 15S, 16S
0	Other	
941,810		**TOTAL AREA**

Time span=0.00-48.00 hrs, dt=0.01 hrs, 4801 points x 2
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Dyn-Stor-Ind method - Pond routing by Dyn-Stor-Ind method

Subcatchment1S: (new Subcat) Runoff Area=28,835 sf 82.21% Impervious Runoff Depth=2.16"
Flow Length=132' Slope=0.0100 '/' Tc=6.0 min CN=91 Runoff=1.66 cfs 5,201 cf

Subcatchment2S: (new Subcat) Runoff Area=27,182 sf 88.34% Impervious Runoff Depth=2.45"
Flow Length=164' Slope=0.0180 '/' Tc=6.0 min CN=94 Runoff=1.72 cfs 5,543 cf

Subcatchment3S: (new Subcat) Runoff Area=15,213 sf 80.21% Impervious Runoff Depth=2.16"
Flow Length=161' Slope=0.0150 '/' Tc=6.0 min CN=91 Runoff=0.87 cfs 2,744 cf

Subcatchment4S: (new Subcat) Runoff Area=28,840 sf 96.87% Impervious Runoff Depth=2.76"
Flow Length=178' Slope=0.0160 '/' Tc=6.0 min CN=97 Runoff=1.96 cfs 6,627 cf

Subcatchment5S: (new Subcat) Runoff Area=49,425 sf 82.25% Impervious Runoff Depth=2.16"
Flow Length=281' Slope=0.0100 '/' Tc=6.0 min CN=91 Runoff=2.84 cfs 8,915 cf

Subcatchment6S: (new Subcat) Runoff Area=15,879 sf 76.74% Impervious Runoff Depth=2.08"
Flow Length=231' Tc=6.1 min CN=90 Runoff=0.88 cfs 2,747 cf

Subcatchment7S: (new Subcat) Runoff Area=7,643 sf 92.45% Impervious Runoff Depth=2.65"
Flow Length=180' Slope=0.0250 '/' Tc=6.0 min CN=96 Runoff=0.51 cfs 1,688 cf

Subcatchment8S: (new Subcat) Runoff Area=7,438 sf 31.78% Impervious Runoff Depth=0.92"
Flow Length=45' Slope=0.0800 '/' Tc=6.0 min CN=73 Runoff=0.17 cfs 570 cf

Subcatchment9S: (new Subcat) Runoff Area=12,873 sf 97.59% Impervious Runoff Depth=2.76"
Flow Length=215' Slope=0.0220 '/' Tc=6.0 min CN=97 Runoff=0.87 cfs 2,958 cf

Subcatchment10S: (new Subcat) Runoff Area=16,424 sf 95.28% Impervious Runoff Depth=2.76"
Flow Length=195' Tc=6.0 min CN=97 Runoff=1.12 cfs 3,774 cf

Subcatchment11S: (new Subcat) Runoff Area=14,521 sf 95.72% Impervious Runoff Depth=2.76"
Flow Length=230' Slope=0.0250 '/' Tc=6.0 min CN=97 Runoff=0.99 cfs 3,337 cf

Subcatchment12S: (new Subcat) Runoff Area=9,667 sf 100.00% Impervious Runoff Depth=2.87"
Flow Length=257' Slope=0.0240 '/' Tc=6.0 min CN=98 Runoff=0.67 cfs 2,310 cf

Subcatchment13S: (new Subcat) Runoff Area=12,123 sf 88.89% Impervious Runoff Depth=2.65"
Flow Length=274' Slope=0.0210 '/' Tc=6.0 min CN=96 Runoff=0.81 cfs 2,678 cf

Subcatchment14S: (new Subcat) Runoff Area=8,897 sf 92.62% Impervious Runoff Depth=2.76"
Flow Length=188' Slope=0.0250 '/' Tc=6.0 min CN=97 Runoff=0.60 cfs 2,044 cf

Subcatchment15S: (new Subcat) Runoff Area=30,398 sf 93.40% Impervious Runoff Depth=2.76"
Flow Length=331' Tc=6.0 min CN=97 Runoff=2.06 cfs 6,985 cf

Subcatchment16S: (new Subcat) Runoff Area=91,275 sf 0.98% Impervious Runoff Depth=0.97"
Flow Length=109' Tc=6.0 min CN=74 Runoff=2.25 cfs 7,395 cf

Subcatchment 17S: (new Subcat) Runoff Area=34,419 sf 73.63% Impervious Runoff Depth=1.91"
Flow Length=144' Slope=0.0200 '/' Tc=6.0 min CN=88 Runoff=1.76 cfs 5,471 cf

Subcatchment Off Site: Off Site Flow Runoff Area=530,758 sf 21.83% Impervious Runoff Depth=0.72"
Flow Length=722' Slope=0.0200 '/' Tc=12.2 min CN=69 Runoff=7.21 cfs 32,021 cf

Pond 1P: DMH 10162 Peak Elev=10.33' Inflow=7.21 cfs 32,021 cf
42.0" Round Culvert n=0.011 L=147.0' S=0.0044 '/' Outflow=7.21 cfs 32,021 cf

Pond 2P: CB-15 Peak Elev=9.66' Inflow=7.21 cfs 32,021 cf
36.0" Round Culvert n=0.013 L=147.0' S=0.0050 '/' Outflow=7.21 cfs 32,021 cf

Pond 4P: CBR 1710 Peak Elev=17.27' Inflow=9.04 cfs 29,030 cf
24.0" Round Culvert n=0.013 L=234.8' S=0.0052 '/' Outflow=9.04 cfs 29,030 cf

Pond 5P: CB 1668 Peak Elev=21.17' Inflow=2.84 cfs 8,915 cf
18.0" Round Culvert n=0.013 L=155.0' S=0.0134 '/' Outflow=2.84 cfs 8,915 cf

Pond 6P: CBR 1709 Peak Elev=17.52' Inflow=4.25 cfs 13,488 cf
18.0" Round Culvert n=0.013 L=48.0' S=0.0029 '/' Outflow=4.25 cfs 13,488 cf

Pond 7P: CB 12 Peak Elev=25.48' Inflow=1.66 cfs 5,201 cf
12.0" Round Culvert n=0.013 L=10.4' S=0.0106 '/' Outflow=1.66 cfs 5,201 cf

Pond 8P: CBR 1708 Peak Elev=17.82' Inflow=3.37 cfs 10,744 cf
18.0" Round Culvert n=0.013 L=93.0' S=0.0100 '/' Outflow=3.37 cfs 10,744 cf

Pond 9P: CB-11 Peak Elev=22.40' Inflow=1.72 cfs 5,543 cf
12.0" Round Culvert n=0.013 L=13.8' S=0.0051 '/' Outflow=1.72 cfs 5,543 cf

Pond 10P: CB-16 Peak Elev=8.77' Inflow=7.21 cfs 32,021 cf
36.0" Round Culvert n=0.013 L=296.0' S=0.0050 '/' Outflow=7.21 cfs 32,021 cf

Pond 11P: DMH-1 Peak Elev=7.19' Inflow=7.21 cfs 32,021 cf
36.0" Round Culvert n=0.013 L=199.0' S=0.0050 '/' Outflow=7.21 cfs 32,021 cf

Pond 12P: CB-4 Peak Elev=16.12' Inflow=14.07 cfs 45,845 cf
30.0" Round Culvert n=0.013 L=105.3' S=0.0239 '/' Outflow=14.07 cfs 45,845 cf

Pond 13P: CB-7 Peak Elev=13.87' Inflow=17.54 cfs 57,552 cf
36.0" Round Culvert n=0.013 L=1.3' S=0.0154 '/' Outflow=17.54 cfs 57,552 cf

Pond 14P: ICS-1 Peak Elev=13.18' Inflow=17.54 cfs 57,552 cf
Primary=17.54 cfs 52,420 cf Secondary=1.44 cfs 5,132 cf Outflow=17.54 cfs 57,552 cf

Pond 15P: CB-6 Peak Elev=16.47' Inflow=0.67 cfs 2,310 cf
12.0" Round Culvert n=0.013 L=59.5' S=0.0050 '/' Outflow=0.67 cfs 2,310 cf

Pond 16P: CB-3 Peak Elev=16.38' Inflow=2.26 cfs 7,394 cf
15.0" Round Culvert n=0.013 L=75.5' S=0.0101 '/' Outflow=2.26 cfs 7,394 cf

Pond 17P: CB-2 Peak Elev=16.97' Inflow=1.38 cfs 4,435 cf
12.0" Round Culvert n=0.013 L=77.3' S=0.0127 '/' Outflow=1.38 cfs 4,435 cf

Pond 18P: CB-1 Peak Elev=17.51' Inflow=0.88 cfs 2,747 cf
12.0" Round Culvert n=0.013 L=63.5' S=0.0101 '/' Outflow=0.88 cfs 2,747 cf

Pond 19P: CB-8 Peak Elev=13.93' Inflow=2.87 cfs 9,663 cf
24.0" Round Culvert n=0.013 L=66.0' S=0.0050 '/' Outflow=2.87 cfs 9,663 cf

Pond 20P: CB-9 Peak Elev=14.18' Inflow=2.06 cfs 6,985 cf
18.0" Round Culvert n=0.013 L=159.0' S=0.0051 '/' Outflow=2.06 cfs 6,985 cf

Pond 21P: DMH-2 Peak Elev=11.51' Inflow=1.44 cfs 5,132 cf
18.0" Round Culvert n=0.013 L=133.0' S=0.0200 '/' Outflow=1.44 cfs 5,132 cf

Pond 22P: DMH-3 Peak Elev=8.56' Inflow=1.44 cfs 5,132 cf
18.0" Round Culvert n=0.013 L=30.1' S=0.0316 '/' Outflow=1.44 cfs 5,132 cf

Pond 23P: CBR 1380 Peak Elev=24.46' Inflow=1.66 cfs 5,201 cf
12.0" Round Culvert n=0.013 L=87.8' S=0.0066 '/' Outflow=1.66 cfs 5,201 cf

Pond 25P: CBR 2113 Peak Elev=23.52' Inflow=1.66 cfs 5,201 cf
15.0" Round Culvert n=0.013 L=148.6' S=0.0090 '/' Outflow=1.66 cfs 5,201 cf

Pond 26P: CB-5 Peak Elev=16.42' Inflow=1.65 cfs 5,647 cf
12.0" Round Culvert n=0.013 L=42.0' S=0.0052 '/' Outflow=1.65 cfs 5,647 cf

Pond EX WTLND: Existing Wetland Peak Elev=6.00' Storage=0 cf Inflow=4.48 cfs 70,425 cf
Primary=4.48 cfs 70,425 cf Secondary=0.00 cfs 0 cf Outflow=4.48 cfs 70,425 cf

Pond SSF-1: Subsurface Sand Filter 1 Peak Elev=13.17' Storage=26,498 cf Inflow=17.54 cfs 52,420 cf
Outflow=1.93 cfs 52,427 cf

Link SP-1: Study Point 1 Inflow=10.55 cfs 102,446 cf
Primary=10.55 cfs 102,446 cf

Link SP-2: Study Point 2 Inflow=0.17 cfs 570 cf
Primary=0.17 cfs 570 cf

Total Runoff Area = 941,810 sf Runoff Volume = 103,009 cf Average Runoff Depth = 1.31"
58.44% Pervious = 550,380 sf 41.56% Impervious = 391,430 sf

Time span=0.00-48.00 hrs, dt=0.01 hrs, 4801 points x 2
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Dyn-Stor-Ind method - Pond routing by Dyn-Stor-Ind method

Subcatchment1S: (new Subcat) Runoff Area=28,835 sf 82.21% Impervious Runoff Depth=3.59"
Flow Length=132' Slope=0.0100 '/' Tc=6.0 min CN=91 Runoff=2.69 cfs 8,638 cf

Subcatchment2S: (new Subcat) Runoff Area=27,182 sf 88.34% Impervious Runoff Depth=3.91"
Flow Length=164' Slope=0.0180 '/' Tc=6.0 min CN=94 Runoff=2.68 cfs 8,865 cf

Subcatchment3S: (new Subcat) Runoff Area=15,213 sf 80.21% Impervious Runoff Depth=3.59"
Flow Length=161' Slope=0.0150 '/' Tc=6.0 min CN=91 Runoff=1.42 cfs 4,557 cf

Subcatchment4S: (new Subcat) Runoff Area=28,840 sf 96.87% Impervious Runoff Depth=4.25"
Flow Length=178' Slope=0.0160 '/' Tc=6.0 min CN=97 Runoff=2.95 cfs 10,211 cf

Subcatchment5S: (new Subcat) Runoff Area=49,425 sf 82.25% Impervious Runoff Depth=3.59"
Flow Length=281' Slope=0.0100 '/' Tc=6.0 min CN=91 Runoff=4.60 cfs 14,805 cf

Subcatchment6S: (new Subcat) Runoff Area=15,879 sf 76.74% Impervious Runoff Depth=3.49"
Flow Length=231' Tc=6.1 min CN=90 Runoff=1.44 cfs 4,620 cf

Subcatchment7S: (new Subcat) Runoff Area=7,643 sf 92.45% Impervious Runoff Depth=4.14"
Flow Length=180' Slope=0.0250 '/' Tc=6.0 min CN=96 Runoff=0.77 cfs 2,634 cf

Subcatchment8S: (new Subcat) Runoff Area=7,438 sf 31.78% Impervious Runoff Depth=1.97"
Flow Length=45' Slope=0.0800 '/' Tc=6.0 min CN=73 Runoff=0.39 cfs 1,222 cf

Subcatchment9S: (new Subcat) Runoff Area=12,873 sf 97.59% Impervious Runoff Depth=4.25"
Flow Length=215' Slope=0.0220 '/' Tc=6.0 min CN=97 Runoff=1.32 cfs 4,558 cf

Subcatchment10S: (new Subcat) Runoff Area=16,424 sf 95.28% Impervious Runoff Depth=4.25"
Flow Length=195' Tc=6.0 min CN=97 Runoff=1.68 cfs 5,815 cf

Subcatchment11S: (new Subcat) Runoff Area=14,521 sf 95.72% Impervious Runoff Depth=4.25"
Flow Length=230' Slope=0.0250 '/' Tc=6.0 min CN=97 Runoff=1.49 cfs 5,141 cf

Subcatchment12S: (new Subcat) Runoff Area=9,667 sf 100.00% Impervious Runoff Depth=4.36"
Flow Length=257' Slope=0.0240 '/' Tc=6.0 min CN=98 Runoff=1.00 cfs 3,515 cf

Subcatchment13S: (new Subcat) Runoff Area=12,123 sf 88.89% Impervious Runoff Depth=4.14"
Flow Length=274' Slope=0.0210 '/' Tc=6.0 min CN=96 Runoff=1.23 cfs 4,178 cf

Subcatchment14S: (new Subcat) Runoff Area=8,897 sf 92.62% Impervious Runoff Depth=4.25"
Flow Length=188' Slope=0.0250 '/' Tc=6.0 min CN=97 Runoff=0.91 cfs 3,150 cf

Subcatchment15S: (new Subcat) Runoff Area=30,398 sf 93.40% Impervious Runoff Depth=4.25"
Flow Length=331' Tc=6.0 min CN=97 Runoff=3.11 cfs 10,762 cf

Subcatchment16S: (new Subcat) Runoff Area=91,275 sf 0.98% Impervious Runoff Depth=2.05"
Flow Length=109' Tc=6.0 min CN=74 Runoff=4.99 cfs 15,589 cf

Subcatchment 17S: (new Subcat) Runoff Area=34,419 sf 73.63% Impervious Runoff Depth=3.29"
Flow Length=144' Slope=0.0200 '/' Tc=6.0 min CN=88 Runoff=2.99 cfs 9,438 cf

Subcatchment Off Site: Off Site Flow Runoff Area=530,758 sf 21.83% Impervious Runoff Depth=1.67"
Flow Length=722' Slope=0.0200 '/' Tc=12.2 min CN=69 Runoff=18.76 cfs 73,952 cf

Pond 1P: DMH 10162 Peak Elev=11.30' Inflow=18.76 cfs 73,952 cf
42.0" Round Culvert n=0.011 L=147.0' S=0.0044 '/' Outflow=18.76 cfs 73,952 cf

Pond 2P: CB-15 Peak Elev=10.65' Inflow=18.76 cfs 73,952 cf
36.0" Round Culvert n=0.013 L=147.0' S=0.0050 '/' Outflow=18.76 cfs 73,952 cf

Pond 4P: CBR 1710 Peak Elev=18.37' Inflow=14.33 cfs 47,076 cf
24.0" Round Culvert n=0.013 L=234.8' S=0.0052 '/' Outflow=14.33 cfs 47,076 cf

Pond 5P: CB 1668 Peak Elev=21.43' Inflow=4.60 cfs 14,805 cf
18.0" Round Culvert n=0.013 L=155.0' S=0.0134 '/' Outflow=4.60 cfs 14,805 cf

Pond 6P: CBR 1709 Peak Elev=18.98' Inflow=6.78 cfs 22,060 cf
18.0" Round Culvert n=0.013 L=48.0' S=0.0029 '/' Outflow=6.78 cfs 22,060 cf

Pond 7P: CB 12 Peak Elev=25.81' Inflow=2.69 cfs 8,638 cf
12.0" Round Culvert n=0.013 L=10.4' S=0.0106 '/' Outflow=2.69 cfs 8,638 cf

Pond 8P: CBR 1708 Peak Elev=19.45' Inflow=5.36 cfs 17,503 cf
18.0" Round Culvert n=0.013 L=93.0' S=0.0100 '/' Outflow=5.36 cfs 17,503 cf

Pond 9P: CB-11 Peak Elev=22.82' Inflow=2.68 cfs 8,865 cf
12.0" Round Culvert n=0.013 L=13.8' S=0.0051 '/' Outflow=2.68 cfs 8,865 cf

Pond 10P: CB-16 Peak Elev=9.66' Inflow=18.76 cfs 73,952 cf
36.0" Round Culvert n=0.013 L=296.0' S=0.0050 '/' Outflow=18.76 cfs 73,952 cf

Pond 11P: DMH-1 Peak Elev=8.03' Inflow=18.76 cfs 73,952 cf
36.0" Round Culvert n=0.013 L=199.0' S=0.0050 '/' Outflow=18.76 cfs 73,952 cf

Pond 12P: CB-4 Peak Elev=16.92' Inflow=22.03 cfs 73,359 cf
30.0" Round Culvert n=0.013 L=105.3' S=0.0239 '/' Outflow=22.03 cfs 73,359 cf

Pond 13P: CB-7 Peak Elev=14.54' Inflow=27.28 cfs 91,449 cf
36.0" Round Culvert n=0.013 L=1.3' S=0.0154 '/' Outflow=27.28 cfs 91,449 cf

Pond 14P: ICS-1 Peak Elev=13.62' Inflow=27.28 cfs 91,449 cf
Primary=21.66 cfs 72,013 cf Secondary=7.24 cfs 19,436 cf Outflow=27.28 cfs 91,449 cf

Pond 15P: CB-6 Peak Elev=17.72' Inflow=1.00 cfs 3,515 cf
12.0" Round Culvert n=0.013 L=59.5' S=0.0050 '/' Outflow=1.00 cfs 3,515 cf

Pond 16P: CB-3 Peak Elev=17.50' Inflow=3.53 cfs 11,812 cf
15.0" Round Culvert n=0.013 L=75.5' S=0.0101 '/' Outflow=3.53 cfs 11,812 cf

Pond 17P: CB-2 Peak Elev=18.04' Inflow=2.22 cfs 7,254 cf
12.0" Round Culvert n=0.013 L=77.3' S=0.0127 '/' Outflow=2.22 cfs 7,254 cf

Pond 18P: CB-1 Peak Elev=18.28' Inflow=1.44 cfs 4,620 cf
12.0" Round Culvert n=0.013 L=63.5' S=0.0101 '/' Outflow=1.44 cfs 4,620 cf

Pond 19P: CB-8 Peak Elev=14.68' Inflow=4.34 cfs 14,940 cf
24.0" Round Culvert n=0.013 L=66.0' S=0.0050 '/' Outflow=4.34 cfs 14,940 cf

Pond 20P: CB-9 Peak Elev=14.89' Inflow=3.11 cfs 10,762 cf
18.0" Round Culvert n=0.013 L=159.0' S=0.0051 '/' Outflow=3.11 cfs 10,762 cf

Pond 21P: DMH-2 Peak Elev=12.81' Inflow=7.24 cfs 19,436 cf
18.0" Round Culvert n=0.013 L=133.0' S=0.0200 '/' Outflow=7.24 cfs 19,436 cf

Pond 22P: DMH-3 Peak Elev=9.86' Inflow=7.24 cfs 19,436 cf
18.0" Round Culvert n=0.013 L=30.1' S=0.0316 '/' Outflow=7.24 cfs 19,436 cf

Pond 23P: CBR 1380 Peak Elev=24.78' Inflow=2.69 cfs 8,638 cf
12.0" Round Culvert n=0.013 L=87.8' S=0.0066 '/' Outflow=2.69 cfs 8,638 cf

Pond 25P: CBR 2113 Peak Elev=23.77' Inflow=2.69 cfs 8,638 cf
15.0" Round Culvert n=0.013 L=148.6' S=0.0090 '/' Outflow=2.69 cfs 8,638 cf

Pond 26P: CB-5 Peak Elev=17.62' Inflow=2.48 cfs 8,657 cf
12.0" Round Culvert n=0.013 L=42.0' S=0.0052 '/' Outflow=2.48 cfs 8,657 cf

Pond EX WTLND: Existing Wetland Peak Elev=7.01' Storage=1,675 cf Inflow=21.63 cfs 116,480 cf
Primary=20.67 cfs 116,479 cf Secondary=0.03 cfs 3 cf Outflow=20.70 cfs 116,481 cf

Pond SSF-1: Subsurface Sand Filter 1 Peak Elev=13.57' Storage=31,015 cf Inflow=21.66 cfs 72,013 cf
Outflow=8.78 cfs 72,017 cf

Link SP-1: Study Point 1 Inflow=39.32 cfs 190,434 cf
Primary=39.32 cfs 190,434 cf

Link SP-2: Study Point 2 Inflow=0.39 cfs 1,222 cf
Primary=0.39 cfs 1,222 cf

Total Runoff Area = 941,810 sf Runoff Volume = 191,651 cf Average Runoff Depth = 2.44"
58.44% Pervious = 550,380 sf 41.56% Impervious = 391,430 sf

Time span=0.00-48.00 hrs, dt=0.01 hrs, 4801 points x 2
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Dyn-Stor-Ind method - Pond routing by Dyn-Stor-Ind method

Subcatchment1S: (new Subcat) Runoff Area=28,835 sf 82.21% Impervious Runoff Depth=4.76"
Flow Length=132' Slope=0.0100 '/' Tc=6.0 min CN=91 Runoff=3.50 cfs 11,442 cf

Subcatchment2S: (new Subcat) Runoff Area=27,182 sf 88.34% Impervious Runoff Depth=5.10"
Flow Length=164' Slope=0.0180 '/' Tc=6.0 min CN=94 Runoff=3.43 cfs 11,549 cf

Subcatchment3S: (new Subcat) Runoff Area=15,213 sf 80.21% Impervious Runoff Depth=4.76"
Flow Length=161' Slope=0.0150 '/' Tc=6.0 min CN=91 Runoff=1.85 cfs 6,037 cf

Subcatchment4S: (new Subcat) Runoff Area=28,840 sf 96.87% Impervious Runoff Depth=5.44"
Flow Length=178' Slope=0.0160 '/' Tc=6.0 min CN=97 Runoff=3.74 cfs 13,085 cf

Subcatchment5S: (new Subcat) Runoff Area=49,425 sf 82.25% Impervious Runoff Depth=4.76"
Flow Length=281' Slope=0.0100 '/' Tc=6.0 min CN=91 Runoff=6.00 cfs 19,612 cf

Subcatchment6S: (new Subcat) Runoff Area=15,879 sf 76.74% Impervious Runoff Depth=4.65"
Flow Length=231' Tc=6.1 min CN=90 Runoff=1.89 cfs 6,155 cf

Subcatchment7S: (new Subcat) Runoff Area=7,643 sf 92.45% Impervious Runoff Depth=5.33"
Flow Length=180' Slope=0.0250 '/' Tc=6.0 min CN=96 Runoff=0.98 cfs 3,394 cf

Subcatchment8S: (new Subcat) Runoff Area=7,438 sf 31.78% Impervious Runoff Depth=2.92"
Flow Length=45' Slope=0.0800 '/' Tc=6.0 min CN=73 Runoff=0.58 cfs 1,812 cf

Subcatchment9S: (new Subcat) Runoff Area=12,873 sf 97.59% Impervious Runoff Depth=5.44"
Flow Length=215' Slope=0.0220 '/' Tc=6.0 min CN=97 Runoff=1.67 cfs 5,841 cf

Subcatchment10S: (new Subcat) Runoff Area=16,424 sf 95.28% Impervious Runoff Depth=5.44"
Flow Length=195' Tc=6.0 min CN=97 Runoff=2.13 cfs 7,452 cf

Subcatchment11S: (new Subcat) Runoff Area=14,521 sf 95.72% Impervious Runoff Depth=5.44"
Flow Length=230' Slope=0.0250 '/' Tc=6.0 min CN=97 Runoff=1.88 cfs 6,589 cf

Subcatchment12S: (new Subcat) Runoff Area=9,667 sf 100.00% Impervious Runoff Depth=5.56"
Flow Length=257' Slope=0.0240 '/' Tc=6.0 min CN=98 Runoff=1.26 cfs 4,481 cf

Subcatchment13S: (new Subcat) Runoff Area=12,123 sf 88.89% Impervious Runoff Depth=5.33"
Flow Length=274' Slope=0.0210 '/' Tc=6.0 min CN=96 Runoff=1.56 cfs 5,383 cf

Subcatchment14S: (new Subcat) Runoff Area=8,897 sf 92.62% Impervious Runoff Depth=5.44"
Flow Length=188' Slope=0.0250 '/' Tc=6.0 min CN=97 Runoff=1.15 cfs 4,037 cf

Subcatchment15S: (new Subcat) Runoff Area=30,398 sf 93.40% Impervious Runoff Depth=5.44"
Flow Length=331' Tc=6.0 min CN=97 Runoff=3.94 cfs 13,792 cf

Subcatchment16S: (new Subcat) Runoff Area=91,275 sf 0.98% Impervious Runoff Depth=3.02"
Flow Length=109' Tc=6.0 min CN=74 Runoff=7.41 cfs 22,951 cf

Subcatchment 17S: (new Subcat) Runoff Area=34,419 sf 73.63% Impervious Runoff Depth=4.43"
Flow Length=144' Slope=0.0200 '/' Tc=6.0 min CN=88 Runoff=3.98 cfs 12,716 cf

Subcatchment Off Site: Off Site Flow Runoff Area=530,758 sf 21.83% Impervious Runoff Depth=2.56"
Flow Length=722' Slope=0.0200 '/' Tc=12.2 min CN=69 Runoff=29.44 cfs 113,111 cf

Pond 1P: DMH 10162 Peak Elev=12.24' Inflow=29.44 cfs 113,111 cf
42.0" Round Culvert n=0.011 L=147.0' S=0.0044 '/' Outflow=29.44 cfs 113,111 cf

Pond 2P: CB-15 Peak Elev=11.63' Inflow=29.44 cfs 113,111 cf
36.0" Round Culvert n=0.013 L=147.0' S=0.0050 '/' Outflow=29.44 cfs 113,111 cf

Pond 4P: CBR 1710 Peak Elev=20.42' Inflow=18.53 cfs 61,725 cf
24.0" Round Culvert n=0.013 L=234.8' S=0.0052 '/' Outflow=18.53 cfs 61,725 cf

Pond 5P: CB 1668 Peak Elev=21.73' Inflow=6.00 cfs 19,612 cf
18.0" Round Culvert n=0.013 L=155.0' S=0.0134 '/' Outflow=6.00 cfs 19,612 cf

Pond 6P: CBR 1709 Peak Elev=21.48' Inflow=8.79 cfs 29,027 cf
18.0" Round Culvert n=0.013 L=48.0' S=0.0029 '/' Outflow=8.79 cfs 29,027 cf

Pond 7P: CB 12 Peak Elev=26.28' Inflow=3.50 cfs 11,442 cf
12.0" Round Culvert n=0.013 L=10.4' S=0.0106 '/' Outflow=3.50 cfs 11,442 cf

Pond 8P: CBR 1708 Peak Elev=22.20' Inflow=6.94 cfs 22,991 cf
18.0" Round Culvert n=0.013 L=93.0' S=0.0100 '/' Outflow=6.94 cfs 22,991 cf

Pond 9P: CB-11 Peak Elev=23.49' Inflow=3.43 cfs 11,549 cf
12.0" Round Culvert n=0.013 L=13.8' S=0.0051 '/' Outflow=3.43 cfs 11,549 cf

Pond 10P: CB-16 Peak Elev=10.43' Inflow=29.44 cfs 113,111 cf
36.0" Round Culvert n=0.013 L=296.0' S=0.0050 '/' Outflow=29.44 cfs 113,111 cf

Pond 11P: DMH-1 Peak Elev=8.73' Inflow=29.44 cfs 113,111 cf
36.0" Round Culvert n=0.013 L=199.0' S=0.0050 '/' Outflow=29.44 cfs 113,111 cf

Pond 12P: CB-4 Peak Elev=18.09' Inflow=28.35 cfs 95,635 cf
30.0" Round Culvert n=0.013 L=105.3' S=0.0239 '/' Outflow=28.35 cfs 95,635 cf

Pond 13P: CB-7 Peak Elev=15.81' Inflow=35.01 cfs 118,847 cf
36.0" Round Culvert n=0.013 L=1.3' S=0.0154 '/' Outflow=35.01 cfs 118,847 cf

Pond 14P: ICS-1 Peak Elev=14.29' Inflow=35.01 cfs 118,847 cf
Primary=27.29 cfs 90,438 cf Secondary=8.33 cfs 28,409 cf Outflow=35.01 cfs 118,847 cf

Pond 15P: CB-6 Peak Elev=19.34' Inflow=1.26 cfs 4,481 cf
12.0" Round Culvert n=0.013 L=59.5' S=0.0050 '/' Outflow=1.26 cfs 4,481 cf

Pond 16P: CB-3 Peak Elev=18.99' Inflow=4.55 cfs 15,389 cf
15.0" Round Culvert n=0.013 L=75.5' S=0.0101 '/' Outflow=4.55 cfs 15,389 cf

Pond 17P: CB-2 Peak Elev=19.93' Inflow=2.88 cfs 9,548 cf
12.0" Round Culvert n=0.013 L=77.3' S=0.0127 '/' Outflow=2.88 cfs 9,548 cf

Pond 18P: CB-1 Peak Elev=20.28' Inflow=1.89 cfs 6,155 cf
12.0" Round Culvert n=0.013 L=63.5' S=0.0101 '/' Outflow=1.89 cfs 6,155 cf

Pond 19P: CB-8 Peak Elev=16.01' Inflow=5.51 cfs 19,175 cf
24.0" Round Culvert n=0.013 L=66.0' S=0.0050 '/' Outflow=5.51 cfs 19,175 cf

Pond 20P: CB-9 Peak Elev=16.37' Inflow=3.94 cfs 13,792 cf
18.0" Round Culvert n=0.013 L=159.0' S=0.0051 '/' Outflow=3.94 cfs 13,792 cf

Pond 21P: DMH-2 Peak Elev=13.19' Inflow=8.33 cfs 28,409 cf
18.0" Round Culvert n=0.013 L=133.0' S=0.0200 '/' Outflow=8.33 cfs 28,409 cf

Pond 22P: DMH-3 Peak Elev=10.24' Inflow=8.33 cfs 28,409 cf
18.0" Round Culvert n=0.013 L=30.1' S=0.0316 '/' Outflow=8.33 cfs 28,409 cf

Pond 23P: CBR 1380 Peak Elev=25.42' Inflow=3.50 cfs 11,442 cf
12.0" Round Culvert n=0.013 L=87.8' S=0.0066 '/' Outflow=3.50 cfs 11,442 cf

Pond 25P: CBR 2113 Peak Elev=23.98' Inflow=3.50 cfs 11,442 cf
15.0" Round Culvert n=0.013 L=148.6' S=0.0090 '/' Outflow=3.50 cfs 11,442 cf

Pond 26P: CB-5 Peak Elev=19.15' Inflow=3.15 cfs 11,069 cf
12.0" Round Culvert n=0.013 L=42.0' S=0.0052 '/' Outflow=3.15 cfs 11,069 cf

Pond EX WTLND: Existing Wetland Peak Elev=7.31' Storage=2,487 cf Inflow=31.43 cfs 154,517 cf
Primary=25.46 cfs 150,582 cf Secondary=5.60 cfs 3,935 cf Outflow=31.05 cfs 154,517 cf

Pond SSF-1: Subsurface Sand Filter 1 Peak Elev=14.17' Storage=36,291 cf Inflow=27.29 cfs 90,438 cf
Outflow=13.47 cfs 90,441 cf

Link SP-1: Study Point 1 Inflow=59.99 cfs 267,628 cf
Primary=59.99 cfs 267,628 cf

Link SP-2: Study Point 2 Inflow=0.58 cfs 1,812 cf
Primary=0.58 cfs 1,812 cf

Total Runoff Area = 941,810 sf Runoff Volume = 269,438 cf Average Runoff Depth = 3.43"
58.44% Pervious = 550,380 sf 41.56% Impervious = 391,430 sf

Summary for Subcatchment 1S: (new Subcat)

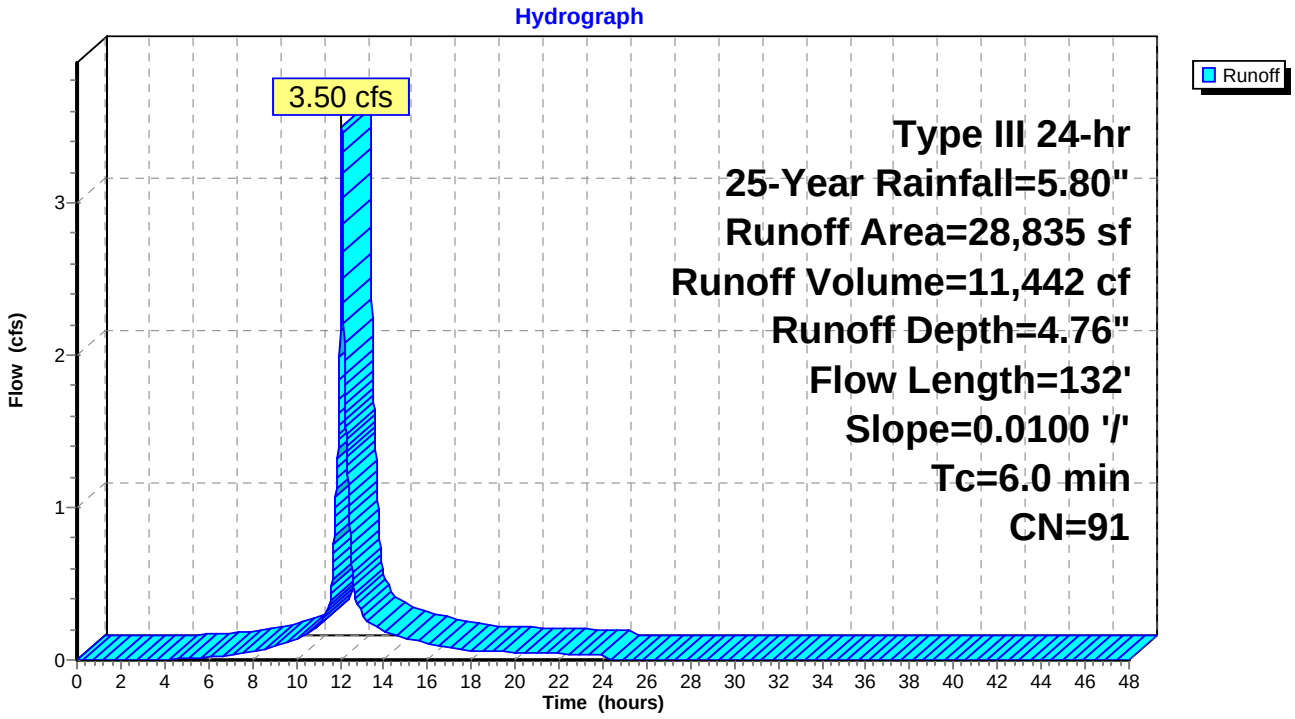
Runoff = 3.50 cfs @ 12.08 hrs, Volume= 11,442 cf, Depth= 4.76"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Type III 24-hr 25-Year Rainfall=5.80"

Area (sf)	CN	Description
4,290	98	Roofs, HSG B
19,414	98	Paved parking, HSG B
5,131	61	>75% Grass cover, Good, HSG B
28,835	91	Weighted Average
5,131		17.79% Pervious Area
23,704		82.21% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.1	58	0.0100	0.92		**Sheet Flow,** Smooth surfaces n= 0.011 P2= 3.10"
0.6	74	0.0100	2.03		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
4.3					**Direct Entry,**
6.0	132	Total			

Subcatchment 1S: (new Subcat)



Summary for Subcatchment 2S: (new Subcat)

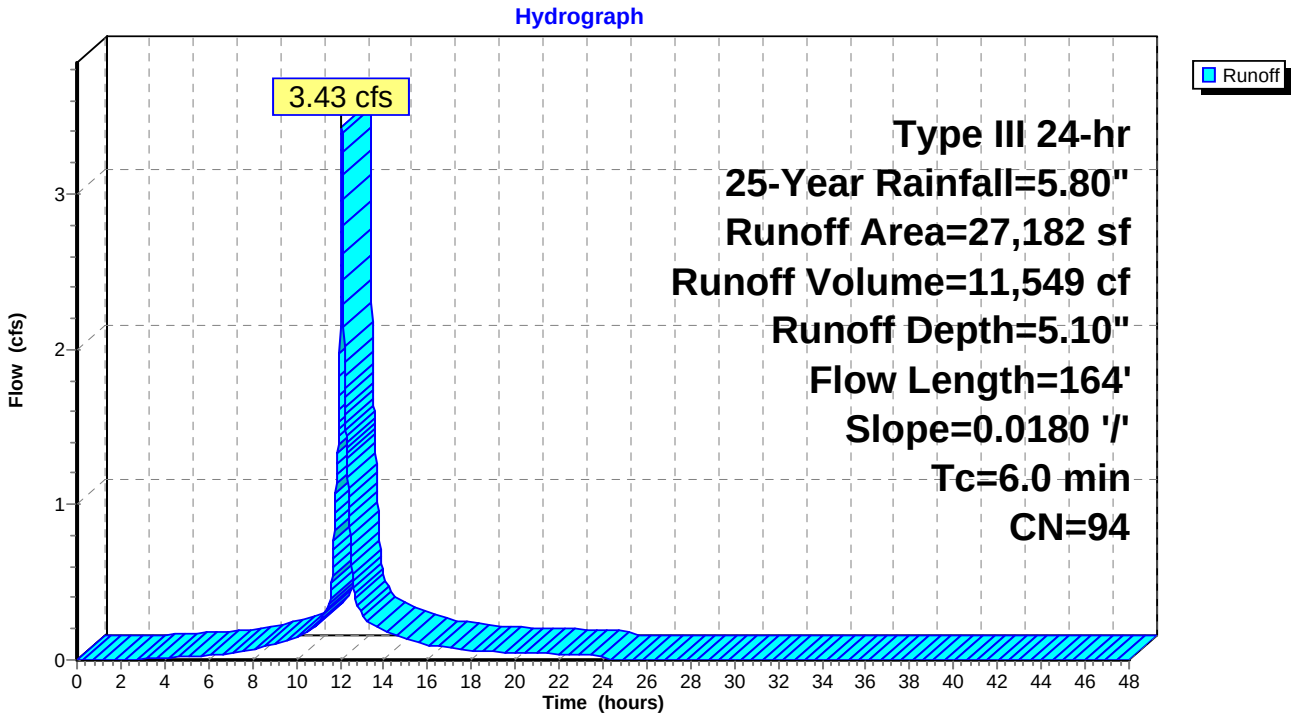
Runoff = 3.43 cfs @ 12.08 hrs, Volume= 11,549 cf, Depth= 5.10"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Type III 24-hr 25-Year Rainfall=5.80"

Area (sf)	CN	Description
1,939	98	Roofs, HSG B
22,074	98	Paved parking, HSG B
3,169	61	>75% Grass cover, Good, HSG B
27,182	94	Weighted Average
3,169		11.66% Pervious Area
24,013		88.34% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.3	100	0.0180	1.30		**Sheet Flow,** Smooth surfaces n= 0.011 P2= 3.10"
0.4	64	0.0180	2.72		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
4.3					**Direct Entry,**
6.0	164	Total			

Subcatchment 2S: (new Subcat)



Summary for Subcatchment 3S: (new Subcat)

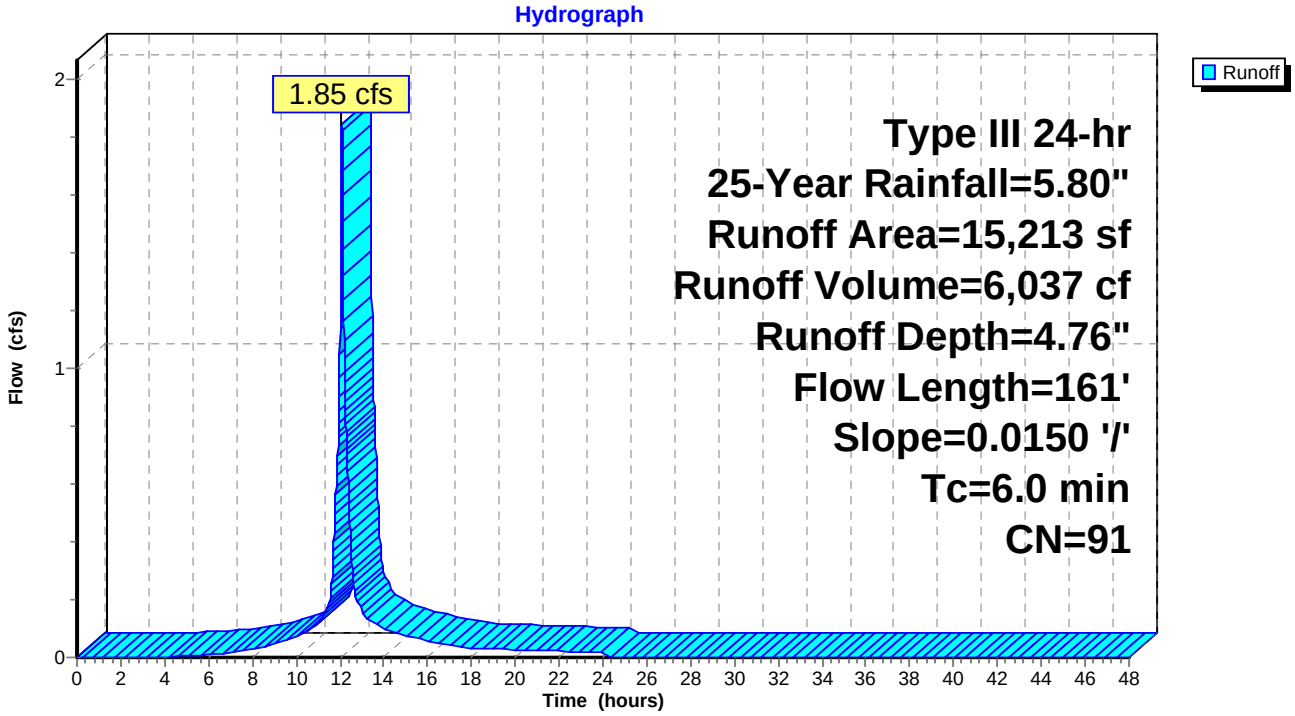
Runoff = 1.85 cfs @ 12.08 hrs, Volume= 6,037 cf, Depth= 4.76"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Type III 24-hr 25-Year Rainfall=5.80"

Area (sf)	CN	Description
12,202	98	Paved parking, HSG B
3,011	61	>75% Grass cover, Good, HSG B
15,213	91	Weighted Average
3,011		19.79% Pervious Area
12,202		80.21% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
4.6	33	0.0150	0.12		**Sheet Flow,** Grass: Short n= 0.150 P2= 3.10"
0.9	128	0.0150	2.49		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
0.5					**Direct Entry,**
6.0	161	Total			

Subcatchment 3S: (new Subcat)



Summary for Subcatchment 4S: (new Subcat)

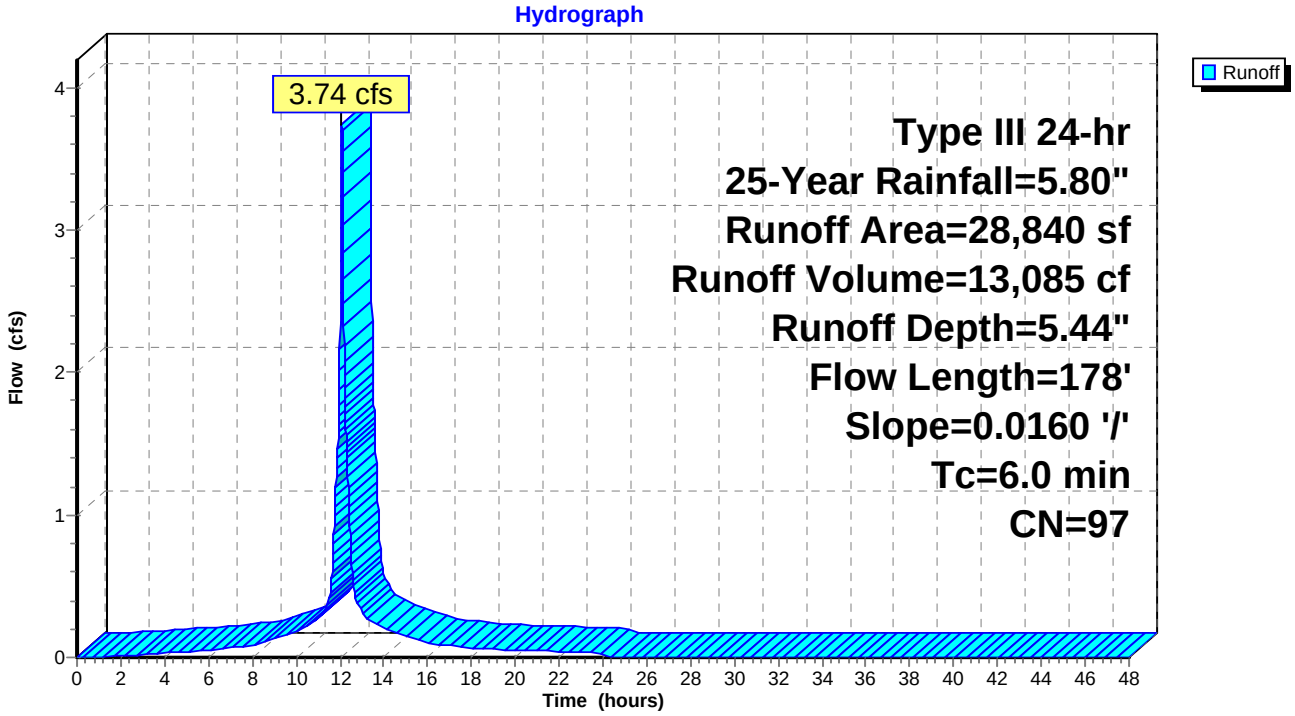
Runoff = 3.74 cfs @ 12.08 hrs, Volume= 13,085 cf, Depth= 5.44"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Type III 24-hr 25-Year Rainfall=5.80"

Area (sf)	CN	Description
27,938	98	Paved parking, HSG B
902	61	>75% Grass cover, Good, HSG B
28,840	97	Weighted Average
902		3.13% Pervious Area
27,938		96.87% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.3	100	0.0160	1.24		**Sheet Flow,** Smooth surfaces n= 0.011 P2= 3.10"
0.5	78	0.0160	2.57		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
4.2					**Direct Entry,**
6.0	178	Total			

Subcatchment 4S: (new Subcat)



Summary for Subcatchment 5S: (new Subcat)

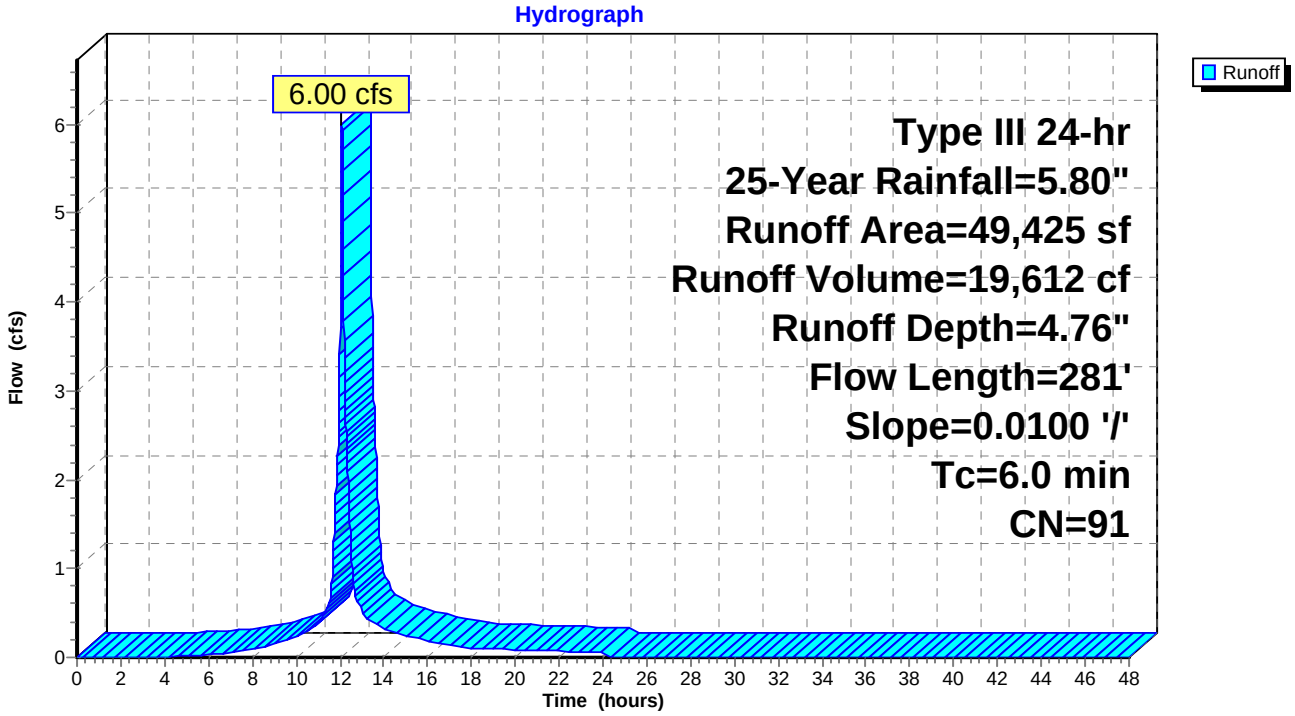
Runoff = 6.00 cfs @ 12.08 hrs, Volume= 19,612 cf, Depth= 4.76"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Type III 24-hr 25-Year Rainfall=5.80"

Area (sf)	CN	Description
40,650	98	Paved parking, HSG B
8,775	61	>75% Grass cover, Good, HSG B
49,425	91	Weighted Average
8,775		17.75% Pervious Area
40,650		82.25% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.6	100	0.0100	1.03		**Sheet Flow,** Smooth surfaces n= 0.011 P2= 3.10"
1.5	181	0.0100	2.03		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
2.9					**Direct Entry,**
6.0	281	Total			

Subcatchment 5S: (new Subcat)



Summary for Subcatchment 6S: (new Subcat)

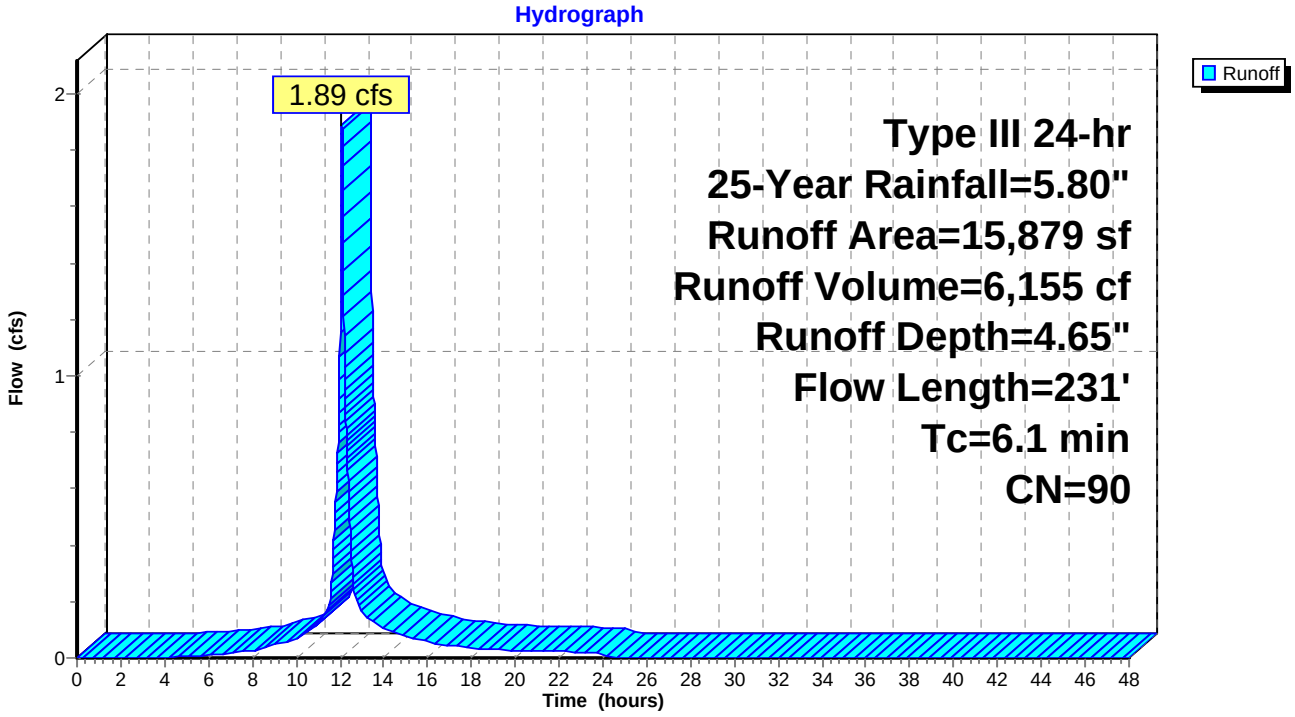
Runoff = 1.89 cfs @ 12.09 hrs, Volume= 6,155 cf, Depth= 4.65"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Type III 24-hr 25-Year Rainfall=5.80"

Area (sf)	CN	Description
8,219	98	Paved parking, HSG B
3,967	98	Paved parking, HSG D
3,328	61	>75% Grass cover, Good, HSG B
365	80	>75% Grass cover, Good, HSG D
15,879	90	Weighted Average
3,693		23.26% Pervious Area
12,186		76.74% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.2	66	0.0450	0.21		**Sheet Flow,** Grass: Short n= 0.150 P2= 3.10"
0.9	165	0.0250	3.21		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
6.1	231	Total			

Subcatchment 6S: (new Subcat)



Summary for Subcatchment 7S: (new Subcat)

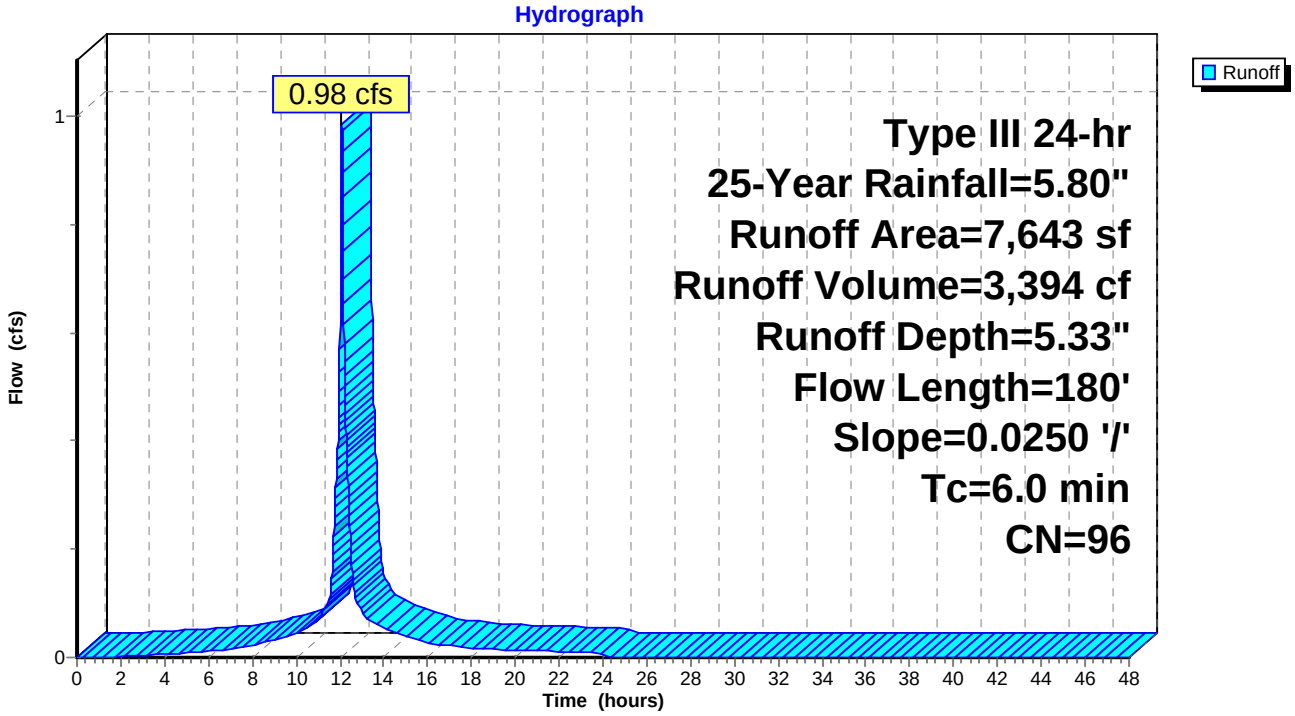
Runoff = 0.98 cfs @ 12.08 hrs, Volume= 3,394 cf, Depth= 5.33"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Type III 24-hr 25-Year Rainfall=5.80"

Area (sf)	CN	Description
2,645	98	Paved parking, HSG B
4,421	98	Paved parking, HSG D
183	61	>75% Grass cover, Good, HSG B
394	80	>75% Grass cover, Good, HSG D
7,643	96	Weighted Average
577		7.55% Pervious Area
7,066		92.45% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.1	100	0.0250	1.48		**Sheet Flow,** Smooth surfaces n= 0.011 P2= 3.10"
0.4	80	0.0250	3.21		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
4.5					**Direct Entry,**
6.0	180	Total			

Subcatchment 7S: (new Subcat)



Summary for Subcatchment 8S: (new Subcat)

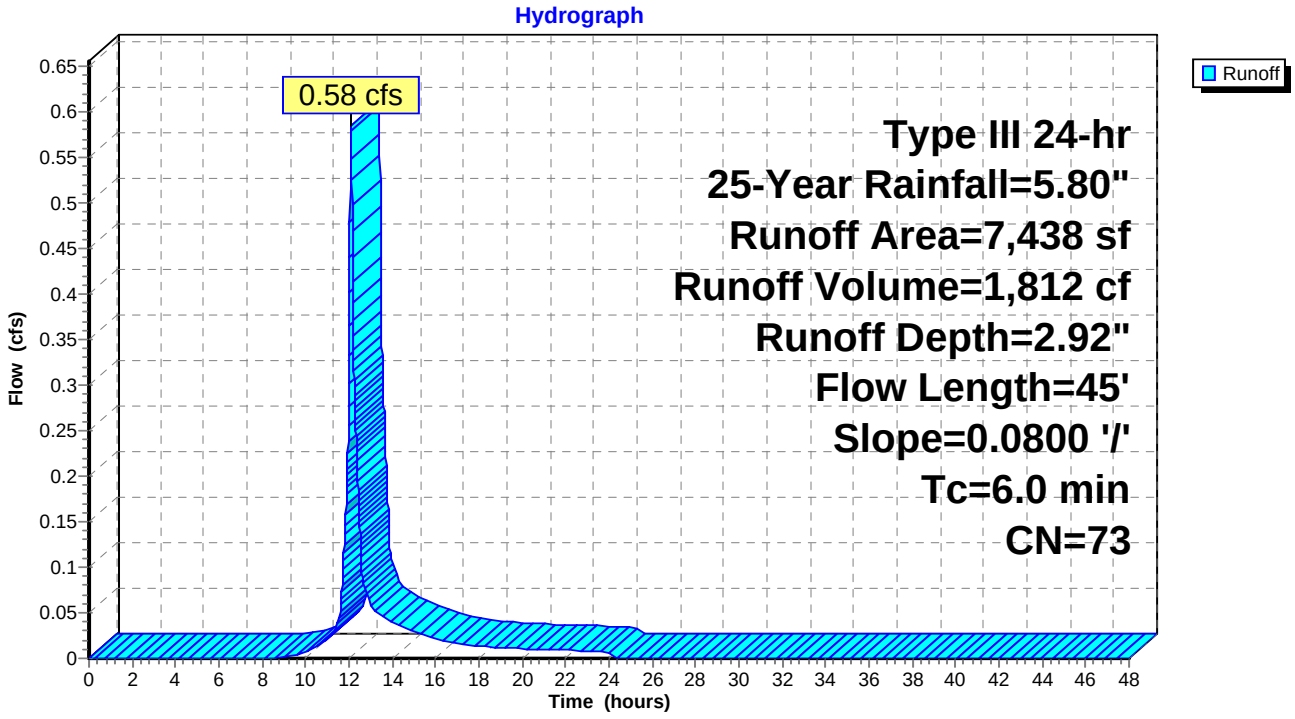
Runoff = 0.58 cfs @ 12.09 hrs, Volume= 1,812 cf, Depth= 2.92"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Type III 24-hr 25-Year Rainfall=5.80"

Area (sf)	CN	Description
2,364	98	Paved parking, HSG B
5,074	61	>75% Grass cover, Good, HSG B
7,438	73	Weighted Average
5,074		68.22% Pervious Area
2,364		31.78% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
3.0	45	0.0800	0.25		**Sheet Flow,** Grass: Short n= 0.150 P2= 3.10"
3.0					**Direct Entry,**
6.0	45	Total			

Subcatchment 8S: (new Subcat)



Summary for Subcatchment 9S: (new Subcat)

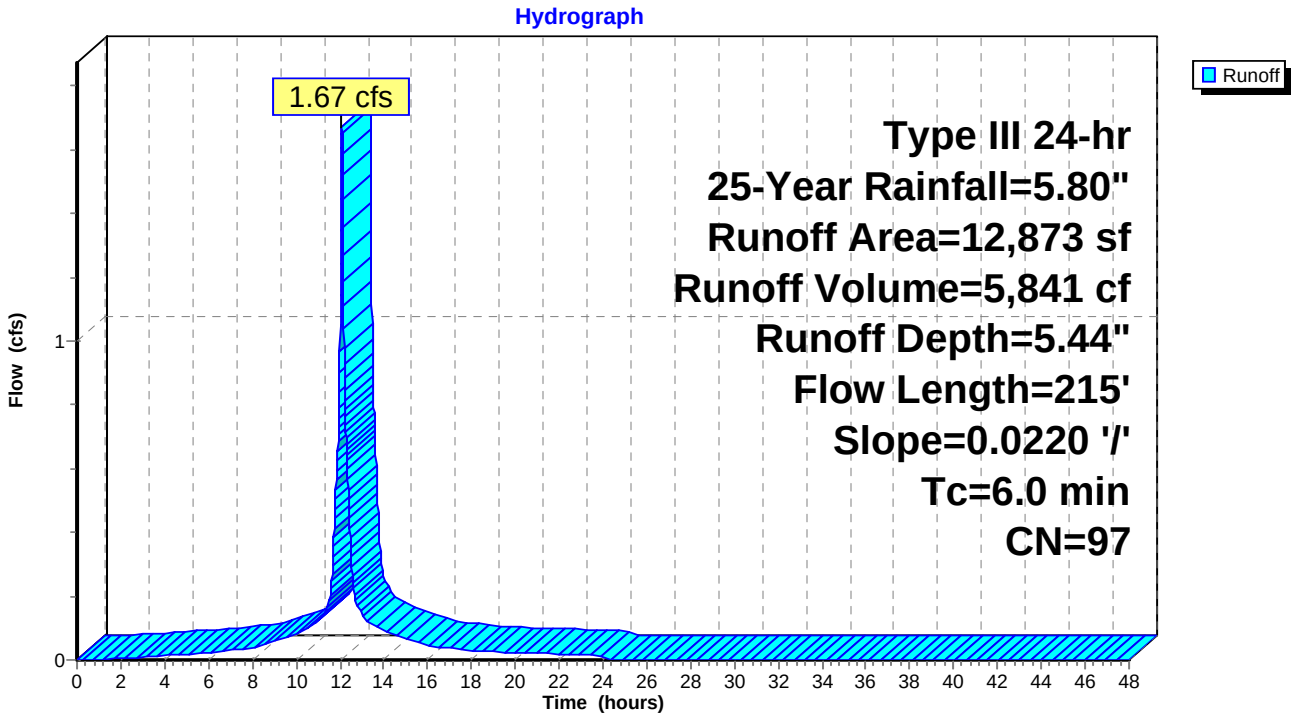
Runoff = 1.67 cfs @ 12.08 hrs, Volume= 5,841 cf, Depth= 5.44"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Type III 24-hr 25-Year Rainfall=5.80"

Area (sf)	CN	Description
2,193	98	Paved parking, HSG B
10,370	98	Paved parking, HSG D
310	61	>75% Grass cover, Good, HSG B
12,873	97	Weighted Average
310		2.41% Pervious Area
12,563		97.59% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.2	100	0.0220	1.41		**Sheet Flow,** Smooth surfaces n= 0.011 P2= 3.10"
0.6	115	0.0220	3.01		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
4.2					**Direct Entry,**
6.0	215	Total			

Subcatchment 9S: (new Subcat)



Summary for Subcatchment 10S: (new Subcat)

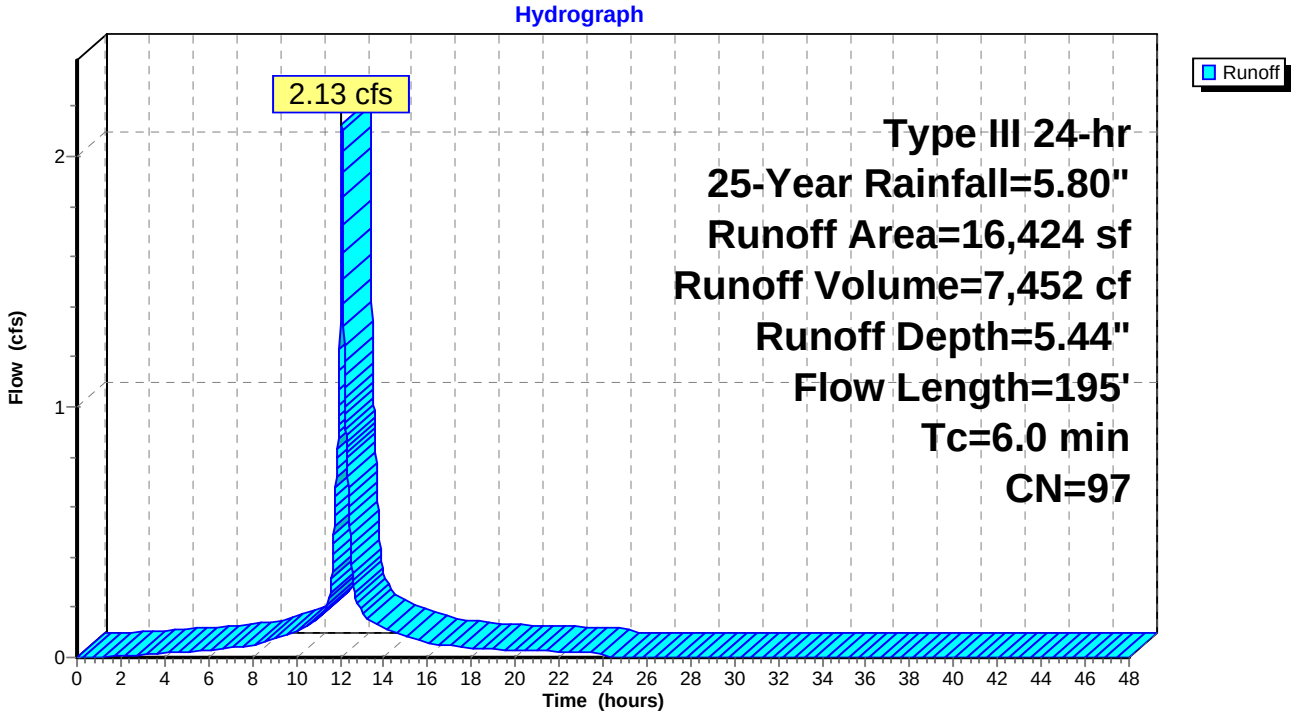
Runoff = 2.13 cfs @ 12.08 hrs, Volume= 7,452 cf, Depth= 5.44"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Type III 24-hr 25-Year Rainfall=5.80"

Area (sf)	CN	Description
1,869	98	Paved parking, HSG B
13,780	98	Paved parking, HSG D
465	61	>75% Grass cover, Good, HSG B
310	80	>75% Grass cover, Good, HSG D
16,424	97	Weighted Average
775		4.72% Pervious Area
15,649		95.28% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.2	100	0.0226	1.42		**Sheet Flow,** Smooth surfaces n= 0.011 P2= 3.10"
0.5	95	0.0260	3.27		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
4.3					**Direct Entry,**
6.0	195	Total			

Subcatchment 10S: (new Subcat)



Summary for Subcatchment 11S: (new Subcat)

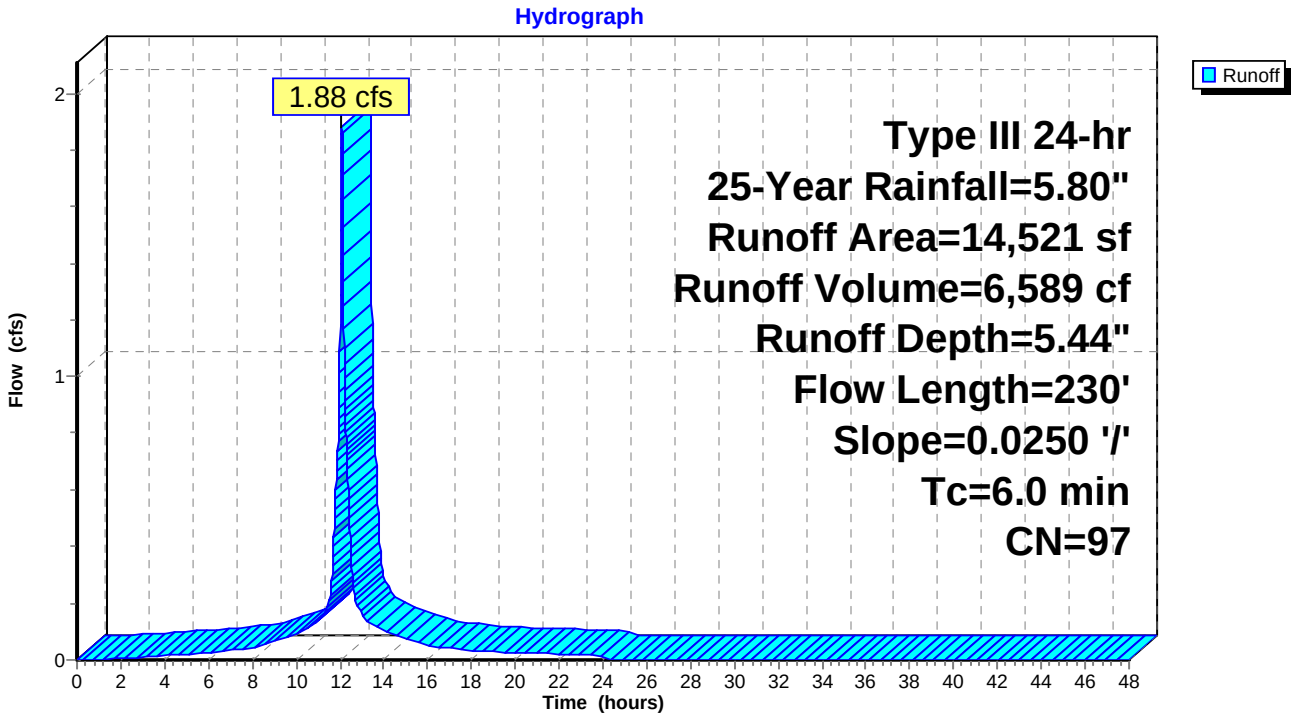
Runoff = 1.88 cfs @ 12.08 hrs, Volume= 6,589 cf, Depth= 5.44"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Type III 24-hr 25-Year Rainfall=5.80"

Area (sf)	CN	Description
1,962	98	Paved parking, HSG B
11,938	98	Paved parking, HSG D
621	80	>75% Grass cover, Good, HSG D
14,521	97	Weighted Average
621		4.28% Pervious Area
13,900		95.72% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.1	100	0.0250	1.48		**Sheet Flow,** Smooth surfaces n= 0.011 P2= 3.10"
0.7	130	0.0250	3.21		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
4.2					**Direct Entry,**
6.0	230	Total			

Subcatchment 11S: (new Subcat)



Summary for Subcatchment 12S: (new Subcat)

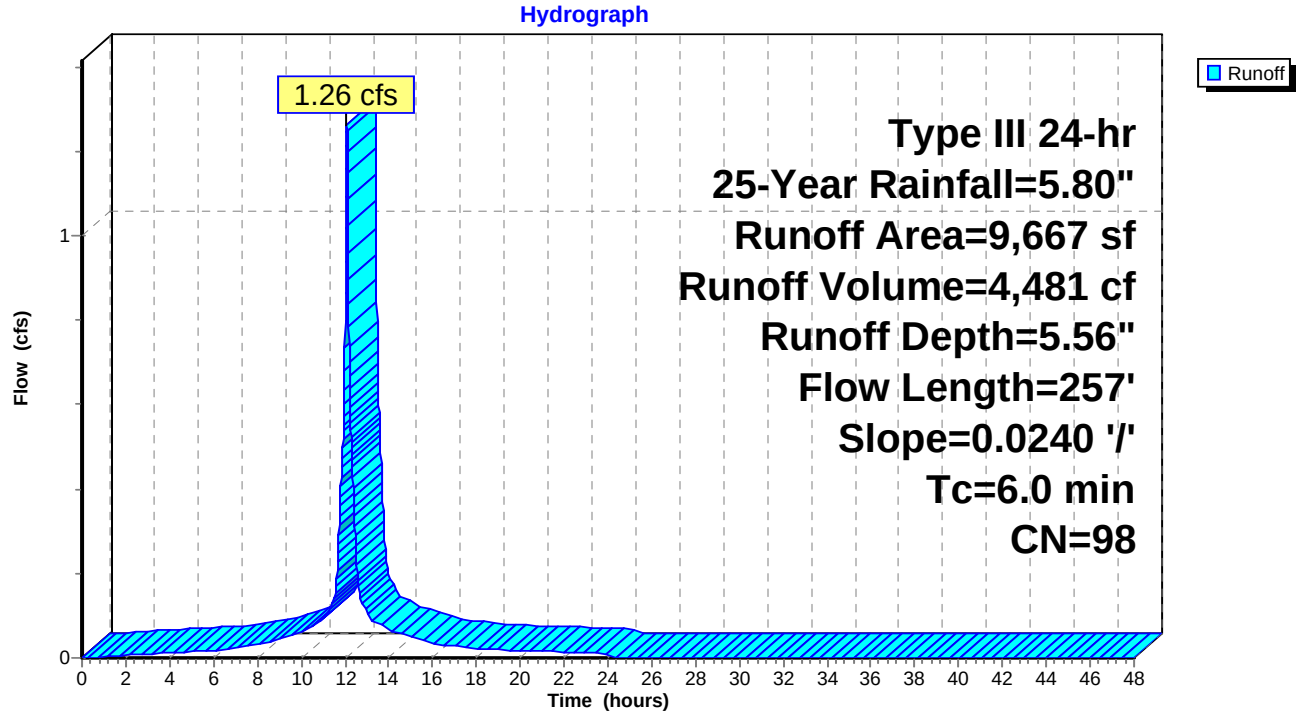
Runoff = 1.26 cfs @ 12.08 hrs, Volume= 4,481 cf, Depth= 5.56"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Type III 24-hr 25-Year Rainfall=5.80"

Area (sf)	CN	Description
2,861	98	Paved parking, HSG B
6,806	98	Paved parking, HSG D
9,667	98	Weighted Average
9,667		100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.1	100	0.0240	1.46		**Sheet Flow,** Smooth surfaces n= 0.011 P2= 3.10"
0.8	157	0.0240	3.14		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
4.1					**Direct Entry,**
6.0	257	Total			

Subcatchment 12S: (new Subcat)



Summary for Subcatchment 13S: (new Subcat)

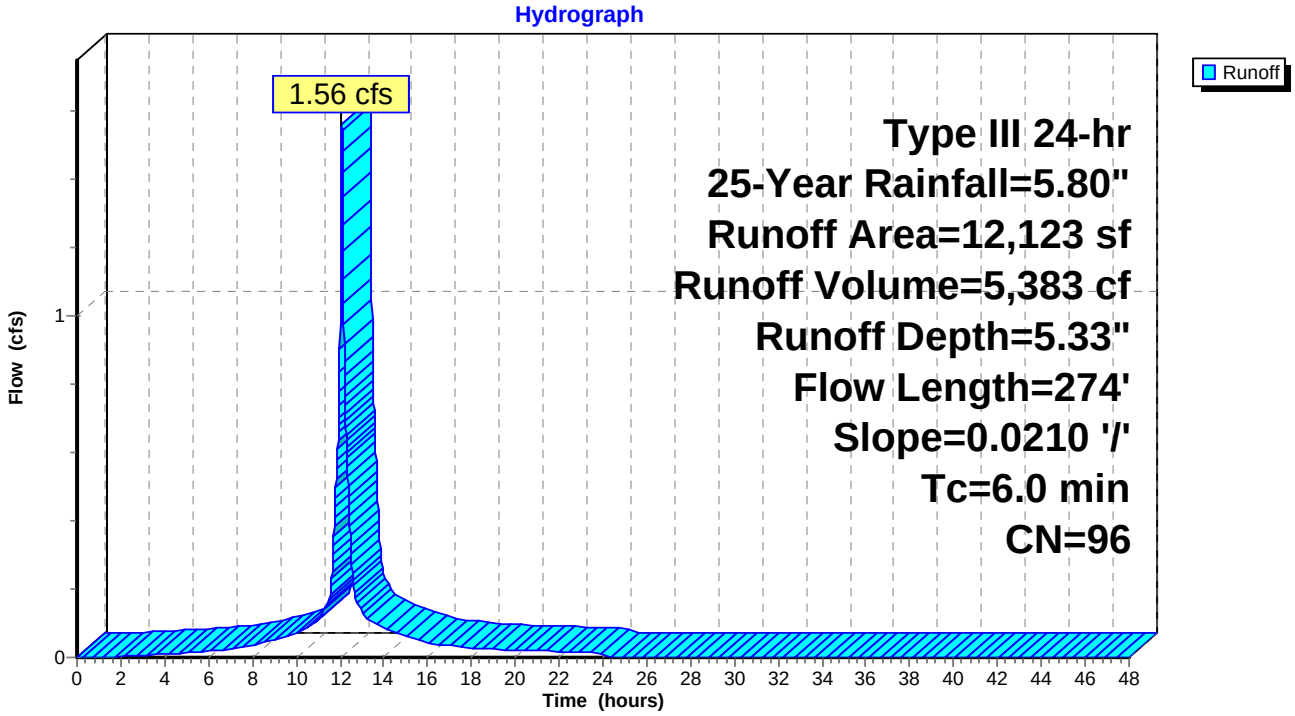
Runoff = 1.56 cfs @ 12.08 hrs, Volume= 5,383 cf, Depth= 5.33"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Type III 24-hr 25-Year Rainfall=5.80"

Area (sf)	CN	Description
10,776	98	Paved parking, HSG D
1,347	80	>75% Grass cover, Good, HSG D
12,123	96	Weighted Average
1,347		11.11% Pervious Area
10,776		88.89% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.2	100	0.0210	1.38		**Sheet Flow,** Smooth surfaces n= 0.011 P2= 3.10"
1.0	174	0.0210	2.94		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
3.8					**Direct Entry,**
6.0	274	Total			

Subcatchment 13S: (new Subcat)



Summary for Subcatchment 14S: (new Subcat)

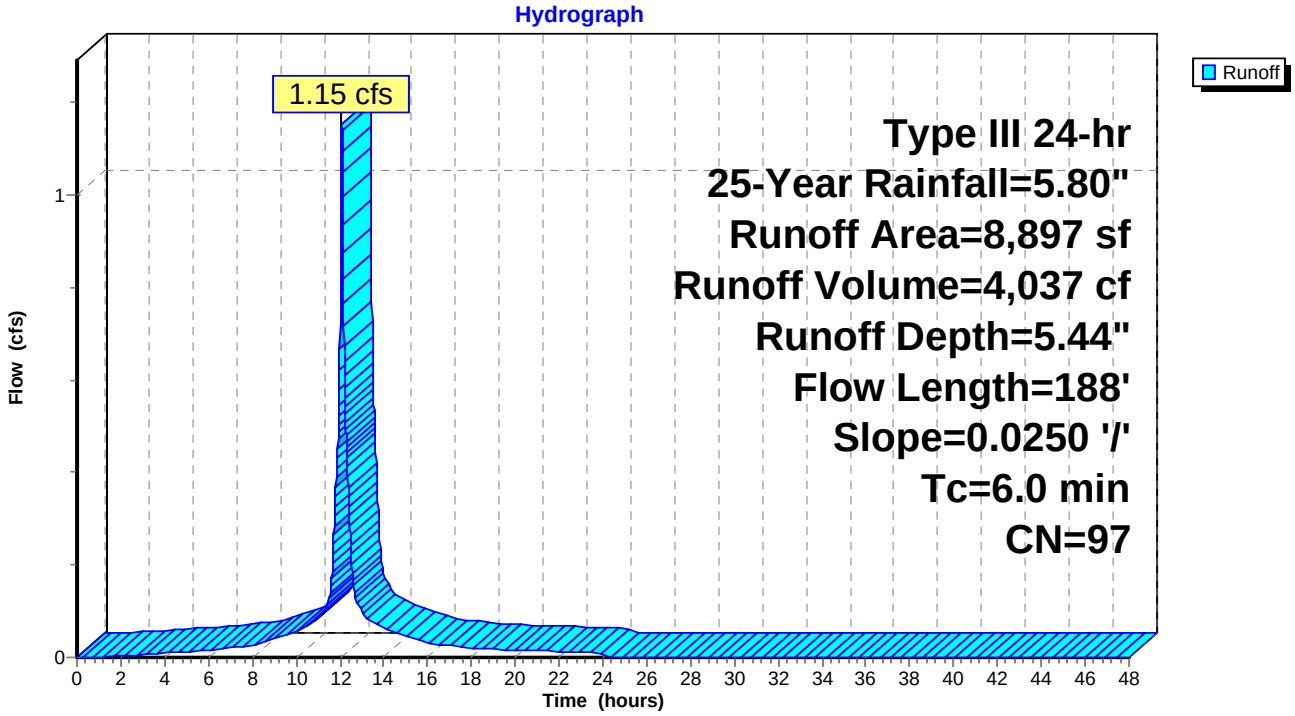
Runoff = 1.15 cfs @ 12.08 hrs, Volume= 4,037 cf, Depth= 5.44"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Type III 24-hr 25-Year Rainfall=5.80"

Area (sf)	CN	Description
8,240	98	Paved parking, HSG D
657	80	>75% Grass cover, Good, HSG D
8,897	97	Weighted Average
657		7.38% Pervious Area
8,240		92.62% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.1	100	0.0250	1.48		**Sheet Flow,** Smooth surfaces n= 0.011 P2= 3.10"
0.5	88	0.0250	3.21		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
4.4					**Direct Entry,**
6.0	188	Total			

Subcatchment 14S: (new Subcat)



Summary for Subcatchment 15S: (new Subcat)

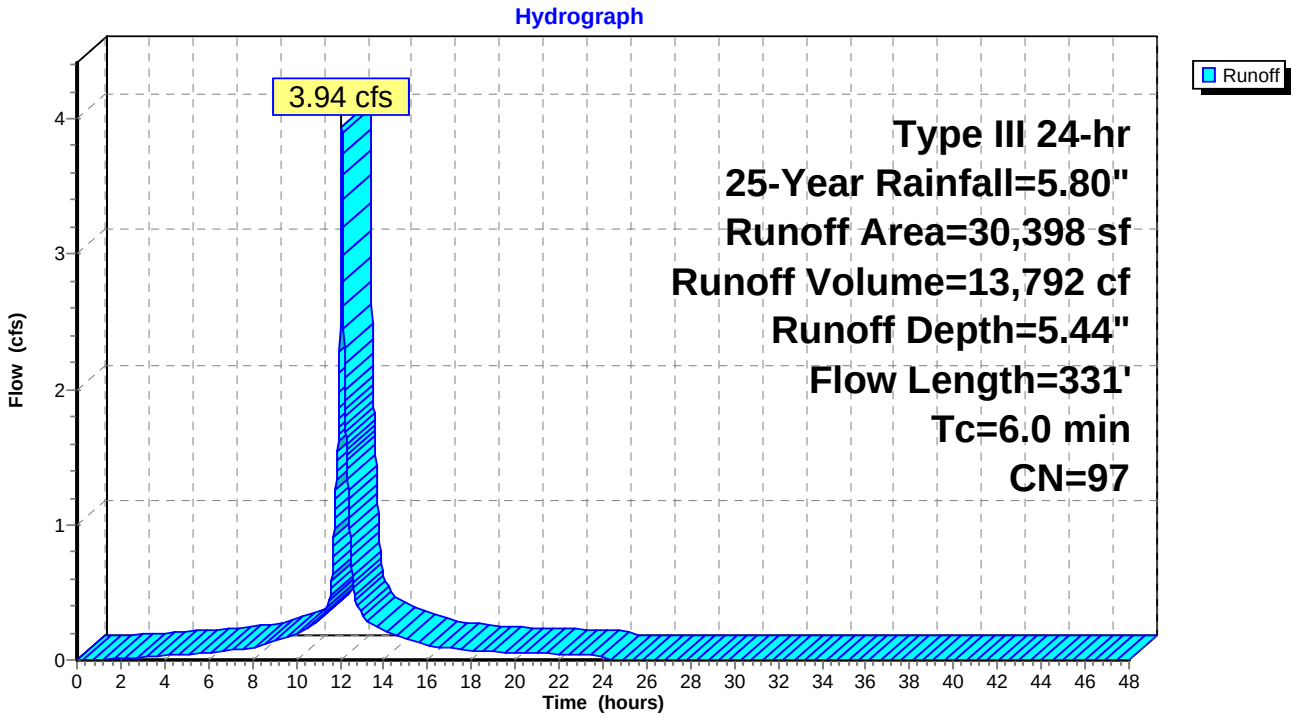
Runoff = 3.94 cfs @ 12.08 hrs, Volume= 13,792 cf, Depth= 5.44"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Type III 24-hr 25-Year Rainfall=5.80"

Area (sf)	CN	Description
104	98	Paved parking, HSG B
28,288	98	Paved parking, HSG D
2,006	80	>75% Grass cover, Good, HSG D
30,398	97	Weighted Average
2,006		6.60% Pervious Area
28,392		93.40% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.2	100	0.0225	1.42		**Sheet Flow,** Smooth surfaces n= 0.011 P2= 3.10"
1.7	231	0.0130	2.31		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
3.1					**Direct Entry,**
6.0	331	Total			

Subcatchment 15S: (new Subcat)



Summary for Subcatchment 16S: (new Subcat)

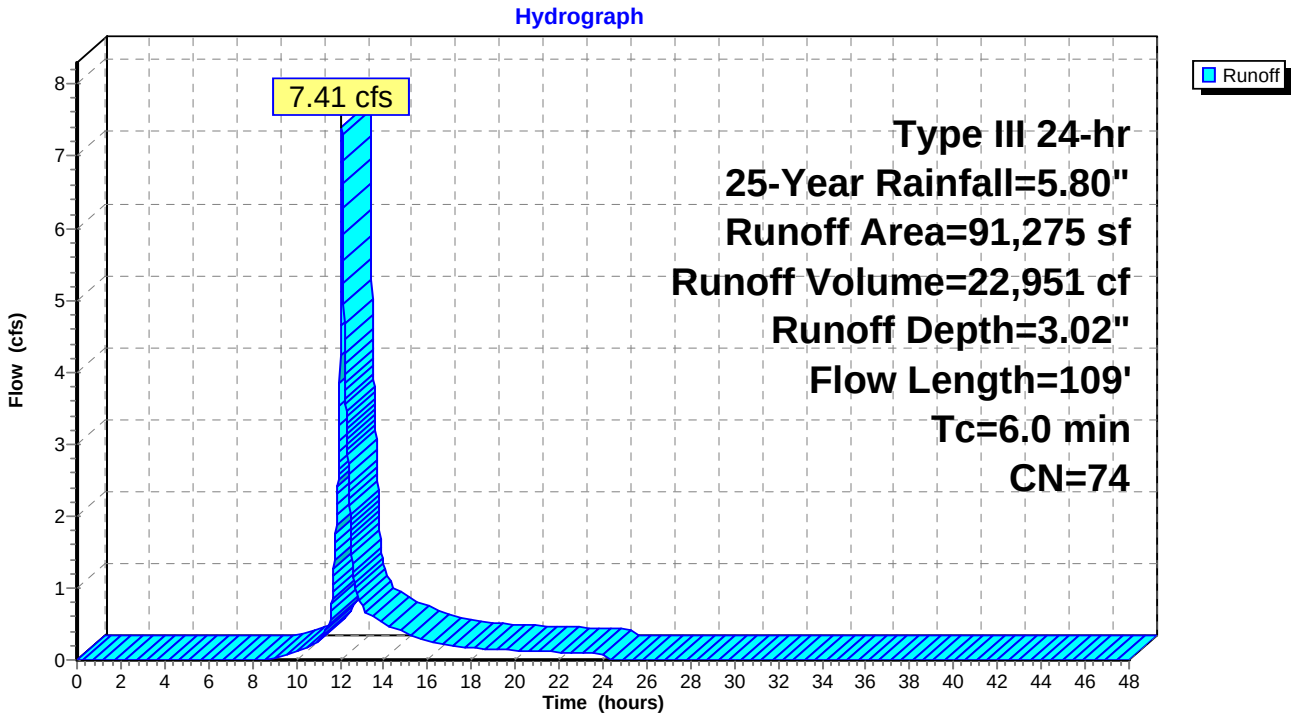
Runoff = 7.41 cfs @ 12.09 hrs, Volume= 22,951 cf, Depth= 3.02"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Type III 24-hr 25-Year Rainfall=5.80"

Area (sf)	CN	Description
892	98	Roofs, HSG B
29,427	61	>75% Grass cover, Good, HSG B
60,956	80	>75% Grass cover, Good, HSG D
91,275	74	Weighted Average
90,383		99.02% Pervious Area
892		0.98% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.3	71	0.0490	0.22		**Sheet Flow,** Grass: Short n= 0.150 P2= 3.10"
0.1	38	0.4300	4.59		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
0.6					**Direct Entry,**
6.0	109	Total			

Subcatchment 16S: (new Subcat)



Summary for Subcatchment 17S: (new Subcat)

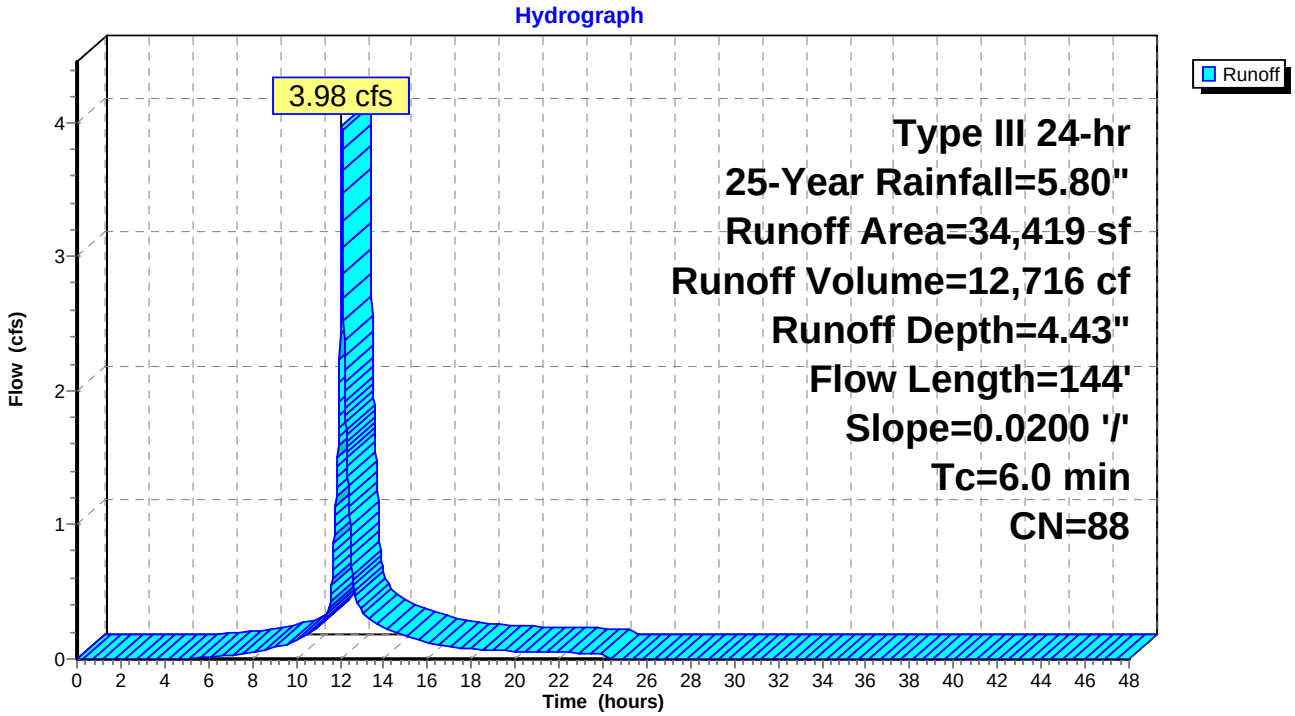
Runoff = 3.98 cfs @ 12.09 hrs, Volume= 12,716 cf, Depth= 4.43"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Type III 24-hr 25-Year Rainfall=5.80"

Area (sf)	CN	Description
17,541	98	Paved parking, HSG B
7,803	98	Roofs, HSG B
9,075	61	>75% Grass cover, Good, HSG B
34,419	88	Weighted Average
9,075		26.37% Pervious Area
25,344		73.63% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.2	100	0.0200	1.35		**Sheet Flow,** Smooth surfaces n= 0.011 P2= 3.10"
0.1	20	0.0200	2.87		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
0.4	24	0.0200	0.99		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
4.3					**Direct Entry,**
6.0	144	Total			

Subcatchment 17S: (new Subcat)



Summary for Subcatchment Off Site: Off Site Flow

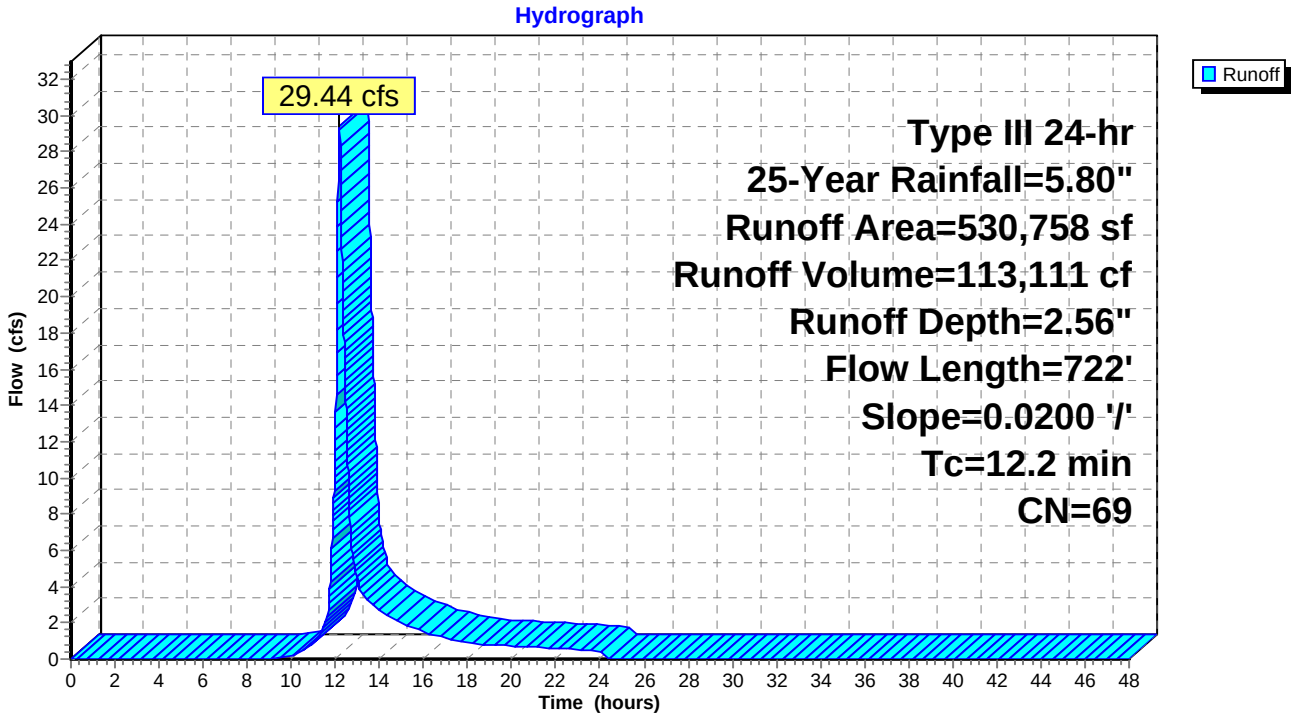
Runoff = 29.44 cfs @ 12.17 hrs, Volume= 113,111 cf, Depth= 2.56"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Type III 24-hr 25-Year Rainfall=5.80"

Area (sf)	CN	Description
414,874	61	>75% Grass cover, Good, HSG B
115,884	98	Paved parking, HSG B
530,758	69	Weighted Average
414,874		78.17% Pervious Area
115,884		21.83% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
12.2	722	0.0200	0.99		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps

Subcatchment Off Site: Off Site Flow



Summary for Pond 1P: DMH 10162

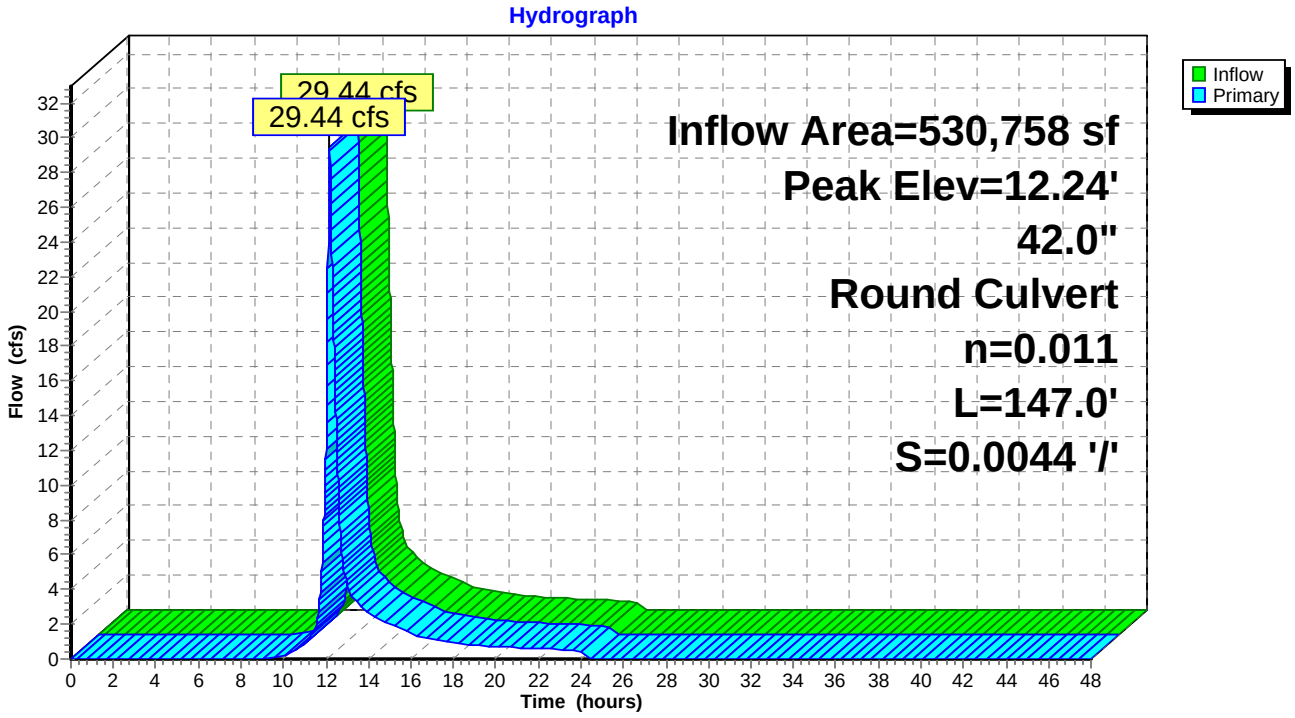
Inflow Area = 530,758 sf, 21.83% Impervious, Inflow Depth = 2.56" for 25-Year event
Inflow = 29.44 cfs @ 12.17 hrs, Volume= 113,111 cf
Outflow = 29.44 cfs @ 12.17 hrs, Volume= 113,111 cf, Atten= 0%, Lag= 0.0 min
Primary = 29.44 cfs @ 12.17 hrs, Volume= 113,111 cf

Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs / 2
Peak Elev= 12.24' @ 12.18 hrs
Flood Elev= 28.14'

Device	Routing	Invert	Outlet Devices
#1	Primary	9.18'	**42.0" Round Culvert** L= 147.0' RCP, sq.cut end projecting, Ke= 0.500 Inlet / Outlet Invert= 9.18' / 8.54' S= 0.0044 '/' Cc= 0.900 n= 0.011 Concrete pipe, straight & clean, Flow Area= 9.62 sf

Primary OutFlow Max=29.33 cfs @ 12.17 hrs HW=12.23' TW=11.63' (Dynamic Tailwater)
1=Culvert (Outlet Controls 29.33 cfs @ 4.40 fps)

Pond 1P: DMH 10162



Summary for Pond 2P: CB-15

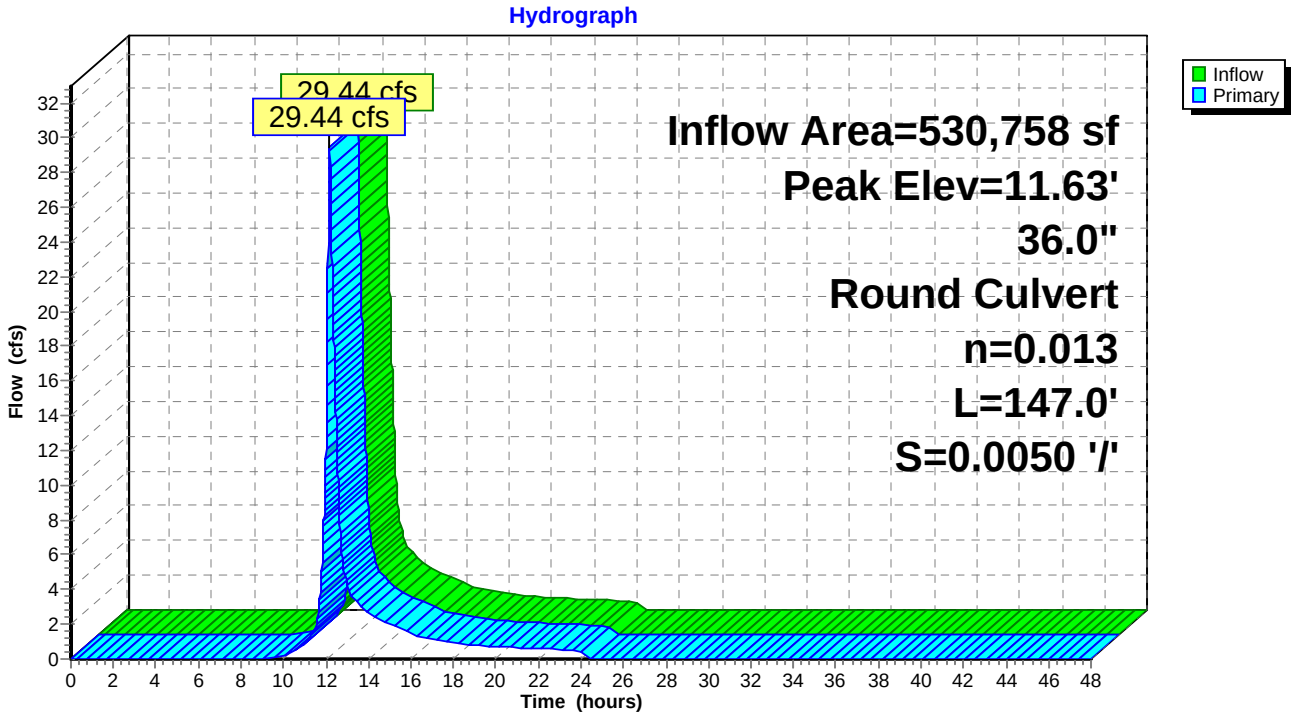
Inflow Area = 530,758 sf, 21.83% Impervious, Inflow Depth = 2.56" for 25-Year event
Inflow = 29.44 cfs @ 12.17 hrs, Volume= 113,111 cf
Outflow = 29.44 cfs @ 12.17 hrs, Volume= 113,111 cf, Atten= 0%, Lag= 0.0 min
Primary = 29.44 cfs @ 12.17 hrs, Volume= 113,111 cf

Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs / 2
Peak Elev= 11.63' @ 12.18 hrs
Flood Elev= 14.50'

Device	Routing	Invert	Outlet Devices
#1	Primary	8.44'	**36.0" Round Culvert** L= 147.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 8.44' / 7.71' S= 0.0050 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 7.07 sf

Primary OutFlow Max=29.39 cfs @ 12.17 hrs HW=11.63' TW=10.43' (Dynamic Tailwater)
1=Culvert (Inlet Controls 29.39 cfs @ 4.16 fps)

Pond 2P: CB-15



Summary for Pond 4P: CBR 1710

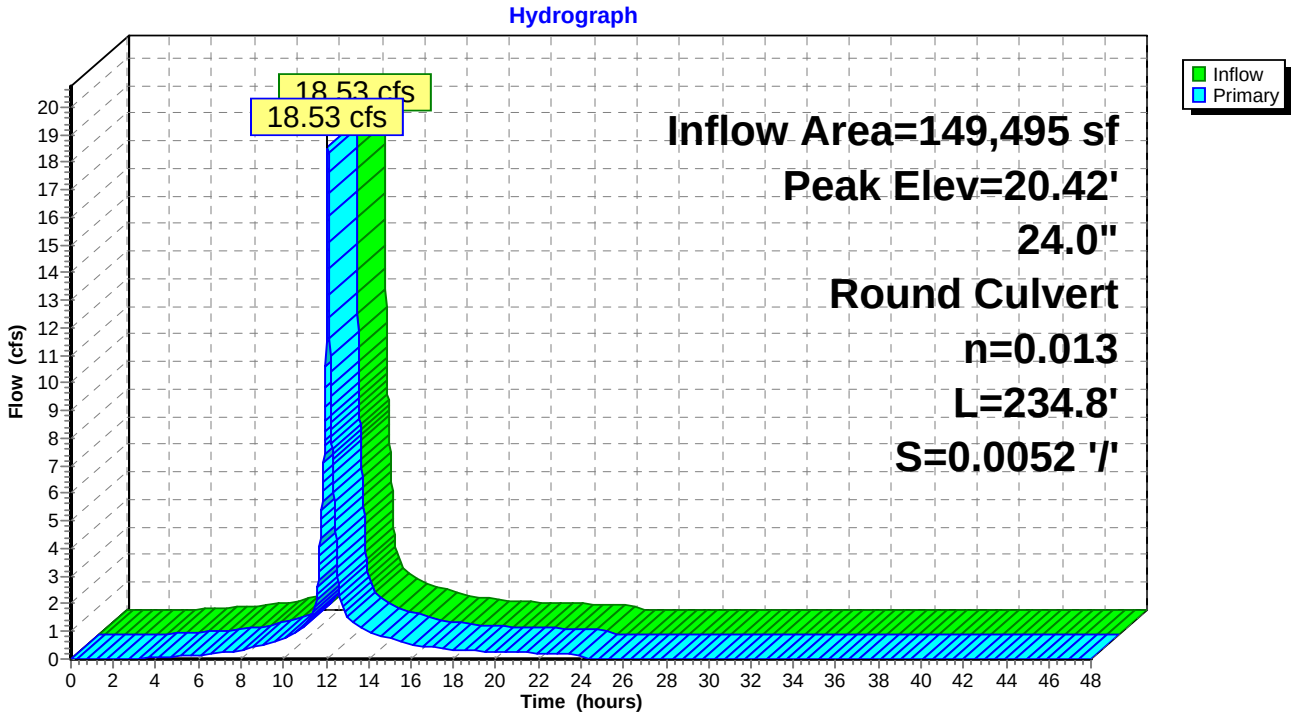
Inflow Area = 149,495 sf, 85.96% Impervious, Inflow Depth = 4.95" for 25-Year event
Inflow = 18.53 cfs @ 12.08 hrs, Volume= 61,725 cf
Outflow = 18.53 cfs @ 12.08 hrs, Volume= 61,725 cf, Atten= 0%, Lag= 0.0 min
Primary = 18.53 cfs @ 12.08 hrs, Volume= 61,725 cf

Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs / 2
Peak Elev= 20.42' @ 12.09 hrs
Flood Elev= 25.22'

Device	Routing	Invert	Outlet Devices
#1	Primary	15.59'	**24.0" Round Culvert** L= 234.8' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 15.59' / 14.38' S= 0.0052 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 3.14 sf

Primary OutFlow Max=18.20 cfs @ 12.08 hrs HW=20.37' TW=18.06' (Dynamic Tailwater)
└**1=Culvert** (Outlet Controls 18.20 cfs @ 5.79 fps)

Pond 4P: CBR 1710



Summary for Pond 5P: CB 1668

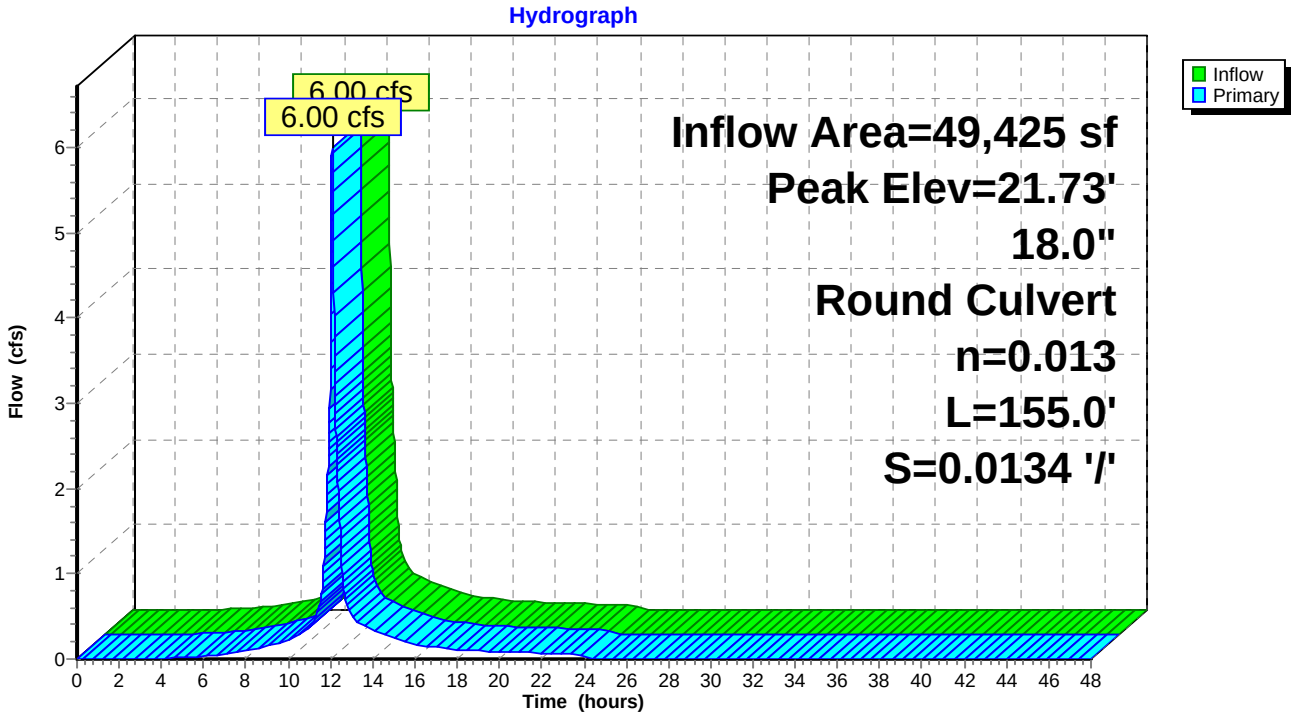
Inflow Area = 49,425 sf, 82.25% Impervious, Inflow Depth = 4.76" for 25-Year event
Inflow = 6.00 cfs @ 12.08 hrs, Volume= 19,612 cf
Outflow = 6.00 cfs @ 12.08 hrs, Volume= 19,612 cf, Atten= 0%, Lag= 0.0 min
Primary = 6.00 cfs @ 12.08 hrs, Volume= 19,612 cf

Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs / 2
Peak Elev= 21.73' @ 12.09 hrs
Flood Elev= 25.58'

Device	Routing	Invert	Outlet Devices
#1	Primary	20.38'	**18.0" Round Culvert** L= 155.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 20.38' / 18.30' S= 0.0134 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.77 sf

Primary OutFlow Max=5.88 cfs @ 12.08 hrs HW=21.70' TW=20.37' (Dynamic Tailwater)
└**1=Culvert** (Outlet Controls 5.88 cfs @ 4.74 fps)

Pond 5P: CB 1668



Summary for Pond 6P: CBR 1709

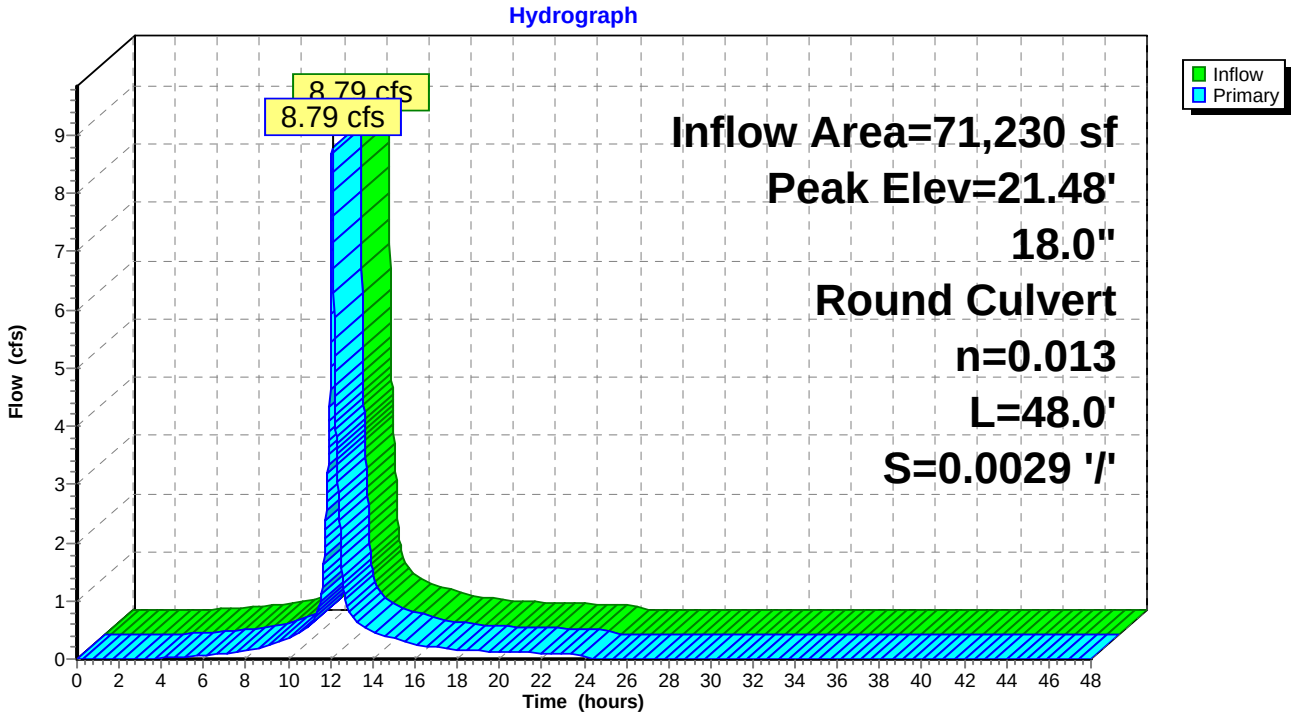
Inflow Area = 71,230 sf, 84.12% Impervious, Inflow Depth = 4.89" for 25-Year event
Inflow = 8.79 cfs @ 12.08 hrs, Volume= 29,027 cf
Outflow = 8.79 cfs @ 12.08 hrs, Volume= 29,027 cf, Atten= 0%, Lag= 0.0 min
Primary = 8.79 cfs @ 12.08 hrs, Volume= 29,027 cf

Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs / 2
Peak Elev= 21.48' @ 12.09 hrs
Flood Elev= 25.90'

Device	Routing	Invert	Outlet Devices
#1	Primary	15.83'	**18.0" Round Culvert** L= 48.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 15.83' / 15.69' S= 0.0029 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.77 sf

Primary OutFlow Max=8.53 cfs @ 12.08 hrs HW=21.37' TW=20.37' (Dynamic Tailwater)
└**1=Culvert** (Inlet Controls 8.53 cfs @ 4.83 fps)

Pond 6P: CBR 1709



Summary for Pond 7P: CB 12

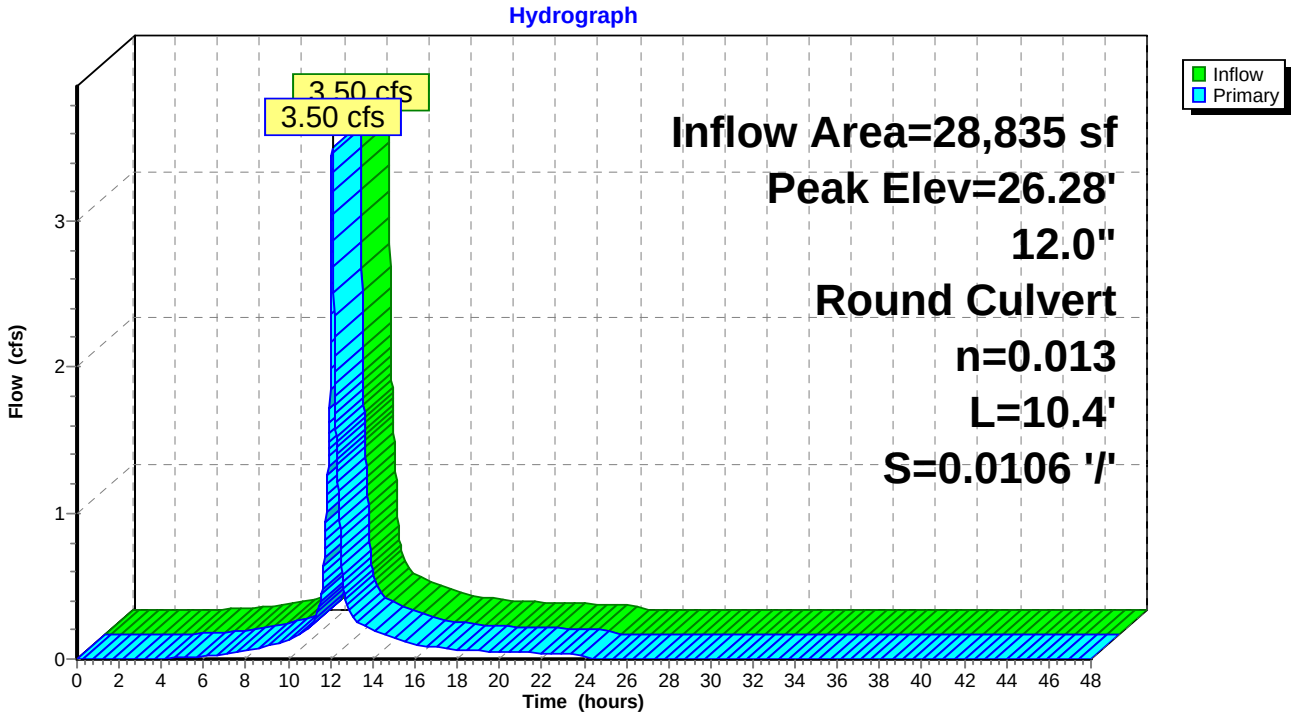
Inflow Area = 28,835 sf, 82.21% Impervious, Inflow Depth = 4.76" for 25-Year event
Inflow = 3.50 cfs @ 12.08 hrs, Volume= 11,442 cf
Outflow = 3.50 cfs @ 12.08 hrs, Volume= 11,442 cf, Atten= 0%, Lag= 0.0 min
Primary = 3.50 cfs @ 12.08 hrs, Volume= 11,442 cf

Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs / 2
Peak Elev= 26.28' @ 12.08 hrs
Flood Elev= 29.60'

Device	Routing	Invert	Outlet Devices
#1	Primary	24.68'	**12.0" Round Culvert** L= 10.4' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 24.68' / 24.57' S= 0.0106 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.79 sf

Primary OutFlow Max=3.50 cfs @ 12.08 hrs HW=26.27' TW=25.42' (Dynamic Tailwater)
1=Culvert (Inlet Controls 3.50 cfs @ 4.45 fps)

Pond 7P: CB 12



Summary for Pond 8P: CBR 1708

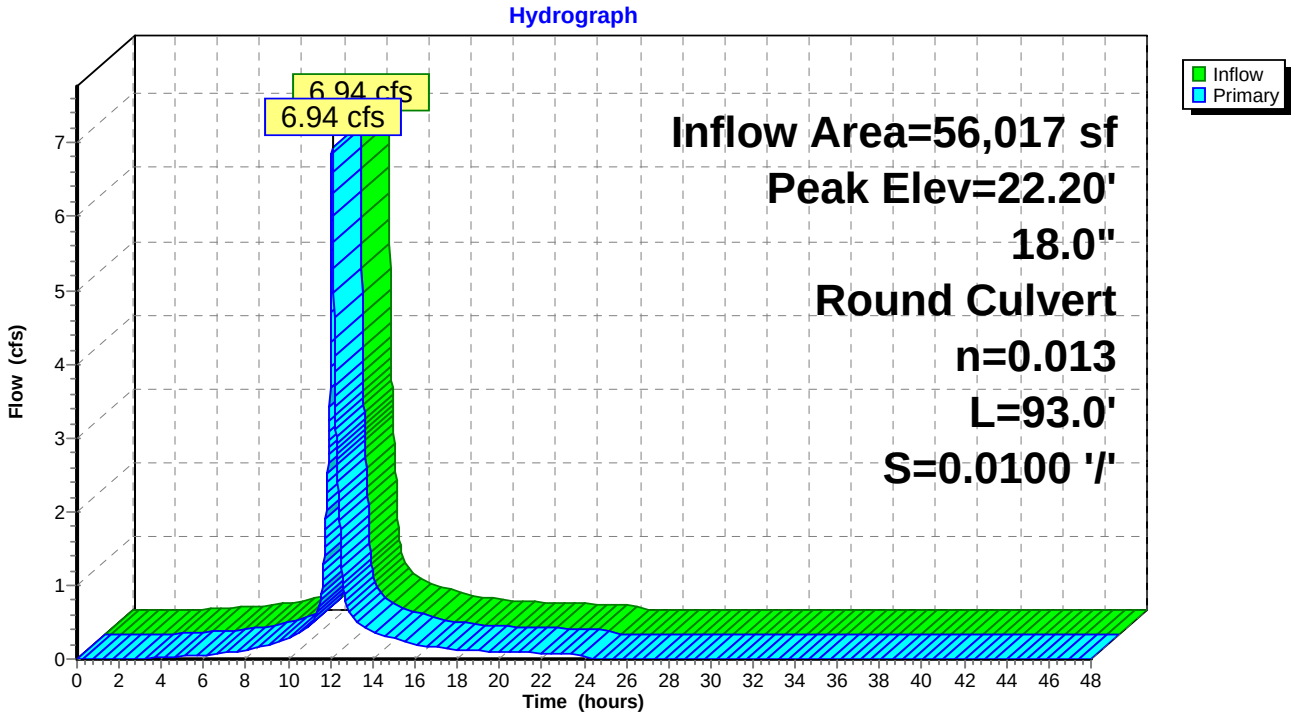
Inflow Area = 56,017 sf, 85.18% Impervious, Inflow Depth = 4.93" for 25-Year event
Inflow = 6.94 cfs @ 12.08 hrs, Volume= 22,991 cf
Outflow = 6.94 cfs @ 12.08 hrs, Volume= 22,991 cf, Atten= 0%, Lag= 0.0 min
Primary = 6.94 cfs @ 12.08 hrs, Volume= 22,991 cf

Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs / 2
Peak Elev= 22.20' @ 12.10 hrs
Flood Elev= 27.09'

Device	Routing	Invert	Outlet Devices
#1	Primary	16.46'	**18.0" Round Culvert** L= 93.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 16.46' / 15.53' S= 0.0100 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.77 sf

Primary OutFlow Max=6.36 cfs @ 12.08 hrs HW=22.01' TW=21.37' (Dynamic Tailwater)
1=Culvert (Outlet Controls 6.36 cfs @ 3.60 fps)

Pond 8P: CBR 1708



Summary for Pond 9P: CB-11

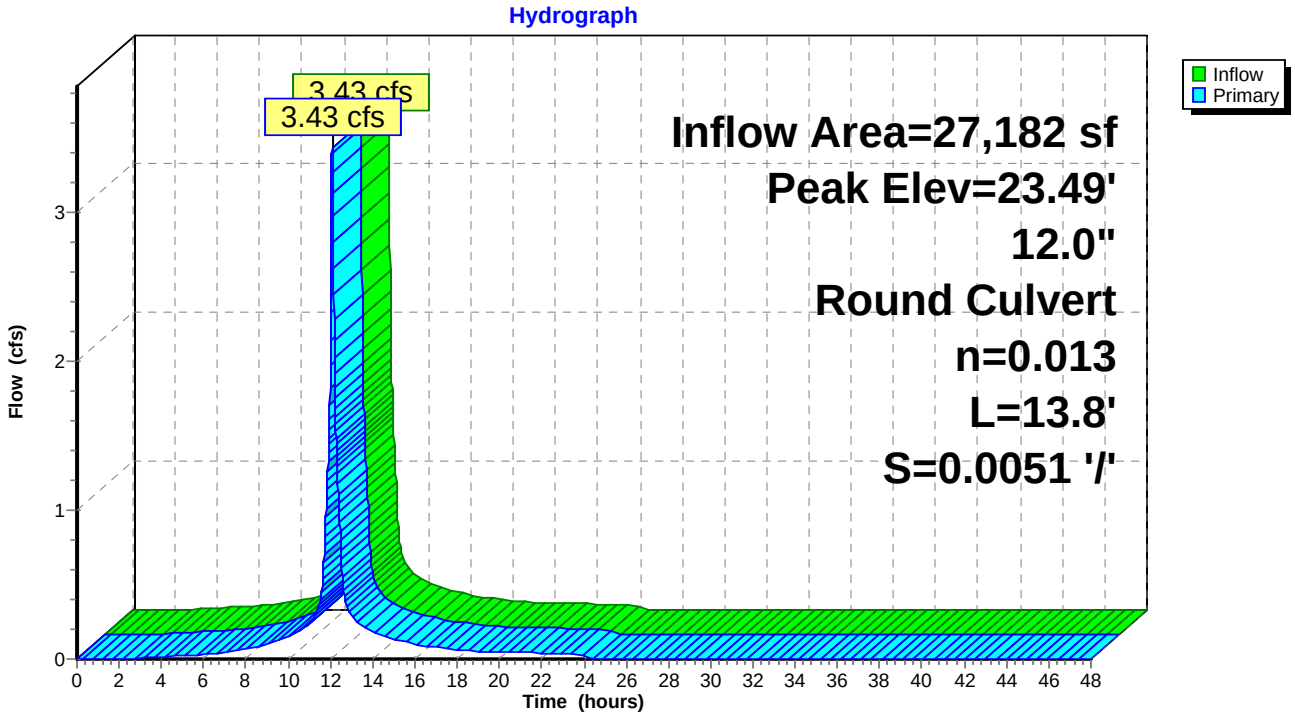
Inflow Area = 27,182 sf, 88.34% Impervious, Inflow Depth = 5.10" for 25-Year event
Inflow = 3.43 cfs @ 12.08 hrs, Volume= 11,549 cf
Outflow = 3.43 cfs @ 12.08 hrs, Volume= 11,549 cf, Atten= 0%, Lag= 0.0 min
Primary = 3.43 cfs @ 12.08 hrs, Volume= 11,549 cf

Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs / 2
Peak Elev= 23.49' @ 12.10 hrs
Flood Elev= 27.50'

Device	Routing	Invert	Outlet Devices
#1	Primary	21.47'	**12.0" Round Culvert** L= 13.8' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 21.47' / 21.40' S= 0.0051 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.79 sf

Primary OutFlow Max=3.42 cfs @ 12.08 hrs HW=23.32' TW=22.01' (Dynamic Tailwater)
1=Culvert (Inlet Controls 3.42 cfs @ 4.36 fps)

Pond 9P: CB-11



Summary for Pond 10P: CB-16

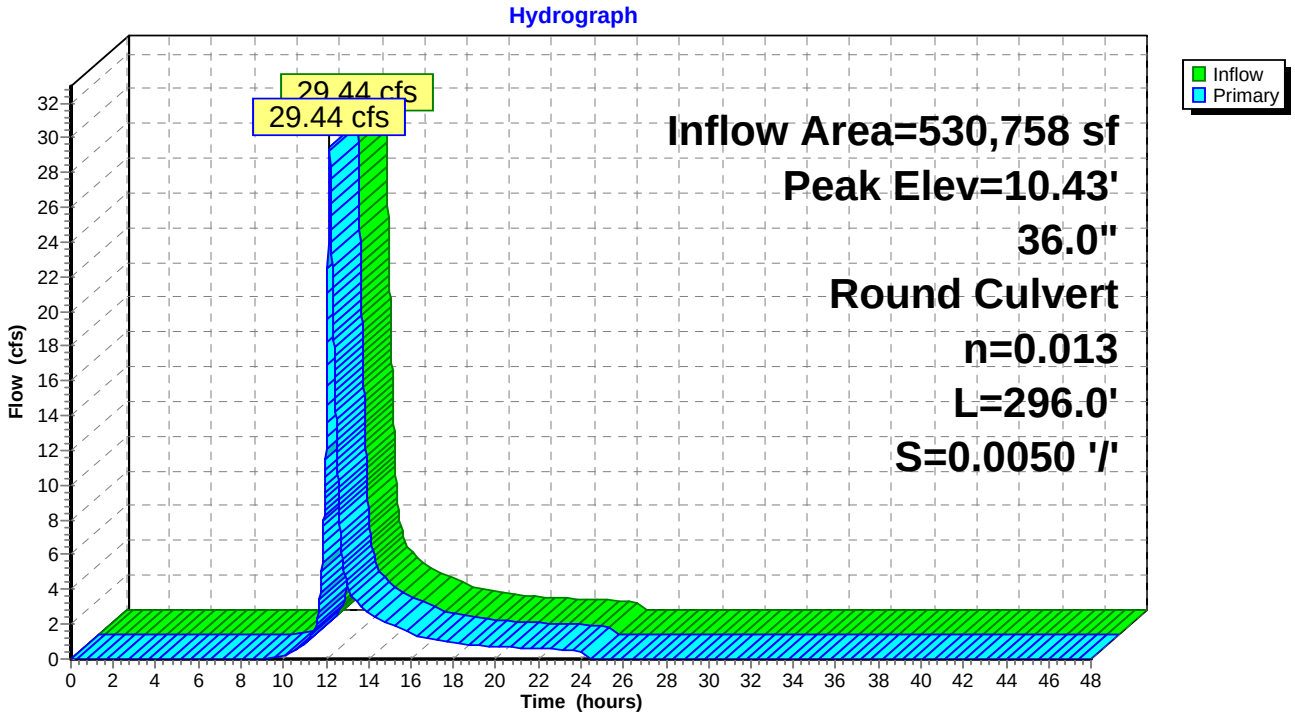
Inflow Area = 530,758 sf, 21.83% Impervious, Inflow Depth = 2.56" for 25-Year event
Inflow = 29.44 cfs @ 12.17 hrs, Volume= 113,111 cf
Outflow = 29.44 cfs @ 12.17 hrs, Volume= 113,111 cf, Atten= 0%, Lag= 0.0 min
Primary = 29.44 cfs @ 12.17 hrs, Volume= 113,111 cf

Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs / 2
Peak Elev= 10.43' @ 12.17 hrs
Flood Elev= 14.50'

Device	Routing	Invert	Outlet Devices
#1	Primary	7.61'	**36.0" Round Culvert** L= 296.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 7.61' / 6.14' S= 0.0050 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 7.07 sf

Primary OutFlow Max=29.42 cfs @ 12.17 hrs HW=10.43' TW=8.73' (Dynamic Tailwater)
1=Culvert (Outlet Controls 29.42 cfs @ 5.52 fps)

Pond 10P: CB-16



Summary for Pond 11P: DMH-1

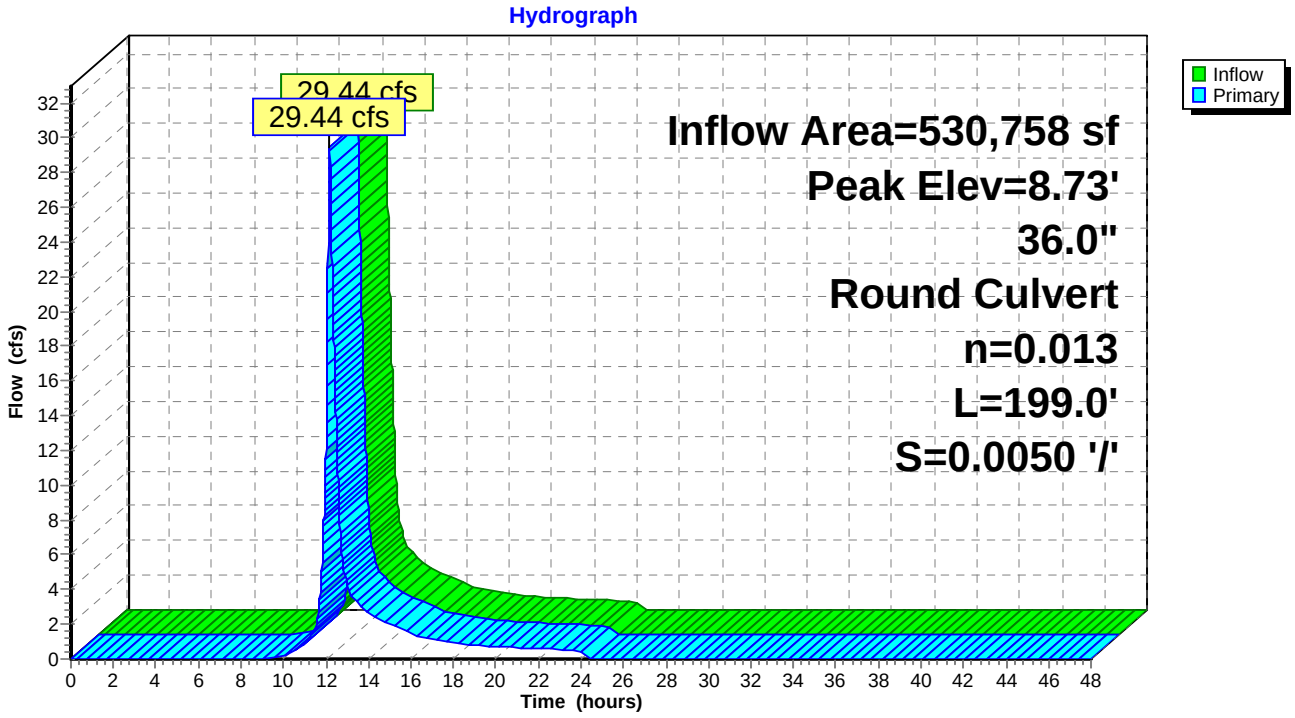
Inflow Area = 530,758 sf, 21.83% Impervious, Inflow Depth = 2.56" for 25-Year event
Inflow = 29.44 cfs @ 12.17 hrs, Volume= 113,111 cf
Outflow = 29.44 cfs @ 12.17 hrs, Volume= 113,111 cf, Atten= 0%, Lag= 0.0 min
Primary = 29.44 cfs @ 12.17 hrs, Volume= 113,111 cf

Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs / 2
Peak Elev= 8.73' @ 12.17 hrs
Flood Elev= 14.00'

Device	Routing	Invert	Outlet Devices
#1	Primary	6.04'	**36.0" Round Culvert** L= 199.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 6.04' / 5.05' S= 0.0050 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 7.07 sf

Primary OutFlow Max=29.42 cfs @ 12.17 hrs HW=8.73' TW=0.00' (Dynamic Tailwater)
1=Culvert (Inlet Controls 29.42 cfs @ 4.41 fps)

Pond 11P: DMH-1



Summary for Pond 12P: CB-4

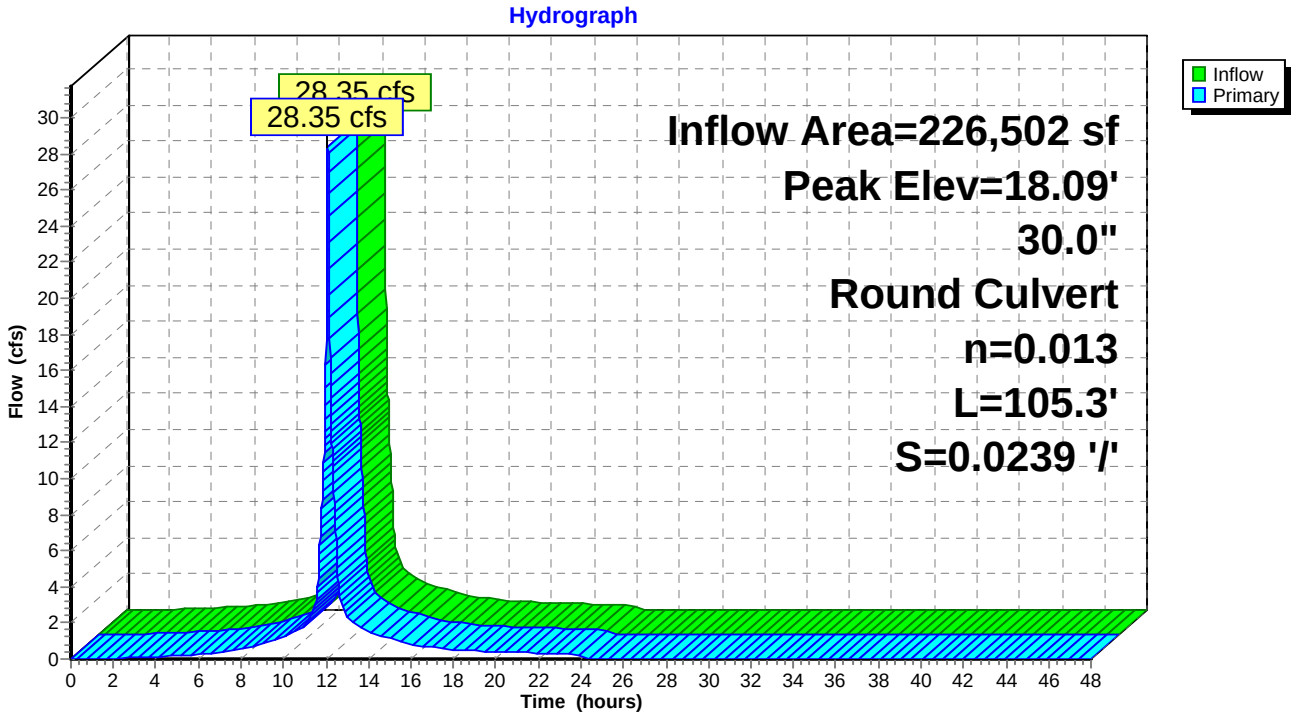
Inflow Area = 226,502 sf, 88.10% Impervious, Inflow Depth = 5.07" for 25-Year event
Inflow = 28.35 cfs @ 12.08 hrs, Volume= 95,635 cf
Outflow = 28.35 cfs @ 12.08 hrs, Volume= 95,635 cf, Atten= 0%, Lag= 0.0 min
Primary = 28.35 cfs @ 12.08 hrs, Volume= 95,635 cf

Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs / 2
Peak Elev= 18.09' @ 12.09 hrs
Flood Elev= 20.69'

Device	Routing	Invert	Outlet Devices
#1	Primary	14.28'	**30.0" Round Culvert** L= 105.3' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 14.28' / 11.76' S= 0.0239 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 4.91 sf

Primary OutFlow Max=28.21 cfs @ 12.08 hrs HW=18.06' TW=15.77' (Dynamic Tailwater)
1=Culvert (Inlet Controls 28.21 cfs @ 5.75 fps)

Pond 12P: CB-4



Summary for Pond 13P: CB-7

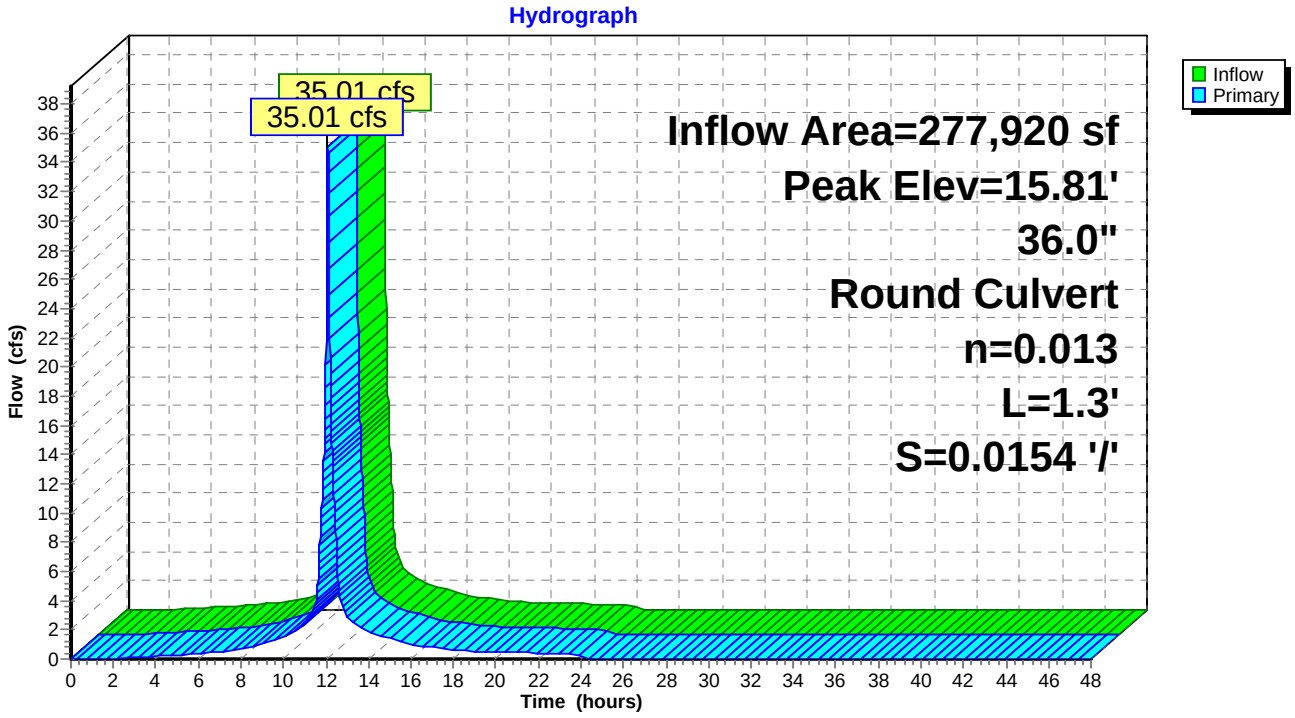
Inflow Area = 277,920 sf, 88.86% Impervious, Inflow Depth = 5.13" for 25-Year event
Inflow = 35.01 cfs @ 12.08 hrs, Volume= 118,847 cf
Outflow = 35.01 cfs @ 12.08 hrs, Volume= 118,847 cf, Atten= 0%, Lag= 0.0 min
Primary = 35.01 cfs @ 12.08 hrs, Volume= 118,847 cf

Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs / 2
Peak Elev= 15.81' @ 12.09 hrs
Flood Elev= 19.40'

Device	Routing	Invert	Outlet Devices
#1	Primary	11.66'	**36.0" Round Culvert** L= 1.3' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 11.66' / 11.64' S= 0.0154 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 7.07 sf

Primary OutFlow Max=34.41 cfs @ 12.08 hrs HW=15.77' TW=14.13' (Dynamic Tailwater)
↑**1=Culvert** (Inlet Controls 34.41 cfs @ 4.87 fps)

Pond 13P: CB-7



Summary for Pond 14P: ICS-1

Inflow Area = 277,920 sf, 88.86% Impervious, Inflow Depth = 5.13" for 25-Year event
Inflow = 35.01 cfs @ 12.08 hrs, Volume= 118,847 cf
Outflow = 35.01 cfs @ 12.08 hrs, Volume= 118,847 cf, Atten= 0%, Lag= 0.0 min
Primary = 27.29 cfs @ 12.08 hrs, Volume= 90,438 cf
Secondary = 8.33 cfs @ 12.16 hrs, Volume= 28,409 cf

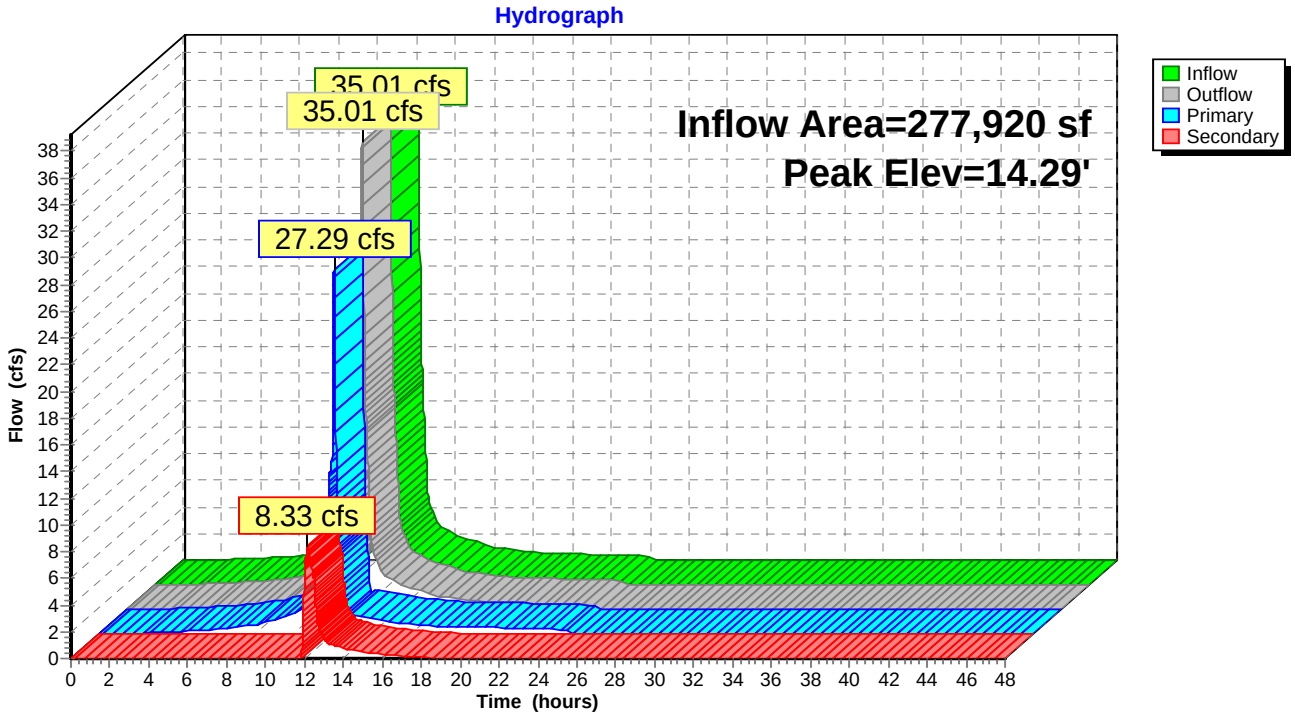
Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs / 2
Peak Elev= 14.29' @ 12.14 hrs
Flood Elev= 19.43'

Device	Routing	Invert	Outlet Devices
#1	Primary	11.54'	**24.0" Round Culvert X 4.00** L= 2.7' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 11.54' / 11.49' S= 0.0185 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 3.14 sf
#2	Secondary	11.54'	**18.0" Round Bypass Culvert** L= 27.5' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 11.54' / 11.00' S= 0.0196 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.77 sf
#3	Device 2	13.00'	**6.0' long Overflow Weir** 2 End Contraction(s)

Primary OutFlow Max=27.31 cfs @ 12.08 hrs HW=14.11' TW=13.79' (Dynamic Tailwater)
└**1=Culvert** (Inlet Controls 27.31 cfs @ 2.17 fps)

Secondary OutFlow Max=7.01 cfs @ 12.16 hrs HW=14.28' TW=13.19' (Dynamic Tailwater)
└**2=Bypass Culvert** (Inlet Controls 7.01 cfs @ 3.97 fps)
└**3=Overflow Weir** (Passes 7.01 cfs of 26.50 cfs potential flow)

Pond 14P: ICS-1



Summary for Pond 15P: CB-6

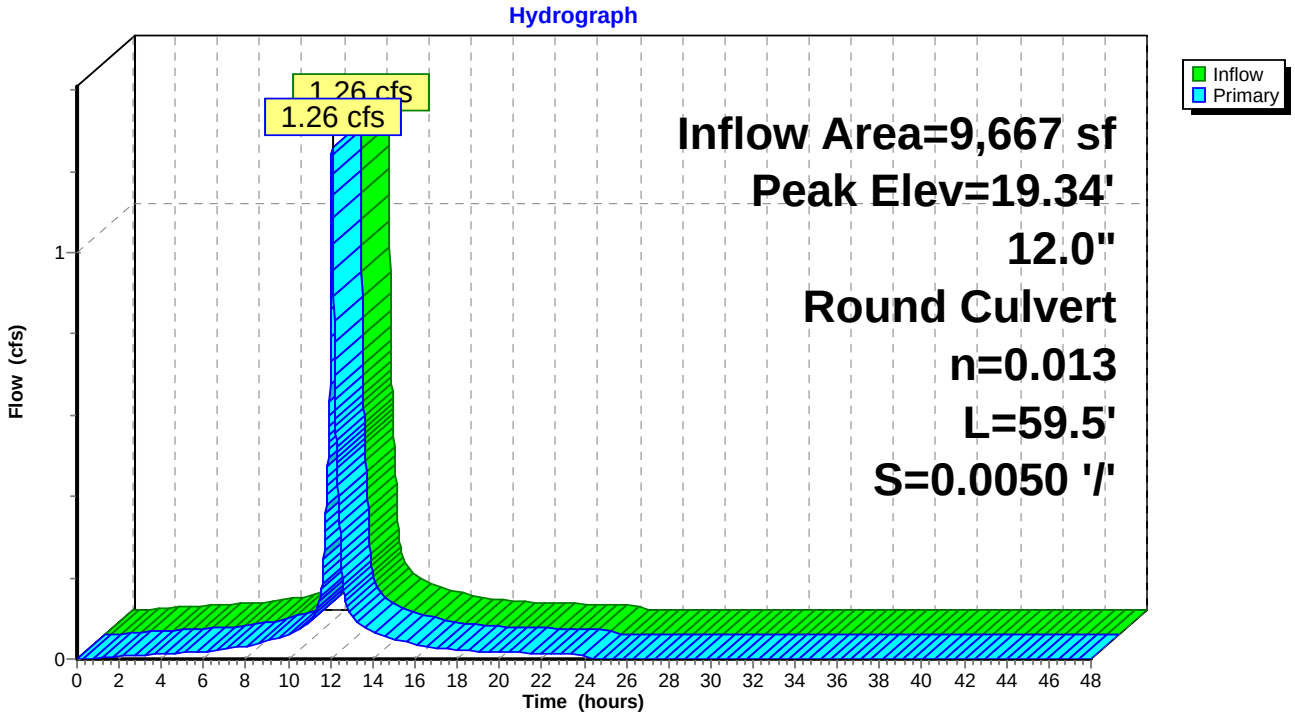
Inflow Area = 9,667 sf,100.00% Impervious, Inflow Depth = 5.56" for 25-Year event
Inflow = 1.26 cfs @ 12.08 hrs, Volume= 4,481 cf
Outflow = 1.26 cfs @ 12.08 hrs, Volume= 4,481 cf, Atten= 0%, Lag= 0.0 min
Primary = 1.26 cfs @ 12.08 hrs, Volume= 4,481 cf

Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs / 2
Peak Elev= 19.34' @ 12.10 hrs
Flood Elev= 20.47'

Device	Routing	Invert	Outlet Devices
#1	Primary	15.06'	**12.0" Round Culvert** L= 59.5' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 15.06' / 14.76' S= 0.0050 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.79 sf

Primary OutFlow Max=1.00 cfs @ 12.08 hrs HW=19.19' TW=19.08' (Dynamic Tailwater)
↳**1=Culvert** (Inlet Controls 1.00 cfs @ 1.28 fps)

Pond 15P: CB-6



Summary for Pond 16P: CB-3

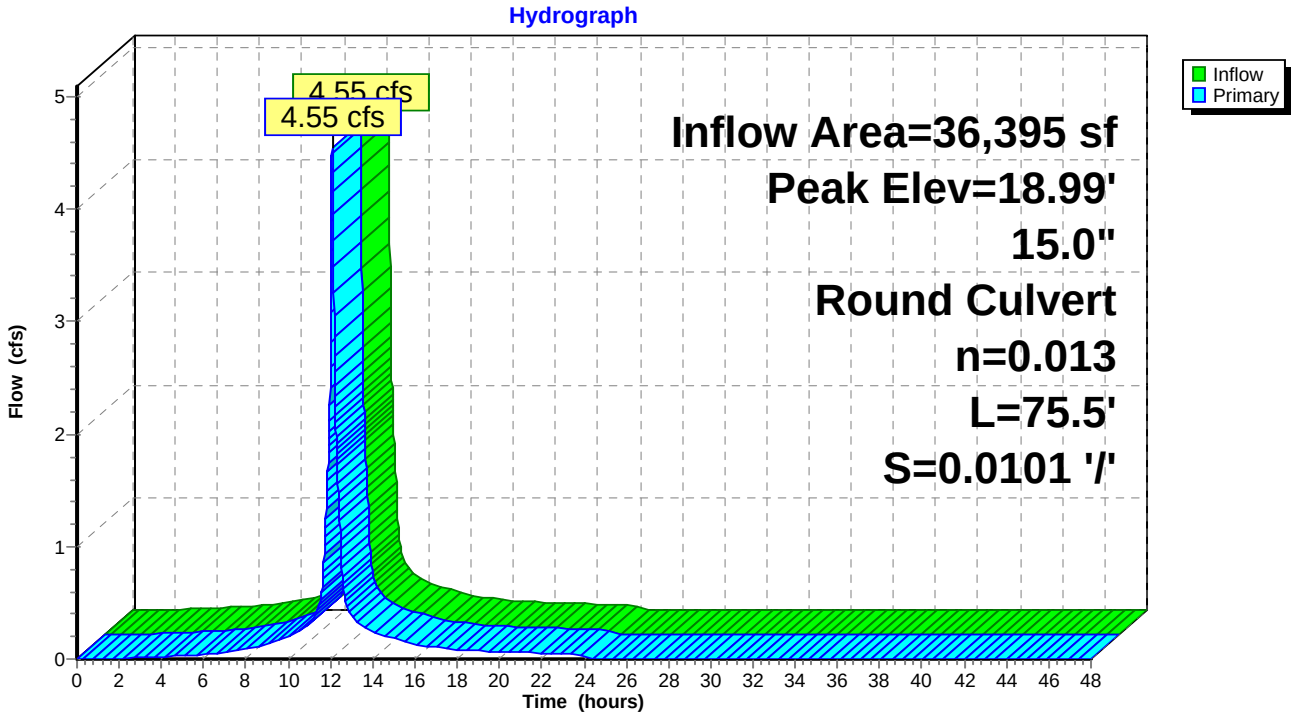
Inflow Area = 36,395 sf, 87.42% Impervious, Inflow Depth = 5.07" for 25-Year event
Inflow = 4.55 cfs @ 12.08 hrs, Volume= 15,389 cf
Outflow = 4.55 cfs @ 12.08 hrs, Volume= 15,389 cf, Atten= 0%, Lag= 0.0 min
Primary = 4.55 cfs @ 12.08 hrs, Volume= 15,389 cf

Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs / 2
Peak Elev= 18.99' @ 12.09 hrs
Flood Elev= 21.02'

Device	Routing	Invert	Outlet Devices
#1	Primary	15.14'	**15.0" Round Culvert** L= 75.5' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 15.14' / 14.38' S= 0.0101 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.23 sf

Primary OutFlow Max=4.36 cfs @ 12.08 hrs HW=18.93' TW=18.06' (Dynamic Tailwater)
1=Culvert (Inlet Controls 4.36 cfs @ 3.55 fps)

Pond 16P: CB-3



Summary for Pond 17P: CB-2

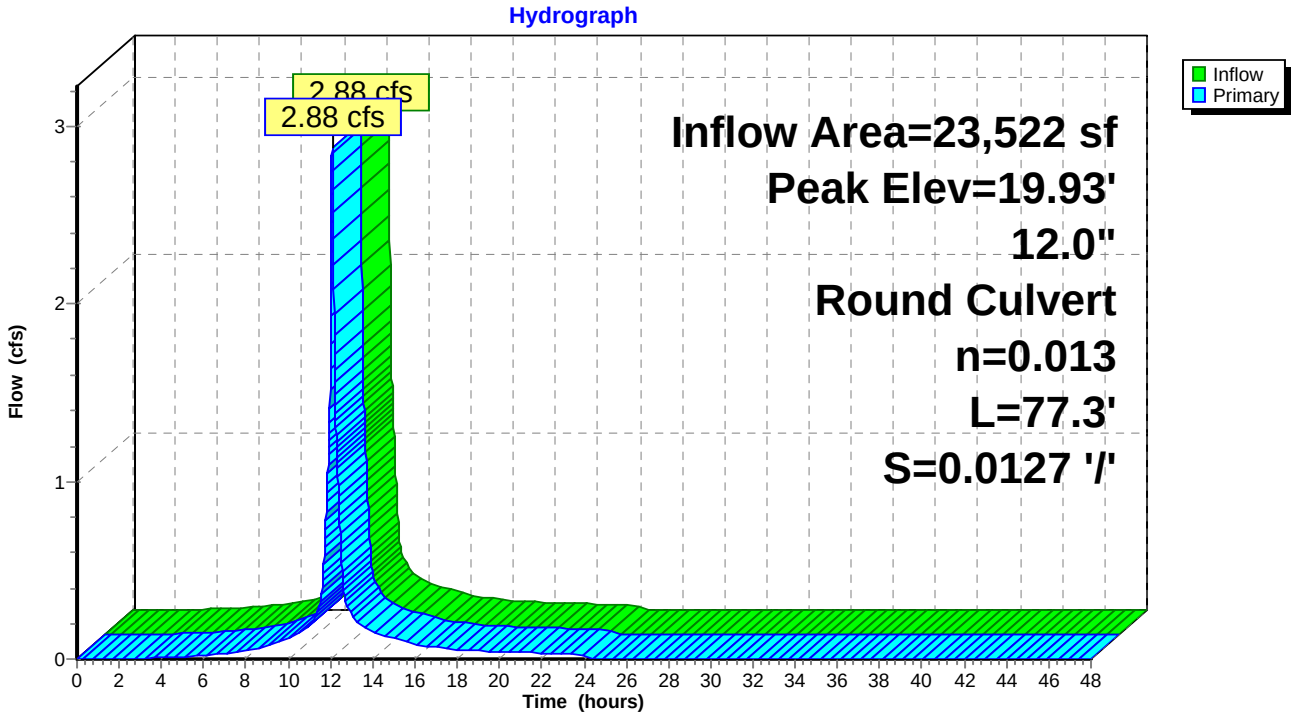
Inflow Area = 23,522 sf, 81.85% Impervious, Inflow Depth = 4.87" for 25-Year event
Inflow = 2.88 cfs @ 12.08 hrs, Volume= 9,548 cf
Outflow = 2.88 cfs @ 12.08 hrs, Volume= 9,548 cf, Atten= 0%, Lag= 0.0 min
Primary = 2.88 cfs @ 12.08 hrs, Volume= 9,548 cf

Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs / 2
Peak Elev= 19.93' @ 12.10 hrs
Flood Elev= 21.02'

Device	Routing	Invert	Outlet Devices
#1	Primary	16.22'	**12.0" Round Culvert** L= 77.3' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 16.22' / 15.24' S= 0.0127 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.79 sf

Primary OutFlow Max=2.79 cfs @ 12.08 hrs HW=19.81' TW=18.94' (Dynamic Tailwater)
1=Culvert (Inlet Controls 2.79 cfs @ 3.55 fps)

Pond 17P: CB-2



Summary for Pond 18P: CB-1

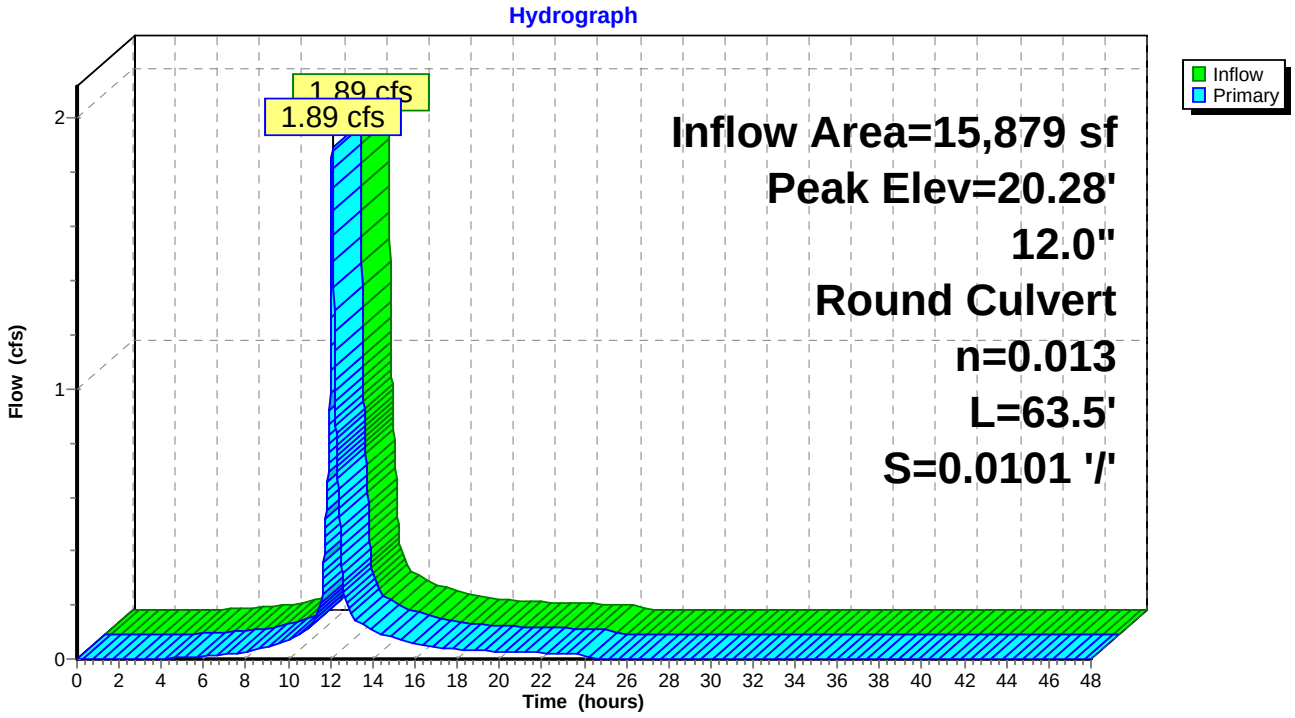
Inflow Area = 15,879 sf, 76.74% Impervious, Inflow Depth = 4.65" for 25-Year event
Inflow = 1.89 cfs @ 12.09 hrs, Volume= 6,155 cf
Outflow = 1.89 cfs @ 12.09 hrs, Volume= 6,155 cf, Atten= 0%, Lag= 0.0 min
Primary = 1.89 cfs @ 12.09 hrs, Volume= 6,155 cf

Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs / 2
Peak Elev= 20.28' @ 12.10 hrs
Flood Elev= 23.45'

Device	Routing	Invert	Outlet Devices
#1	Primary	16.96'	**12.0" Round Culvert** L= 63.5' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 16.96' / 16.32' S= 0.0101 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.79 sf

Primary OutFlow Max=1.64 cfs @ 12.09 hrs HW=20.13' TW=19.83' (Dynamic Tailwater)
└**1=Culvert** (Inlet Controls 1.64 cfs @ 2.09 fps)

Pond 18P: CB-1



Summary for Pond 19P: CB-8

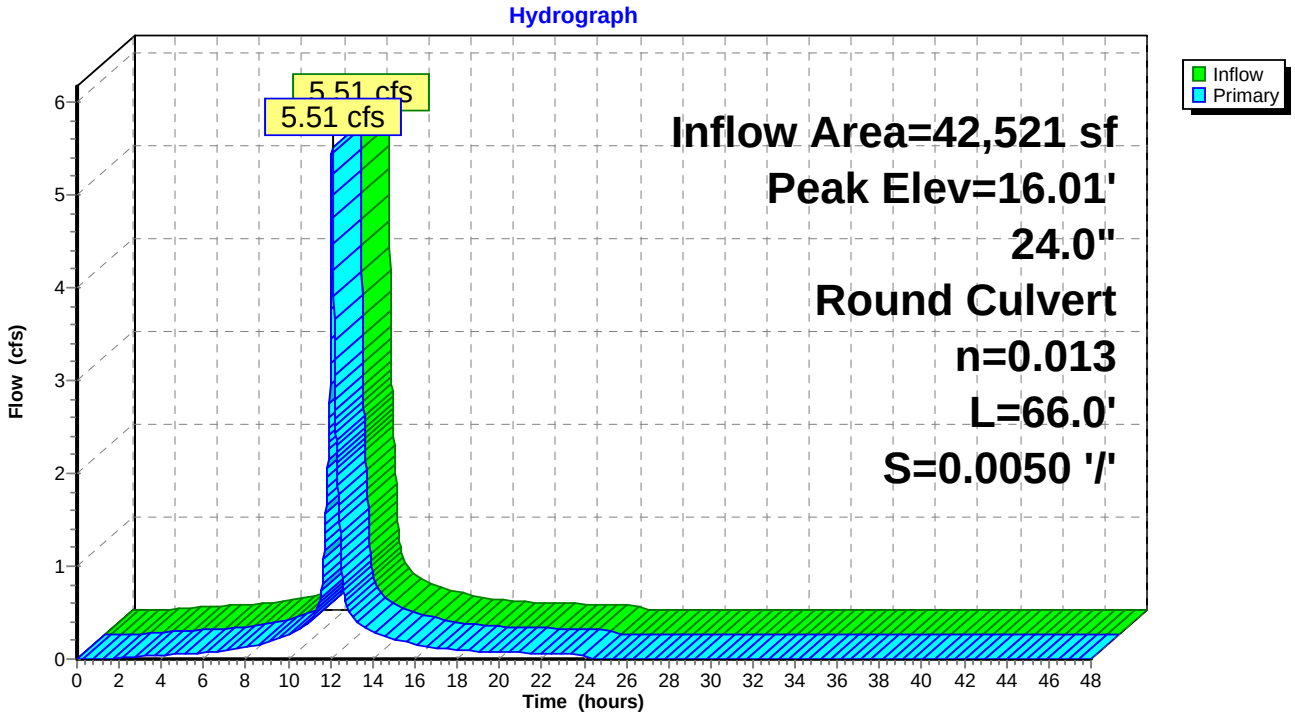
Inflow Area = 42,521 sf, 92.11% Impervious, Inflow Depth = 5.41" for 25-Year event
Inflow = 5.51 cfs @ 12.08 hrs, Volume= 19,175 cf
Outflow = 5.51 cfs @ 12.08 hrs, Volume= 19,175 cf, Atten= 0%, Lag= 0.0 min
Primary = 5.51 cfs @ 12.08 hrs, Volume= 19,175 cf

Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs / 2
Peak Elev= 16.01' @ 12.09 hrs
Flood Elev= 18.55'

Device	Routing	Invert	Outlet Devices
#1	Primary	12.09'	**24.0" Round Culvert** L= 66.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 12.09' / 11.76' S= 0.0050 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 3.14 sf

Primary OutFlow Max=5.29 cfs @ 12.08 hrs HW=15.96' TW=15.77' (Dynamic Tailwater)
1=Culvert (Inlet Controls 5.29 cfs @ 1.69 fps)

Pond 19P: CB-8



Summary for Pond 20P: CB-9

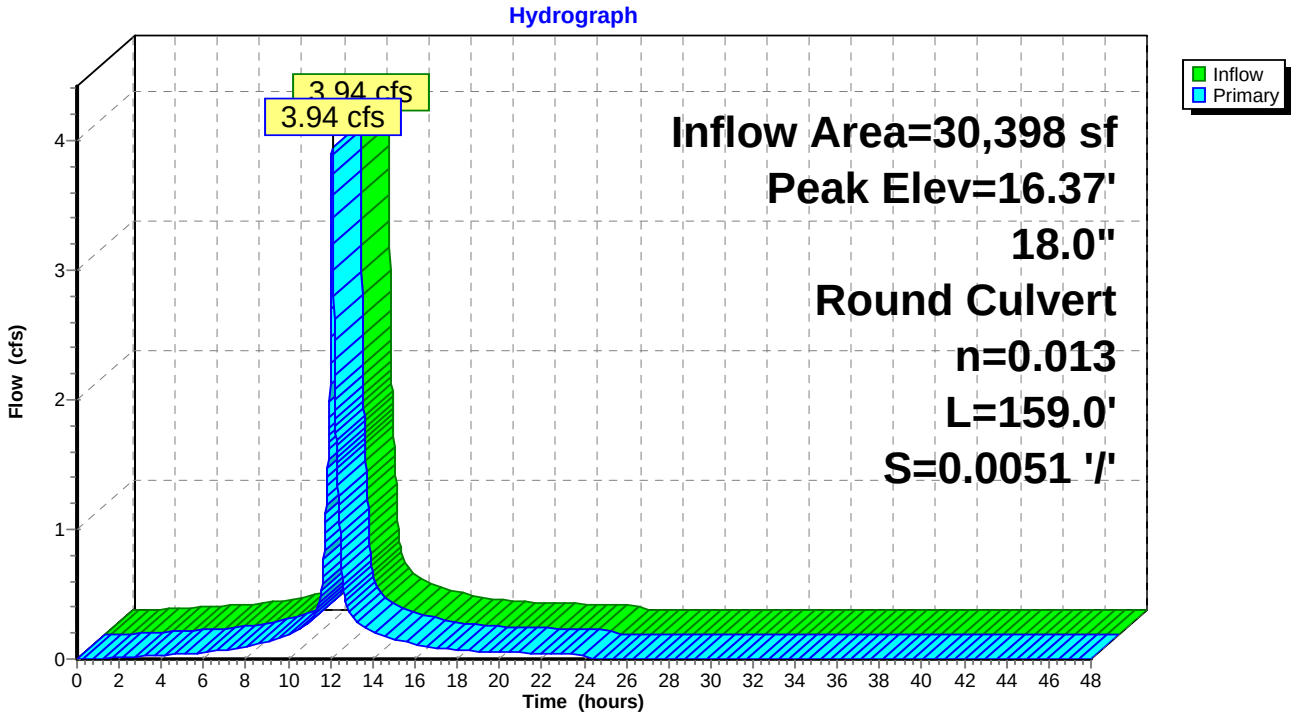
Inflow Area = 30,398 sf, 93.40% Impervious, Inflow Depth = 5.44" for 25-Year event
Inflow = 3.94 cfs @ 12.08 hrs, Volume= 13,792 cf
Outflow = 3.94 cfs @ 12.08 hrs, Volume= 13,792 cf, Atten= 0%, Lag= 0.0 min
Primary = 3.94 cfs @ 12.08 hrs, Volume= 13,792 cf

Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs / 2
Peak Elev= 16.37' @ 12.10 hrs
Flood Elev= 16.50'

Device	Routing	Invert	Outlet Devices
#1	Primary	13.00'	**18.0" Round Culvert** L= 159.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 13.00' / 12.19' S= 0.0051 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.77 sf

Primary OutFlow Max=3.50 cfs @ 12.08 hrs HW=16.26' TW=15.96' (Dynamic Tailwater)
1=Culvert (Outlet Controls 3.50 cfs @ 1.98 fps)

Pond 20P: CB-9



Summary for Pond 21P: DMH-2

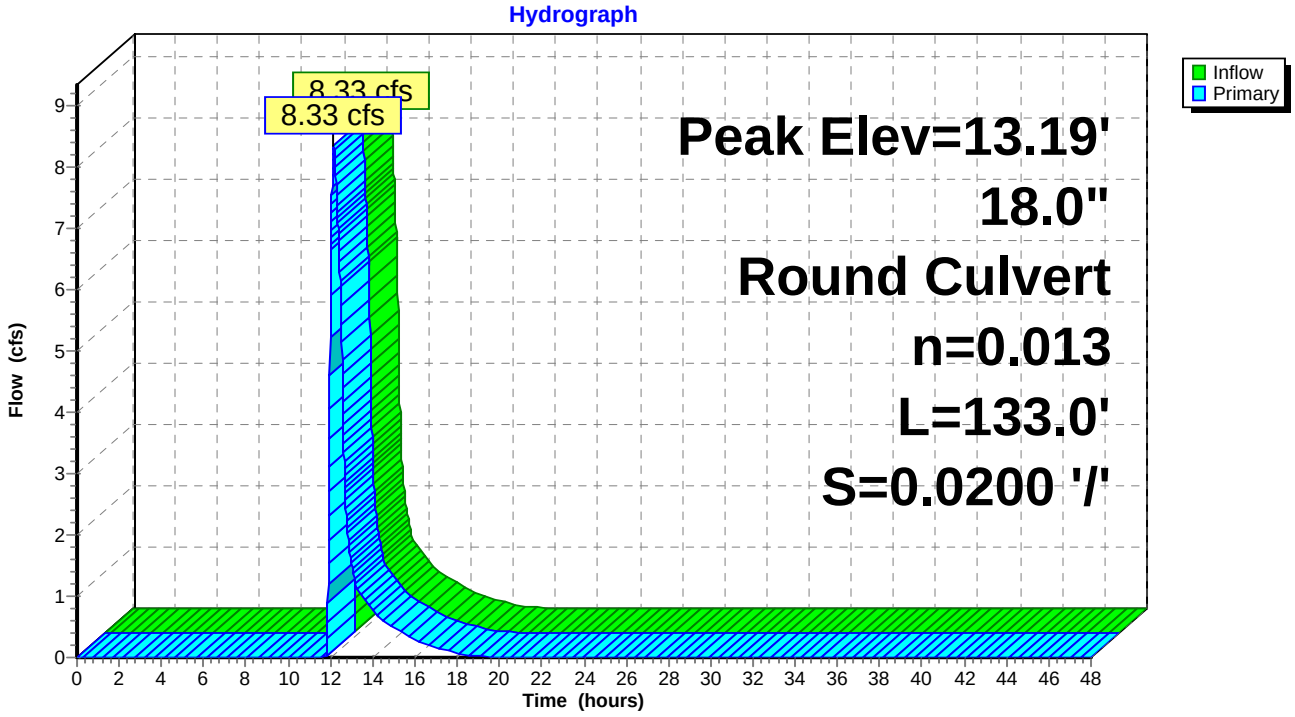
Inflow	=	8.33 cfs @	12.16 hrs, Volume=	28,409 cf
Outflow	=	8.33 cfs @	12.16 hrs, Volume=	28,409 cf, Atten= 0%, Lag= 0.0 min
Primary	=	8.33 cfs @	12.16 hrs, Volume=	28,409 cf

Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs / 2
Peak Elev= 13.19' @ 12.16 hrs
Flood Elev= 18.67'

Device	Routing	Invert	Outlet Devices
#1	Primary	10.90'	**18.0" Round Culvert** L= 133.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 10.90' / 8.24' S= 0.0200 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.77 sf

Primary OutFlow Max=8.33 cfs @ 12.16 hrs HW=13.19' TW=10.24' (Dynamic Tailwater)
└**1=Culvert** (Inlet Controls 8.33 cfs @ 4.71 fps)

Pond 21P: DMH-2



Summary for Pond 22P: DMH-3

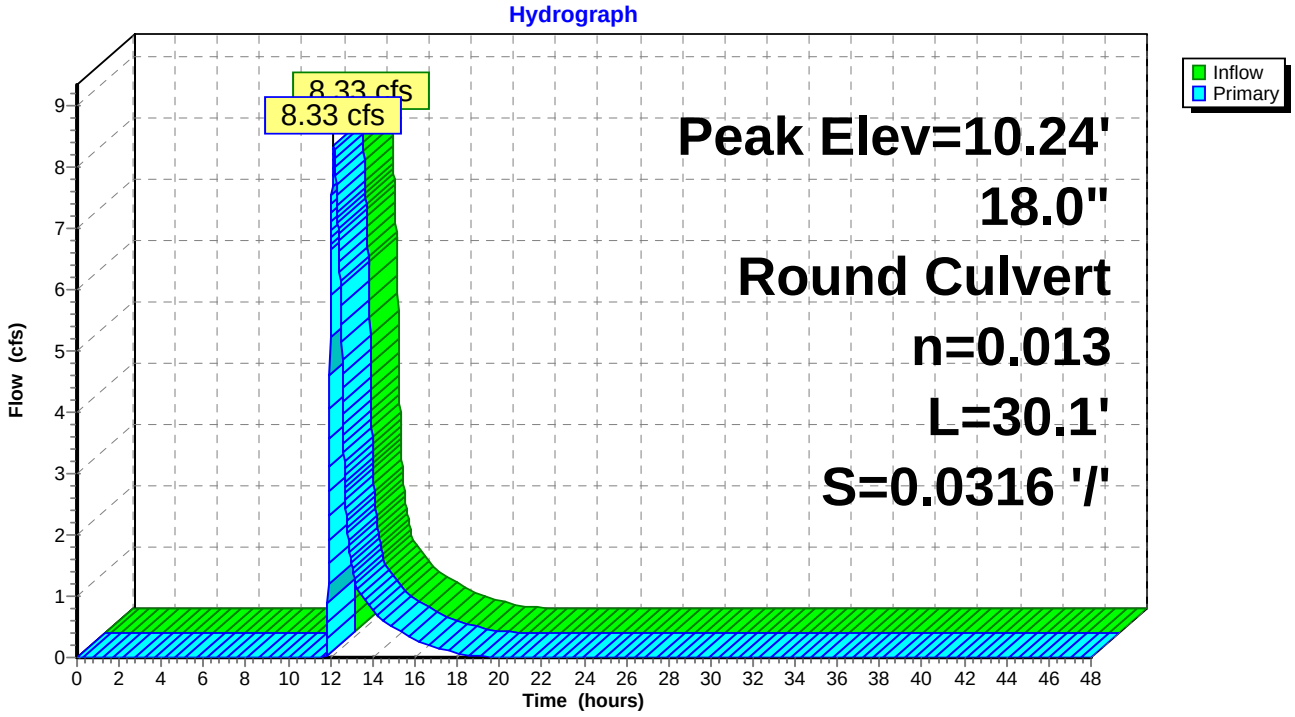
Inflow	=	8.33 cfs @	12.16 hrs, Volume=	28,409 cf
Outflow	=	8.33 cfs @	12.16 hrs, Volume=	28,409 cf, Atten= 0%, Lag= 0.0 min
Primary	=	8.33 cfs @	12.16 hrs, Volume=	28,409 cf

Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs / 2
Peak Elev= 10.24' @ 12.16 hrs
Flood Elev= 17.04'

Device	Routing	Invert	Outlet Devices
#1	Primary	7.95'	**18.0" Round Culvert** L= 30.1' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 7.95' / 7.00' S= 0.0316 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.77 sf

Primary OutFlow Max=8.33 cfs @ 12.16 hrs HW=10.24' TW=7.31' (Dynamic Tailwater)
└**1=Culvert** (Inlet Controls 8.33 cfs @ 4.71 fps)

Pond 22P: DMH-3



Summary for Pond 23P: CBR 1380

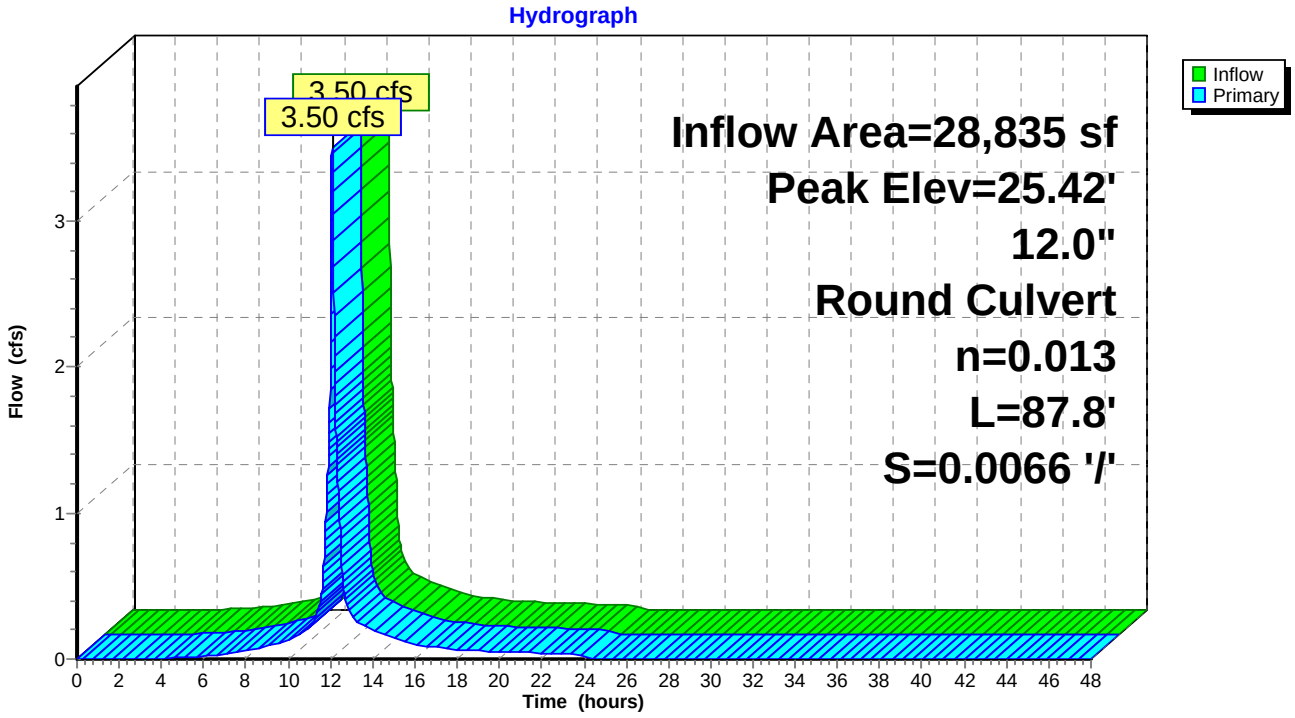
Inflow Area = 28,835 sf, 82.21% Impervious, Inflow Depth = 4.76" for 25-Year event
Inflow = 3.50 cfs @ 12.08 hrs, Volume= 11,442 cf
Outflow = 3.50 cfs @ 12.08 hrs, Volume= 11,442 cf, Atten= 0%, Lag= 0.0 min
Primary = 3.50 cfs @ 12.08 hrs, Volume= 11,442 cf

Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs / 2
Peak Elev= 25.42' @ 12.08 hrs
Flood Elev= 29.60'

Device	Routing	Invert	Outlet Devices
#1	Primary	23.69'	**12.0" Round Culvert** L= 87.8' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 23.69' / 23.11' S= 0.0066 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.79 sf

Primary OutFlow Max=3.50 cfs @ 12.08 hrs HW=25.42' TW=23.98' (Dynamic Tailwater)
1=Culvert (Barrel Controls 3.50 cfs @ 4.45 fps)

Pond 23P: CBR 1380



Summary for Pond 25P: CBR 2113

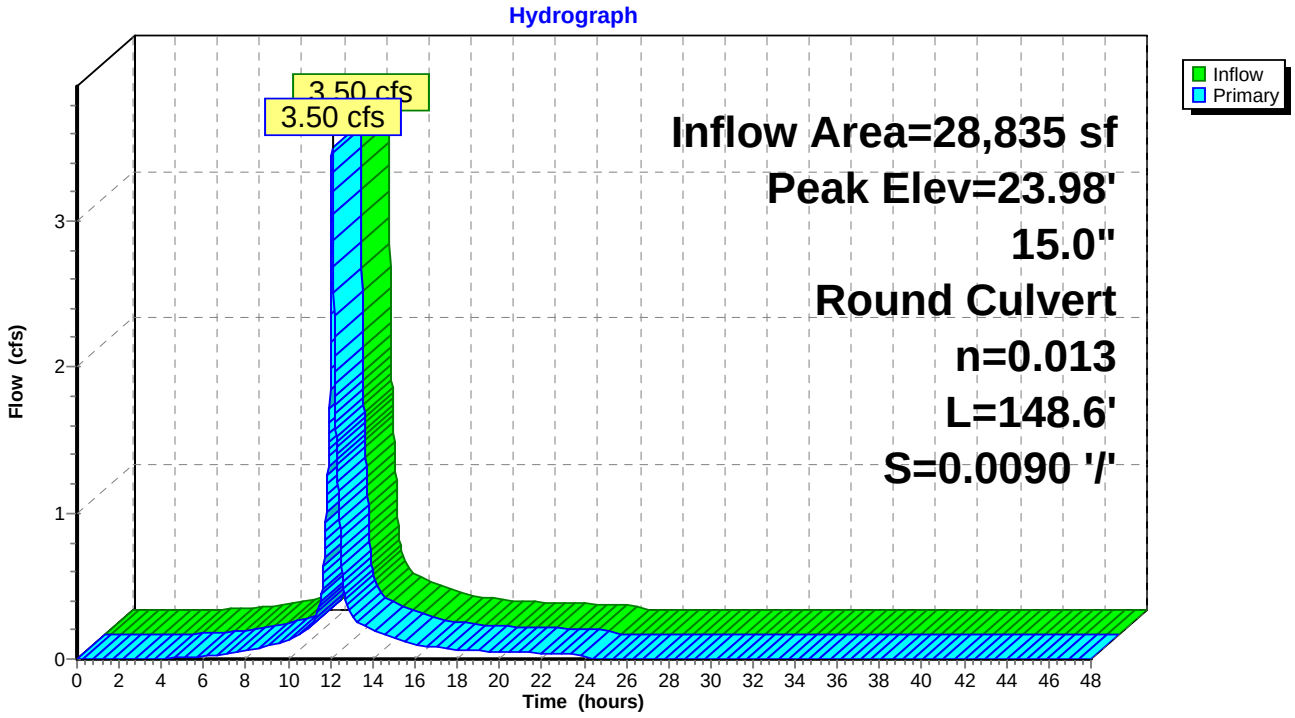
Inflow Area = 28,835 sf, 82.21% Impervious, Inflow Depth = 4.76" for 25-Year event
Inflow = 3.50 cfs @ 12.08 hrs, Volume= 11,442 cf
Outflow = 3.50 cfs @ 12.08 hrs, Volume= 11,442 cf, Atten= 0%, Lag= 0.0 min
Primary = 3.50 cfs @ 12.08 hrs, Volume= 11,442 cf

Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs / 2
Peak Elev= 23.98' @ 12.08 hrs
Flood Elev= 29.47'

Device	Routing	Invert	Outlet Devices
#1	Primary	22.80'	**15.0" Round Culvert** L= 148.6' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 22.80' / 21.47' S= 0.0090 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.23 sf

Primary OutFlow Max=3.50 cfs @ 12.08 hrs HW=23.98' TW=22.02' (Dynamic Tailwater)
1=Culvert (Inlet Controls 3.50 cfs @ 2.92 fps)

Pond 25P: CBR 2113



Summary for Pond 26P: CB-5

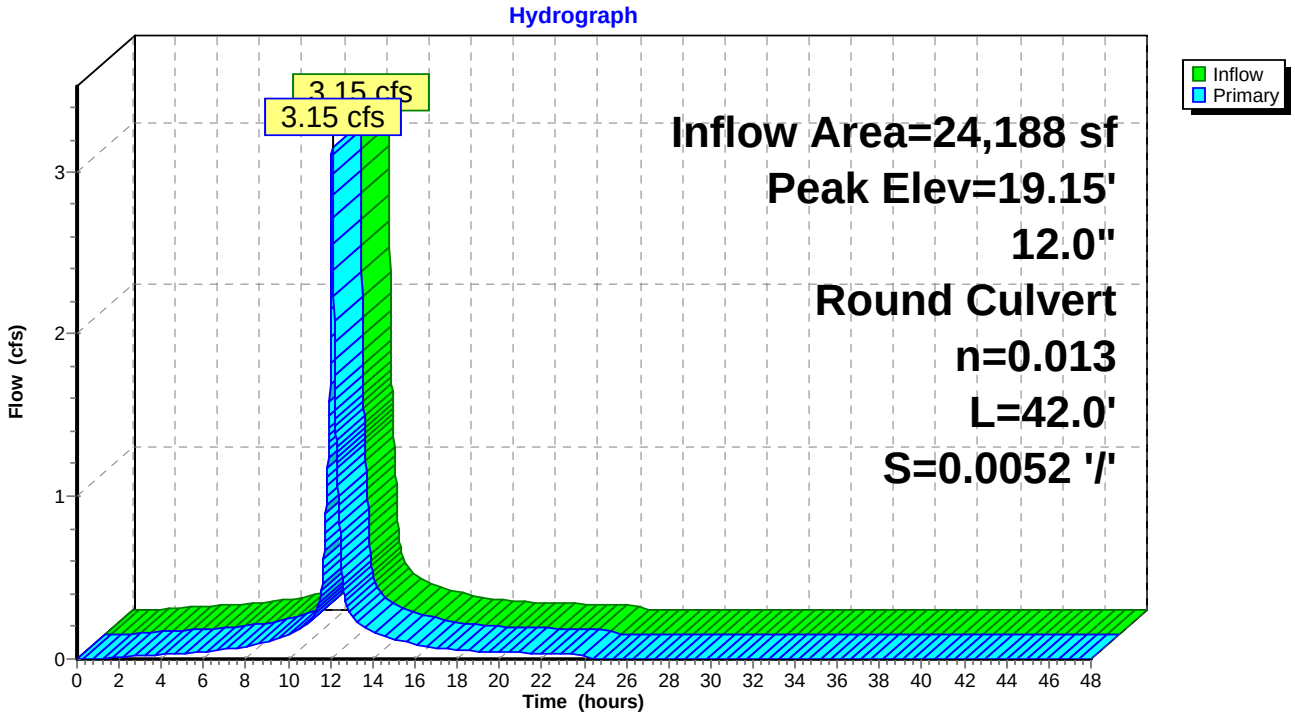
Inflow Area = 24,188 sf, 97.43% Impervious, Inflow Depth = 5.49" for 25-Year event
Inflow = 3.15 cfs @ 12.08 hrs, Volume= 11,069 cf
Outflow = 3.15 cfs @ 12.08 hrs, Volume= 11,069 cf, Atten= 0%, Lag= 0.0 min
Primary = 3.15 cfs @ 12.08 hrs, Volume= 11,069 cf

Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs / 2
Peak Elev= 19.15' @ 12.09 hrs
Flood Elev= 20.55'

Device	Routing	Invert	Outlet Devices
#1	Primary	14.66'	**12.0" Round Culvert** L= 42.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 14.66' / 14.44' S= 0.0052 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.79 sf

Primary OutFlow Max=3.03 cfs @ 12.08 hrs HW=19.08' TW=18.05' (Dynamic Tailwater)
1=Culvert (Inlet Controls 3.03 cfs @ 3.85 fps)

Pond 26P: CB-5



Summary for Pond EX WTLND: Existing Wetland

Inflow Area = 403,614 sf, 67.68% Impervious, Inflow Depth = 4.59" for 25-Year event
Inflow = 31.43 cfs @ 12.12 hrs, Volume= 154,517 cf
Outflow = 31.05 cfs @ 12.14 hrs, Volume= 154,517 cf, Atten= 1%, Lag= 1.3 min
Primary = 25.46 cfs @ 12.14 hrs, Volume= 150,582 cf
Secondary = 5.60 cfs @ 12.14 hrs, Volume= 3,935 cf

Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs / 2
Peak Elev= 7.31' @ 12.14 hrs Surf.Area= 2,875 sf Storage= 2,487 cf
Flood Elev= 9.00' Surf.Area= 3,742 sf Storage= 4,763 cf

Plug-Flow detention time= (not calculated: outflow precedes inflow)
Center-of-Mass det. time= 0.4 min (966.5 - 966.0)

Volume	Invert	Avail.Storage	Storage Description
#1	6.00'	4,763 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

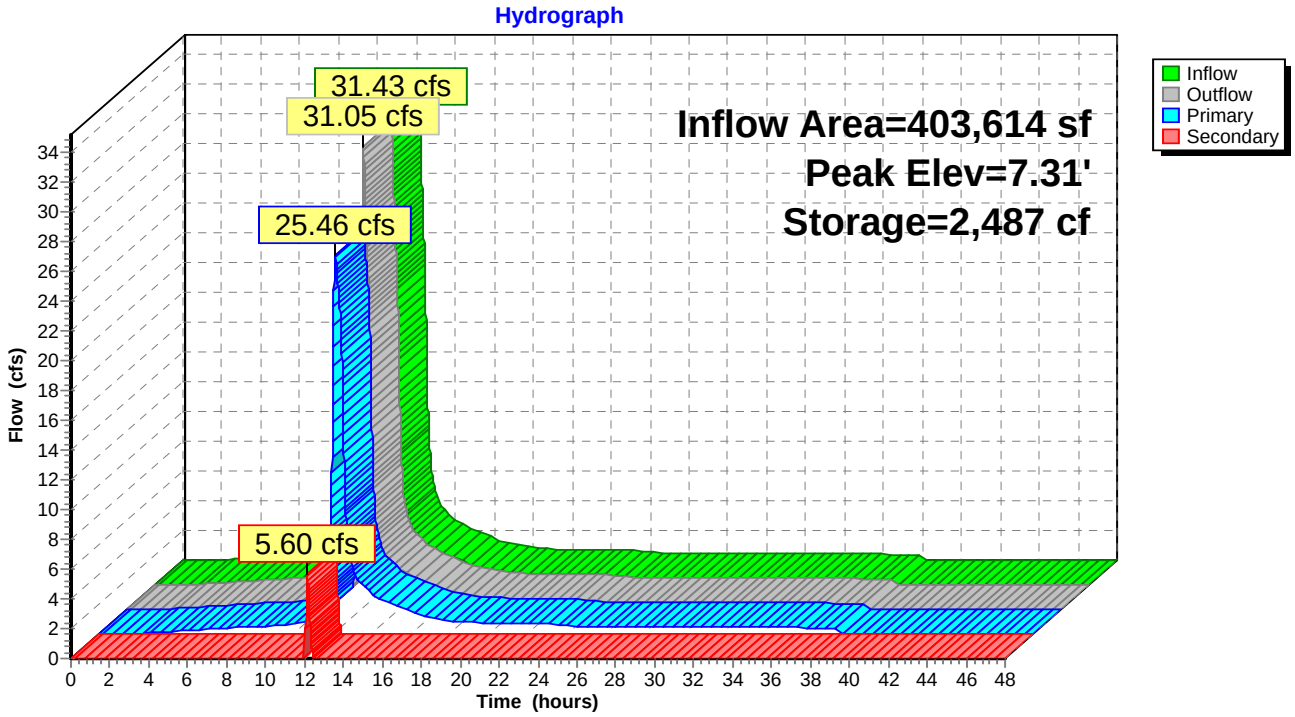
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
6.00	821	0	0
7.00	2,481	1,651	1,651
8.00	3,742	3,112	4,763

Device	Routing	Invert	Outlet Devices
#1	Primary	4.89'	**36.0" Round Culvert** L= 80.0' CMP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 4.89' / 3.61' S= 0.0160 '/' Cc= 0.900 n= 0.025 Corrugated metal, Flow Area= 7.07 sf
#2	Secondary	7.00'	**13.0' long x 4.0' breadth Overflow** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 3.50 4.00 4.50 5.00 5.50 Coef. (English) 2.38 2.54 2.69 2.68 2.67 2.67 2.65 2.66 2.66 2.68 2.72 2.73 2.76 2.79 2.88 3.07 3.32

Primary OutFlow Max=25.45 cfs @ 12.14 hrs HW=7.31' TW=0.00' (Dynamic Tailwater)
└**1=Culvert** (Barrel Controls 25.45 cfs @ 5.69 fps)

Secondary OutFlow Max=5.59 cfs @ 12.14 hrs HW=7.31' TW=0.00' (Dynamic Tailwater)
└**2=Overflow** (Weir Controls 5.59 cfs @ 1.38 fps)

Pond EX WTLND: Existing Wetland



Summary for Pond SSF-1: Subsurface Sand Filter 1

Inflow Area = 277,920 sf, 88.86% Impervious, Inflow Depth = 3.90" for 25-Year event
Inflow = 27.29 cfs @ 12.08 hrs, Volume= 90,438 cf
Outflow = 13.47 cfs @ 12.18 hrs, Volume= 90,441 cf, Atten= 51%, Lag= 6.0 min
Primary = 13.47 cfs @ 12.18 hrs, Volume= 90,441 cf

Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs / 2
Peak Elev= 14.17' @ 12.18 hrs Surf.Area= 20,084 sf Storage= 36,291 cf
Flood Elev= 19.43' Surf.Area= 20,269 sf Storage= 38,911 cf

Plug-Flow detention time= (not calculated: outflow precedes inflow)
Center-of-Mass det. time= 322.4 min (1,082.6 - 760.2)

Volume	Invert	Avail.Storage	Storage Description
#1A	10.99'	19,065 cf	**133.00'W x 137.78'L x 3.50'H Field A Z=1.0** 67,509 cf Overall - 19,846 cf Embedded = 47,663 cf x 40.0% Voids
#2A	11.49'	19,846 cf	**ADS_StormTech SC-740 +Cap** x 432 Inside #1 Effective Size= 44.6"W x 30.0"H => 6.45 sf x 7.12'L = 45.9 cf Overall Size= 51.0"W x 30.0"H x 7.56'L with 0.44' Overlap 24 Rows of 18 Chambers
		38,911 cf	Total Available Storage

Storage Group A created with Chamber Wizard

Device	Routing	Invert	Outlet Devices
#1	Primary	8.00'	**24.0" Round Culvert** L= 34.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 8.00' / 7.00' S= 0.0294 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 3.14 sf
#2	Device 1	8.15'	**3.0" Vert. UD Orifice** C= 0.600
#3	Device 2	8.15'	**6.0" Round Header Pipe** L= 3.3' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 8.15' / 8.10' S= 0.0152 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.20 sf
#4	Device 1	13.00'	**6.0' long Weir Wall** 2 End Contraction(s)
#5	Device 3	10.99'	**4.000 in/hr Filtration over Surface area**
#6	Device 4	11.49'	**24.0" Round Culvert** L= 3.3' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 11.49' / 11.44' S= 0.0152 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 3.14 sf

Primary OutFlow Max=13.46 cfs @ 12.18 hrs HW=14.16' TW=7.29' (Dynamic Tailwater)
- **1=Culvert** (Passes 13.46 cfs of 34.38 cfs potential flow)
  - **2=UD Orifice** (Orifice Controls 0.57 cfs @ 11.69 fps)
    - **3=Header Pipe** (Passes 0.57 cfs of 2.27 cfs potential flow)
      - **5=Filtration** (Passes 0.57 cfs of 1.86 cfs potential flow)
  - **4=Weir Wall** (Passes 12.89 cfs of 23.71 cfs potential flow)
    - **6=Culvert** (Inlet Controls 12.89 cfs @ 4.10 fps)

Pond SSF-1: Subsurface Sand Filter 1 - Chamber Wizard Field A

Chamber Model = ADS_StormTech SC-740 +Cap (ADS StormTech® SC-740 with cap length)
Effective Size= 44.6"W x 30.0"H => 6.45 sf x 7.12'L = 45.9 cf
Overall Size= 51.0"W x 30.0"H x 7.56'L with 0.44' Overlap

51.0" Wide + 12.0" Spacing = 63.0" C-C Row Spacing

18 Chambers/Row x 7.12' Long +0.81' Cap Length x 2 = 129.78' Row Length +48.0" End Stone x 2 = 137.78' Base Length
24 Rows x 51.0" Wide + 12.0" Spacing x 23 + 48.0" Side Stone x 2 = 133.00' Base Width
6.0" Base + 30.0" Chamber Height + 6.0" Cover = 3.50' Field Height

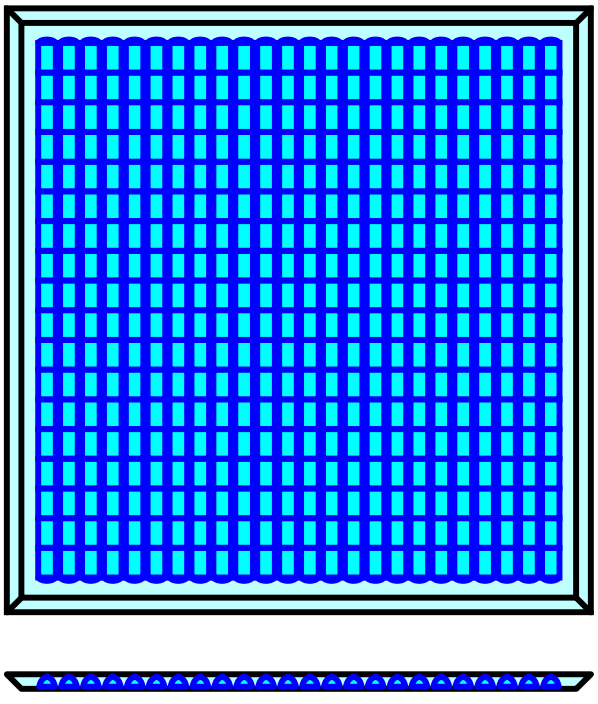
1.0 '/' Side-Z x Height = 42.0" Flare/Side
Base Length + Flare x 2 = 144.78' Top Length
Base Width + Flare x 2 = 140.00' Top Width

432 Chambers x 45.9 cf = 19,846.1 cf Chamber Storage

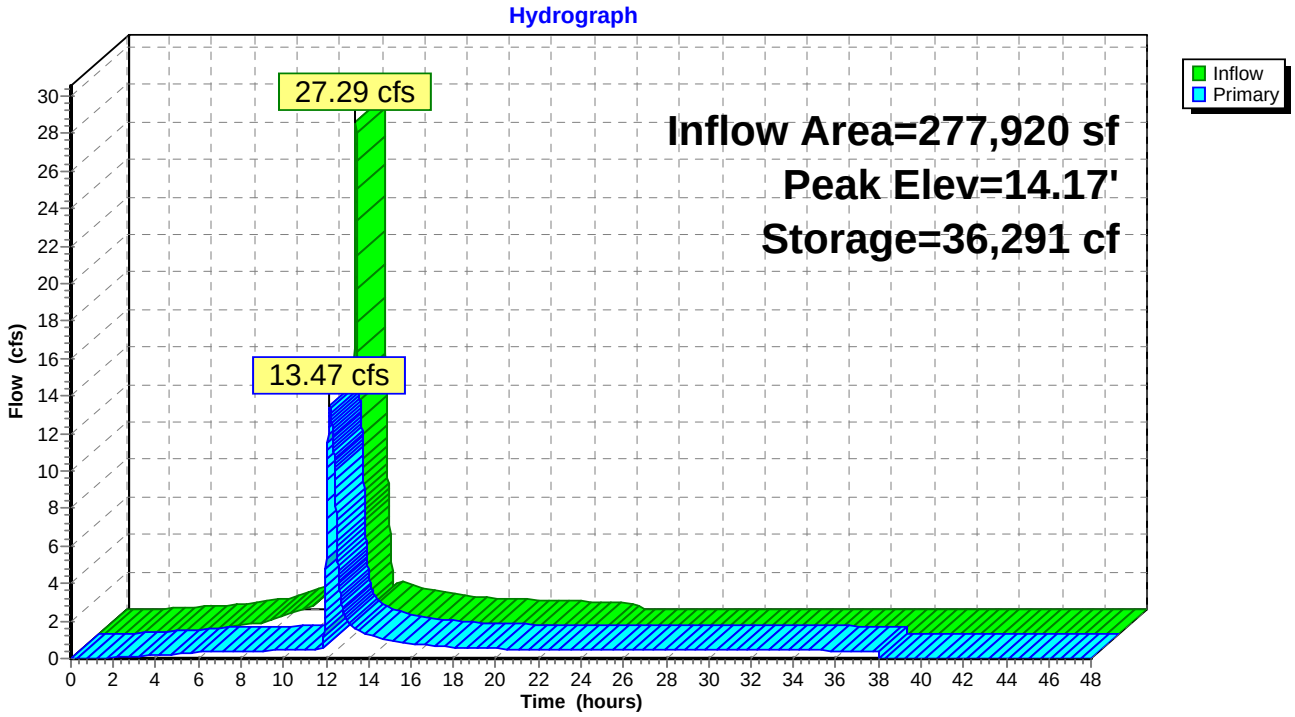
67,509.2 cf Field - 19,846.1 cf Chambers = 47,663.1 cf Stone x 40.0% Voids = 19,065.3 cf Stone Storage

Chamber Storage + Stone Storage = 38,911.3 cf = 0.893 af
Overall Storage Efficiency = 57.6%
Overall System Size = 137.78' x 133.00' x 3.50'

432 Chambers
2,500.3 cy Field
1,765.3 cy Stone



Pond SSF-1: Subsurface Sand Filter 1

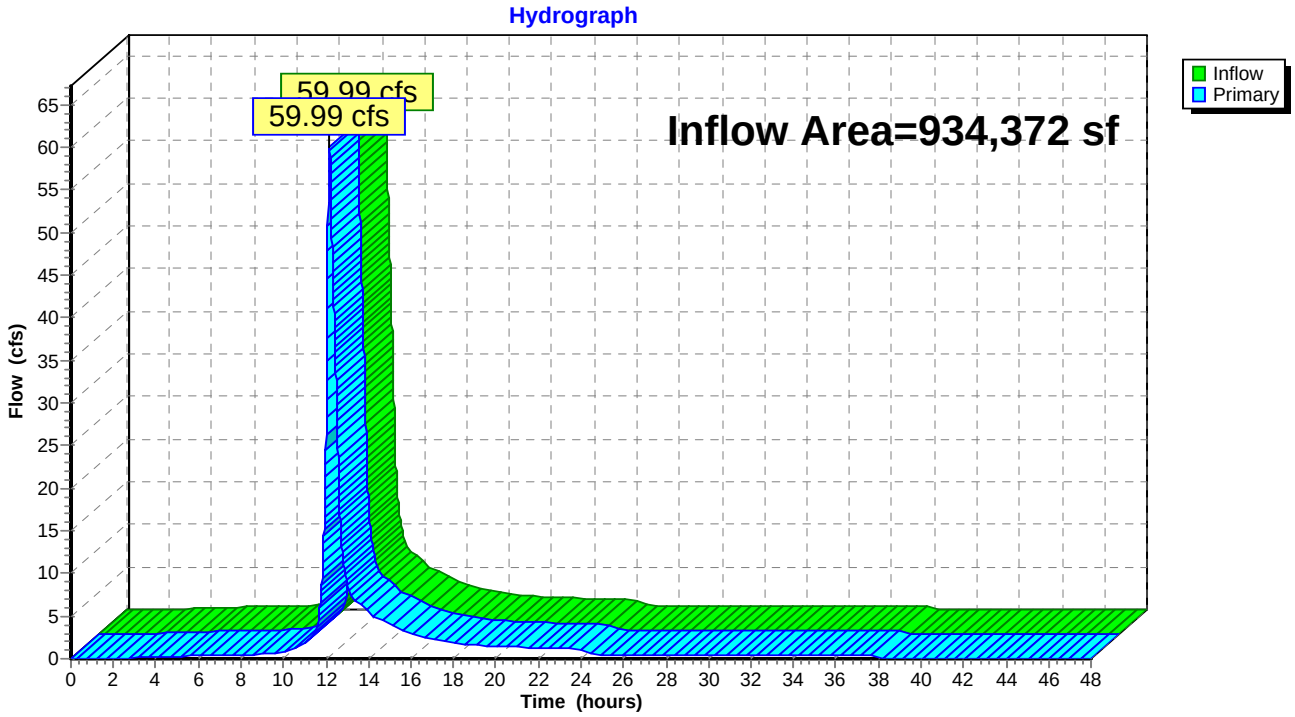


Summary for Link SP-1: Study Point 1

Inflow Area = 934,372 sf, 41.64% Impervious, Inflow Depth = 3.44" for 25-Year event
Inflow = 59.99 cfs @ 12.16 hrs, Volume= 267,628 cf
Primary = 59.99 cfs @ 12.16 hrs, Volume= 267,628 cf, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs

Link SP-1: Study Point 1

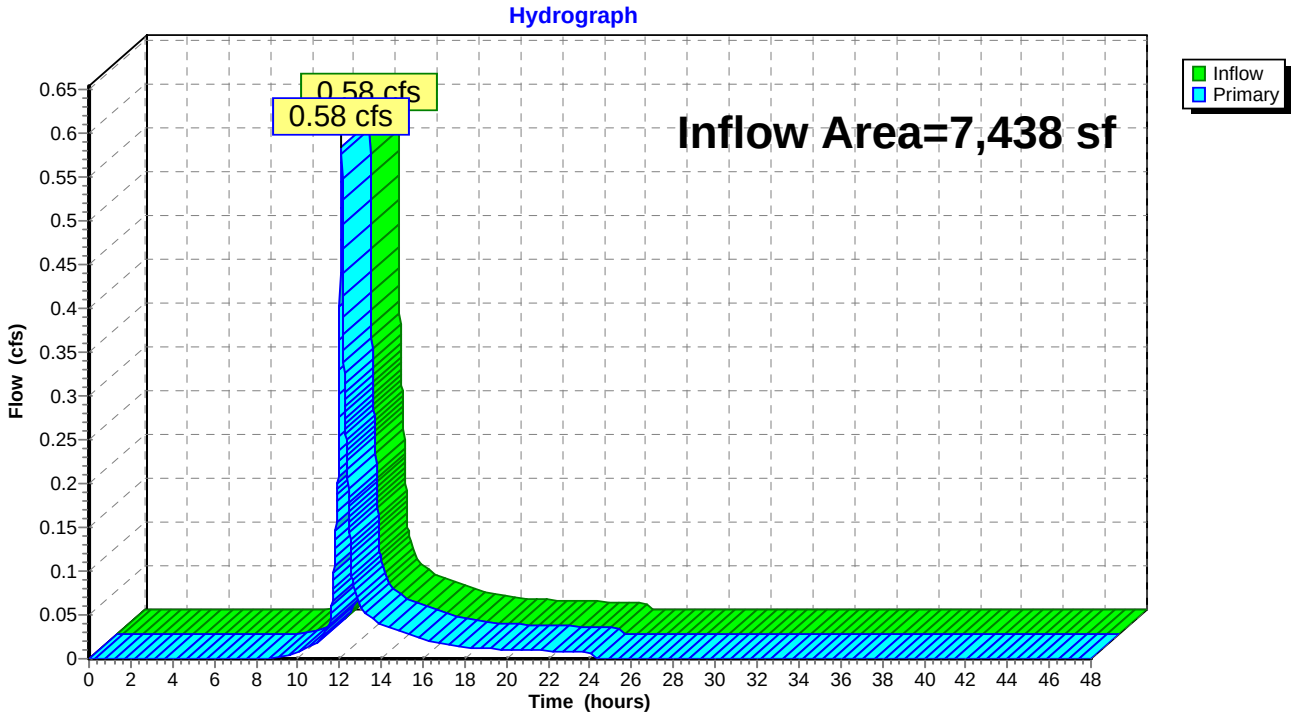


Summary for Link SP-2: Study Point 2

Inflow Area = 7,438 sf, 31.78% Impervious, Inflow Depth = 2.92" for 25-Year event
Inflow = 0.58 cfs @ 12.09 hrs, Volume= 1,812 cf
Primary = 0.58 cfs @ 12.09 hrs, Volume= 1,812 cf, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs

Link SP-2: Study Point 2



Attachment D

Inspection, Maintenance, and Housekeeping Plan

INSPECTION, MAINTENANCE, AND HOUSEKEEPING PLAN
Portland Transportation Center
Thompson's Point Connector
Portland, Maine

Introduction

The following plan outlines the anticipated inspection and maintenance procedures for the erosion and sedimentation control measures as well as stormwater management facilities for the project. This plan also outlines several housekeeping requirements that shall be followed during and after construction. These procedures shall be followed in order to ensure the intended function of the designed measures and to prevent unreasonably adverse impacts to the surrounding environment.

The procedures outlined in this Inspection, Maintenance and Housekeeping Plan are provided as an overview of the anticipated practices to be used on this site. In some instances, additional measures may be required due to unexpected conditions. For additional detail on any of the erosion and sedimentation control measures or stormwater management devices to be utilized on this project, refer to the most recently revised edition of the "Maine Erosion and Sedimentation Control BMP" manual and/or the "Stormwater Management for Maine: Best Management Practices" manual as published by the Maine Department of Environmental Protection (MDEP).

During Construction

1. **Inspection:** During the construction process, it is the Contractor's responsibility to comply with the inspection and maintenance procedures outlined in this section and the erosion and sedimentation control plan for the project. These responsibilities include inspecting disturbed and impervious areas, erosion control measures, materials storage areas that are exposed to precipitation, and locations where vehicles enter or exit the site. These areas shall be inspected at least once a week as well as before and after a storm event, and prior to completing permanent stabilization measures. A person with knowledge of erosion and stormwater control, including the standards and conditions in any applicable permits, shall conduct the inspections.

2. **Maintenance:** All measures shall be maintained in an effective operating condition until areas are permanently stabilized. If Best Management Practices (BMPs) need to be maintained or modified, additional BMPs are necessary, or other corrective action is needed, implementation must be completed within 7 calendar days and prior to any storm event (rainfall).

3. **Documentation:** A log summarizing the inspections and any corrective action taken must be maintained on-site. Corrective action shall be performed in general conformance with the Maine Construction General Permit and Maine DEP Chapter 500 Stormwater standards. The log must include the name(s) and qualifications of the person making the inspections, the date(s) of the inspections, and major observations about the operation and maintenance of erosion and sedimentation controls, material storage areas, and vehicle access points to the site. Major observations must include BMPs that need maintenance, BMPs that failed to operate as designed or proved inadequate for a particular location, and locations where additional BMPs are needed. For each BMP requiring maintenance, BMP needing replacement, and location needing additional BMPs, note in the log the corrective action taken and when it was taken. The log must be made

accessible to the appropriate regulatory agency upon request. The permittee shall retain a copy of the log for a period of at least three years from the completion of permanent stabilization.

4. **Specific Inspection and Maintenance Tasks:** The following is a list of erosion control and stormwater management measures and the specific inspection and maintenance tasks to be performed during construction.

A. Filter Berms:

- Hay bale barriers, silt fences, and filter berms shall be inspected immediately after each rainfall and at least daily during prolonged rainfall.
- If the fabric on a silt fence or filter barrier should decompose or become ineffective prior to the end of the expected usable life and the barrier is still necessary, it shall be replaced.
- Sediment deposits should be removed after each storm event. They must be removed before deposits reach approximately one-half the height of the barrier.
- Filter berms shall be reshaped as needed.
- Any sediment deposits remaining in place after the silt fence or filter barrier is no longer required should be dressed to conform to the existing grade, prepared, and seeded.

B. Stone Check Dams:

- Inspect the center of the dam to make sure it is lower than the edges. Erosion caused by high flows around the edges of the dam must be corrected.
- Sediment accumulation shall be removed prior to reaching half of the original design height.
- Areas beneath stone check dams must be seeded and mulched upon removal.

C. Riprap Materials:

- Once a riprap installation has been completed, it should require very little maintenance. It shall, however, be inspected periodically to determine if high flows have caused scour beneath the riprap or dislodged any of the stone.

D. Erosion Control Blankets:

- Inspect these reinforced areas semi-annually and after significant rainfall events for slumping, sliding, seepage, and scour. Pay close attention to unreinforced areas adjacent to the erosion control blankets, which may experience accelerated erosion.
- Review all applicable inspection and maintenance procedures recommended by the specific blanket manufacturer. These tasks shall be included in addition to the requirements of this plan.

E. Stabilized Construction Entrances/Exits:

- The exit shall be maintained in a condition that will prevent tracking of sediment onto public rights-of-way.

- When the control pad becomes ineffective, the stone shall be removed along with the collected soil material. The entrance should then be reconstructed.
- Areas that have received mud-tracking or sediment deposits shall be swept or washed. Washing shall be done on an area stabilized with aggregate, which drains into an approved sediment-trapping device (not into storm drains, ditches, or waterways).

F. Temporary Seed and Mulch:

- Mulched areas should be inspected after rain events to check for rill erosion.
- If less than 90% of the soil surface is covered by mulch, additional mulch shall be applied in bare areas.
- In applications where seeding and mulch have been applied in conjunction with erosion control blankets, the blankets must be inspected after rain events for dislocation or undercutting.
- Mulch shall continue to be reapplied until 95% of the soil surface has established temporary vegetative cover.

G. Stabilized Temporary Drainage Swales:

- Sediment accumulation in the swale shall be removed once the cross section of the swale is reduced by 25%.
- The swales shall be inspected after rainfall events. Any evidence of sloughing of the side slopes or channel erosion shall be repaired and corrective action should be taken to prevent reoccurrence of the problem.
- In addition to the stabilized lining of the channel (i.e. erosion control blankets), stone check dams may be needed to further reduce channel velocity.

5. **Housekeeping:** The following general performance standards apply to the proposed project.

A. Spill prevention: Controls must be used to prevent pollutants from being discharged from materials on-site, including storage practices to minimize exposure of the materials to stormwater, and appropriate spill prevention, containment, and response planning and implementation. A Spill, Prevention, Control and Countermeasures Plan is created for the project and is to be kept onsite at all times.

B. Groundwater protection: During construction, liquid petroleum products and other hazardous materials with the potential to contaminate groundwater may not be stored or handled in areas of the site draining to an infiltration area. An "infiltration area" is any area of the site that by design or as a result of soils, topography and other relevant factors, accumulates runoff that infiltrates into the soil. Dikes, berms, sumps, and other forms of secondary containment that prevent discharge to groundwater may be used to isolate portions of the site for the purposes of storage and handling of these materials.

C. Fugitive sediment and dust: Actions must be taken to insure that activities do not result in noticeable erosion of soils or fugitive dust emissions during or after construction. Oil may not be used for dust control.

D. Debris and other materials: Litter, construction debris, and chemicals exposed to stormwater must be prevented from becoming a pollutant source.

E. Trench or foundation dewatering: Trench dewatering is the removal of water from trenches, foundations, cofferdams, ponds, and other areas within the construction area that retain water after excavation. In most cases, the collected water is heavily silted and hinders correct and safe construction practices. The collected water must be removed from the ponded area, either through gravity or pumping, and must be spread through natural wooded buffers or removed to areas that are specifically designed to collect the maximum amount of sediment possible, like a cofferdam sedimentation basin. Avoid allowing the water to flow over disturbed areas of the site. Equivalent measures may be taken if approved.

Post-Construction

1. **Inspection:** After construction, it is the responsibility of Langdon Street Real Estate to comply with the inspection and maintenance procedures outlined in this section. All measures must be maintained in effective operating condition. A person with knowledge of erosion and stormwater control, including the standards and conditions in all applicable permits, shall conduct the inspections.

2. **Specific Inspection and Maintenance Tasks:** The following is a list of permanent erosion control and stormwater management measures and the inspection and maintenance tasks to be performed after construction.

   A. Vegetated Areas:
   - Inspect vegetated areas, particularly slopes and embankments, early in the growing season or after heavy rains to identify active or potential erosion problems.
   - Replant bare areas or areas with sparse growth. Where rill erosion is evident, armor the area with an appropriate lining or divert the erosive flows to on-site areas able to withstand the concentrated flows.

   B. Ditches, Swales and Other Open Channels:

   - Inspect ditches, swales, level spreaders and other open stormwater channels in the spring, in the late fall, and after heavy rains to remove any obstructions to flow. Remove accumulated sediments and debris, remove woody vegetative growth that could obstruct flow, and repair any erosion of the ditch lining.
   - Vegetated ditches must be mowed at least annually or otherwise maintained to control the growth of woody vegetation and maintain flow capacity.
   - Any woody vegetation growing through riprap linings must also be removed. Repair any slumping side slopes as soon as practicable.
   - If the ditch has a riprap lining, replace riprap in areas where any underlying filter fabric or underdrain gravel is showing through the stone or where stones have dislodged.

   C. Winter Sanding:

   - Clear accumulations of winter sand along access road at least once a year,

preferably in the spring.

- Accumulations of sand along road shoulders may be removed by grading excess sand to the pavement edge and removing it manually or by a front-end loader or other acceptable method.

D. Culverts:

- Inspect culverts in the spring, in the late fall, and after heavy rains to remove any obstructions to flow.
- Remove accumulated sediments and debris at the inlet, at the outlet, and within the conduit.
- Inspect and repair any erosion damage at the culvert's inlet and outlet.

E. Subsurface Sand Filter:

- Inspect the site monthly for the first few months after construction. Then inspections can occur on an annual basis, preferably after rain events when clogging will be obvious.
- Make any repairs necessary to ensure the measure is operating properly.
- Regular maintenance is necessary to remove surface sediment, trash, debris, and leaf litter.
- Outlets and chambers need to be cleaned/repaired when drawdown times in the filter exceed 36 hours.
- In certain cases, layers of sand may need to be replaced every 3 to 5 years.

3. Documentation:

A. A log summarizing the inspections and any corrective action taken must be maintained. The log must include the name(s) and qualifications of the person making the inspections, the date(s) of the inspections, and major observations about the operation and maintenance of controls. Major observations must include BMPs that need maintenance, BMPs that failed to operate as designed or proved inadequate for a particular location, and locations where additional BMPs are needed. For each BMP requiring maintenance, BMP needing replacement, and location needing additional BMPs, note in the log the corrective action taken and when it was taken. The log must be made accessible to the appropriate regulatory agency upon request. A sample "Stormwater Inspection and Maintenance Form" has been included as Attachment 1 of this Inspection, Maintenance, and Housekeeping Plan.

4. Maine DEP Recertification: A certification of the following shall be submitted to the MDEP within three months of the expiration of each five year interval from the date of issuance of MDEP permits.

A. Identification and repair of erosion problems. All areas of the project site have been inspected for areas of erosion, and appropriate steps have been taken to permanently stabilize these areas.

B. Inspection and repair of stormwater control system. All aspects of the stormwater control system have been inspected for damage, wear, and malfunction, and appropriate steps have been taken to repair or replace the system, or portions of the system.

C. The Inspection, Maintenance, and Housekeeping Plan for the site is being implemented as written, or modifications to the plan have been submitted to and approved by the MDEP, and the maintenance log is being maintained.

5. Duration of Maintenance: Perform maintenance as described and required for any associated permits unless and until the system is formally accepted by a municipality or quasi-municipal district, or is placed under the jurisdiction of a legally created association that will be responsible for the maintenance of the system. If a municipality or quasi-municipal district chooses to accept a stormwater management system, or a component of a stormwater system, it must provide a letter to the MDEP stating that it assumes responsibility for the system. The letter must specify the components of the system for which the municipality or district will assume responsibility, and that the municipality or district agrees to maintain those components of the system in compliance with MDEP standards. Upon such assumption of responsibility, and approval by the MDEP, the municipality, quasi-municipal district, or association becomes a co-permittee for this purpose only and must comply with all terms and conditions of the permit.

Attachments

Attachment 1 – Stormwater Inspection and Maintenance Log Form

ATTACHMENT 1 – STORMWATER INSPECTION AND MAINTENANCE LOG

Portland Transportation Center
Thompson's Point Connector
Portland, Maine

This log is intended to accompany the Inspection, Maintenance and Housekeeping Plan for the proposed Portland Transportation Center. The following items shall be checked, cleaned and maintained on a regular basis as specified in the Maintenance Plan and as described in the table below. This log shall be kept on file for a minimum of five (5) years and shall be available for review by the municipality and MDEP. Qualified personnel familiar with the onsite drainage systems and soils shall perform all inspections. Attached is a copy of the construction and post-construction maintenance logs.

Items	INSPECTOR NAME	DATE PERFORMED	SUGGESTED INTERVAL
Vegetated Areas			
Inspect all slopes and embankments			Annually
Replant bare areas or areas with sparse growth			Annually
Paved Surfaces			
Clear accumulated winter sand			Annually
Remove sediment along edges and in pockets			Annually
Ditches & Swales			
Remove any obstructions and accumulated sediments and debris			Monthly
Repair any erosion of ditch lining			Annually
Mow vegetated ditches			Annually
Remove woody vegetation growing through riprap			Annually
Repair any slumping side slopes			Annually
Replace riprap where stones have dislodged			Annually
Catch Basins			
Remove accumulated sediments and debris in the sump and at grate			Annually
Culverts			
Remove accumulated sediments and debris at the inlet, outlet, within conduit			Annually
Repair any erosion at inlet and outlet			Annually
Sump Depth			Annually

Subsurface Sand Filter				
	Inspection of subsurface structure following major storm events			Semi-Annually (during first year)
	Inspection after major storm to ensure proper function			Bi-Annually
	Remove sediment and debris			Annually
	Clean/repair outlets and chambers			When drawdown times in filter exceed 48 hrs

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Stormwater Management Report

To:

Maine Department of Environmental Protection

Portland Transportation Center

Thompson's Point Connector
Portland, Maine

Prepared for:
Langdon Street Real Estate
7 Langdon Street
Concord, NH 03301

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June 2018

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Stormwater Management Narrative

A. General

This Stormwater Management Plan has been prepared to address the potential impacts associated with the proposed modification in stormwater runoff characteristics for the proposed development at Portland Transportation Center located at Thompson's Point Connector in Portland. The stormwater management controls that are outlined in this plan have been designed to best suit the proposed development and to comply with applicable regulatory requirements to evaluate the pre- and post-development conditions.

The existing development consist of approximately 8.74 acres of impervious areas and associated vegetated areas. Proposed improvements to the site include the construction of paved surfaces for parking and vehicular traffic with the remaining developed area comprised of vegetated side slopes and landscaped areas. The project will result in a net increase in impervious area of 2.86 acres, for a total impervious area of approximately 6.32 acres.

B. Existing Conditions

The site has been developed in the past dating back to 1996. The existing site includes a building totaling 15,600 square feet accessed by paved parking lot located off of Thompson's Point Connector. The remaining developed land consists of paved areas used for vehicular traffic and parking, landscaped areas and a stormwater detention basin.

Runoff from the existing site generally flows from the western side of the property, where the building is located, across the parking lot to the eastern side of the property where the detention pond. For stormwater calculating purposes, runoff was analyzed at two study points where the runoff exits the subject parcel. Study Point 1 (SP-1) is located at the southeastern corner of the property. Runoff at SP-1 leaving the property enters into the Fore River. Study Point 2 (SP-2) is located along Thompson's Point Connector along the north western sideline of the property. Runoff at this location enters into the existing closed storm drain system.

C. Preload Site Improvements

Based on the recommendations of the geotechnical engineer, it will be necessary to preload the proposed developed area for a period of approximately 12-18 months to eliminate the majority of the anticipated settlement that will occur from the weak underlying soils before any permanent drainage structures or pavement is installed. Prior to the placement of any preload material, trees and shrubs will be removed down to ground level, leaving as much vegetation along the perimeter of the preload area to minimized the potential for erosion. A stormwater bypass pipe will be installed to direct runoff that currently drains onto the property from offsite around the perimeter of the preload area to the existing 36-inch diameter culvert that flows under the railroad tracks. The initial preload fill will consist of a three foot thick sand layer placed directly onto the cleared wetland area. From there, common borrow material will be installed to an elevation of one-foot below the proposed elevation of the parking lot subbase gravel. One foot of gravel borrow will be installed upon the preload fill prior to the installation of the pavement subbase and base gravels. After the

subbase and base gravels are installed 3 inches of reclaimed asphalt pavement will be installed to cap the fill and help minimize erosion during the preload phase.

During the preload phase, stormwater from the existing building and parking lots flowing to the existing detention basin will be treated by constructing a "drainage ring" within the footprint of the detention basin. The drainage ring will be constructed by installing an open bottom 8-foot diameter concrete structure surrounded by crushed stone. The concrete structure will be perforated to allow stormwater to flow out the sides of the structure to the surrounding crushed stone. The concrete structure will be installed on a base of crushed stone over a sand filter layer. Perforated pipes installed in crushed stone under the sand filter layer will be installed to collect the treated stormwater and direct it to the existing 36-inch culverts under the railroad tracks.

During the preload phase of approximately 12-18 months, stormwater from the surface of the preload area will be treated by constructing two underdrained soil filters in the south east corner of the preload area. Sediment forebays will be constructed adjacent to each of the underdrained soil filters to pretreat the stormwater prior to overflowing into the underdrained soil filter. Stormwater will then pass through a layer of mulch and a layer of soil filter media before being collected in the underdrain pipes. The proposed underdrained soil filters have been designed to conform to the Maine Department of Environmental Protection's (MeDEP) Chapter 500 Stormwater Standards.

D. Proposed Site Improvements

Proposed improvements involve the construction of paved surfaces for parking and vehicular traffic. The proposed development will increase the total impervious surfaces by approximately 2.86 acres over the existing impervious areas that exist today. With the development of the site, stormwater BMPs will be constructed to treat runoff prior to entering into the existing drainage system. The proposed stormwater BMP, a proposed Subsurface Sand Filter, has been designed to treat stormwater runoff prior to leaving the site. The proposed stormwater BMP has been designed to conform to the Maine Department of Environmental Protection's (MeDEP) Chapter 500 Stormwater Standards.

The stormwater management plan was designed so that existing drainage patterns are not significantly altered at the two study points SP-1, and SP-2.

E. Soils

Soil information for the site was obtained via the USDA United States Department of Agriculture and Natural Resources Conservation Service's Web Soil Survey. The Hydrologic Soil Group (HSG) of the site soils are classified by Technical Release TR-55 of the Soil Conservation Service as follows:

Soil Type	Symbol	HSG	Drainage Class
Belgrade	BgB	B	Moderately Well Drained
Belgrade	BgC2	B	Moderately Well Drained
Cut and Fill	Cu	-	Moderately Well Drained
Gravel Pits	Gp	-	
Tidal Marsh	Tm	-	Very Poorly Drained
Windsor	WmB	A	Very Well Drained
Water	W	-	

F. Methodology

The stormwater runoff analysis was developed using the "HydroCAD" computer modeling software, which incorporates the TR-55 and TR-20 methodologies as provided by the Soil Conservation Service of the U.S. Department of Agriculture.

The peak runoff rates were calculated using a 24-hour duration storm event with a Type III rainfall distribution. The rainfall amounts for Cumberland for the 2-year, 10-year and 25-year storm events are as follows:

Storm Frequency	24-hr Duration Rainfall (in.)
2-yr	3.10
10-yr	4.60
25-yr	5.80

G. Pre-Development Watershed Model

The pre-development watershed model consists of eleven (11) subcatchments.

Subcatchments 1S through 6S, includes a majority of the subject parcel. The area is graded to discharge runoff easterly through a closed storm drain system located on the property to an existing wet pond. Stormwater flows generally from west to east, designated as Study Point 1 (SP-1).

Subcatchment 7S includes portions of the site east of the existing parking lot with runoff that drains to the existing wetland, designated as Study Point 1 (SP-1).

Subcatchment 8S includes a small portions of the site along the northern property line. This area flows to an existing closed drainage system located in Thompson's Point Connector, designated as Study Point 2 (SP-2).

Subcatchment 9S includes a portion of the site in the southwestern corner of the property. This area flows to an existing culvert that discharges directly into the existing wetland, designated as Study Point 1 (SP-1).

Subcatchments OSW and OSE are offsite subcatchments. These areas flow from the I-295 and Fore River Parkways offsite and ultimately outfall east of the existing wetland in Subcatchment 6S.

H. Preload-Development Watershed Model

The pre-development watershed model consists of twelve (12) subcatchments.

Subcatchments 1S through 5S, includes a majority of the existing development. The area is graded to discharge runoff easterly through a closed storm drain system located on the property to a proposed drainage ring. Stormwater is collected in the underdrain system below the drainage ring. Stormwater then flows through the proposed closed storm drain system to the existing culvert, designated as Study Point 1 (SP-1).

Subcatchments 6S and 7S includes the preload surface area. Stormwater from the preload surface will be directed to two undrained soil filters. Treated stormwater will flow through undrain collection pipes and discharged to the existing culvert, designated as Study Point 1 (SP-1).

Subcatchment 8S includes a small portions of the site along the northern property line. This area flows to an existing closed drainage system located in Thompson's Point Connector, designated as Study Point 2 (SP-2).

Subcatchments 9S and 11S includes a portion of the site in the southwestern corner of the property and portions of the existing vegetated side slopes surrounding the property. This area flows to an existing culvert, designated as Study Point 1 (SP-1).

Subcatchments OSW and OSE are offsite subcatchments. These areas flow from the I-295 and Fore River Parkways offsite and ultimately outfall east of the existing wetland in Subcatchment 6S. These offsite subcatchments are not included in the development but are used to account for the total outflow at the Fore River in the preload-development condition.

I. Post-Development Watershed Model

The post-development watershed model consists of nineteen (19) subcatchments. Modeling reflects on-site ground cover changes to include proposed landscaping and impervious areas associated with the parking lot and associated sidewalks. Existing drainage patterns will be generally maintained with the proposed stormwater design.

Subcatchments 1S through 7S and 9S through 15S includes the existing parking areas, portions of the existing building, the proposed parking areas and proposed landscape areas associated the expansion. The area is graded to discharge runoff through a closed storm drain system to the proposed Subsurface Sand Filter. Stormwater will then flow through proposed closed storm drain system to the existing culvert, designated as Study Point 1 (SP-1).

Subcatchment 8S includes a small portions of the site along the northern property line. This area flows to an existing closed drainage system located in Thompson's Point Connector, designated as Study Point 2 (SP-2).

Subcatchments 16S and 17S includes a portion of the site in the southwestern corner of the property and portions of the existing vegetated side slopes surrounding the property. This area flows to an existing culvert, designated as Study Point 1 (SP-1).

Subcatchments OSW and OSE are offsite subcatchments. These areas flow from the I-295 and Fore River Parkways offsite and ultimately outfall east of the existing wetland in Subcatchment 6S. These offsite subcatchments are not included in the development but are used to account for the total outflow at the Fore River in the post-development condition.

J. Stormwater Quality Management (General Standard)

Runoff from the existing development that was treated in the wet pond, along with the proposed development will be directed to a subsurface sand filter. The subsurface sand filter is designed in general conformance with Section 7.3 of the BMPs Technical Design Manual. An inlet control structure will distribute flow from a 1 inch rain storm evenly to four isolator rows within the system. Through the isolator rows, flow will disperse equally to exterior chambers so that a consistent water level is maintained throughout the entire system. An outlet control structure will be constructed with a weir installed so that storage is provided for at least the first 1 inch of runoff. Additional runoff from larger storm events will be diverted along the easterly side of the system so that additional flow does not impact conditions upstream. Runoff contained in the chambers will first pass through a media for treatment before discharging to the project's closed storm drainage system.

The new impervious surface combined with the existing impervious areas currently being treated in the wet pond would require a total impervious treatment of 246,946 square feet (SF). The new landscape areas combined with the existing landscape areas currently being treated would require a total landscape treatment of 30,974 square feet (SF). Therefore, the proposed development will treat stormwater to a much greater extent than what is actually required to be treated through a strict interpretation of the MeDEP Stormwater Law regulations.

Test pits were observed within the general area of the proposed development. Test pits indicate the presence of groundwater approximately two feet below existing ground level in the lower area adjacent to the proposed subsurface sand filter. Given the existing topography in the area of the proposed parking lot, the proposed subsurface sand filter will be constructed entirely in fill conditions. This will place the bottom of the proposed subsurface sand filter approximately four feet above groundwater table. As a safety measure, a liner will be used to prevent any potential groundwater or tidal water from backing up into the proposed subsurface sand filter.

Stormwater management design calculations for the Subsurface Sand Filter, and for General Standard compliance, are enclosed as part of **Attachment A**.

K. Stormwater Quantity Management (Flooding Standard)

The following table summarizes the results of stormwater calculations for the design storm events for the project area. Calculations and computer modeling data sheets are provided with this report.

The HydroCAD model predicts increases in estimated peak flow rates during the 2-, 10- and 25-year storm events at SP-1. During a 25-year storm event, the increase of flow to the existing four 36-inch culverts will increase by approximately 5 inches over existing conditions. This increase in water level remains below the top of the existing culverts. At SP-2 the model predicts that peaks flows remain constant during the 2- and 10-year storms and decreases slightly during the 25-year storm. Stormwater exiting the site will enter into Fore River.

As permitted under Chapter 500 §4.F(3)(a), the project is eligible for a waiver from the Flooding Standard since it is within the direct watershed of a coastal wetland with adequate capacity and the stormwater is conveyed through a piped system directly to Fore River. Fore River, which separates South Portland and Portland, is a direct tributary to Casco Bay. Due to the proximity to Casco Bay and ultimately the Atlantic Ocean, Fore River is subject to tidal influence, as such, there are no anticipated detrimental impacts to downstream receiving structures, drainage channels, or properties. A waiver from the flooding standards has been requested. Please refer to Attachment B, Attachment C and Attachment D for pre-, preload- and post-development stormwater modeling.

Preload Stormwater Peak Discharge Summary Table									
Study Point	**2-Year Storm**			**10-Year Storm**			**25-Year Storm**		
	Pre (cfs)	**Preload (cfs)**	**Diff. (cfs)**	**Pre (cfs)**	**Preload (cfs)**	**Diff. (cfs)**	**Pre (cfs)**	**Preload (cfs)**	**Diff. (cfs)**
SP-1	31.48	39.43	7.95	51.99	69.89	17.90	73.39	97.09	23.70
SP-2	0.17	0.17	0.00	0.39	0.39	0.00	0.59	0.58	-0.01

Stormwater Peak Discharge Summary Table									
Study Point	**2-Year Storm**			**10-Year Storm**			**25-Year Storm**		
	Pre (cfs)	**Post (cfs)**	**Diff. (cfs)**	**Pre (cfs)**	**Post (cfs)**	**Diff. (cfs)**	**Pre (cfs)**	**Post (cfs)**	**Diff. (cfs)**
SP-1	31.48	38.32	6.84	51.99	71.84	19.85	73.39	99.49	26.10
SP-2	0.17	0.17	0.00	0.39	0.39	0.00	0.59	0.58	-0.01

L. Inspection & Maintenance

Provisions for periodic inspection and maintenance of the subsurface sand filter are included in the Inspection, Maintenance, and Housekeeping Plan included in this section of the application.

M. Summary

An Erosion and Sedimentation Control Plan has been developed using the Maine Department of Environmental Protection's 2015 Erosion and Sediment Control Field Guide for Contractors for the project site placing emphasis on the installation of sedimentation barriers and revegetation to minimize erosion potential from development activities during and after construction. The Erosion Control Plan is incorporated into the design plans and includes the locations of the erosion control provisions (i.e., silt fence, construction entrance) along with a narrative and construction details for reference by the contractor during construction.

The proposed development will include the construction of a Subsurface Sand Filter to which a majority of runoff from impervious and developed areas will be directed. The construction of the Subsurface Sand Filter will provide water quality treatment of stormwater runoff from the site so that the General Standards are satisfied. Increases in post-development peak flow rates during the 10-year, and 25-year storm events are anticipated to have negligible impact on flow characteristics of Fore River, immediately downstream of the site and further downstream.

With incorporation of these measures, no significant impacts to off-site drainage are anticipated due to the development of the property

Prepared by

SEBAGO TECHNICS, INC.

Craig A. Burgess, P.E.
Senior Project Engineer

CAB/BJB

Attachment A

Water Quality Calculations

Table 1: MDEP GENERAL STANDARD CALCULATIONS: Portland Transportation Center, Portland, Maine

AREA ID	WATERSHED SIZE (S.F.)	EXISTING IMPERVIOUS AREA (S.F.)	NEW IMPERVIOUS AREA (S.F.)	EXISTING LANDSCAPED AREA (S.F.)	NEW LANDSCAPED AREA (S.F.)	DEVELOPED AREA (S.F.)	UNDEVELOPED AREAS (S.F.)	TREATMENT PROVIDED?	IMPERVIOUS AREA TREATED* (S.F.)	LANDSCAPED AREA TREATED* (S.F.)	DEVELOPED AREA TREATED* (S.F.)	TREATMENT BMP
1S	28,835	23,704	0	2,853	2,278	28,835	0	YES	23,704	5,131	28,835	SSF-1
2S	27,182	17,707	6,306	1,336	1,833	27,182	0	YES	24,013	3,169	27,182	SSF-1
3S	15,213	12,202	0	1,350	1,661	15,213	0	YES	12,202	3,011	15,213	SSF-1
4S	28,840	27,938	0	902	0	28,840	0	YES	27,938	902	28,840	SSF-1
5S	49,425	40,584	66	8,446	329	49,425	0	YES	40,650	3,693	44,343	SSF-1
6S	15,879	0	12,186	0	3,693	15,879	0	YES	12,186	3,693	15,879	SSF-1
7S	7,643	0	7,066	0	577	7,643	0	YES	7,066	577	7,643	SSF-1
8S	7,438	2,242	122	0	5,074	7,438	0	NO	0	0	0	None
9S	12,873	0	12,563	0	310	12,873	0	YES	12,563	310	12,873	SSF-1
10S	16,424	0	15,649	0	775	16,424	0	YES	15,649	775	16,424	SSF-1
11S	14,521	0	13,900	0	621	14,521	0	YES	13,900	621	14,521	SSF-1
12S	9,667	0	9,667	0	0	9,667	0	YES	9,667	0	9,667	SSF-1
13S	12,123	0	10,776	0	1,347	12,123	0	YES	10,776	1,347	12,123	SSF-1
14S	8,897	0	8,240	0	657	8,897	0	YES	8,240	657	8,897	SSF-1
15S	30,398	0	28,392	0	2,006	30,398	0	YES	28,392	2,006	30,398	SSF-1
16S	91,275	892	0	0	0	892	90,383	NO	0	0	0	None
17S**	34,419	25,344	0	9,075	0	34,419	0	NO	0	0	0	None
SUM	**411,052**	**150,613**	**124,933**	**23,962**	**21,161**	**320,669**	**90,383**	-	**246,946**	**25,892**	**272,838**	-

Designations: SSF= Subsurface Sand Filter

***TOTAL IMPERVIOUS AREA (Ac.)**	**250,202**	***TOTAL DEVELOPED AREA (Ac.)**	**286,250**
TOTAL IMPERVIOUS AREA RECEIVING TREATMENT (Ac.)	**246,946**	**TOTAL DEV. AREA RECEIVING TREATMENT (Ac.)**	**272,838**
% OF IMPERVIOUS AREA RECEIVING TREATMENT	**98.7%**	**% OF DEV. AREA RECEIVING TREATMENT**	**95.3%**

*INCLUDES EXISTING IMPERVIOUS AND DEVELOPED AREAS THAT ARE CURRENTLY RECEIVING TREATEMENT

**INCLUDES EXISTING IMPERVIOUS AND DEVELOPED AREAS THAT ARE NOT CURRENTLY RECEIVING TREATEMENT AND WILL NOT RECEIVE TREATMENT IN POST DEVELOPMENT

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JOB	99607		
SHEET NO.	1	OF	2
CALCULATED BY	BJB	DATE	6/12/2018
CHECKED BY	CAB		
FILE NAME	99607-WQC	PRINT DATE	6/19/2018

MDEP Site Location of Development Submission

Note: Underdrained Soil Filters are sized in accordance with Chapter 7.1 of the Maine Department of Environmental Protection BMPs Technical Design Manual, latest revision

Treatment Calculations for Proposed Underdrained Soil Filter #1 (UDSF-1) - Preload Phase									
Subcatchments tributary to UDSF-1 include 6S									
WQV Calculation									
(WQV = Water Quality Volume)									
Total Impervious Area =			55,468.0	sf					
Total Landscaped Area=			0.0	sf					
WQV Required= 1" x Impervious Area + 0.4"x Landscape Area =						4,622.3	cf		
WQV Provided =		**7,437.0**	cf @ 1.5' depth						
Filterbed Area Calculation									
Filterbed Area Required = 0.05 x Impervious + 0.02 x Landscape =						2773.4	sf		
Filterbed Area Provided=			**3,003.0**	sf					
Pre-treatment Sediment Forebay Volume Calculation									
Sand Application Rate=			50.0	cf/acre/year					
Total Impervious Area=			55,468.0	sf					
Tributary to UDSF #1									
Required Pre-treatment Volume=			63.7	cf					
Provided Pre-treatment Volume=			126.0	cf					

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JOB	99607		
SHEET NO.	2	OF	2
CALCULATED BY	BJB	DATE	6/12/2018
CHECKED BY	CAB		
FILE NAME	99607-WQC	PRINT DATE	6/19/2018

MDEP Site Location of Development Submission

Note: Underdrained Soil Filters are sized in accordance with Chapter 7.1 of the Maine Department of Environmental Protection BMPs Technical Design Manual, latest revision

Treatment Calculations for Proposed Underdrained Soil Filter #2 (UDSF-2) - Preload Phase									
Subcatchments tributary to UDSF-2 include 7S									
WQV Calculation									
(WQV = Water Quality Volume)									
Total Impervious Area =			70,595.0	sf					
Total Landscaped Area=			2,733.0	sf					
WQV Required= 1" x Impervious Area + 0.4"x Landscape Area =						5,974.0	cf		
WQV Provided =		**9,919.0**	cf @ 1.5' depth						
Filterbed Area Calculation									
Filterbed Area Required = 0.05 x Impervious + 0.02 x Landscape =						3584.4	sf		
Filterbed Area Provided=			**4,077.0**	sf					
Pre-treatment Sediment Forebay Volume Calculation									
Sand Application Rate=			50.0	cf/acre/year					
Total Impervious Area=			70,595.0	sf					
Tributary to UDSF #2									
Required Pre-treatment Volume=			81.0	cf					
Provided Pre-treatment Volume=			93.0	cf					

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JOB	99607		
SHEET NO.	1	OF	1
CALCULATED BY		DATE	1/15/2018
FILE NAME	99607-WQC.xls	PRNT DATE	6/18/2018

UNDERDRAINED SUBSURFACE SAND FILTER-1

Task: Calculate water quality volume per MDEP chapter 500 regulations

References
1. Maine DEP Chapter 500, Section 4.C.(3)(b)
"must detain a runoff volume equal to 1.0 inch times the subcatchment's impervious area plus 0.4 inch times the subcatchment's landscaped area"

2. Maine DEP Best Management Practices Stormwater Manual, Section 7.3.2
a. "detain runoff volume equal to 1.0 inch times the subcatchment's impervious area plus 0.4 inch times the subcatchment's landscaped area"
b. "surface area of the sand filter bed and chamber system must be at least equal to 5% of the impervious area draining to it and 2% of the landscaped area."
c. "treatment flow rate for the Stormtech Isolator Row is the projected one year peak flow rate for the drainage area feeding the Isolator Row"

Flow rates:

SC-310	0.10	fs/chamber
SC-740	0.20	fs/chamber
DC-780	0.20	fs/chamber
MC-3500	0.30	fs/chamber
Cultech 150XLHD	0.185	fs/chamber
Cultech 330XLHD	0.227	fs/chamber

Tributary to Subsurface Sand Filter

Landscaped Area	30,974	SF	
Impervious Area	246,946	SF	

Minimum Surface Area for sand filter and chamber system

Required (2% X Landscaped + 5%" X Impervious)

Total Landscaped Area	30,974	SF	Area	619.5	SF	
Total Impervious Area	246,946	SF	Area	12,347.3	SF	
Required Minimum Surface Area				12,966.8	SF	
Provided Surface Area				16,932.0	SF	

Treatment Volume

Required (0.4" X Landscaped + 1.0" X Impervious)

Landscaped Area	30,974	SF	Volume	1,032.5				
Impervious Area	246,946	SF	Volume	20,578.8				
Treatment Volume Required				21,611.3	CF	0.496	AF	
Provided Treatment Volume				24,354.0	CF	Elev.= 13.00		

Sediment Pre-Treatment

Per Reference 2.c above

One year flow rate out put from Hydrocad:		14.28	cfs
ISO Row sizing for:	**SC-740**	**0.2**	cfs
Total number of Isolator Row Chambers required:		72	

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JOB	99607		
SHEET NO.	1	OF	1
CALCULATED BY		DATE	1/29/2018
FILE NAME	99607-WQC.xls	PRNT DATE	6/18/2018

ORIFICE SIZING CALCULATION

SUBSURFACE SAND FILTER #1

Orifice Equation $Q = CA\sqrt{(2gh)}$

Q = Rate of Discharge (cfs)
A = Orifice Area (sf)
G = Gravitational Constant (32.2 ft/s^2)
h = Depth of water above the flow line (center) of the orifice (ft)
C = Orifice coefficient (usually assumed = 0.6)

Average discharge rate required to drawdown the treatment volume in a desired amount of time is:

$$Q = \frac{TV}{tCF}$$

T = Treatment Volume (cf)
t = Recovery Time (hrs)
CF = Conversion Factor = 3600 sec/hr

TV = 24,354 cf
t = 24 hr

$$Q = \frac{TV}{tCF} = 0.28 \text{ cfs}$$

surface area of filter = 16,932 SF

h = 1.44 ft

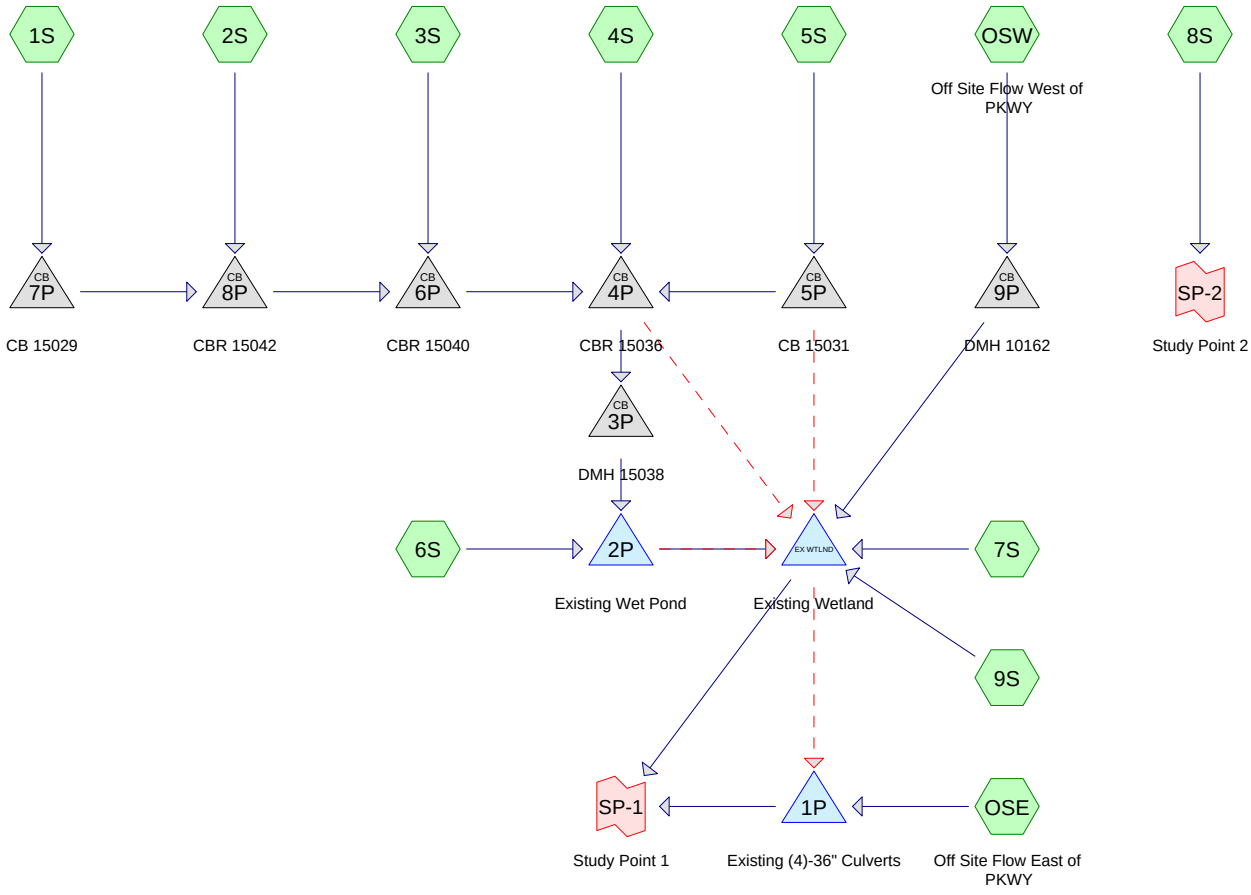
$$A = \frac{Q}{C\sqrt{(2gh)}}$$

A = 0.049 sf = 7.03 sq. in.

Diam = 2.99 in

Attachment B

Pre-Development Stormwater Modeling



Subcat Reach Pond Link

Routing Diagram for 99607 Pre
Prepared by Sebago Techincs, Printed 6/18/2018
HydroCAD® 10.00-18 s/n 01856 © 2016 HydroCAD Software Solutions LLC

Area Listing (all nodes)

Area (sq-ft)	CN	Description (subcatchment-numbers)
415,703	61	>75% Grass cover, Good, HSG B (1S, 2S, 3S, 4S, 5S, 6S, 7S, 8S, 9S, OSE)
80,663	80	>75% Grass cover, Good, HSG D (6S, 7S)
589,516	98	Paved parking, HSG B (1S, 2S, 3S, 4S, 5S, 8S, 9S, OSE, OSW)
14,924	98	Roofs, HSG B (1S, 2S, 3S, 7S, 9S)
536,874	92	Urban commercial, 85% imp, HSG B (OSW)
7,169	98	Water Surface, HSG B (7S)
84,579	98	Water Surface, HSG D (6S, 7S)
1,729,428	**86**	**TOTAL AREA**

Soil Listing (all nodes)

Area (sq-ft)	Soil Group	Subcatchment Numbers
0	HSG A	
1,564,186	HSG B	1S, 2S, 3S, 4S, 5S, 6S, 7S, 8S, 9S, OSE, OSW
0	HSG C	
165,242	HSG D	6S, 7S
0	Other	
1,729,428		**TOTAL AREA**

Time span=0.00-48.00 hrs, dt=0.01 hrs, 4801 points x 2
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Dyn-Stor-Ind method - Pond routing by Dyn-Stor-Ind method

Subcatchment 1S: Runoff Area=28,467 sf 89.98% Impervious Runoff Depth=2.45"
Flow Length=126' Slope=0.0100 '/' Tc=6.0 min CN=94 Runoff=1.80 cfs 5,805 cf

Subcatchment 2S: Runoff Area=19,045 sf 92.99% Impervious Runoff Depth=2.55"
Flow Length=173' Slope=0.0150 '/' Tc=6.0 min CN=95 Runoff=1.24 cfs 4,042 cf

Subcatchment 3S: Runoff Area=21,460 sf 93.71% Impervious Runoff Depth=2.65"
Flow Length=190' Slope=0.0150 '/' Tc=6.0 min CN=96 Runoff=1.43 cfs 4,740 cf

Subcatchment 4S: Runoff Area=29,131 sf 96.64% Impervious Runoff Depth=2.76"
Flow Length=223' Slope=0.0150 '/' Tc=6.0 min CN=97 Runoff=1.98 cfs 6,694 cf

Subcatchment 5S: Runoff Area=49,032 sf 82.77% Impervious Runoff Depth=2.26"
Flow Length=281' Slope=0.0150 '/' Tc=6.0 min CN=92 Runoff=2.91 cfs 9,217 cf

Subcatchment 6S: Runoff Area=8,204 sf 38.65% Impervious Runoff Depth=1.33"
Flow Length=48' Slope=0.2500 '/' Tc=6.0 min CN=80 Runoff=0.29 cfs 906 cf

Subcatchment 7S: Runoff Area=213,488 sf 41.94% Impervious Runoff Depth=1.60"
Flow Length=306' Tc=6.3 min CN=84 Runoff=9.09 cfs 28,446 cf

Subcatchment 8S: Runoff Area=7,806 sf 28.72% Impervious Runoff Depth=0.87"
Flow Length=49' Slope=0.0800 '/' Tc=6.0 min CN=72 Runoff=0.17 cfs 565 cf

Subcatchment 9S: Runoff Area=34,419 sf 73.63% Impervious Runoff Depth=1.91"
Flow Length=144' Slope=0.0200 '/' Tc=6.0 min CN=88 Runoff=1.76 cfs 5,471 cf

Subcatchment OSE: Off Site Flow East of Runoff Area=715,271 sf 52.78% Impervious Runoff Depth=1.39"
Flow Length=725' Tc=32.1 min CN=81 Runoff=14.53 cfs 82,901 cf

Subcatchment OSW: Off Site Flow West Runoff Area=603,105 sf 86.65% Impervious Runoff Depth=2.35"
Flow Length=1,076' Tc=34.1 min CN=93 Runoff=19.88 cfs 118,098 cf

Pond 1P: Existing (4)-36" Culverts Peak Elev=5.78' Storage=2,040 cf Inflow=14.53 cfs 82,901 cf
36.0" Round Culvert x 4.00 n=0.025 L=127.0' S=0.0079 '/' Outflow=14.50 cfs 82,184 cf

Pond 2P: Existing Wet Pond Peak Elev=14.61' Storage=8,947 cf Inflow=8.75 cfs 30,609 cf
Primary=5.59 cfs 26,082 cf Secondary=0.48 cfs 176 cf Outflow=6.07 cfs 26,257 cf

Pond 3P: DMH 15038 Peak Elev=15.55' Inflow=8.47 cfs 29,703 cf
18.0" Round Culvert n=0.013 L=76.0' S=0.0120 '/' Outflow=8.47 cfs 29,703 cf

Pond 4P: CBR 15036 Peak Elev=16.65' Inflow=8.47 cfs 29,703 cf
Primary=8.47 cfs 29,703 cf Secondary=0.01 cfs 0 cf Outflow=8.47 cfs 29,703 cf

Pond 5P: CB 15031 Peak Elev=21.03' Inflow=2.91 cfs 9,217 cf
Primary=2.03 cfs 8,422 cf Secondary=0.88 cfs 795 cf Outflow=2.91 cfs 9,217 cf

Pond 6P: CBR 15040 Peak Elev=17.13' Inflow=4.46 cfs 14,587 cf
18.0" Round Culvert n=0.013 L=48.0' S=0.0029 '/' Outflow=4.46 cfs 14,587 cf

Pond 7P: CB 15029 Peak Elev=23.84' Inflow=1.80 cfs 5,805 cf
12.0" Round Culvert n=0.013 L=144.0' S=0.0119 '/' Outflow=1.80 cfs 5,805 cf

Pond 8P: CBR 15042 Peak Elev=17.57' Inflow=3.04 cfs 9,847 cf
18.0" Round Culvert n=0.013 L=93.0' S=0.0100 '/' Outflow=3.04 cfs 9,847 cf

Pond 9P: DMH 10162 Peak Elev=10.85' Inflow=19.88 cfs 118,098 cf
42.0" Round Culvert n=0.011 L=115.0' S=0.0090 '/' Outflow=19.88 cfs 118,098 cf

Pond EX WTLND: Existing Wetland Peak Elev=6.83' Storage=26,521 cf Inflow=27.73 cfs 179,068 cf
Primary=17.83 cfs 179,087 cf Secondary=0.00 cfs 0 cf Outflow=17.83 cfs 179,087 cf

Link SP-1: Study Point 1 Inflow=31.48 cfs 261,271 cf
Primary=31.48 cfs 261,271 cf

Link SP-2: Study Point 2 Inflow=0.17 cfs 565 cf
Primary=0.17 cfs 565 cf

Total Runoff Area = 1,729,428 sf Runoff Volume = 266,885 cf Average Runoff Depth = 1.85"
33.36% Pervious = 576,897 sf 66.64% Impervious = 1,152,531 sf

Time span=0.00-48.00 hrs, dt=0.01 hrs, 4801 points x 2
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Dyn-Stor-Ind method - Pond routing by Dyn-Stor-Ind method

Subcatchment 1S: Runoff Area=28,467 sf 89.98% Impervious Runoff Depth=3.91"
Flow Length=126' Slope=0.0100 '/' Tc=6.0 min CN=94 Runoff=2.80 cfs 9,284 cf

Subcatchment 2S: Runoff Area=19,045 sf 92.99% Impervious Runoff Depth=4.02"
Flow Length=173' Slope=0.0150 '/' Tc=6.0 min CN=95 Runoff=1.90 cfs 6,386 cf

Subcatchment 3S: Runoff Area=21,460 sf 93.71% Impervious Runoff Depth=4.14"
Flow Length=190' Slope=0.0150 '/' Tc=6.0 min CN=96 Runoff=2.17 cfs 7,395 cf

Subcatchment 4S: Runoff Area=29,131 sf 96.64% Impervious Runoff Depth=4.25"
Flow Length=223' Slope=0.0150 '/' Tc=6.0 min CN=97 Runoff=2.98 cfs 10,314 cf

Subcatchment 5S: Runoff Area=49,032 sf 82.77% Impervious Runoff Depth=3.70"
Flow Length=281' Slope=0.0150 '/' Tc=6.0 min CN=92 Runoff=4.66 cfs 15,115 cf

Subcatchment 6S: Runoff Area=8,204 sf 38.65% Impervious Runoff Depth=2.55"
Flow Length=48' Slope=0.2500 '/' Tc=6.0 min CN=80 Runoff=0.56 cfs 1,741 cf

Subcatchment 7S: Runoff Area=213,488 sf 41.94% Impervious Runoff Depth=2.91"
Flow Length=306' Tc=6.3 min CN=84 Runoff=16.47 cfs 51,713 cf

Subcatchment 8S: Runoff Area=7,806 sf 28.72% Impervious Runoff Depth=1.89"
Flow Length=49' Slope=0.0800 '/' Tc=6.0 min CN=72 Runoff=0.39 cfs 1,232 cf

Subcatchment 9S: Runoff Area=34,419 sf 73.63% Impervious Runoff Depth=3.29"
Flow Length=144' Slope=0.0200 '/' Tc=6.0 min CN=88 Runoff=2.99 cfs 9,438 cf

Subcatchment OSE: Off Site Flow East of Runoff Area=715,271 sf 52.78% Impervious Runoff Depth=2.63"
Flow Length=725' Tc=32.1 min CN=81 Runoff=27.86 cfs 157,046 cf

Subcatchment OSW: Off Site Flow West Runoff Area=603,105 sf 86.65% Impervious Runoff Depth=3.81"
Flow Length=1,076' Tc=34.1 min CN=93 Runoff=31.45 cfs 191,269 cf

Pond 1P: Existing (4)-36" Culverts Peak Elev=6.18' Storage=2,740 cf Inflow=29.03 cfs 163,337 cf
36.0" Round Culvert x 4.00 n=0.025 L=127.0' S=0.0079 '/' Outflow=29.00 cfs 162,620 cf

Pond 2P: Existing Wet Pond Peak Elev=14.86' Storage=9,875 cf Inflow=10.63 cfs 47,480 cf
Primary=6.46 cfs 40,990 cf Secondary=2.77 cfs 2,137 cf Outflow=9.23 cfs 43,128 cf

Pond 3P: DMH 15038 Peak Elev=16.23' Inflow=10.07 cfs 45,739 cf
18.0" Round Culvert n=0.013 L=76.0' S=0.0120 '/' Outflow=10.07 cfs 45,739 cf

Pond 4P: CBR 15036 Peak Elev=17.59' Inflow=12.83 cfs 46,700 cf
Primary=10.07 cfs 45,739 cf Secondary=2.76 cfs 961 cf Outflow=12.83 cfs 46,700 cf

Pond 5P: CB 15031 Peak Elev=21.19' Inflow=4.66 cfs 15,115 cf
Primary=2.96 cfs 13,320 cf Secondary=1.70 cfs 1,795 cf Outflow=4.66 cfs 15,115 cf

Pond 6P: CBR 15040 Peak Elev=18.25' Inflow=6.88 cfs 23,065 cf
18.0" Round Culvert n=0.013 L=48.0' S=0.0029 '/' Outflow=6.88 cfs 23,065 cf

Pond 7P: CB 15029 Peak Elev=24.16' Inflow=2.80 cfs 9,284 cf
12.0" Round Culvert n=0.013 L=144.0' S=0.0119 '/' Outflow=2.80 cfs 9,284 cf

Pond 8P: CBR 15042 Peak Elev=18.59' Inflow=4.71 cfs 15,670 cf
18.0" Round Culvert n=0.013 L=93.0' S=0.0100 '/' Outflow=4.71 cfs 15,670 cf

Pond 9P: DMH 10162 Peak Elev=11.37' Inflow=31.45 cfs 191,269 cf
42.0" Round Culvert n=0.011 L=115.0' S=0.0090 '/' Outflow=31.45 cfs 191,269 cf

Pond EX WTLND: Existing Wetland Peak Elev=7.22' Storage=56,078 cf Inflow=46.25 cfs 298,303 cf
Primary=24.03 cfs 292,032 cf Secondary=3.27 cfs 6,290 cf Outflow=27.29 cfs 298,322 cf

Link SP-1: Study Point 1 Inflow=51.99 cfs 454,652 cf
Primary=51.99 cfs 454,652 cf

Link SP-2: Study Point 2 Inflow=0.39 cfs 1,232 cf
Primary=0.39 cfs 1,232 cf

Total Runoff Area = 1,729,428 sf Runoff Volume = 460,934 cf Average Runoff Depth = 3.20"
33.36% Pervious = 576,897 sf 66.64% Impervious = 1,152,531 sf

Time span=0.00-48.00 hrs, dt=0.01 hrs, 4801 points x 2
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Dyn-Stor-Ind method - Pond routing by Dyn-Stor-Ind method

Subcatchment 1S: Runoff Area=28,467 sf 89.98% Impervious Runoff Depth=5.10"
Flow Length=126' Slope=0.0100 '/' Tc=6.0 min CN=94 Runoff=3.60 cfs 12,095 cf

Subcatchment 2S: Runoff Area=19,045 sf 92.99% Impervious Runoff Depth=5.21"
Flow Length=173' Slope=0.0150 '/' Tc=6.0 min CN=95 Runoff=2.43 cfs 8,273 cf

Subcatchment 3S: Runoff Area=21,460 sf 93.71% Impervious Runoff Depth=5.33"
Flow Length=190' Slope=0.0150 '/' Tc=6.0 min CN=96 Runoff=2.76 cfs 9,529 cf

Subcatchment 4S: Runoff Area=29,131 sf 96.64% Impervious Runoff Depth=5.44"
Flow Length=223' Slope=0.0150 '/' Tc=6.0 min CN=97 Runoff=3.78 cfs 13,217 cf

Subcatchment 5S: Runoff Area=49,032 sf 82.77% Impervious Runoff Depth=4.87"
Flow Length=281' Slope=0.0150 '/' Tc=6.0 min CN=92 Runoff=6.04 cfs 19,911 cf

Subcatchment 6S: Runoff Area=8,204 sf 38.65% Impervious Runoff Depth=3.60"
Flow Length=48' Slope=0.2500 '/' Tc=6.0 min CN=80 Runoff=0.79 cfs 2,462 cf

Subcatchment 7S: Runoff Area=213,488 sf 41.94% Impervious Runoff Depth=4.01"
Flow Length=306' Tc=6.3 min CN=84 Runoff=22.50 cfs 71,335 cf

Subcatchment 8S: Runoff Area=7,806 sf 28.72% Impervious Runoff Depth=2.83"
Flow Length=49' Slope=0.0800 '/' Tc=6.0 min CN=72 Runoff=0.59 cfs 1,841 cf

Subcatchment 9S: Runoff Area=34,419 sf 73.63% Impervious Runoff Depth=4.43"
Flow Length=144' Slope=0.0200 '/' Tc=6.0 min CN=88 Runoff=3.98 cfs 12,716 cf

Subcatchment OSE: Off Site Flow East of Runoff Area=715,271 sf 52.78% Impervious Runoff Depth=3.70"
Flow Length=725' Tc=32.1 min CN=81 Runoff=39.02 cfs 220,658 cf

Subcatchment OSW: Off Site Flow West Runoff Area=603,105 sf 86.65% Impervious Runoff Depth=4.99"
Flow Length=1,076' Tc=34.1 min CN=93 Runoff=40.62 cfs 250,553 cf

Pond 1P: Existing (4)-36" Culverts Peak Elev=6.57' Storage=3,623 cf Inflow=46.36 cfs 247,405 cf
36.0" Round Culvert x 4.00 n=0.025 L=127.0' S=0.0079 '/' Outflow=46.33 cfs 246,689 cf

Pond 2P: Existing Wet Pond Peak Elev=14.95' Storage=10,235 cf Inflow=11.98 cfs 60,344 cf
Primary=6.78 cfs 51,984 cf Secondary=3.95 cfs 4,008 cf Outflow=10.73 cfs 55,992 cf

Pond 3P: DMH 15038 Peak Elev=16.70' Inflow=11.19 cfs 57,882 cf
18.0" Round Culvert n=0.013 L=76.0' S=0.0120 '/' Outflow=11.19 cfs 57,882 cf

Pond 4P: CBR 15036 Peak Elev=18.41' Inflow=16.24 cfs 60,292 cf
Primary=11.19 cfs 57,882 cf Secondary=5.05 cfs 2,410 cf Outflow=16.24 cfs 60,292 cf

Pond 5P: CB 15031 Peak Elev=21.29' Inflow=6.04 cfs 19,911 cf
Primary=3.66 cfs 17,177 cf Secondary=2.38 cfs 2,733 cf Outflow=6.04 cfs 19,911 cf

Pond 6P: CBR 15040 Peak Elev=19.46' Inflow=8.79 cfs 29,897 cf
18.0" Round Culvert n=0.013 L=48.0' S=0.0029 '/' Outflow=8.79 cfs 29,897 cf

Pond 7P: CB 15029 Peak Elev=24.51' Inflow=3.60 cfs 12,095 cf
12.0" Round Culvert n=0.013 L=144.0' S=0.0119 '/' Outflow=3.60 cfs 12,095 cf

Pond 8P: CBR 15042 Peak Elev=20.04' Inflow=6.03 cfs 20,369 cf
18.0" Round Culvert n=0.013 L=93.0' S=0.0100 '/' Outflow=6.03 cfs 20,369 cf

Pond 9P: DMH 10162 Peak Elev=11.76' Inflow=40.62 cfs 250,553 cf
42.0" Round Culvert n=0.011 L=115.0' S=0.0090 '/' Outflow=40.62 cfs 250,553 cf

Pond EX WTLND: Existing Wetland Peak Elev=7.46' Storage=75,208 cf Inflow=62.32 cfs 395,740 cf
Primary=27.79 cfs 368,997 cf Secondary=10.51 cfs 26,748 cf Outflow=38.30 cfs 395,744 cf

Link SP-1: Study Point 1 Inflow=73.39 cfs 615,685 cf
Primary=73.39 cfs 615,685 cf

Link SP-2: Study Point 2 Inflow=0.59 cfs 1,841 cf
Primary=0.59 cfs 1,841 cf

Total Runoff Area = 1,729,428 sf Runoff Volume = 622,591 cf Average Runoff Depth = 4.32"
33.36% Pervious = 576,897 sf 66.64% Impervious = 1,152,531 sf

Summary for Subcatchment 1S:

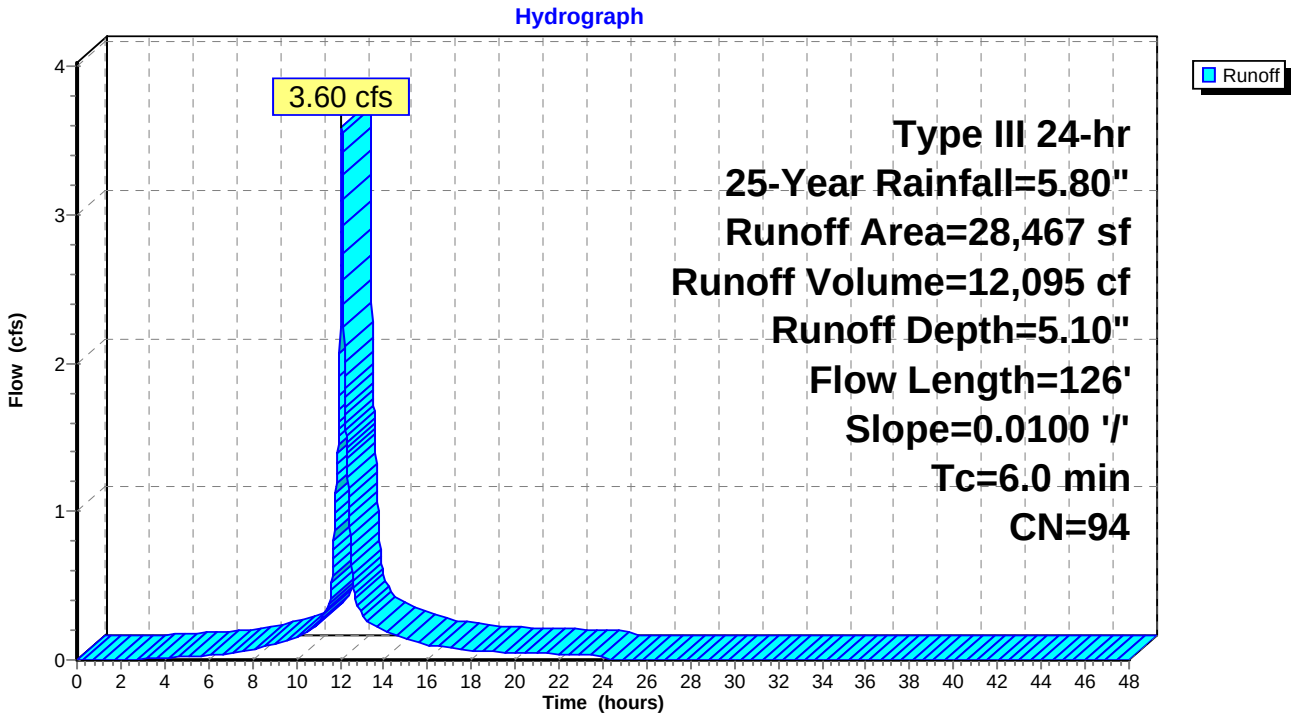
Runoff = 3.60 cfs @ 12.08 hrs, Volume= 12,095 cf, Depth= 5.10"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Type III 24-hr 25-Year Rainfall=5.80"

Area (sf)	CN	Description
4,290	98	Roofs, HSG B
21,324	98	Paved parking, HSG B
2,853	61	>75% Grass cover, Good, HSG B
28,467	94	Weighted Average
2,853		10.02% Pervious Area
25,614		89.98% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.6	100	0.0100	1.03		**Sheet Flow,** Smooth surfaces n= 0.011 P2= 3.10"
0.2	26	0.0100	2.03		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
4.2					**Direct Entry,**
6.0	126	Total			

Subcatchment 1S:



Summary for Subcatchment 2S:

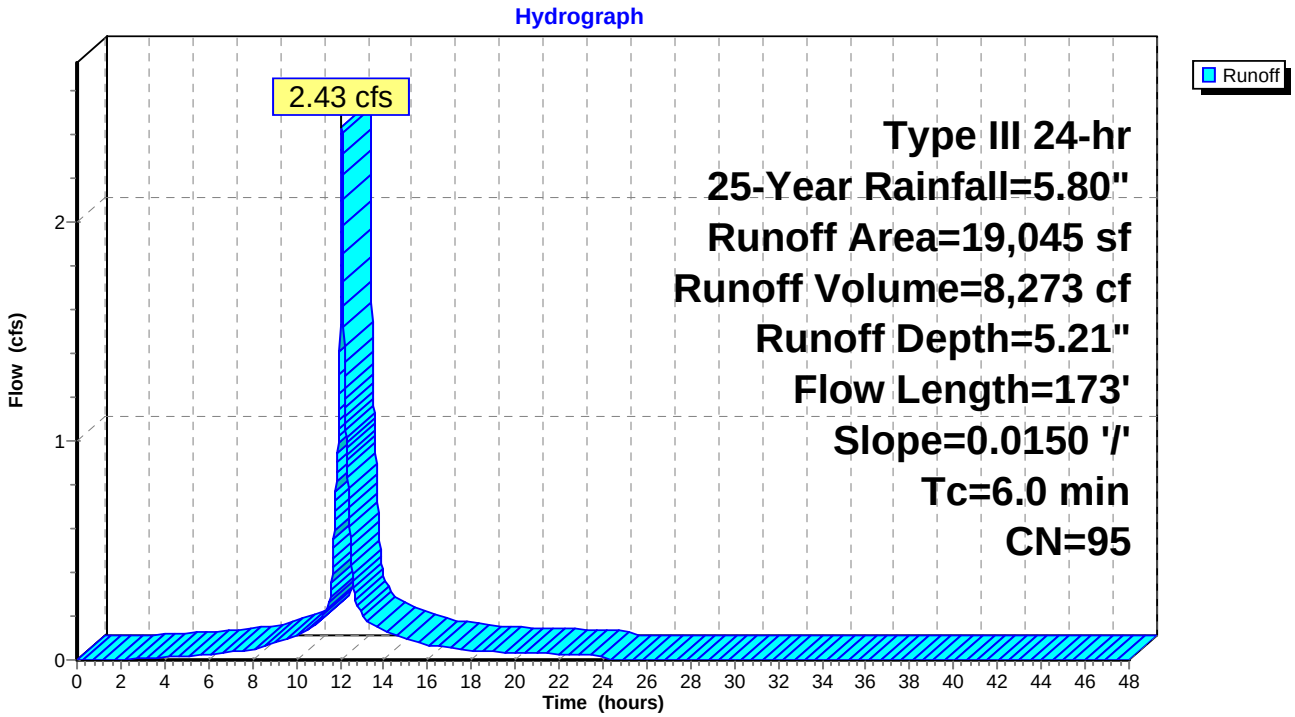
Runoff = 2.43 cfs @ 12.08 hrs, Volume= 8,273 cf, Depth= 5.21"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Type III 24-hr 25-Year Rainfall=5.80"

Area (sf)	CN	Description
1,615	98	Roofs, HSG B
16,094	98	Paved parking, HSG B
1,336	61	>75% Grass cover, Good, HSG B
19,045	95	Weighted Average
1,336		7.01% Pervious Area
17,709		92.99% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.4	100	0.0150	1.21		**Sheet Flow,** Smooth surfaces n= 0.011 P2= 3.10"
0.5	73	0.0150	2.49		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
4.1					**Direct Entry,**
6.0	173	Total			

Subcatchment 2S:



Summary for Subcatchment 3S:

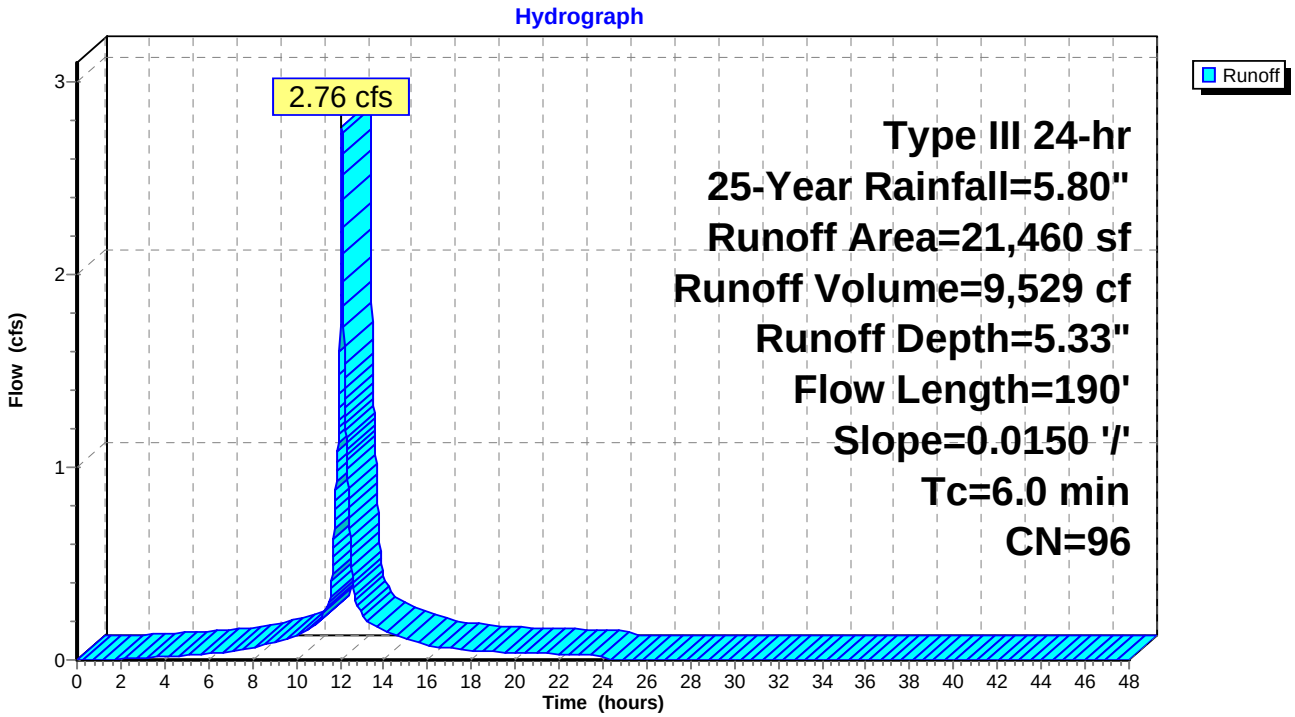
Runoff = 2.76 cfs @ 12.08 hrs, Volume= 9,529 cf, Depth= 5.33"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Type III 24-hr 25-Year Rainfall=5.80"

Area (sf)	CN	Description
259	98	Roofs, HSG B
19,851	98	Paved parking, HSG B
1,350	61	>75% Grass cover, Good, HSG B
21,460	96	Weighted Average
1,350		6.29% Pervious Area
20,110		93.71% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.4	100	0.0150	1.21		**Sheet Flow,** Smooth surfaces n= 0.011 P2= 3.10"
0.6	90	0.0150	2.49		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
4.0					**Direct Entry,**
6.0	190	Total			

Subcatchment 3S:



Summary for Subcatchment 4S:

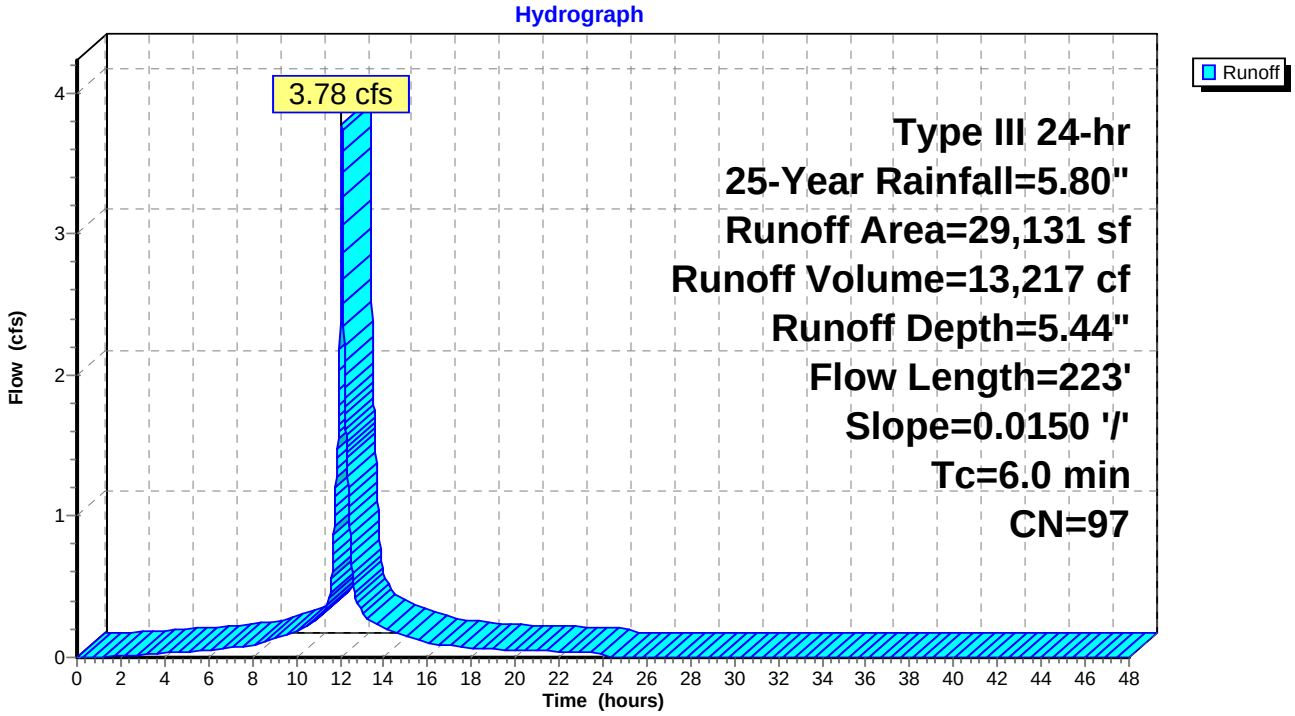
Runoff = 3.78 cfs @ 12.08 hrs, Volume= 13,217 cf, Depth= 5.44"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Type III 24-hr 25-Year Rainfall=5.80"

Area (sf)	CN	Description
28,151	98	Paved parking, HSG B
980	61	>75% Grass cover, Good, HSG B
29,131	97	Weighted Average
980		3.36% Pervious Area
28,151		96.64% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.4	100	0.0150	1.21		**Sheet Flow,** Smooth surfaces n= 0.011 P2= 3.10"
0.8	123	0.0150	2.49		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
3.8					**Direct Entry,**
6.0	223	Total			

Subcatchment 4S:



Summary for Subcatchment 5S:

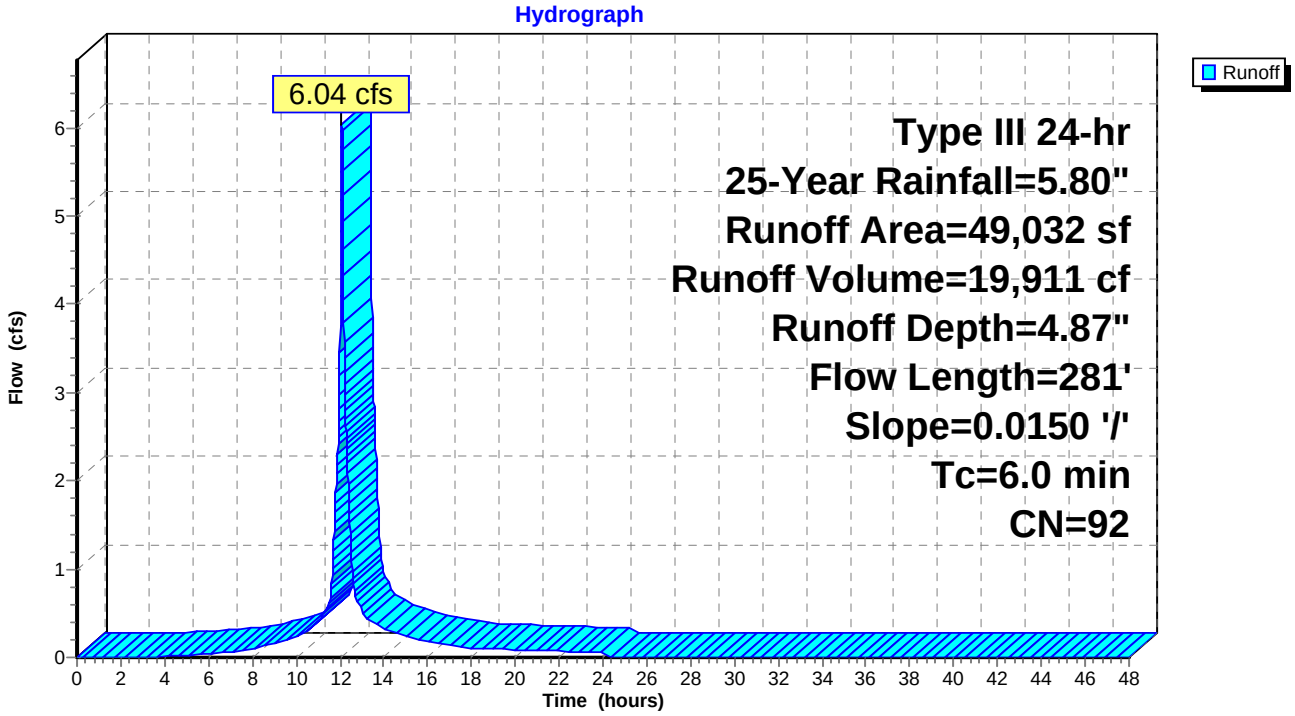
Runoff = 6.04 cfs @ 12.08 hrs, Volume= 19,911 cf, Depth= 4.87"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Type III 24-hr 25-Year Rainfall=5.80"

Area (sf)	CN	Description
40,586	98	Paved parking, HSG B
8,446	61	>75% Grass cover, Good, HSG B
49,032	92	Weighted Average
8,446		17.23% Pervious Area
40,586		82.77% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.4	100	0.0150	1.21		**Sheet Flow,** Smooth surfaces n= 0.011 P2= 3.10"
1.2	181	0.0150	2.49		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
3.4					**Direct Entry,**
6.0	281	Total			

Subcatchment 5S:



Summary for Subcatchment 6S:

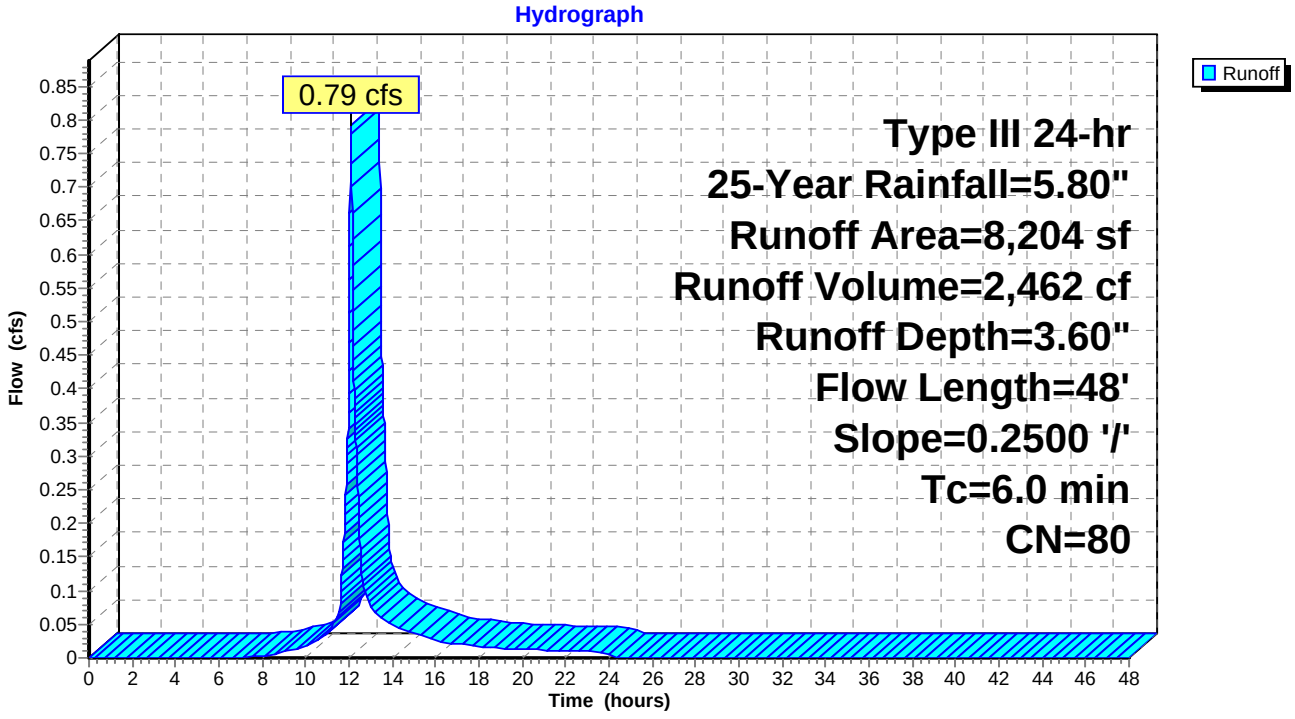
Runoff = 0.79 cfs @ 12.09 hrs, Volume= 2,462 cf, Depth= 3.60"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Type III 24-hr 25-Year Rainfall=5.80"

Area (sf)	CN	Description
3,041	61	>75% Grass cover, Good, HSG B
1,992	80	>75% Grass cover, Good, HSG D
3,171	98	Water Surface, HSG D
8,204	80	Weighted Average
5,033		61.35% Pervious Area
3,171		38.65% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
2.0	48	0.2500	0.40		**Sheet Flow,** Grass: Short n= 0.150 P2= 3.10"
4.0					**Direct Entry,**
6.0	48	Total			

Subcatchment 6S:



Summary for Subcatchment 7S:

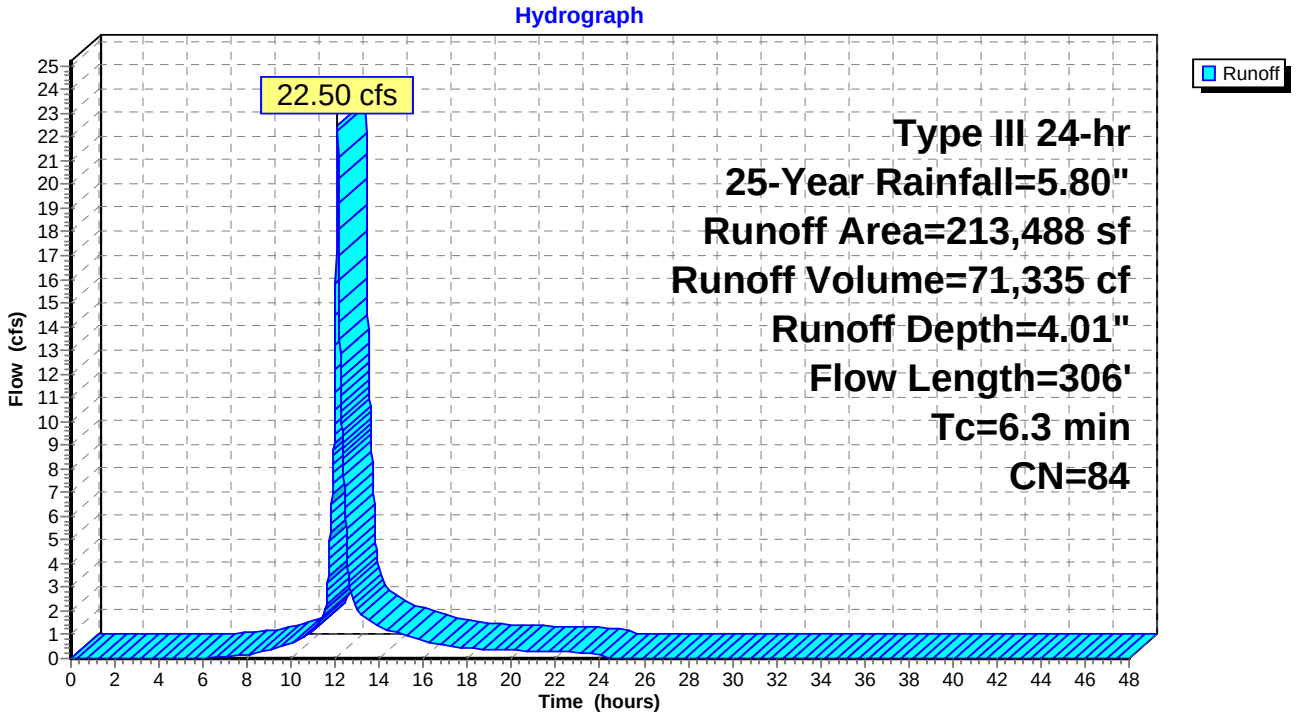
Runoff = 22.50 cfs @ 12.09 hrs, Volume= 71,335 cf, Depth= 4.01"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Type III 24-hr 25-Year Rainfall=5.80"

Area (sf)	CN	Description
45,283	61	>75% Grass cover, Good, HSG B
78,671	80	>75% Grass cover, Good, HSG D
7,169	98	Water Surface, HSG B
81,408	98	Water Surface, HSG D
957	98	Roofs, HSG B
213,488	84	Weighted Average
123,954		58.06% Pervious Area
89,534		41.94% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.3	71	0.0490	0.22		**Sheet Flow,** Grass: Short n= 0.150 P2= 3.10"
0.2	44	0.4300	4.59		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
0.8	191	0.0100	4.15	45.69	**Trap/Vee/Rect Channel Flow,** Bot.W=8.00' D=1.00' Z= 3.0 '/' Top.W=14.00' n= 0.030 Earth, grassed & winding
6.3	306	Total			

Subcatchment 7S:



Summary for Subcatchment 8S:

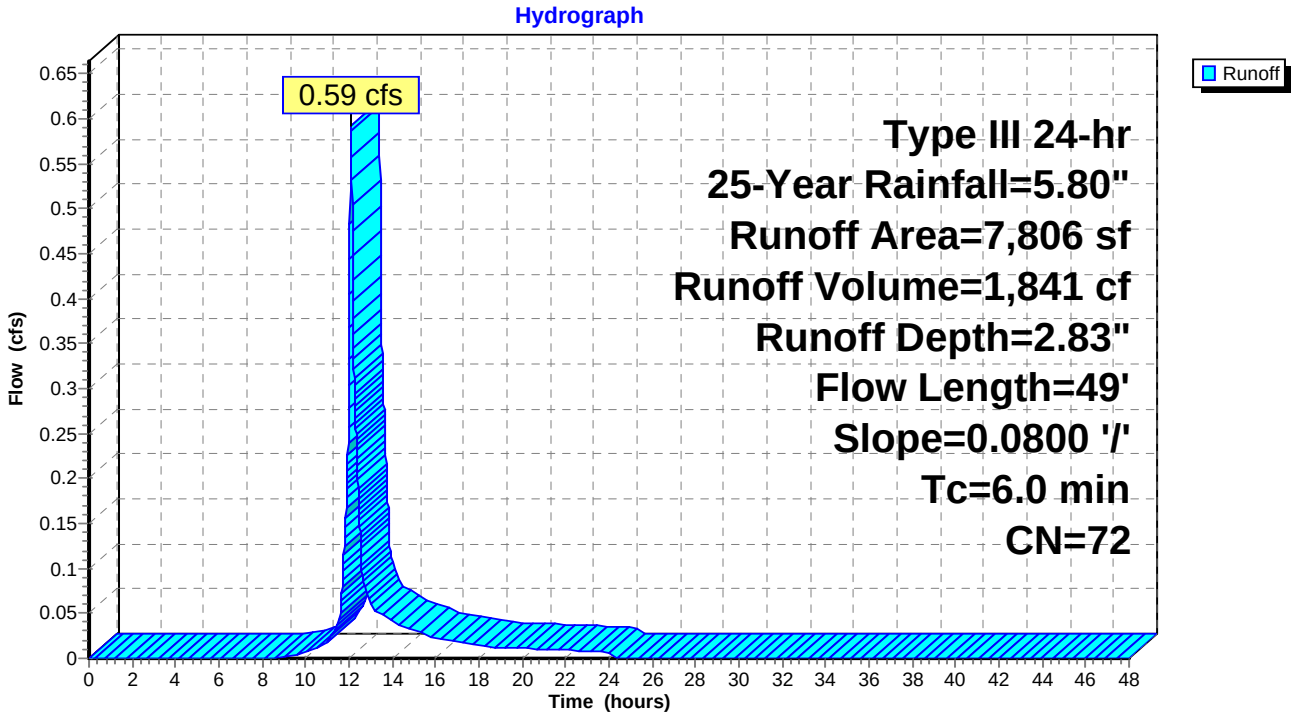
Runoff = 0.59 cfs @ 12.09 hrs, Volume= 1,841 cf, Depth= 2.83"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Type III 24-hr 25-Year Rainfall=5.80"

Area (sf)	CN	Description
2,242	98	Paved parking, HSG B
5,564	61	>75% Grass cover, Good, HSG B
7,806	72	Weighted Average
5,564		71.28% Pervious Area
2,242		28.72% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
3.2	49	0.0800	0.25		**Sheet Flow,** Grass: Short n= 0.150 P2= 3.10"
2.8					**Direct Entry,**
6.0	49	Total			

Subcatchment 8S:



Summary for Subcatchment 9S:

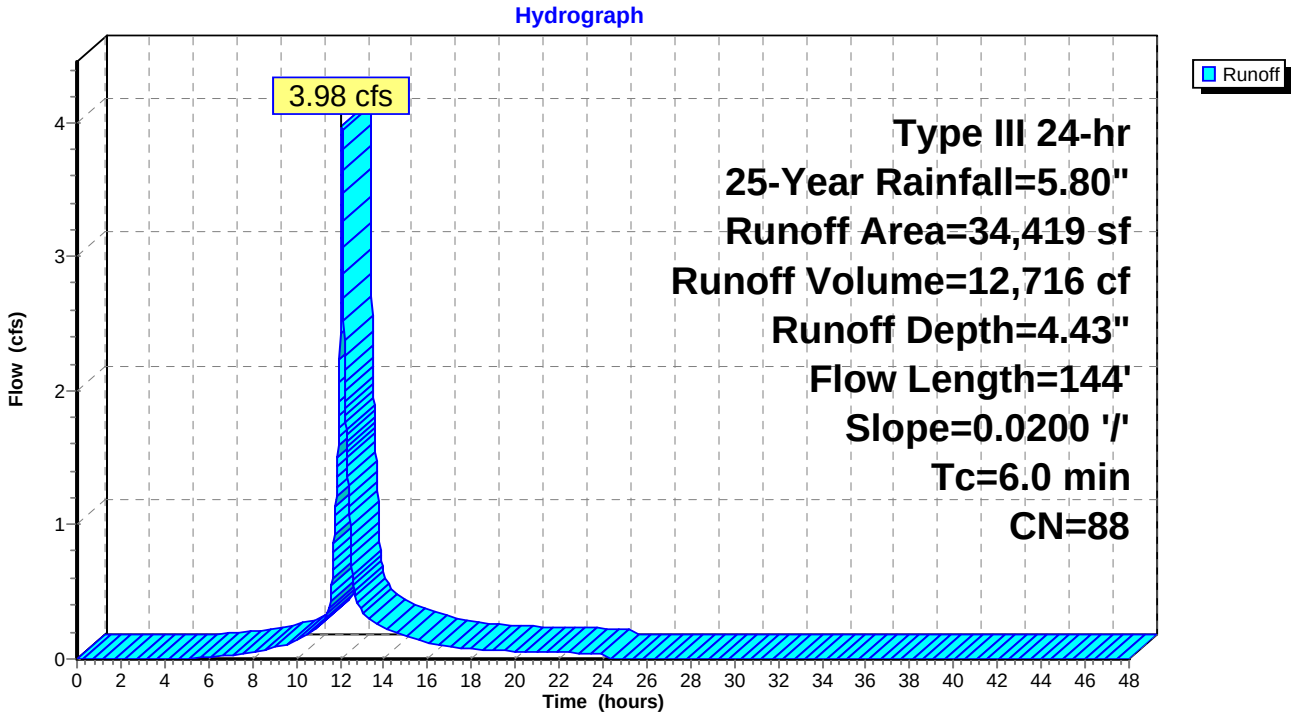
Runoff = 3.98 cfs @ 12.09 hrs, Volume= 12,716 cf, Depth= 4.43"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Type III 24-hr 25-Year Rainfall=5.80"

Area (sf)	CN	Description
17,541	98	Paved parking, HSG B
7,803	98	Roofs, HSG B
9,075	61	>75% Grass cover, Good, HSG B
34,419	88	Weighted Average
9,075		26.37% Pervious Area
25,344		73.63% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.2	100	0.0200	1.35		**Sheet Flow,** Smooth surfaces n= 0.011 P2= 3.10"
0.1	20	0.0200	2.87		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
0.4	24	0.0200	0.99		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
4.3					**Direct Entry,**
6.0	144	Total			

Subcatchment 9S:



Summary for Subcatchment OSE: Off Site Flow East of PKWY

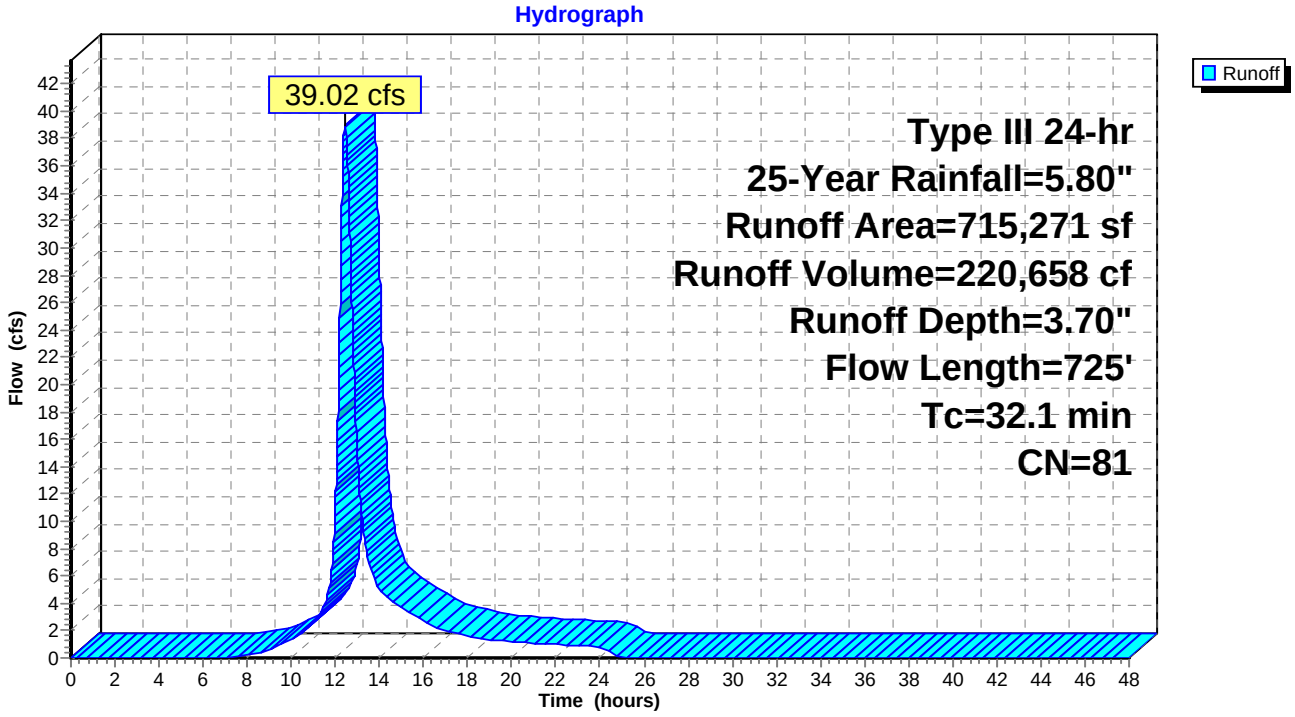
Runoff = 39.02 cfs @ 12.45 hrs, Volume= 220,658 cf, Depth= 3.70"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Type III 24-hr 25-Year Rainfall=5.80"

Area (sf)	CN	Description
377,496	98	Paved parking, HSG B
337,775	61	>75% Grass cover, Good, HSG B
715,271	81	Weighted Average
337,775		47.22% Pervious Area
377,496		52.78% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
20.9	100	0.0080	0.08		**Sheet Flow,** Grass: Dense n= 0.240 P2= 3.10"
6.4	240	0.0080	0.63		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
4.8	385	0.0370	1.35		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
32.1	725	Total			

Subcatchment OSE: Off Site Flow East of PKWY



Summary for Subcatchment OSW: Off Site Flow West of PKWY

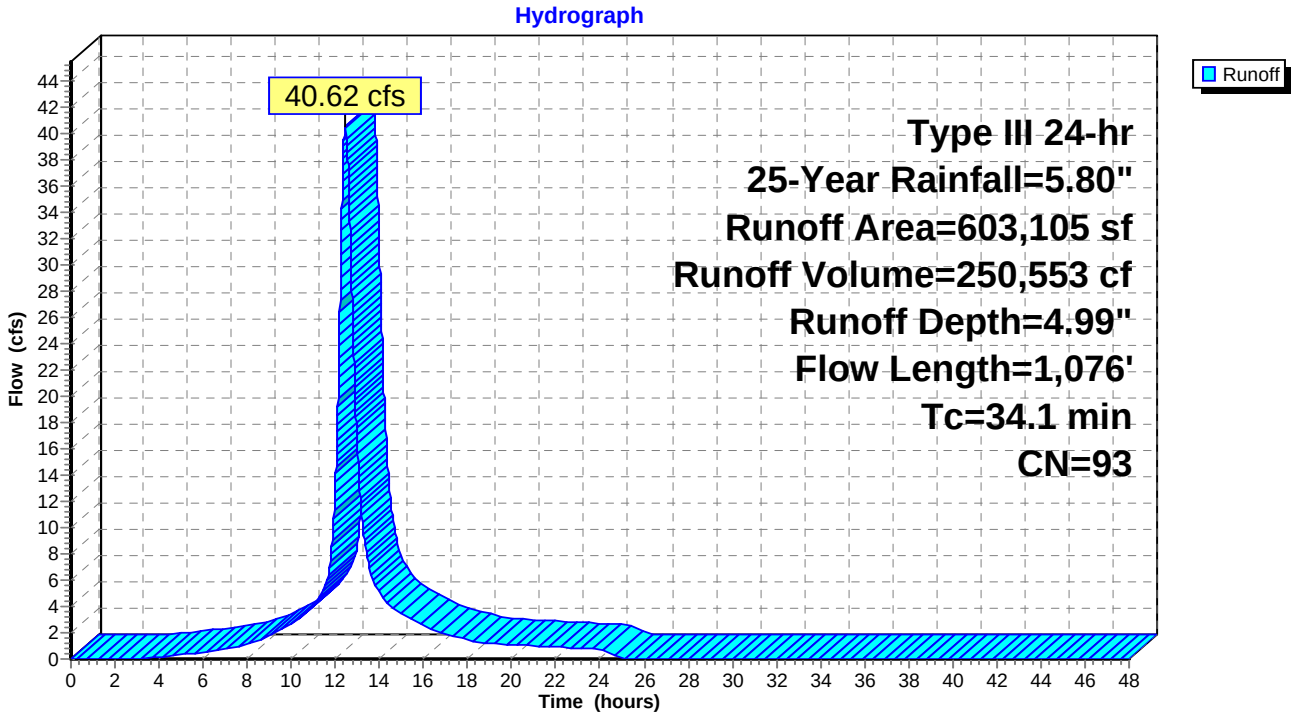
Runoff = 40.62 cfs @ 12.46 hrs, Volume= 250,553 cf, Depth= 4.99"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Type III 24-hr 25-Year Rainfall=5.80"

Area (sf)	CN	Description
536,874	92	Urban commercial, 85% imp, HSG B
66,231	98	Paved parking, HSG B
603,105	93	Weighted Average
80,531		13.35% Pervious Area
522,574		86.65% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
19.1	100	0.0100	0.09		**Sheet Flow,** Grass: Dense n= 0.240 P2= 3.10"
3.5	146	0.0100	0.70		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
4.1	258	0.0230	1.06		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
7.4	572	0.0340	1.29		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
34.1	1,076	Total			

Subcatchment OSW: Off Site Flow West of PKWY



Summary for Pond 1P: Existing (4)-36" Culverts

Inflow Area = 715,271 sf, 52.78% Impervious, Inflow Depth = 4.15" for 25-Year event
Inflow = 46.36 cfs @ 12.50 hrs, Volume= 247,405 cf
Outflow = 46.33 cfs @ 12.52 hrs, Volume= 246,689 cf, Atten= 0%, Lag= 0.8 min
Primary = 46.33 cfs @ 12.52 hrs, Volume= 246,689 cf

Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs / 2
Peak Elev= 6.57' @ 12.52 hrs Surf.Area= 2,580 sf Storage= 3,623 cf
Flood Elev= 10.00' Surf.Area= 5,367 sf Storage= 17,878 cf

Plug-Flow detention time= 5.3 min calculated for 246,689 cf (100% of inflow)
Center-of-Mass det. time= 3.3 min (832.8 - 829.5)

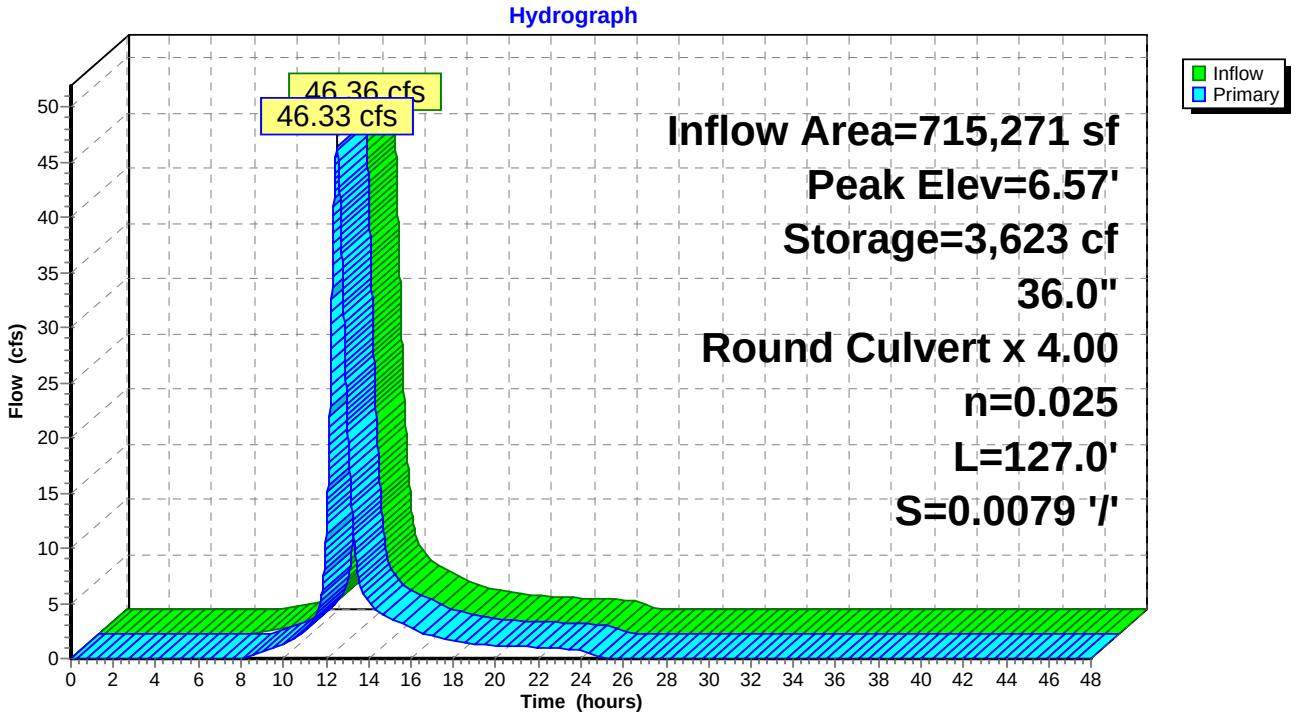
Volume	Invert	Avail.Storage	Storage Description
#1	4.00'	17,878 cf	**Custom Stage Data (Prismatic)**Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
4.00	500	0	0
5.00	1,302	901	901
6.00	1,700	1,501	2,402
7.00	3,242	2,471	4,873
8.00	4,020	3,631	8,504
9.00	4,680	4,350	12,854
10.00	5,367	5,024	17,878

Device	Routing	Invert	Outlet Devices
#1	Primary	4.85'	**36.0" Round Culvert X 4.00** L= 127.0' CMP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 4.85' / 3.85' S= 0.0079 '/' Cc= 0.900 n= 0.025 Corrugated metal, Flow Area= 7.07 sf

Primary OutFlow Max=46.32 cfs @ 12.52 hrs HW=6.57' TW=0.00' (Dynamic Tailwater)
1=Culvert (Barrel Controls 46.32 cfs @ 3.98 fps)

Pond 1P: Existing (4)-36" Culverts



Summary for Pond 2P: Existing Wet Pond

Inflow Area = 155,339 sf, 87.13% Impervious, Inflow Depth = 4.66" for 25-Year event
Inflow = 11.98 cfs @ 12.08 hrs, Volume= 60,344 cf
Outflow = 10.73 cfs @ 12.14 hrs, Volume= 55,992 cf, Atten= 10%, Lag= 3.4 min
Primary = 6.78 cfs @ 12.14 hrs, Volume= 51,984 cf
Secondary = 3.95 cfs @ 12.14 hrs, Volume= 4,008 cf

Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs / 2
Peak Elev= 14.95' @ 12.14 hrs Surf.Area= 3,953 sf Storage= 10,235 cf
Flood Elev= 16.00' Surf.Area= 4,707 sf Storage= 14,792 cf

Plug-Flow detention time= 89.8 min calculated for 55,980 cf (93% of inflow)
Center-of-Mass det. time= 50.8 min (822.8 - 771.9)

Volume	Invert	Avail.Storage	Storage Description
#1	9.00'	14,792 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

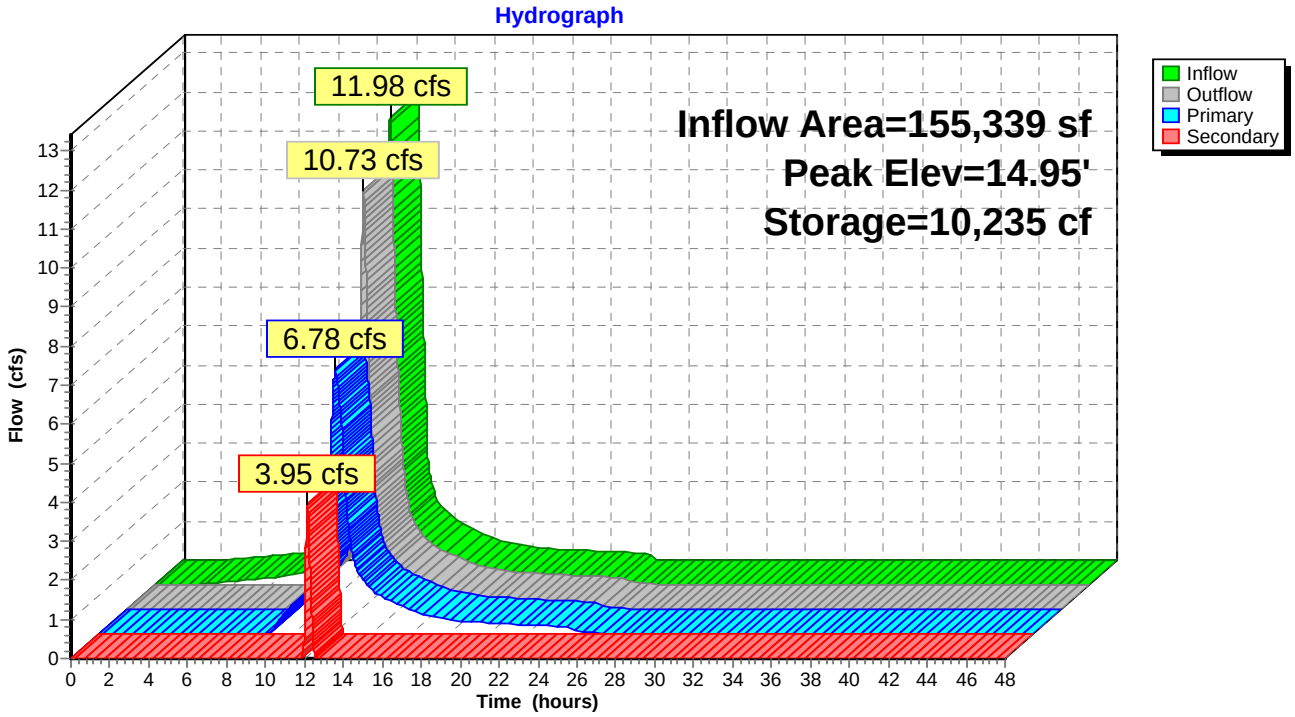
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
9.00	38	0	0
10.00	287	163	163
11.00	765	526	689
12.00	1,474	1,120	1,808
13.00	2,613	2,044	3,852
14.00	3,290	2,952	6,803
15.00	3,990	3,640	10,443
16.00	4,707	4,349	14,792

Device	Routing	Invert	Outlet Devices
#1	Primary	8.16'	**24.0" Round Culvert** L= 19.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 8.16' / 7.78' S= 0.0200 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 3.14 sf
#2	Device 1	13.18'	**18.0" Round Culvert** L= 11.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 13.18' / 12.96' S= 0.0200 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.77 sf
#3	Secondary	14.50'	**5.0' long x 12.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.57 2.62 2.70 2.67 2.66 2.67 2.66 2.64

Primary OutFlow Max=6.78 cfs @ 12.14 hrs HW=14.95' TW=6.93' (Dynamic Tailwater)
└**1=Culvert** (Passes 6.78 cfs of 28.73 cfs potential flow)
└**2=Culvert** (Inlet Controls 6.78 cfs @ 3.83 fps)

Secondary OutFlow Max=3.95 cfs @ 12.14 hrs HW=14.95' TW=6.93' (Dynamic Tailwater)
└**3=Broad-Crested Rectangular Weir** (Weir Controls 3.95 cfs @ 1.77 fps)

Pond 2P: Existing Wet Pond



Summary for Pond 3P: DMH 15038

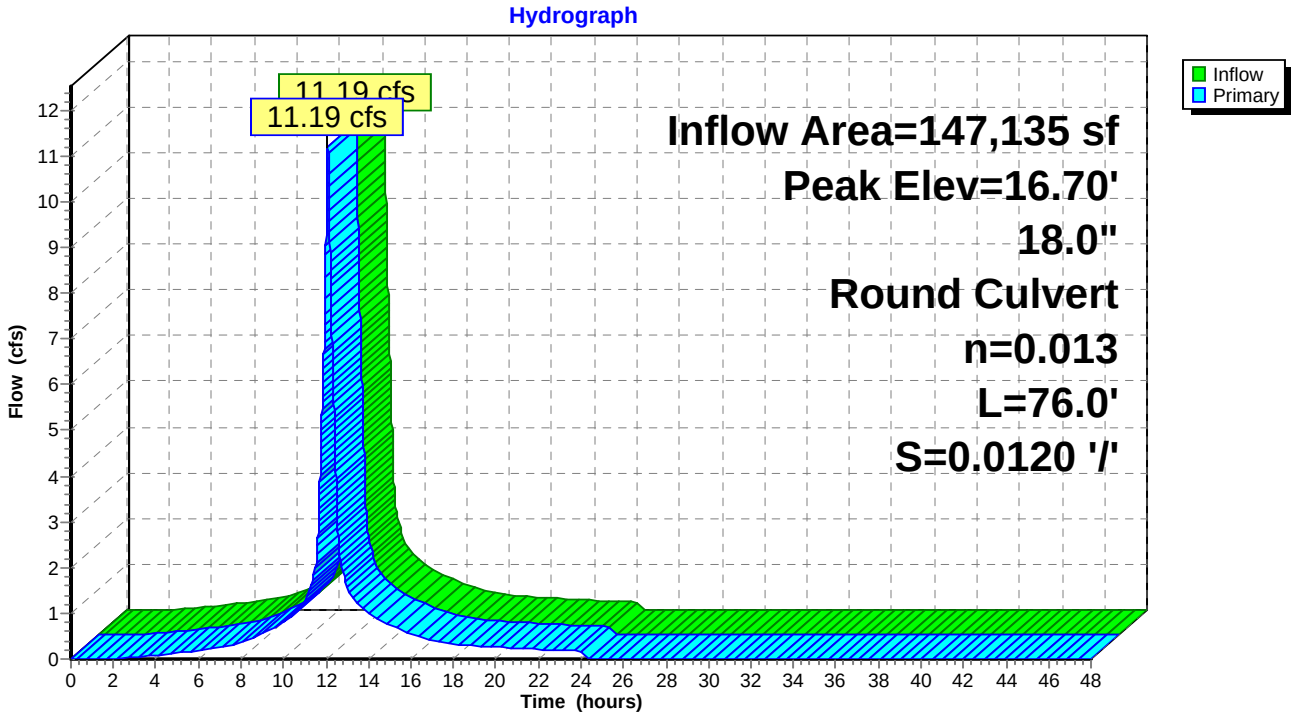
Inflow Area = 147,135 sf, 89.83% Impervious, Inflow Depth = 4.72" for 25-Year event
Inflow = 11.19 cfs @ 12.08 hrs, Volume= 57,882 cf
Outflow = 11.19 cfs @ 12.08 hrs, Volume= 57,882 cf, Atten= 0%, Lag= 0.0 min
Primary = 11.19 cfs @ 12.08 hrs, Volume= 57,882 cf

Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs / 2
Peak Elev= 16.70' @ 12.09 hrs
Flood Elev= 21.94'

Device	Routing	Invert	Outlet Devices
#1	Primary	13.81'	**18.0" Round Culvert** L= 76.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 13.81' / 12.90' S= 0.0120 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.77 sf

Primary OutFlow Max=11.18 cfs @ 12.08 hrs HW=16.69' TW=14.89' (Dynamic Tailwater)
1=Culvert (Outlet Controls 11.18 cfs @ 6.32 fps)

Pond 3P: DMH 15038



Summary for Pond 4P: CBR 15036

Inflow Area = 147,135 sf, 89.83% Impervious, Inflow Depth = 4.92" for 25-Year event
Inflow = 16.24 cfs @ 12.08 hrs, Volume= 60,292 cf
Outflow = 16.24 cfs @ 12.08 hrs, Volume= 60,292 cf, Atten= 0%, Lag= 0.0 min
Primary = 11.19 cfs @ 12.08 hrs, Volume= 57,882 cf
Secondary = 5.05 cfs @ 12.08 hrs, Volume= 2,410 cf

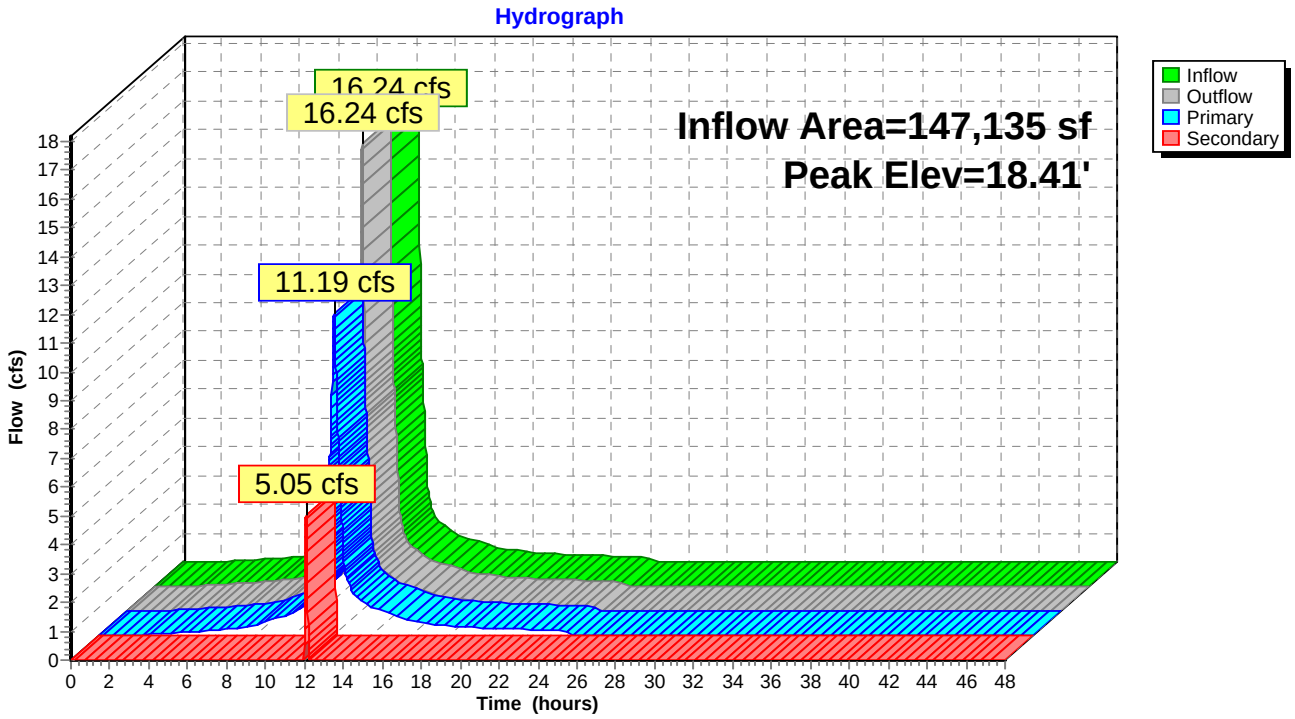
Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs / 2
Peak Elev= 18.41' @ 12.08 hrs
Flood Elev= 25.22'

Device	Routing	Invert	Outlet Devices
#1	Primary	14.91'	**18.0" Round Culvert** L= 50.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 14.91' / 13.91' S= 0.0200 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.77 sf
#2	Secondary	16.61'	**15.0" Round Culvert** L= 85.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 16.61' / 10.60' S= 0.0707 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.23 sf

Primary OutFlow Max=11.14 cfs @ 12.08 hrs HW=18.40' TW=16.69' (Dynamic Tailwater)
└**1=Culvert** (Inlet Controls 11.14 cfs @ 6.30 fps)

Secondary OutFlow Max=5.03 cfs @ 12.08 hrs HW=18.40' TW=6.80' (Dynamic Tailwater)
└**2=Culvert** (Inlet Controls 5.03 cfs @ 4.10 fps)

Pond 4P: CBR 15036



Summary for Pond 5P: CB 15031

Inflow Area = 49,032 sf, 82.77% Impervious, Inflow Depth = 4.87" for 25-Year event
Inflow = 6.04 cfs @ 12.08 hrs, Volume= 19,911 cf
Outflow = 6.04 cfs @ 12.08 hrs, Volume= 19,911 cf, Atten= 0%, Lag= 0.0 min
Primary = 3.66 cfs @ 12.08 hrs, Volume= 17,177 cf
Secondary = 2.38 cfs @ 12.08 hrs, Volume= 2,733 cf

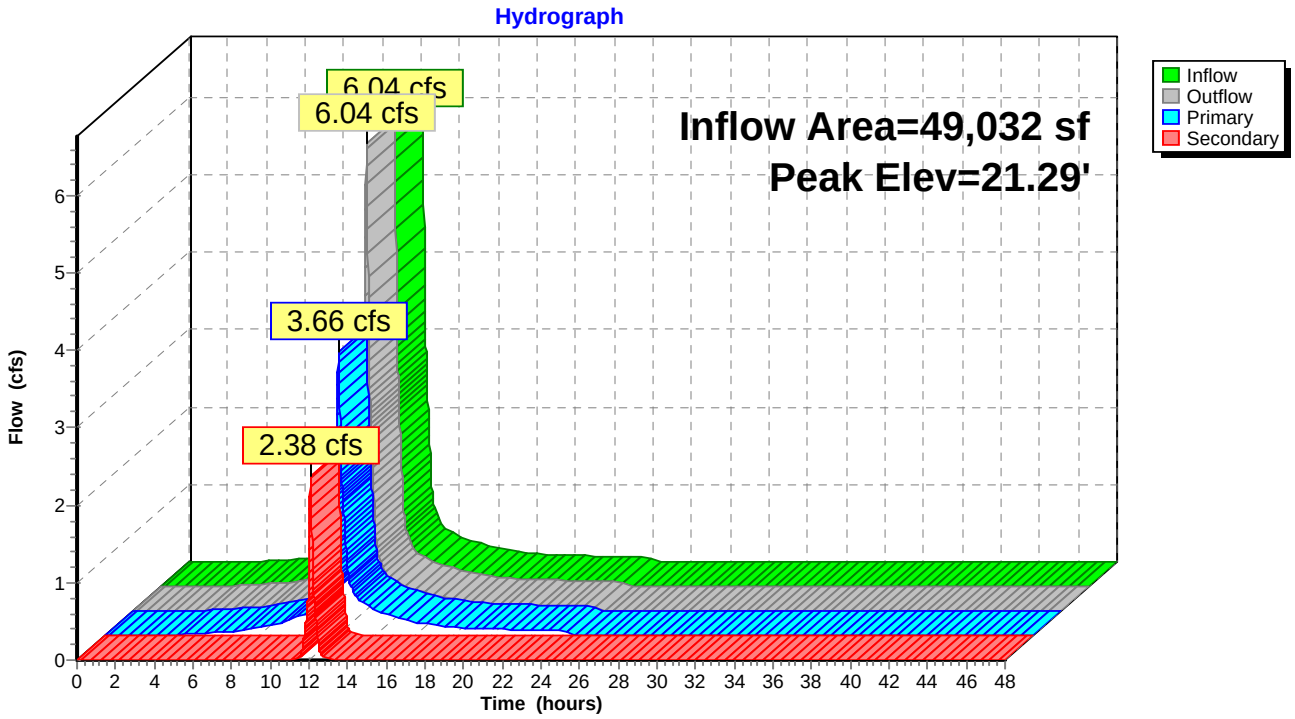
Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs / 2
Peak Elev= 21.29' @ 12.08 hrs
Flood Elev= 25.58'

Device	Routing	Invert	Outlet Devices
#1	Primary	20.38'	**18.0" Round Culvert** L= 155.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 20.38' / 18.30' S= 0.0134 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.77 sf
#2	Secondary	20.65'	**24.0" Round Culvert** L= 70.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 20.65' / 13.39' S= 0.1037 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 3.14 sf

Primary OutFlow Max=3.66 cfs @ 12.08 hrs HW=21.29' TW=18.40' (Dynamic Tailwater)
└**1=Culvert** (Inlet Controls 3.66 cfs @ 3.25 fps)

Secondary OutFlow Max=2.37 cfs @ 12.08 hrs HW=21.29' TW=6.80' (Dynamic Tailwater)
└**2=Culvert** (Inlet Controls 2.37 cfs @ 2.73 fps)

Pond 5P: CB 15031



Summary for Pond 6P: CBR 15040

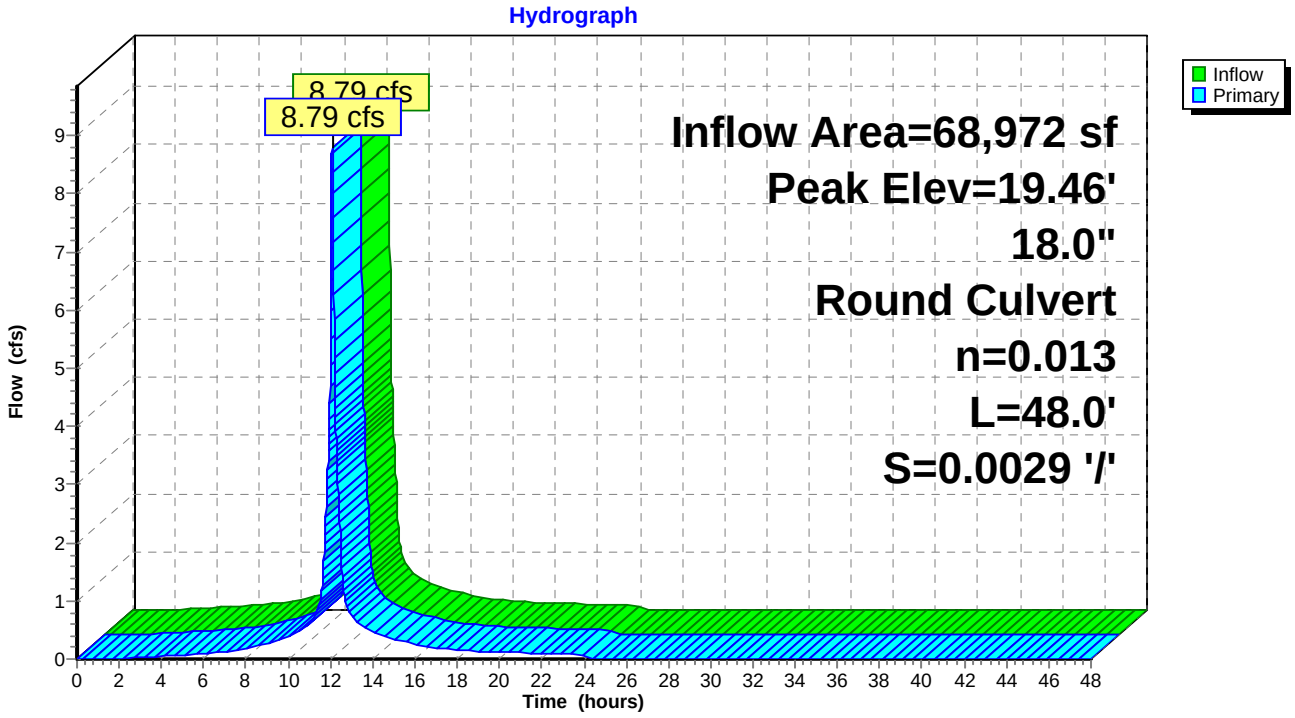
Inflow Area = 68,972 sf, 91.97% Impervious, Inflow Depth = 5.20" for 25-Year event
Inflow = 8.79 cfs @ 12.08 hrs, Volume= 29,897 cf
Outflow = 8.79 cfs @ 12.08 hrs, Volume= 29,897 cf, Atten= 0%, Lag= 0.0 min
Primary = 8.79 cfs @ 12.08 hrs, Volume= 29,897 cf

Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs / 2
Peak Elev= 19.46' @ 12.09 hrs
Flood Elev= 25.90'

Device	Routing	Invert	Outlet Devices
#1	Primary	15.83'	**18.0" Round Culvert** L= 48.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 15.83' / 15.69' S= 0.0029 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.77 sf

Primary OutFlow Max=8.71 cfs @ 12.08 hrs HW=19.45' TW=18.40' (Dynamic Tailwater)
1=Culvert (Inlet Controls 8.71 cfs @ 4.93 fps)

Pond 6P: CBR 15040



Summary for Pond 7P: CB 15029

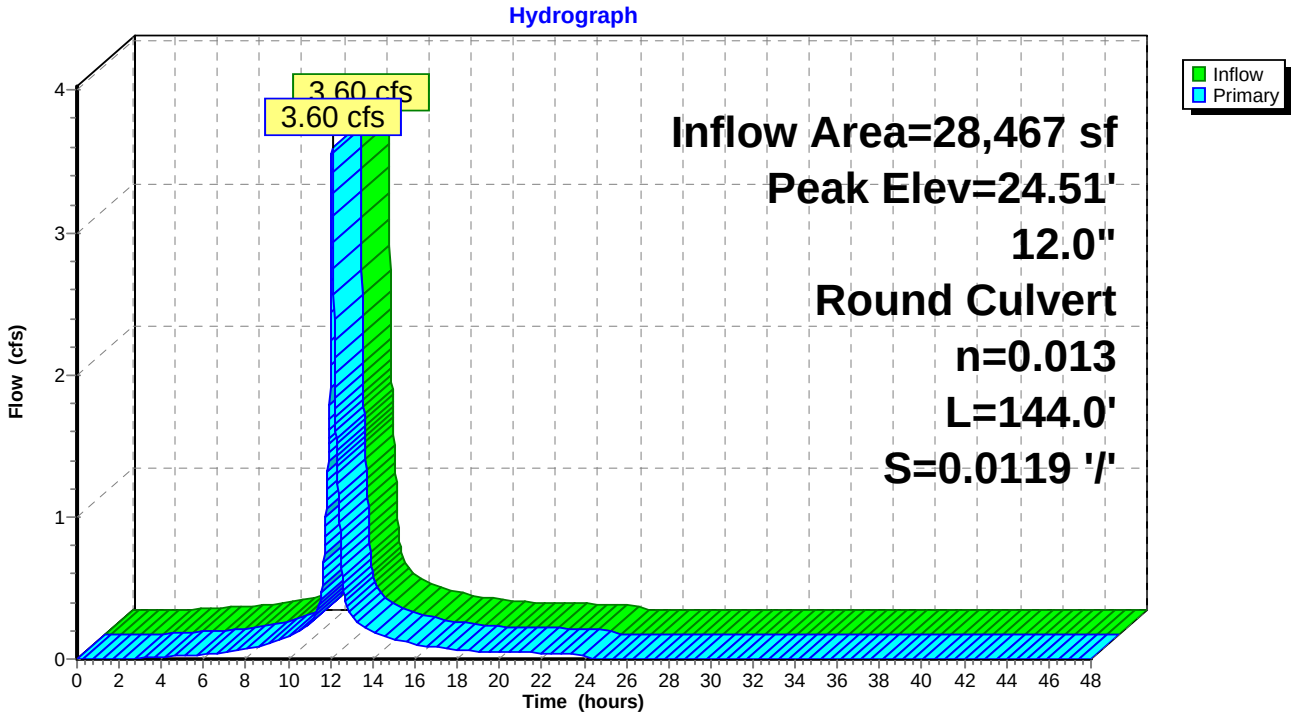
Inflow Area = 28,467 sf, 89.98% Impervious, Inflow Depth = 5.10" for 25-Year event
Inflow = 3.60 cfs @ 12.08 hrs, Volume= 12,095 cf
Outflow = 3.60 cfs @ 12.08 hrs, Volume= 12,095 cf, Atten= 0%, Lag= 0.0 min
Primary = 3.60 cfs @ 12.08 hrs, Volume= 12,095 cf

Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs / 2
Peak Elev= 24.51' @ 12.08 hrs
Flood Elev= 29.47'

Device	Routing	Invert	Outlet Devices
#1	Primary	23.11'	**12.0" Round Culvert** L= 144.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 23.11' / 21.40' S= 0.0119 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.79 sf

Primary OutFlow Max=3.59 cfs @ 12.08 hrs HW=24.51' TW=20.01' (Dynamic Tailwater)
└**1=Culvert** (Inlet Controls 3.59 cfs @ 4.57 fps)

Pond 7P: CB 15029



Summary for Pond 8P: CBR 15042

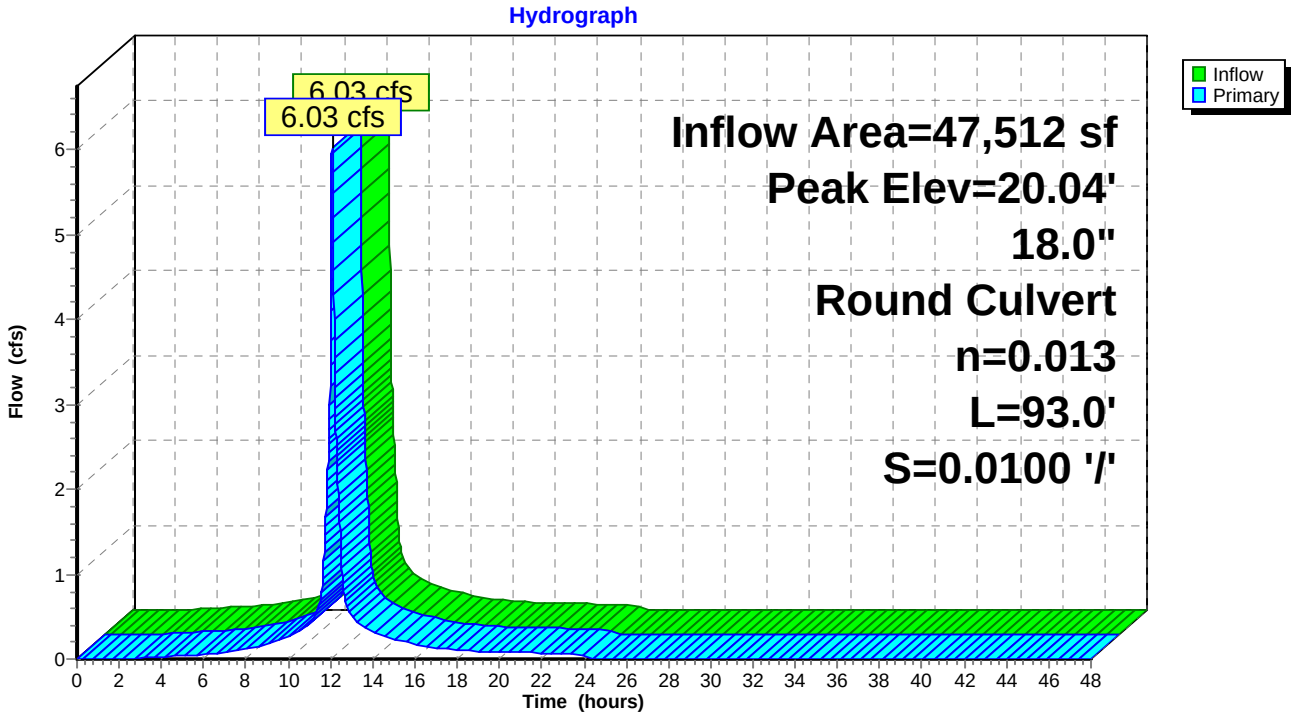
Inflow Area = 47,512 sf, 91.18% Impervious, Inflow Depth = 5.14" for 25-Year event
Inflow = 6.03 cfs @ 12.08 hrs, Volume= 20,369 cf
Outflow = 6.03 cfs @ 12.08 hrs, Volume= 20,369 cf, Atten= 0%, Lag= 0.0 min
Primary = 6.03 cfs @ 12.08 hrs, Volume= 20,369 cf

Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs / 2
Peak Elev= 20.04' @ 12.09 hrs
Flood Elev= 27.09'

Device	Routing	Invert	Outlet Devices
#1	Primary	16.46'	**18.0" Round Culvert** L= 93.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 16.46' / 15.53' S= 0.0100 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.77 sf

Primary OutFlow Max=5.94 cfs @ 12.08 hrs HW=20.01' TW=19.45' (Dynamic Tailwater)
1=Culvert (Outlet Controls 5.94 cfs @ 3.36 fps)

Pond 8P: CBR 15042



Summary for Pond 9P: DMH 10162

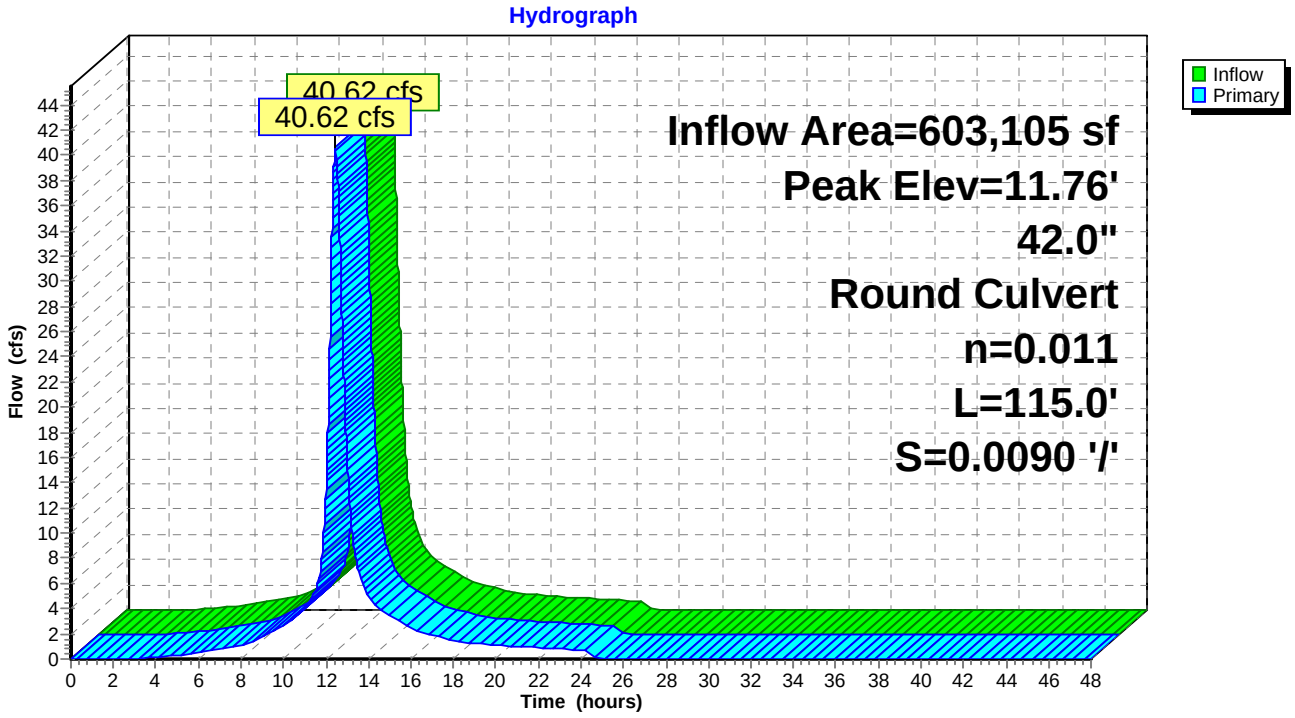
Inflow Area = 603,105 sf, 86.65% Impervious, Inflow Depth = 4.99" for 25-Year event
Inflow = 40.62 cfs @ 12.46 hrs, Volume= 250,553 cf
Outflow = 40.62 cfs @ 12.46 hrs, Volume= 250,553 cf, Atten= 0%, Lag= 0.0 min
Primary = 40.62 cfs @ 12.46 hrs, Volume= 250,553 cf

Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs / 2
Peak Elev= 11.76' @ 12.46 hrs
Flood Elev= 28.14'

Device	Routing	Invert	Outlet Devices
#1	Primary	9.18'	**42.0" Round Culvert** L= 115.0' RCP, sq.cut end projecting, Ke= 0.500 Inlet / Outlet Invert= 9.18' / 8.15' S= 0.0090 '/' Cc= 0.900 n= 0.011 Concrete pipe, straight & clean, Flow Area= 9.62 sf

Primary OutFlow Max=40.61 cfs @ 12.46 hrs HW=11.76' TW=7.36' (Dynamic Tailwater)
1=Culvert (Barrel Controls 40.61 cfs @ 7.44 fps)

Pond 9P: DMH 10162



Summary for Pond EX WTLND: Existing Wetland

Inflow Area = 1,006,351 sf, 76.79% Impervious, Inflow Depth = 4.72" for 25-Year event
Inflow = 62.32 cfs @ 12.10 hrs, Volume= 395,740 cf
Outflow = 38.30 cfs @ 12.68 hrs, Volume= 395,744 cf, Atten= 39%, Lag= 34.8 min
Primary = 27.79 cfs @ 12.68 hrs, Volume= 368,997 cf
Secondary = 10.51 cfs @ 12.68 hrs, Volume= 26,748 cf

Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs / 2
Peak Elev= 7.46' @ 12.68 hrs Surf.Area= 81,430 sf Storage= 75,208 cf
Flood Elev= 9.00' Surf.Area= 86,688 sf Storage= 120,546 cf

Plug-Flow detention time= (not calculated: outflow precedes inflow)
Center-of-Mass det. time= 17.7 min (820.6 - 802.9)

Volume	Invert	Avail.Storage	Storage Description
#1	6.00'	120,546 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

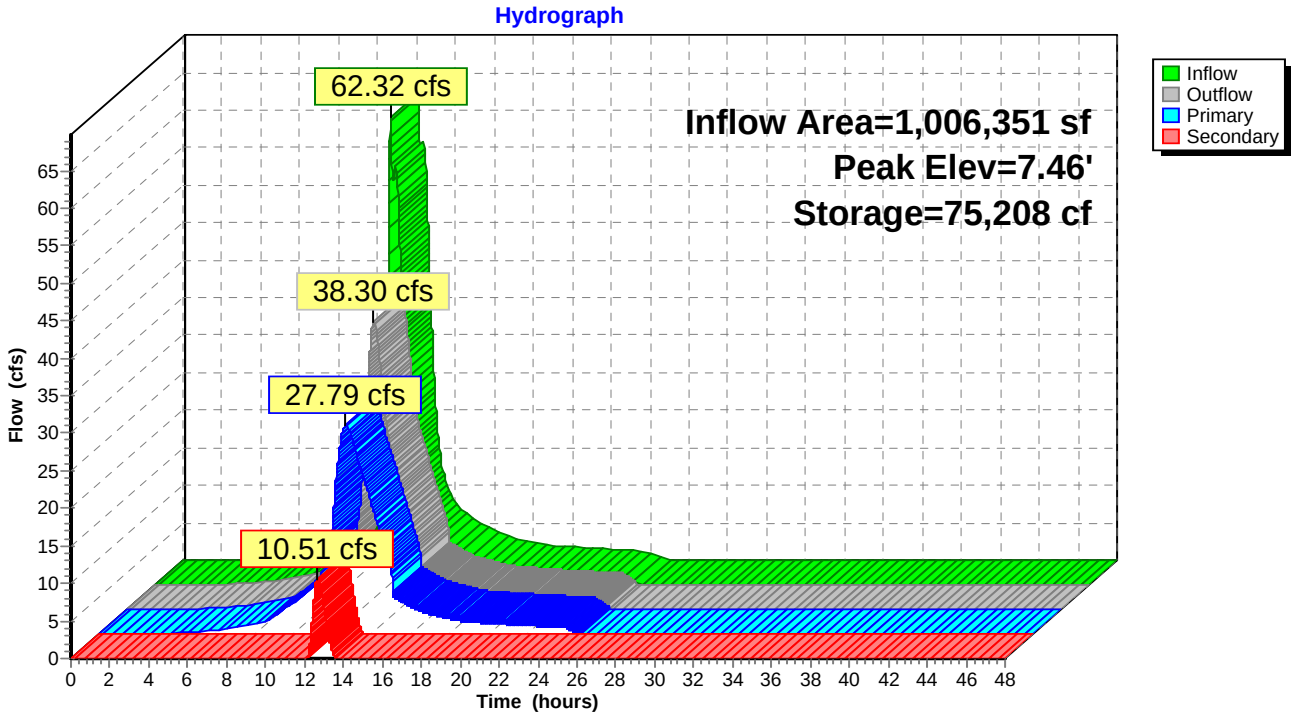
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
6.00	523	0	0
7.00	76,940	38,732	38,732
8.00	86,688	81,814	120,546

Device	Routing	Invert	Outlet Devices
#1	Primary	4.89'	**36.0" Round Culvert** L= 80.0' CMP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 4.89' / 3.61' S= 0.0160 '/' Cc= 0.900 n= 0.025 Corrugated metal, Flow Area= 7.07 sf
#2	Secondary	7.00'	**13.0' long x 4.0' breadth Overflow** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 3.50 4.00 4.50 5.00 5.50 Coef. (English) 2.38 2.54 2.69 2.68 2.67 2.67 2.65 2.66 2.66 2.68 2.72 2.73 2.76 2.79 2.88 3.07 3.32

Primary OutFlow Max=27.79 cfs @ 12.68 hrs HW=7.46' TW=0.00' (Dynamic Tailwater)
└**1=Culvert** (Inlet Controls 27.79 cfs @ 4.31 fps)

Secondary OutFlow Max=10.51 cfs @ 12.68 hrs HW=7.46' TW=6.45' (Dynamic Tailwater)
└**2=Overflow** (Weir Controls 10.51 cfs @ 1.75 fps)

Pond EX WTLND: Existing Wetland

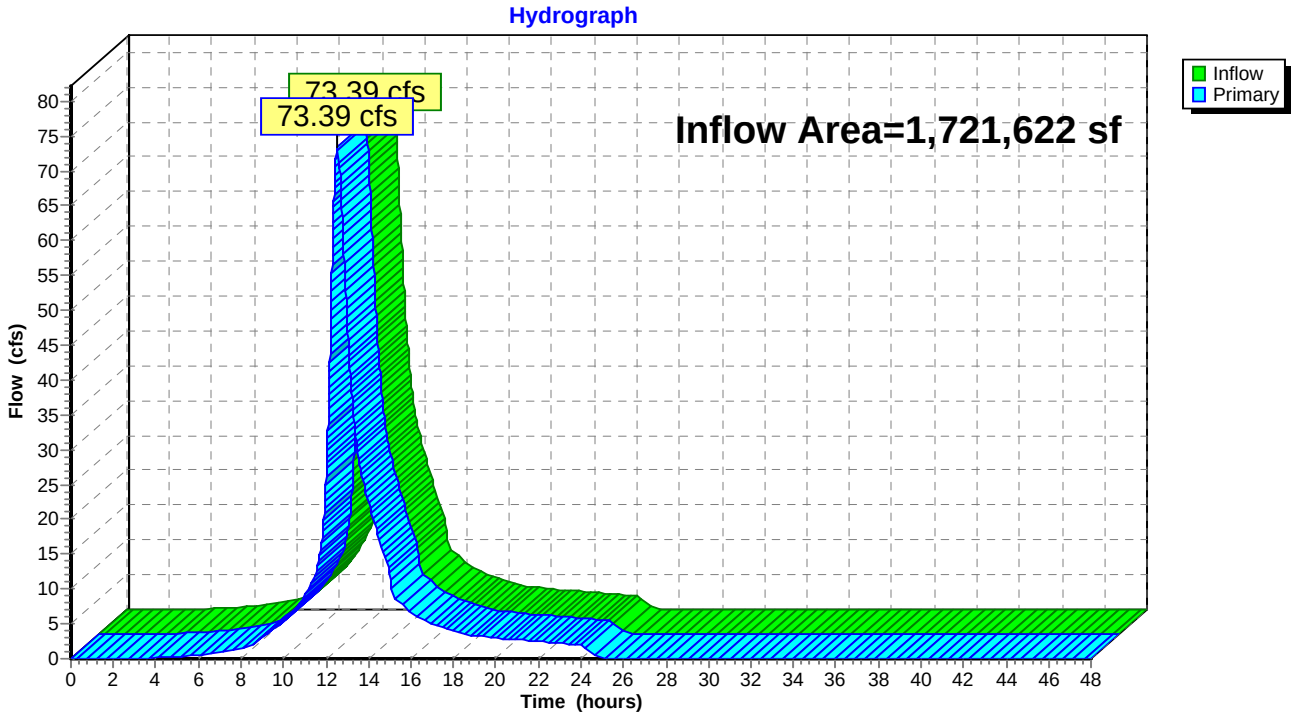


Summary for Link SP-1: Study Point 1

Inflow Area = 1,721,622 sf, 66.81% Impervious, Inflow Depth = 4.29" for 25-Year event
Inflow = 73.39 cfs @ 12.53 hrs, Volume= 615,685 cf
Primary = 73.39 cfs @ 12.53 hrs, Volume= 615,685 cf, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs

Link SP-1: Study Point 1

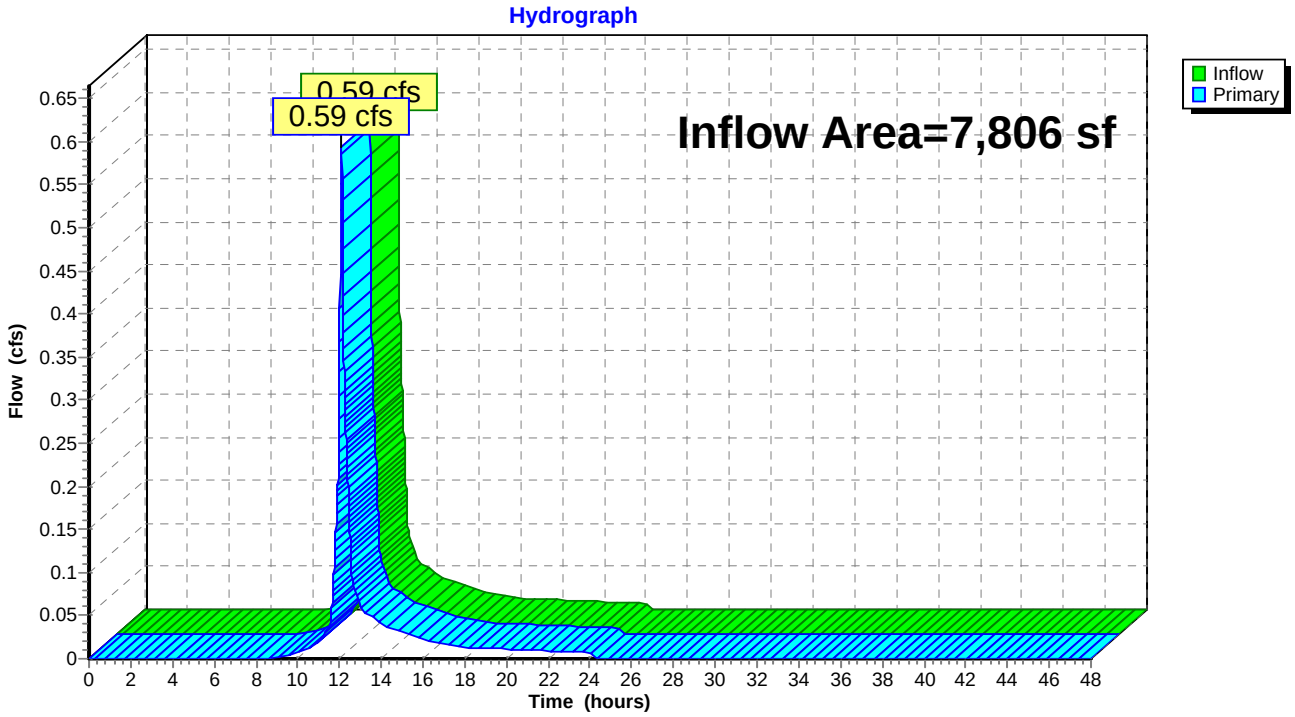


Summary for Link SP-2: Study Point 2

Inflow Area = 7,806 sf, 28.72% Impervious, Inflow Depth = 2.83" for 25-Year event
Inflow = 0.59 cfs @ 12.09 hrs, Volume= 1,841 cf
Primary = 0.59 cfs @ 12.09 hrs, Volume= 1,841 cf, Atten= 0%, Lag= 0.0 min

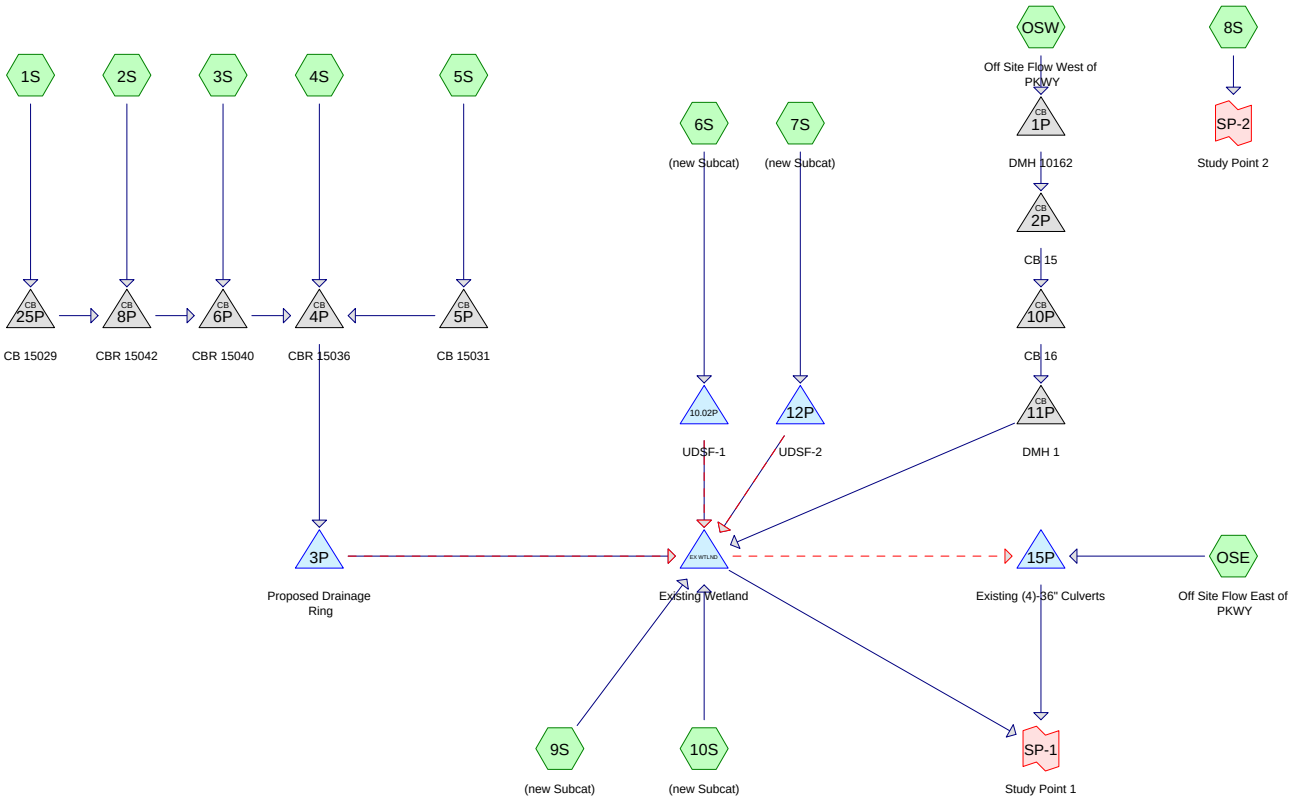
Primary outflow = Inflow, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs

Link SP-2: Study Point 2



Attachment C

Preload-Development Stormwater Modeling



Subcat Reach Pond Link

Routing Diagram for 99607 Preload
Prepared by Sebago Techincs, Printed 6/20/2018
HydroCAD® 10.00-18 s/n 01856 © 2016 HydroCAD Software Solutions LLC

Area Listing (selected nodes)

Area (sq-ft)	CN	Description (subcatchment-numbers)
399,539	61	>75% Grass cover, Good, HSG B (1S, 2S, 3S, 4S, 5S, 7S, 8S, 9S, 10S, OSE)
60,585	80	>75% Grass cover, Good, HSG D (9S)
21,406	96	Gravel surface, HSG B (6S, 7S)
104,657	96	Gravel surface, HSG D (6S, 7S)
591,443	98	Paved parking, HSG B (1S, 2S, 3S, 4S, 5S, 8S, 10S, OSE, OSW)
14,924	98	Roofs, HSG B (1S, 2S, 3S, 9S, 10S)
536,874	92	Urban commercial, 85% imp, HSG B (OSW)
1,729,428	**87**	**TOTAL AREA**

Soil Listing (selected nodes)

Area (sq-ft)	Soil Group	Subcatchment Numbers
0	HSG A	
1,564,186	HSG B	1S, 2S, 3S, 4S, 5S, 6S, 7S, 8S, 9S, 10S, OSE, OSW
0	HSG C	
165,242	HSG D	6S, 7S, 9S
0	Other	
1,729,428		**TOTAL AREA**

Time span=0.00-48.00 hrs, dt=0.01 hrs, 4801 points x 2
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Dyn-Stor-Ind method - Pond routing by Dyn-Stor-Ind method

Subcatchment 1S: Runoff Area=28,467 sf 89.98% Impervious Runoff Depth=2.45"
Flow Length=126' Slope=0.0100 '/' Tc=6.0 min CN=94 Runoff=1.80 cfs 5,805 cf

Subcatchment 2S: Runoff Area=19,045 sf 92.99% Impervious Runoff Depth=2.55"
Flow Length=173' Slope=0.0150 '/' Tc=6.0 min CN=95 Runoff=1.24 cfs 4,042 cf

Subcatchment 3S: Runoff Area=21,678 sf 93.77% Impervious Runoff Depth=2.65"
Flow Length=190' Slope=0.0150 '/' Tc=6.0 min CN=96 Runoff=1.44 cfs 4,788 cf

Subcatchment 4S: Runoff Area=30,590 sf 96.80% Impervious Runoff Depth=2.76"
Flow Length=223' Slope=0.0150 '/' Tc=6.0 min CN=97 Runoff=2.08 cfs 7,029 cf

Subcatchment 5S: Runoff Area=49,347 sf 82.88% Impervious Runoff Depth=2.26"
Flow Length=281' Slope=0.0150 '/' Tc=6.0 min CN=92 Runoff=2.93 cfs 9,276 cf

Subcatchment 6S: (new Subcat) Runoff Area=55,468 sf 0.00% Impervious Runoff Depth=2.65"
Flow Length=231' Tc=6.1 min CN=96 Runoff=3.68 cfs 12,252 cf

Subcatchment 7S: (new Subcat) Runoff Area=73,328 sf 0.00% Impervious Runoff Depth=2.55"
Flow Length=439' Tc=6.0 min CN=95 Runoff=4.76 cfs 15,564 cf

Subcatchment 8S: Runoff Area=7,806 sf 28.72% Impervious Runoff Depth=0.87"
Flow Length=49' Slope=0.0800 '/' Tc=6.0 min CN=72 Runoff=0.17 cfs 565 cf

Subcatchment 9S: (new Subcat) Runoff Area=90,904 sf 0.98% Impervious Runoff Depth=0.97"
Flow Length=109' Tc=6.0 min CN=74 Runoff=2.24 cfs 7,365 cf

Subcatchment 10S: (new Subcat) Runoff Area=34,419 sf 73.63% Impervious Runoff Depth=1.91"
Flow Length=144' Slope=0.0200 '/' Tc=6.0 min CN=88 Runoff=1.76 cfs 5,471 cf

Subcatchment OSE: Off Site Flow East of Runoff Area=715,271 sf 52.78% Impervious Runoff Depth=1.39"
Flow Length=725' Tc=32.1 min CN=81 Runoff=14.53 cfs 82,901 cf

Subcatchment OSW: Off Site Flow West Runoff Area=603,105 sf 86.65% Impervious Runoff Depth=2.35"
Flow Length=1,076' Tc=34.1 min CN=93 Runoff=19.88 cfs 118,098 cf

Pond 1P: DMH 10162 Peak Elev=11.28' Inflow=19.88 cfs 118,098 cf
42.0" Round Culvert n=0.011 L=106.0' S=0.0060 '/' Outflow=19.88 cfs 118,098 cf

Pond 2P: CB 15 Peak Elev=10.58' Inflow=19.88 cfs 118,098 cf
42.0" Round Culvert n=0.013 L=147.0' S=0.0050 '/' Outflow=19.88 cfs 118,098 cf

Pond 3P: Proposed Drainage Ring Peak Elev=16.45' Storage=5,354 cf Inflow=9.49 cfs 30,941 cf
Outflow=7.97 cfs 30,918 cf

Pond 4P: CBR 15036 Peak Elev=18.06' Inflow=9.49 cfs 30,941 cf
18.0" Round Culvert n=0.013 L=127.0' S=0.0158 '/' Outflow=9.49 cfs 30,941 cf

Pond 5P: CB 15031 Peak Elev=21.18' Inflow=2.93 cfs 9,276 cf
18.0" Round Culvert n=0.013 L=155.0' S=0.0134 '/' Outflow=2.93 cfs 9,276 cf

Pond 6P: CBR 15040 Peak Elev=18.29' Inflow=4.48 cfs 14,635 cf
18.0" Round Culvert n=0.013 L=48.0' S=0.0029 '/' Outflow=4.48 cfs 14,635 cf

Pond 8P: CBR 15042 Peak Elev=18.46' Inflow=3.04 cfs 9,847 cf
18.0" Round Culvert n=0.013 L=93.0' S=0.0100 '/' Outflow=3.04 cfs 9,847 cf

Pond 10.02P: UDSF-1 Peak Elev=14.33' Storage=4,875 cf Inflow=3.68 cfs 12,252 cf
Primary=0.33 cfs 12,252 cf Secondary=0.00 cfs 0 cf Outflow=0.33 cfs 12,252 cf

Pond 10P: CB 16 Peak Elev=9.65' Inflow=19.88 cfs 118,098 cf
42.0" Round Culvert n=0.013 L=296.0' S=0.0050 '/' Outflow=19.88 cfs 118,098 cf

Pond 11P: DMH 1 Peak Elev=8.19' Inflow=19.88 cfs 118,098 cf
42.0" Round Culvert n=0.013 L=199.0' S=0.0050 '/' Outflow=19.88 cfs 118,098 cf

Pond 12P: UDSF-2 Peak Elev=14.28' Storage=6,293 cf Inflow=4.76 cfs 15,564 cf
Primary=0.44 cfs 15,564 cf Secondary=0.00 cfs 0 cf Outflow=0.44 cfs 15,564 cf

Pond 15P: Existing (4)-36" Culverts Peak Elev=5.84' Storage=2,140 cf Inflow=16.49 cfs 84,889 cf
36.0" Round Culvert x 4.00 n=0.025 L=127.0' S=0.0079 '/' Outflow=16.44 cfs 84,172 cf

Pond 25P: CB 15029 Peak Elev=23.55' Inflow=1.80 cfs 5,805 cf
15.0" Round Culvert n=0.013 L=148.6' S=0.0090 '/' Outflow=1.80 cfs 5,805 cf

Pond EX WTLND: Existing Wetland Peak Elev=7.16' Storage=2,819 cf Inflow=25.16 cfs 189,669 cf
Primary=23.03 cfs 187,679 cf Secondary=1.97 cfs 1,988 cf Outflow=25.01 cfs 189,667 cf

Link SP-1: Study Point 1 Inflow=39.43 cfs 271,851 cf
Primary=39.43 cfs 271,851 cf

Link SP-2: Study Point 2 Inflow=0.17 cfs 565 cf
Primary=0.17 cfs 565 cf

Total Runoff Area = 1,729,428 sf Runoff Volume = 273,157 cf Average Runoff Depth = 1.90"
38.55% Pervious = 666,718 sf 61.45% Impervious = 1,062,710 sf

Time span=0.00-48.00 hrs, dt=0.01 hrs, 4801 points x 2
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Dyn-Stor-Ind method - Pond routing by Dyn-Stor-Ind method

Subcatchment 1S: Runoff Area=28,467 sf 89.98% Impervious Runoff Depth=3.91"
Flow Length=126' Slope=0.0100 '/' Tc=6.0 min CN=94 Runoff=2.80 cfs 9,284 cf

Subcatchment 2S: Runoff Area=19,045 sf 92.99% Impervious Runoff Depth=4.02"
Flow Length=173' Slope=0.0150 '/' Tc=6.0 min CN=95 Runoff=1.90 cfs 6,386 cf

Subcatchment 3S: Runoff Area=21,678 sf 93.77% Impervious Runoff Depth=4.14"
Flow Length=190' Slope=0.0150 '/' Tc=6.0 min CN=96 Runoff=2.20 cfs 7,470 cf

Subcatchment 4S: Runoff Area=30,590 sf 96.80% Impervious Runoff Depth=4.25"
Flow Length=223' Slope=0.0150 '/' Tc=6.0 min CN=97 Runoff=3.13 cfs 10,830 cf

Subcatchment 5S: Runoff Area=49,347 sf 82.88% Impervious Runoff Depth=3.70"
Flow Length=281' Slope=0.0150 '/' Tc=6.0 min CN=92 Runoff=4.69 cfs 15,212 cf

Subcatchment 6S: (new Subcat) Runoff Area=55,468 sf 0.00% Impervious Runoff Depth=4.14"
Flow Length=231' Tc=6.1 min CN=96 Runoff=5.60 cfs 19,114 cf

Subcatchment 7S: (new Subcat) Runoff Area=73,328 sf 0.00% Impervious Runoff Depth=4.02"
Flow Length=439' Tc=6.0 min CN=95 Runoff=7.33 cfs 24,587 cf

Subcatchment 8S: Runoff Area=7,806 sf 28.72% Impervious Runoff Depth=1.89"
Flow Length=49' Slope=0.0800 '/' Tc=6.0 min CN=72 Runoff=0.39 cfs 1,232 cf

Subcatchment 9S: (new Subcat) Runoff Area=90,904 sf 0.98% Impervious Runoff Depth=2.05"
Flow Length=109' Tc=6.0 min CN=74 Runoff=4.97 cfs 15,526 cf

Subcatchment 10S: (new Subcat) Runoff Area=34,419 sf 73.63% Impervious Runoff Depth=3.29"
Flow Length=144' Slope=0.0200 '/' Tc=6.0 min CN=88 Runoff=2.99 cfs 9,438 cf

Subcatchment OSE: Off Site Flow East of Runoff Area=715,271 sf 52.78% Impervious Runoff Depth=2.63"
Flow Length=725' Tc=32.1 min CN=81 Runoff=27.86 cfs 157,046 cf

Subcatchment OSW: Off Site Flow West Runoff Area=603,105 sf 86.65% Impervious Runoff Depth=3.81"
Flow Length=1,076' Tc=34.1 min CN=93 Runoff=31.45 cfs 191,269 cf

Pond 1P: DMH 10162 Peak Elev=12.08' Inflow=31.45 cfs 191,269 cf
42.0" Round Culvert n=0.011 L=106.0' S=0.0060 '/' Outflow=31.45 cfs 191,269 cf

Pond 2P: CB 15 Peak Elev=11.36' Inflow=31.45 cfs 191,269 cf
42.0" Round Culvert n=0.013 L=147.0' S=0.0050 '/' Outflow=31.45 cfs 191,269 cf

Pond 3P: Proposed Drainage Ring Peak Elev=17.61' Storage=7,581 cf Inflow=14.72 cfs 49,183 cf
Outflow=9.43 cfs 49,161 cf

Pond 4P: CBR 15036 Peak Elev=21.21' Inflow=14.72 cfs 49,183 cf
18.0" Round Culvert n=0.013 L=127.0' S=0.0158 '/' Outflow=14.72 cfs 49,183 cf

Pond 5P: CB 15031 Peak Elev=21.80' Inflow=4.69 cfs 15,212 cf
18.0" Round Culvert n=0.013 L=155.0' S=0.0134 '/' Outflow=4.69 cfs 15,212 cf

Pond 6P: CBR 15040 Peak Elev=21.75' Inflow=6.90 cfs 23,140 cf
18.0" Round Culvert n=0.013 L=48.0' S=0.0029 '/' Outflow=6.90 cfs 23,140 cf

Pond 8P: CBR 15042 Peak Elev=22.17' Inflow=4.71 cfs 15,670 cf
18.0" Round Culvert n=0.013 L=93.0' S=0.0100 '/' Outflow=4.71 cfs 15,670 cf

Pond 10.02P: UDSF-1 Peak Elev=15.11' Storage=7,896 cf Inflow=5.60 cfs 19,114 cf
Primary=0.77 cfs 19,114 cf Secondary=0.00 cfs 0 cf Outflow=0.77 cfs 19,114 cf

Pond 10P: CB 16 Peak Elev=10.34' Inflow=31.45 cfs 191,269 cf
42.0" Round Culvert n=0.013 L=296.0' S=0.0050 '/' Outflow=31.45 cfs 191,269 cf

Pond 11P: DMH 1 Peak Elev=8.80' Inflow=31.45 cfs 191,269 cf
42.0" Round Culvert n=0.013 L=199.0' S=0.0050 '/' Outflow=31.45 cfs 191,269 cf

Pond 12P: UDSF-2 Peak Elev=15.10' Storage=10,450 cf Inflow=7.33 cfs 24,587 cf
Primary=0.82 cfs 24,587 cf Secondary=0.00 cfs 0 cf Outflow=0.82 cfs 24,587 cf

Pond 15P: Existing (4)-36" Culverts Peak Elev=6.46' Storage=3,346 cf Inflow=41.20 cfs 179,604 cf
36.0" Round Culvert x 4.00 n=0.025 L=127.0' S=0.0079 '/' Outflow=41.08 cfs 178,887 cf

Pond 25P: CB 15029 Peak Elev=23.79' Inflow=2.80 cfs 9,284 cf
15.0" Round Culvert n=0.013 L=148.6' S=0.0090 '/' Outflow=2.80 cfs 9,284 cf

Pond EX WTLND: Existing Wetland Peak Elev=7.54' Storage=4,522 cf Inflow=42.63 cfs 309,094 cf
Primary=28.88 cfs 286,533 cf Secondary=13.55 cfs 22,558 cf Outflow=42.43 cfs 309,091 cf

Link SP-1: Study Point 1 Inflow=69.89 cfs 465,420 cf
Primary=69.89 cfs 465,420 cf

Link SP-2: Study Point 2 Inflow=0.39 cfs 1,232 cf
Primary=0.39 cfs 1,232 cf

Total Runoff Area = 1,729,428 sf Runoff Volume = 467,396 cf Average Runoff Depth = 3.24"
38.55% Pervious = 666,718 sf 61.45% Impervious = 1,062,710 sf

Time span=0.00-48.00 hrs, dt=0.01 hrs, 4801 points x 2
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Dyn-Stor-Ind method - Pond routing by Dyn-Stor-Ind method

Subcatchment 1S: Runoff Area=28,467 sf 89.98% Impervious Runoff Depth=5.10"
Flow Length=126' Slope=0.0100 '/' Tc=6.0 min CN=94 Runoff=3.60 cfs 12,095 cf

Subcatchment 2S: Runoff Area=19,045 sf 92.99% Impervious Runoff Depth=5.21"
Flow Length=173' Slope=0.0150 '/' Tc=6.0 min CN=95 Runoff=2.43 cfs 8,273 cf

Subcatchment 3S: Runoff Area=21,678 sf 93.77% Impervious Runoff Depth=5.33"
Flow Length=190' Slope=0.0150 '/' Tc=6.0 min CN=96 Runoff=2.79 cfs 9,626 cf

Subcatchment 4S: Runoff Area=30,590 sf 96.80% Impervious Runoff Depth=5.44"
Flow Length=223' Slope=0.0150 '/' Tc=6.0 min CN=97 Runoff=3.97 cfs 13,879 cf

Subcatchment 5S: Runoff Area=49,347 sf 82.88% Impervious Runoff Depth=4.87"
Flow Length=281' Slope=0.0150 '/' Tc=6.0 min CN=92 Runoff=6.08 cfs 20,039 cf

Subcatchment 6S: (new Subcat) Runoff Area=55,468 sf 0.00% Impervious Runoff Depth=5.33"
Flow Length=231' Tc=6.1 min CN=96 Runoff=7.12 cfs 24,629 cf

Subcatchment 7S: (new Subcat) Runoff Area=73,328 sf 0.00% Impervious Runoff Depth=5.21"
Flow Length=439' Tc=6.0 min CN=95 Runoff=9.36 cfs 31,855 cf

Subcatchment 8S: Runoff Area=7,806 sf 28.72% Impervious Runoff Depth=2.83"
Flow Length=49' Slope=0.0800 '/' Tc=6.0 min CN=72 Runoff=0.59 cfs 1,841 cf

Subcatchment 9S: (new Subcat) Runoff Area=90,904 sf 0.98% Impervious Runoff Depth=3.02"
Flow Length=109' Tc=6.0 min CN=74 Runoff=7.38 cfs 22,858 cf

Subcatchment 10S: (new Subcat) Runoff Area=34,419 sf 73.63% Impervious Runoff Depth=4.43"
Flow Length=144' Slope=0.0200 '/' Tc=6.0 min CN=88 Runoff=3.98 cfs 12,716 cf

Subcatchment OSE: Off Site Flow East of Runoff Area=715,271 sf 52.78% Impervious Runoff Depth=3.70"
Flow Length=725' Tc=32.1 min CN=81 Runoff=39.02 cfs 220,658 cf

Subcatchment OSW: Off Site Flow West Runoff Area=603,105 sf 86.65% Impervious Runoff Depth=4.99"
Flow Length=1,076' Tc=34.1 min CN=93 Runoff=40.62 cfs 250,553 cf

Pond 1P: DMH 10162 Peak Elev=12.89' Inflow=40.62 cfs 250,553 cf
42.0" Round Culvert n=0.011 L=106.0' S=0.0060 '/' Outflow=40.62 cfs 250,553 cf

Pond 2P: CB 15 Peak Elev=12.12' Inflow=40.62 cfs 250,553 cf
42.0" Round Culvert n=0.013 L=147.0' S=0.0050 '/' Outflow=40.62 cfs 250,553 cf

Pond 3P: Proposed Drainage Ring Peak Elev=18.76' Storage=9,759 cf Inflow=18.87 cfs 63,912 cf
Outflow=10.67 cfs 63,890 cf

Pond 4P: CBR 15036 Peak Elev=24.56' Inflow=18.87 cfs 63,912 cf
18.0" Round Culvert n=0.013 L=127.0' S=0.0158 '/' Outflow=18.87 cfs 63,912 cf

Pond 5P: CB 15031 Peak Elev=25.18' Inflow=6.08 cfs 20,039 cf
18.0" Round Culvert n=0.013 L=155.0' S=0.0134 '/' Outflow=6.08 cfs 20,039 cf

Pond 6P: CBR 15040 Peak Elev=25.45' Inflow=8.82 cfs 29,994 cf
18.0" Round Culvert n=0.013 L=48.0' S=0.0029 '/' Outflow=8.82 cfs 29,994 cf

Pond 8P: CBR 15042 Peak Elev=26.15' Inflow=6.03 cfs 20,369 cf
18.0" Round Culvert n=0.013 L=93.0' S=0.0100 '/' Outflow=6.03 cfs 20,369 cf

Pond 10.02P: UDSF-1 Peak Elev=15.33' Storage=8,871 cf Inflow=7.12 cfs 24,629 cf
Primary=2.37 cfs 24,629 cf Secondary=0.00 cfs 0 cf Outflow=2.37 cfs 24,629 cf

Pond 10P: CB 16 Peak Elev=10.89' Inflow=40.62 cfs 250,553 cf
42.0" Round Culvert n=0.013 L=296.0' S=0.0050 '/' Outflow=40.62 cfs 250,553 cf

Pond 11P: DMH 1 Peak Elev=9.27' Inflow=40.62 cfs 250,553 cf
42.0" Round Culvert n=0.013 L=199.0' S=0.0050 '/' Outflow=40.62 cfs 250,553 cf

Pond 12P: UDSF-2 Peak Elev=15.37' Storage=11,917 cf Inflow=9.36 cfs 31,855 cf
Primary=2.79 cfs 31,855 cf Secondary=0.00 cfs 0 cf Outflow=2.79 cfs 31,855 cf

Pond 15P: Existing (4)-36" Culverts Peak Elev=6.94' Storage=4,668 cf Inflow=64.90 cfs 271,041 cf
36.0" Round Culvert x 4.00 n=0.025 L=127.0' S=0.0079 '/' Outflow=64.77 cfs 270,325 cf

Pond 25P: CB 15029 Peak Elev=26.70' Inflow=3.60 cfs 12,095 cf
15.0" Round Culvert n=0.013 L=148.6' S=0.0090 '/' Outflow=3.60 cfs 12,095 cf

Pond EX WTLND: Existing Wetland Peak Elev=7.82' Storage=6,042 cf Inflow=58.56 cfs 406,501 cf
Primary=32.34 cfs 356,111 cf Secondary=25.93 cfs 50,384 cf Outflow=58.27 cfs 406,495 cf

Link SP-1: Study Point 1 Inflow=97.09 cfs 626,436 cf
Primary=97.09 cfs 626,436 cf

Link SP-2: Study Point 2 Inflow=0.59 cfs 1,841 cf
Primary=0.59 cfs 1,841 cf

Total Runoff Area = 1,729,428 sf Runoff Volume = 629,022 cf Average Runoff Depth = 4.36"
38.55% Pervious = 666,718 sf 61.45% Impervious = 1,062,710 sf

Summary for Subcatchment 1S:

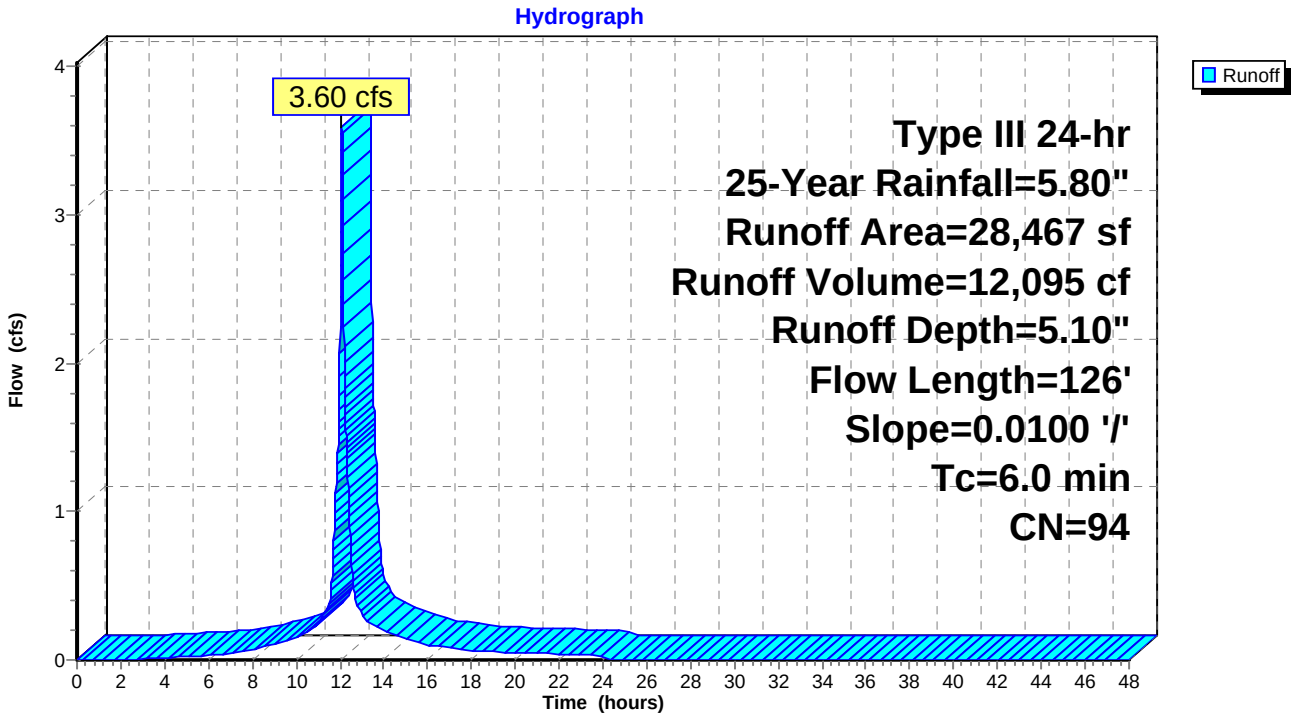
Runoff = 3.60 cfs @ 12.08 hrs, Volume= 12,095 cf, Depth= 5.10"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Type III 24-hr 25-Year Rainfall=5.80"

Area (sf)	CN	Description
4,290	98	Roofs, HSG B
21,324	98	Paved parking, HSG B
2,853	61	>75% Grass cover, Good, HSG B
28,467	94	Weighted Average
2,853		10.02% Pervious Area
25,614		89.98% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.6	100	0.0100	1.03		**Sheet Flow,** Smooth surfaces n= 0.011 P2= 3.10"
0.2	26	0.0100	2.03		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
4.2					**Direct Entry,**
6.0	126	Total			

Subcatchment 1S:



Summary for Subcatchment 2S:

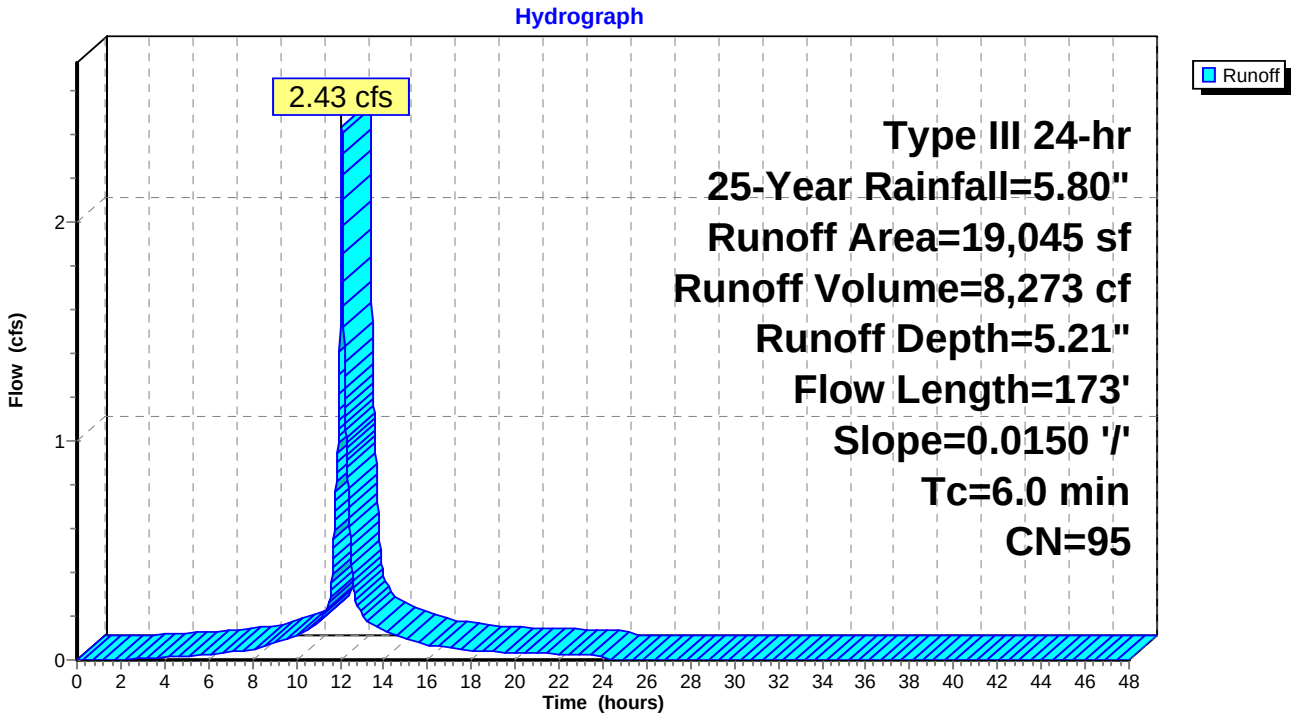
Runoff = 2.43 cfs @ 12.08 hrs, Volume= 8,273 cf, Depth= 5.21"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Type III 24-hr 25-Year Rainfall=5.80"

Area (sf)	CN	Description
1,615	98	Roofs, HSG B
16,094	98	Paved parking, HSG B
1,336	61	>75% Grass cover, Good, HSG B
19,045	95	Weighted Average
1,336		7.01% Pervious Area
17,709		92.99% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.4	100	0.0150	1.21		**Sheet Flow,** Smooth surfaces n= 0.011 P2= 3.10"
0.5	73	0.0150	2.49		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
4.1					**Direct Entry,**
6.0	173	Total			

Subcatchment 2S:



Summary for Subcatchment 3S:

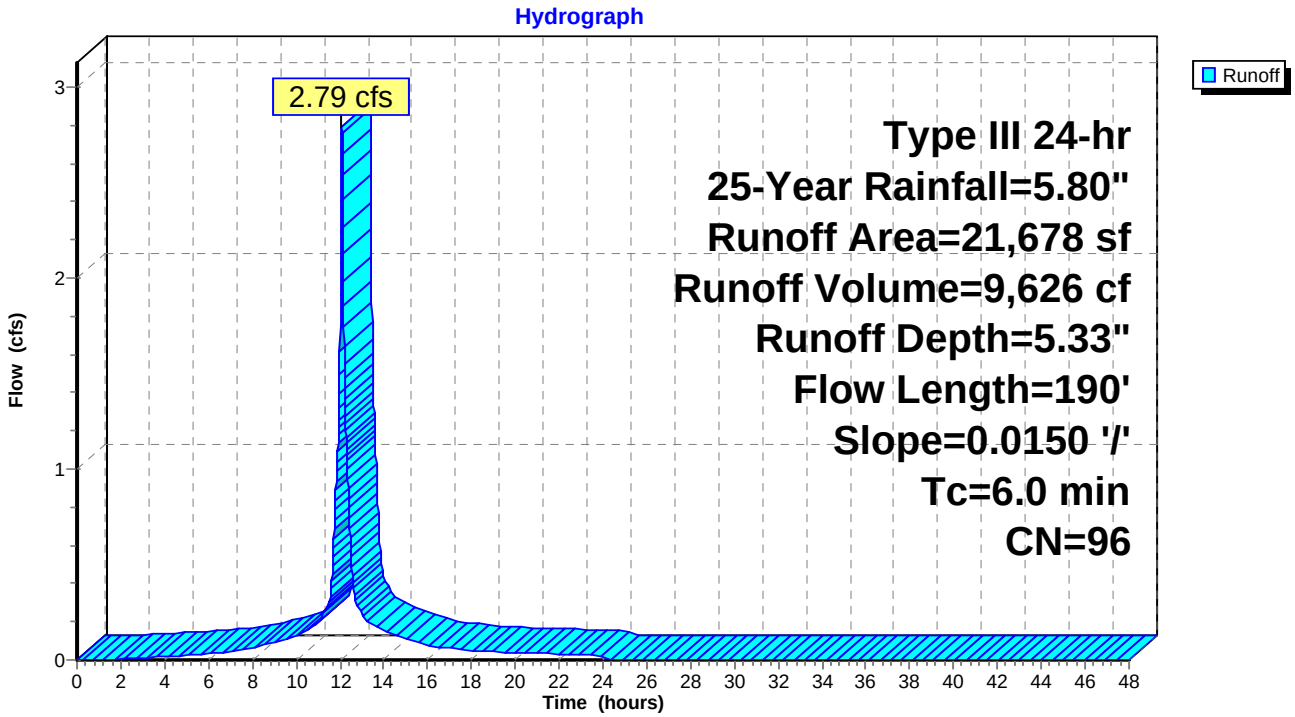
Runoff = 2.79 cfs @ 12.08 hrs, Volume= 9,626 cf, Depth= 5.33"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Type III 24-hr 25-Year Rainfall=5.80"

Area (sf)	CN	Description
324	98	Roofs, HSG B
20,004	98	Paved parking, HSG B
1,350	61	>75% Grass cover, Good, HSG B
21,678	96	Weighted Average
1,350		6.23% Pervious Area
20,328		93.77% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.4	100	0.0150	1.21		**Sheet Flow,** Smooth surfaces n= 0.011 P2= 3.10"
0.6	90	0.0150	2.49		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
4.0					**Direct Entry,**
6.0	190	Total			

Subcatchment 3S:



Summary for Subcatchment 4S:

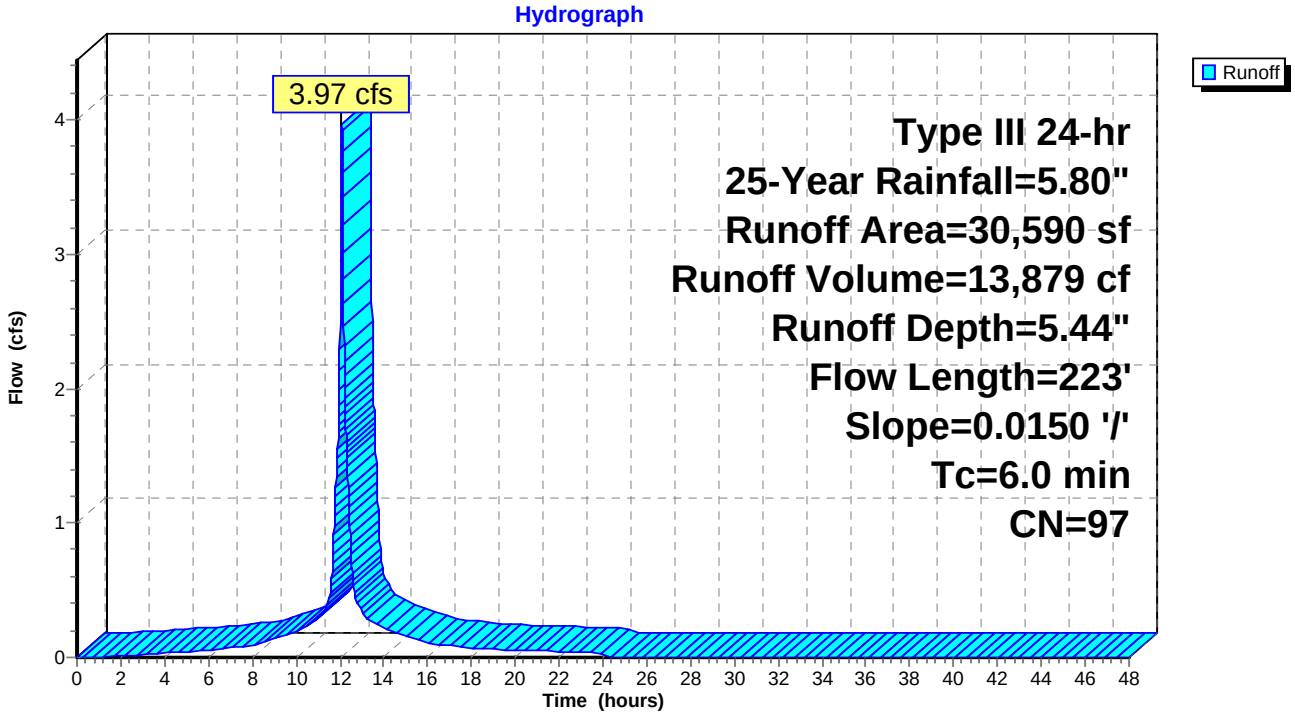
Runoff = 3.97 cfs @ 12.08 hrs, Volume= 13,879 cf, Depth= 5.44"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Type III 24-hr 25-Year Rainfall=5.80"

Area (sf)	CN	Description
29,610	98	Paved parking, HSG B
980	61	>75% Grass cover, Good, HSG B
30,590	97	Weighted Average
980		3.20% Pervious Area
29,610		96.80% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.4	100	0.0150	1.21		**Sheet Flow,** Smooth surfaces n= 0.011 P2= 3.10"
0.8	123	0.0150	2.49		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
3.8					**Direct Entry,**
6.0	223	Total			

Subcatchment 4S:



Summary for Subcatchment 5S:

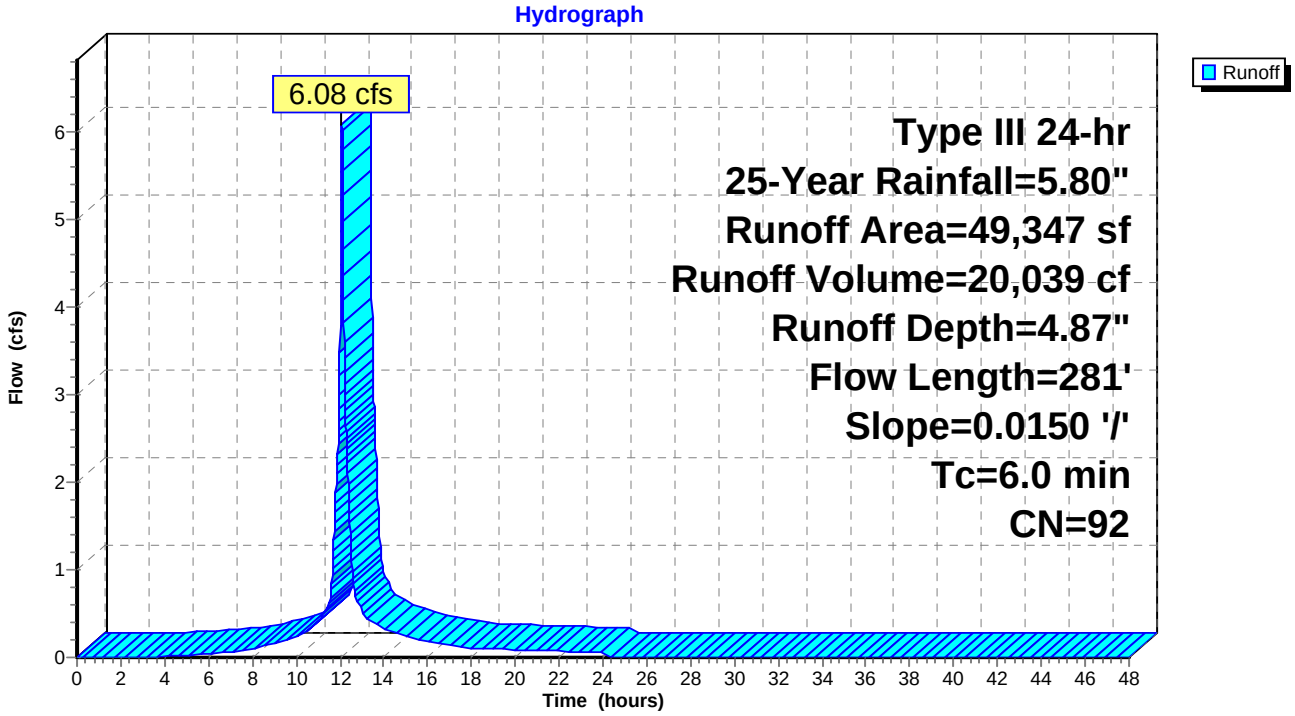
Runoff = 6.08 cfs @ 12.08 hrs, Volume= 20,039 cf, Depth= 4.87"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Type III 24-hr 25-Year Rainfall=5.80"

Area (sf)	CN	Description
40,901	98	Paved parking, HSG B
8,446	61	>75% Grass cover, Good, HSG B
49,347	92	Weighted Average
8,446		17.12% Pervious Area
40,901		82.88% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.4	100	0.0150	1.21		**Sheet Flow,** Smooth surfaces n= 0.011 P2= 3.10"
1.2	181	0.0150	2.49		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
3.4					**Direct Entry,**
6.0	281	Total			

Subcatchment 5S:



Summary for Subcatchment 6S: (new Subcat)

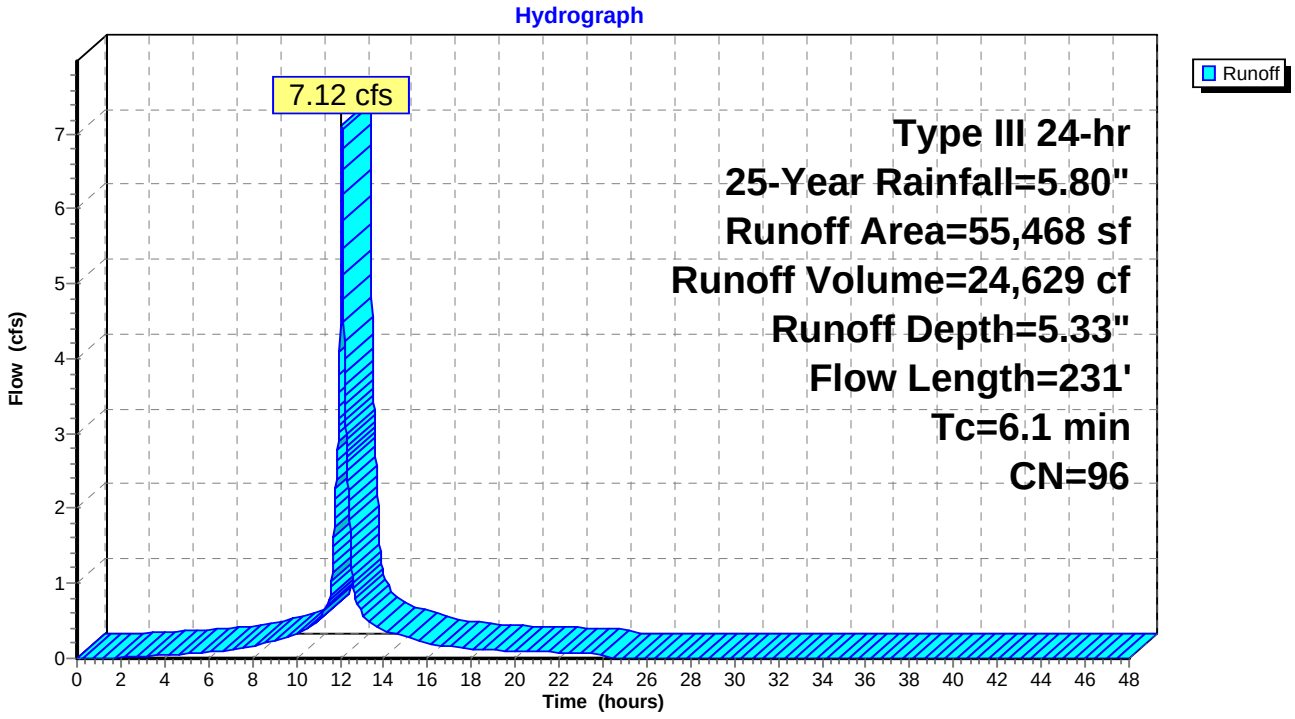
Runoff = 7.12 cfs @ 12.08 hrs, Volume= 24,629 cf, Depth= 5.33"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Type III 24-hr 25-Year Rainfall=5.80"

Area (sf)	CN	Description
7,858	96	Gravel surface, HSG B
47,610	96	Gravel surface, HSG D
55,468	96	Weighted Average
55,468		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.2	66	0.0450	0.21		**Sheet Flow,** Grass: Short n= 0.150 P2= 3.10"
0.9	165	0.0250	3.21		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
6.1	231	Total			

Subcatchment 6S: (new Subcat)



Summary for Subcatchment 7S: (new Subcat)

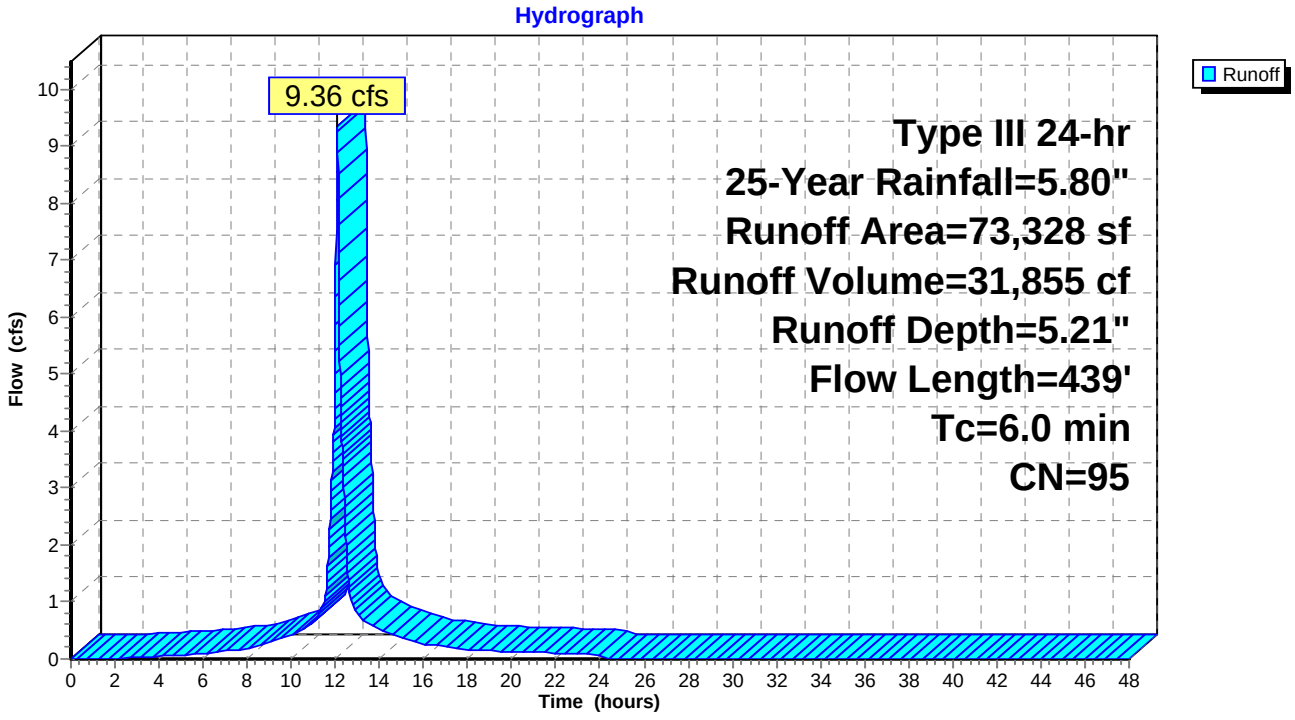
Runoff = 9.36 cfs @ 12.08 hrs, Volume= 31,855 cf, Depth= 5.21"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Type III 24-hr 25-Year Rainfall=5.80"

Area (sf)	CN	Description
13,548	96	Gravel surface, HSG B
57,047	96	Gravel surface, HSG D
2,733	61	>75% Grass cover, Good, HSG B
73,328	95	Weighted Average
73,328		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.2	100	0.0200	1.35		**Sheet Flow,** Smooth surfaces n= 0.011 P2= 3.10"
1.9	265	0.0200	2.28		**Shallow Concentrated Flow,** Unpaved Kv= 16.1 fps
0.3	74	0.0260	4.66	8.15	**Trap/Vee/Rect Channel Flow,** Bot.W=2.00' D=0.50' Z= 3.0 '/' Top.W=5.00' n= 0.025 Earth, clean & winding
2.6					**Direct Entry,**
6.0	439	Total			

Subcatchment 7S: (new Subcat)



Summary for Subcatchment 8S:

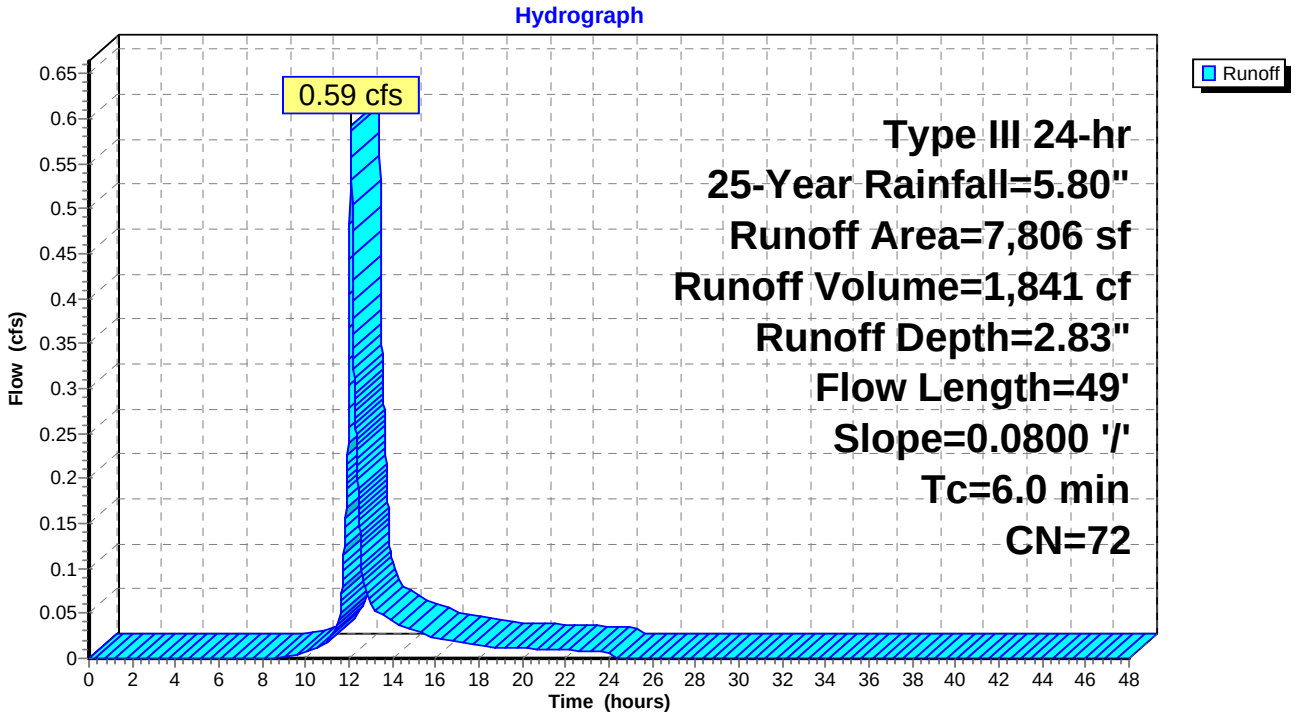
Runoff = 0.59 cfs @ 12.09 hrs, Volume= 1,841 cf, Depth= 2.83"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Type III 24-hr 25-Year Rainfall=5.80"

Area (sf)	CN	Description
2,242	98	Paved parking, HSG B
5,564	61	>75% Grass cover, Good, HSG B
7,806	72	Weighted Average
5,564		71.28% Pervious Area
2,242		28.72% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
3.2	49	0.0800	0.25		**Sheet Flow,** Grass: Short n= 0.150 P2= 3.10"
2.8					**Direct Entry,**
6.0	49	Total			

Subcatchment 8S:



Summary for Subcatchment 9S: (new Subcat)

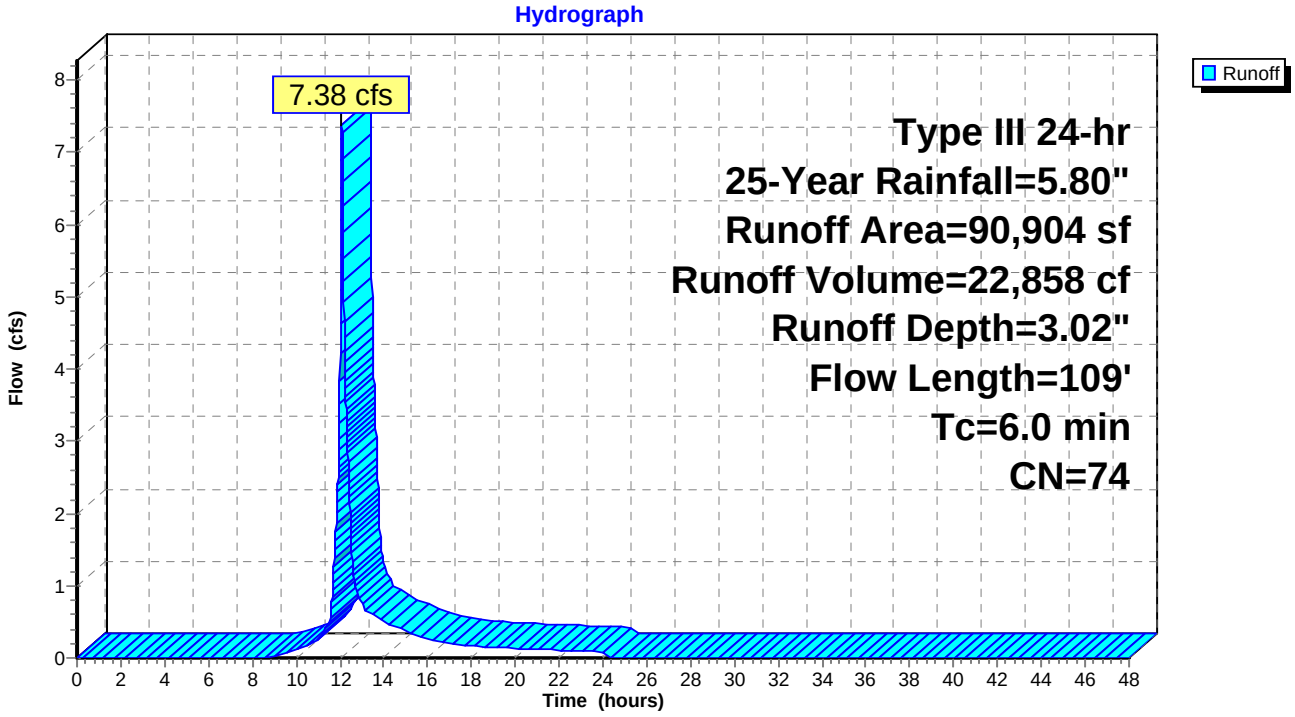
Runoff = 7.38 cfs @ 12.09 hrs, Volume= 22,858 cf, Depth= 3.02"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Type III 24-hr 25-Year Rainfall=5.80"

Area (sf)	CN	Description
892	98	Roofs, HSG B
29,427	61	>75% Grass cover, Good, HSG B
60,585	80	>75% Grass cover, Good, HSG D
90,904	74	Weighted Average
90,012		99.02% Pervious Area
892		0.98% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.3	71	0.0490	0.22		**Sheet Flow,** Grass: Short n= 0.150 P2= 3.10"
0.1	38	0.4300	4.59		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
0.6					**Direct Entry,**
6.0	109	Total			

Subcatchment 9S: (new Subcat)



Summary for Subcatchment 10S: (new Subcat)

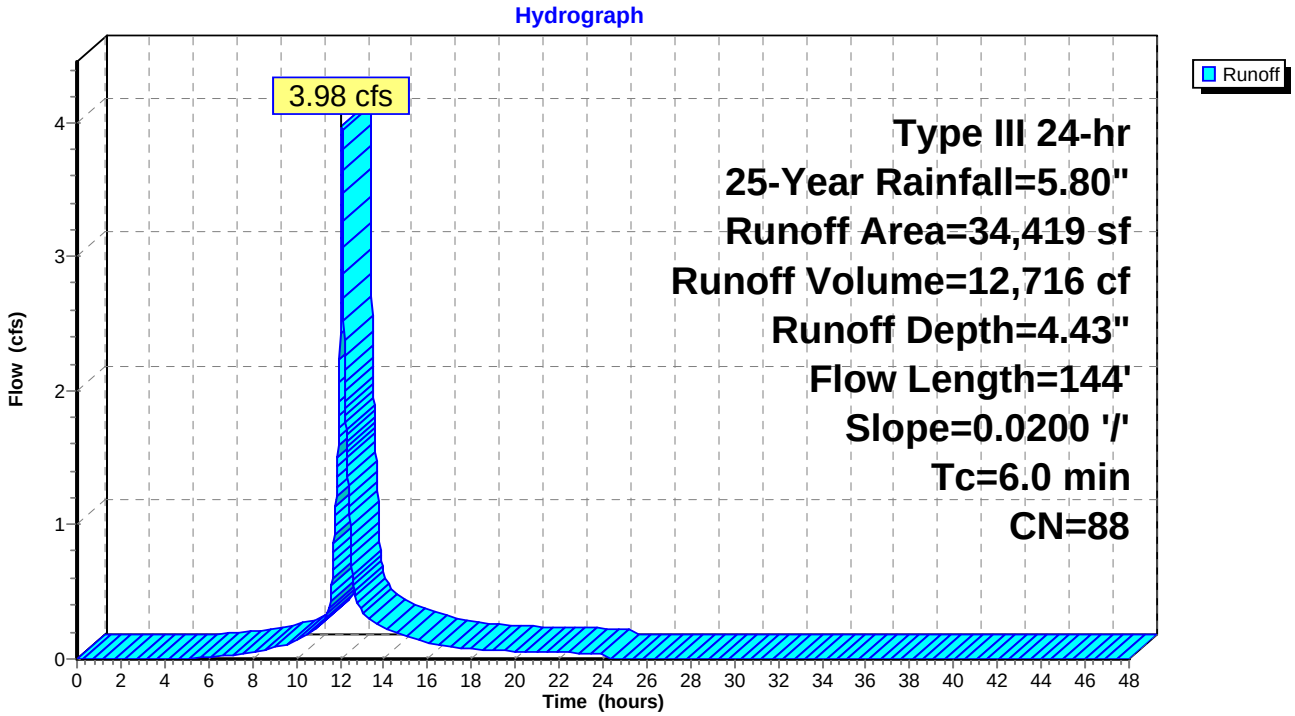
Runoff = 3.98 cfs @ 12.09 hrs, Volume= 12,716 cf, Depth= 4.43"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Type III 24-hr 25-Year Rainfall=5.80"

Area (sf)	CN	Description
17,541	98	Paved parking, HSG B
7,803	98	Roofs, HSG B
9,075	61	>75% Grass cover, Good, HSG B
34,419	88	Weighted Average
9,075		26.37% Pervious Area
25,344		73.63% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.2	100	0.0200	1.35		**Sheet Flow,** Smooth surfaces n= 0.011 P2= 3.10"
0.1	20	0.0200	2.87		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
0.4	24	0.0200	0.99		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
4.3					**Direct Entry,**
6.0	144	Total			

Subcatchment 10S: (new Subcat)



Summary for Subcatchment OSE: Off Site Flow East of PKWY

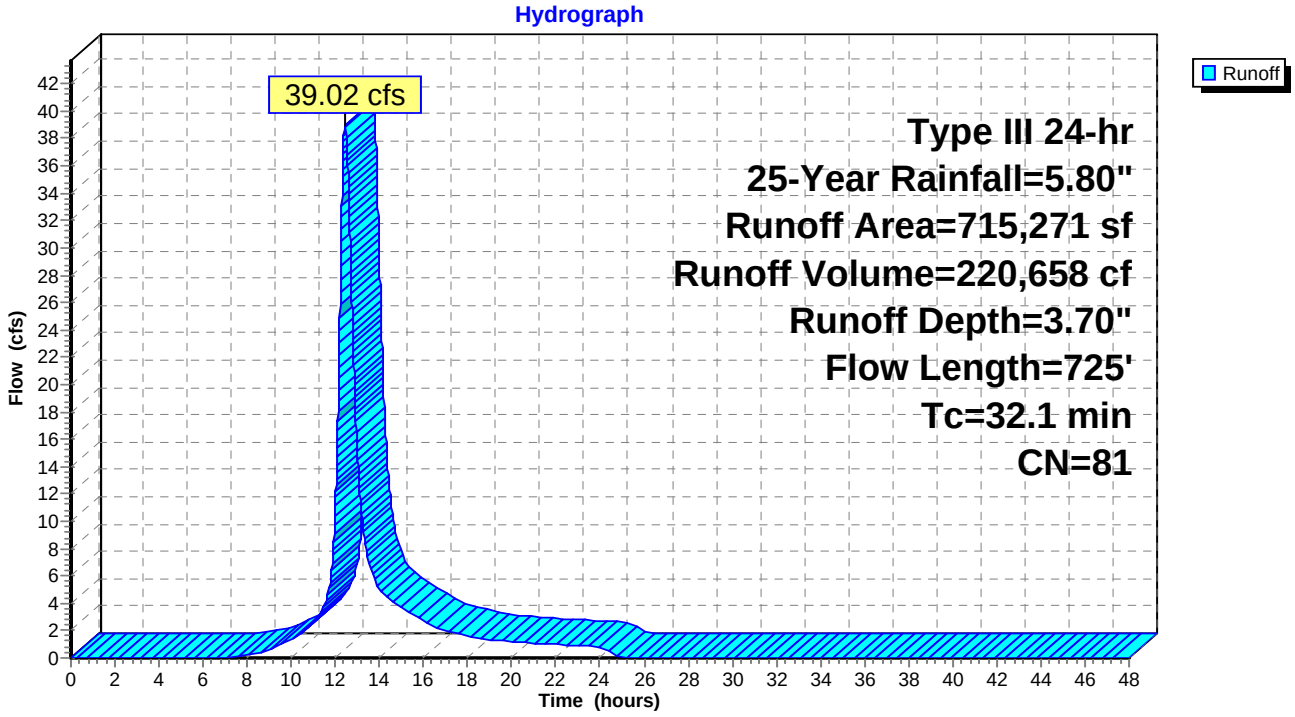
Runoff = 39.02 cfs @ 12.45 hrs, Volume= 220,658 cf, Depth= 3.70"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Type III 24-hr 25-Year Rainfall=5.80"

Area (sf)	CN	Description
377,496	98	Paved parking, HSG B
337,775	61	>75% Grass cover, Good, HSG B
715,271	81	Weighted Average
337,775		47.22% Pervious Area
377,496		52.78% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
20.9	100	0.0080	0.08		**Sheet Flow,** Grass: Dense n= 0.240 P2= 3.10"
6.4	240	0.0080	0.63		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
4.8	385	0.0370	1.35		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
32.1	725	Total			

Subcatchment OSE: Off Site Flow East of PKWY



Summary for Subcatchment OSW: Off Site Flow West of PKWY

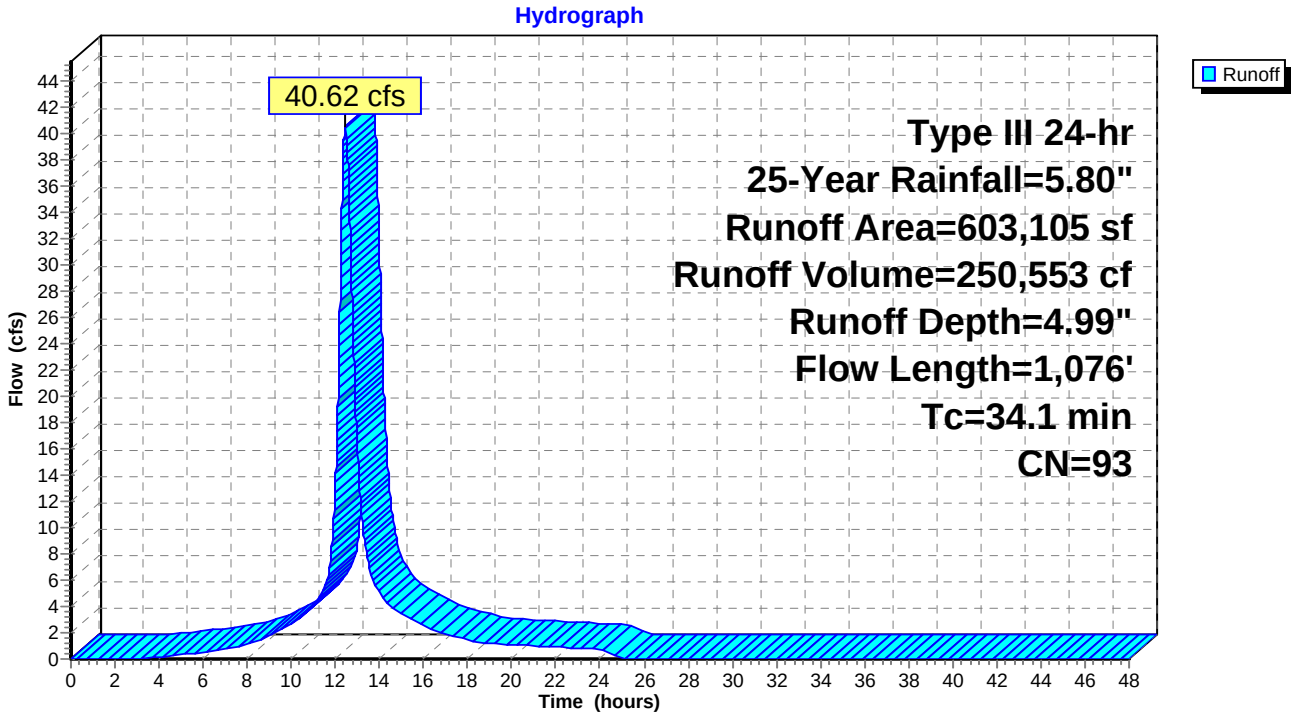
Runoff = 40.62 cfs @ 12.46 hrs, Volume= 250,553 cf, Depth= 4.99"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Type III 24-hr 25-Year Rainfall=5.80"

Area (sf)	CN	Description
536,874	92	Urban commercial, 85% imp, HSG B
66,231	98	Paved parking, HSG B
603,105	93	Weighted Average
80,531		13.35% Pervious Area
522,574		86.65% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
19.1	100	0.0100	0.09		**Sheet Flow,** Grass: Dense n= 0.240 P2= 3.10"
3.5	146	0.0100	0.70		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
4.1	258	0.0230	1.06		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
7.4	572	0.0340	1.29		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
34.1	1,076	Total			

Subcatchment OSW: Off Site Flow West of PKWY



Summary for Pond 1P: DMH 10162

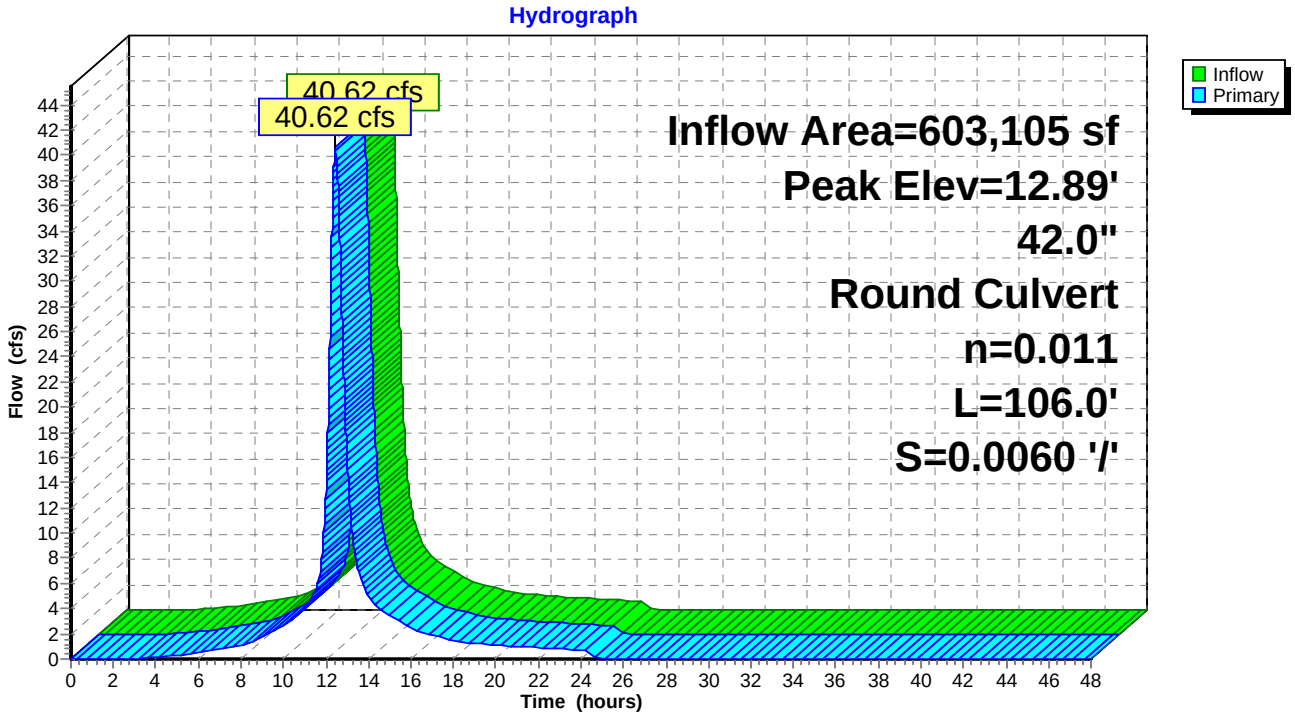
Inflow Area = 603,105 sf, 86.65% Impervious, Inflow Depth = 4.99" for 25-Year event
Inflow = 40.62 cfs @ 12.46 hrs, Volume= 250,553 cf
Outflow = 40.62 cfs @ 12.46 hrs, Volume= 250,553 cf, Atten= 0%, Lag= 0.0 min
Primary = 40.62 cfs @ 12.46 hrs, Volume= 250,553 cf

Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs / 2
Peak Elev= 12.89' @ 12.46 hrs
Flood Elev= 28.14'

Device	Routing	Invert	Outlet Devices
#1	Primary	9.18'	**42.0" Round Culvert** L= 106.0' RCP, sq.cut end projecting, Ke= 0.500 Inlet / Outlet Invert= 9.18' / 8.54' S= 0.0060 '/' Cc= 0.900 n= 0.011 Concrete pipe, straight & clean, Flow Area= 9.62 sf

Primary OutFlow Max=40.58 cfs @ 12.46 hrs HW=12.89' TW=12.12' (Dynamic Tailwater)
1=Culvert (Inlet Controls 40.58 cfs @ 4.22 fps)

Pond 1P: DMH 10162



Summary for Pond 2P: CB 15

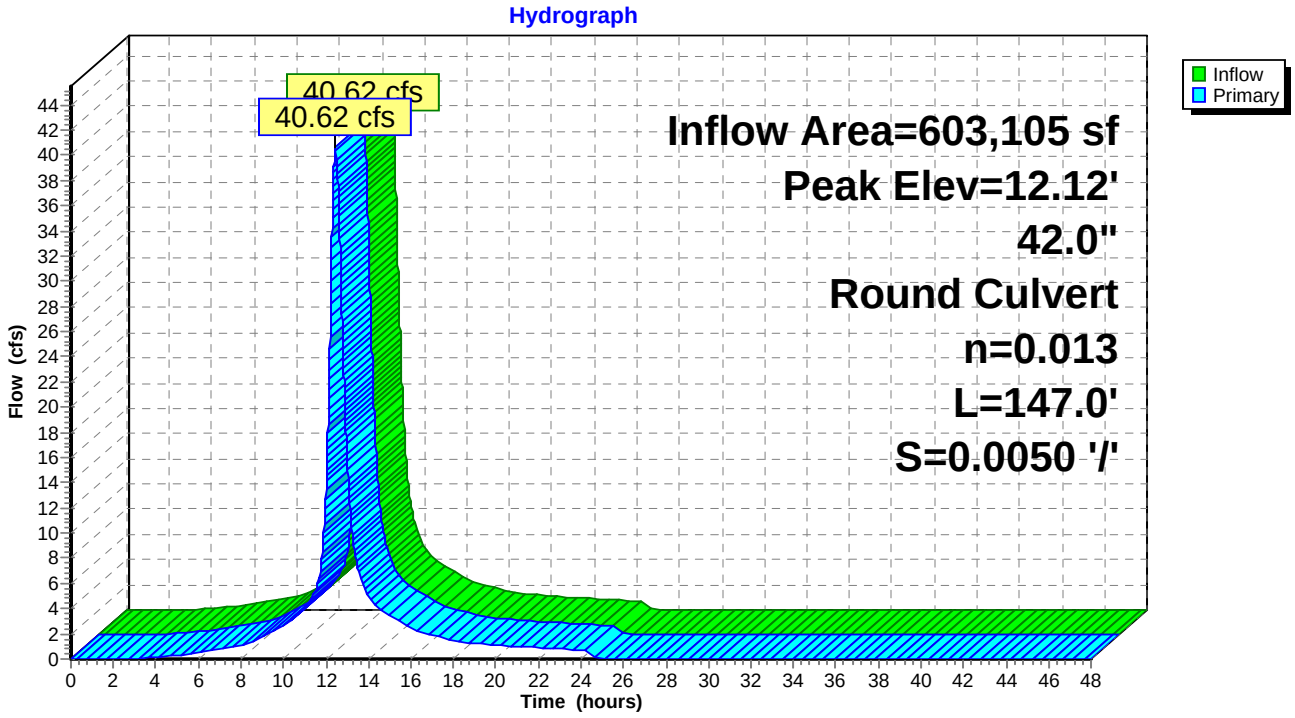
Inflow Area = 603,105 sf, 86.65% Impervious, Inflow Depth = 4.99" for 25-Year event
Inflow = 40.62 cfs @ 12.46 hrs, Volume= 250,553 cf
Outflow = 40.62 cfs @ 12.46 hrs, Volume= 250,553 cf, Atten= 0%, Lag= 0.0 min
Primary = 40.62 cfs @ 12.46 hrs, Volume= 250,553 cf

Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs / 2
Peak Elev= 12.12' @ 12.46 hrs
Flood Elev= 14.50'

Device	Routing	Invert	Outlet Devices
#1	Primary	8.44'	**42.0" Round Culvert** L= 147.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 8.44' / 7.71' S= 0.0050 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 9.62 sf

Primary OutFlow Max=40.60 cfs @ 12.46 hrs HW=12.12' TW=10.89' (Dynamic Tailwater)
↑**1=Culvert** (Inlet Controls 40.60 cfs @ 4.22 fps)

Pond 2P: CB 15



Summary for Pond 3P: Proposed Drainage Ring

Inflow Area = 149,127 sf, 89.96% Impervious, Inflow Depth = 5.14" for 25-Year event
Inflow = 18.87 cfs @ 12.08 hrs, Volume= 63,912 cf
Outflow = 10.67 cfs @ 12.20 hrs, Volume= 63,890 cf, Atten= 43%, Lag= 6.8 min
Primary = 10.67 cfs @ 12.20 hrs, Volume= 63,890 cf

Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs / 2
Peak Elev= 18.76' @ 12.20 hrs Surf.Area= 4,707 sf Storage= 9,759 cf
Flood Elev= 24.50' Surf.Area= 4,707 sf Storage= 17,821 cf

Plug-Flow detention time= 28.1 min calculated for 63,890 cf (100% of inflow)
Center-of-Mass det. time= 27.8 min (794.2 - 766.3)

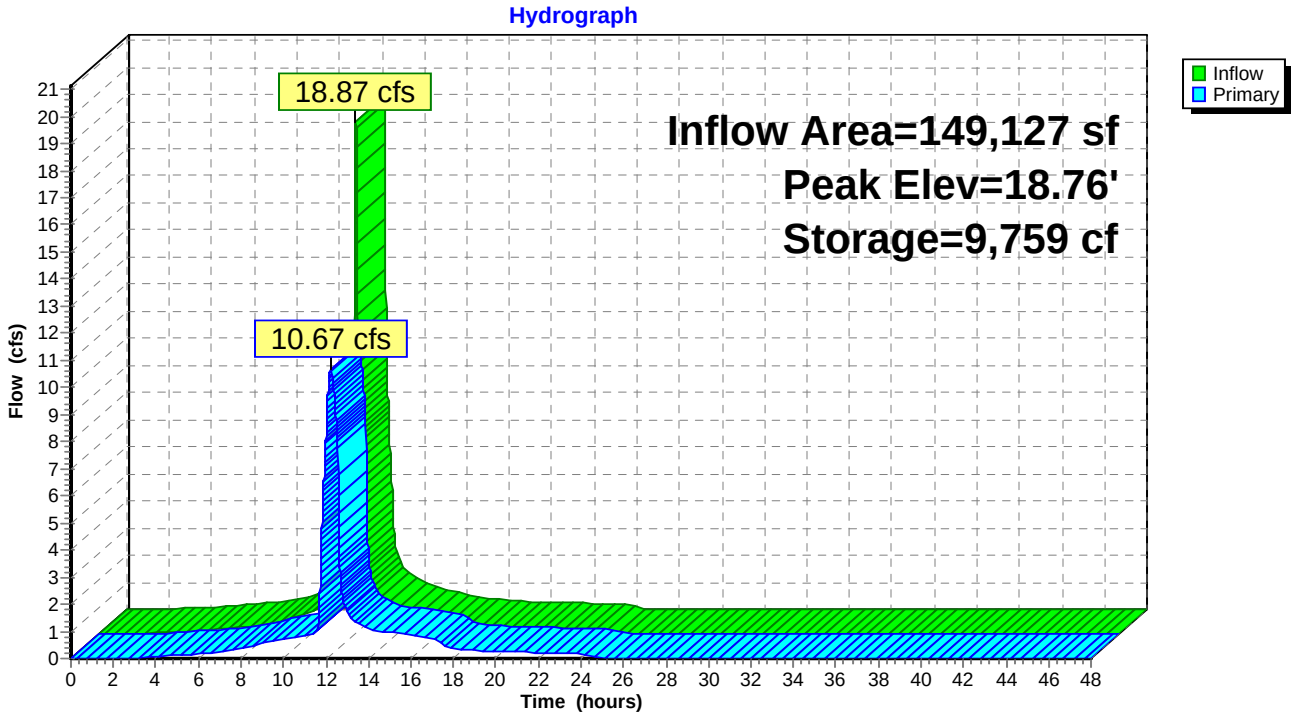
Volume	Invert	Avail.Storage	Storage Description
#1	12.90'	17,520 cf	**Drainage Ring with Stone (Prismatic)**Listed below (Recalc) 44,181 cf Overall - 382 cf Embedded = 43,799 cf x 40.0% Voids
#2	15.65'	302 cf	**8.00'D x 6.00'H Drainage Ring** Inside #1 382 cf Overall - 6.0" Wall Thickness = 302 cf
		17,821 cf	Total Available Storage

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
12.90	2,613	0	0
12.91	2,613	26	26
14.00	3,290	3,217	3,243
15.00	3,990	3,640	6,883
16.00	4,707	4,349	11,232
16.10	4,707	471	11,702
20.00	4,707	18,357	30,060
23.00	4,707	14,121	44,181

Device	Routing	Invert	Outlet Devices
#1	Primary	12.90'	**24.0" Round Culvert** L= 222.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 12.90' / 8.00' S= 0.0221 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 3.14 sf
#2	Device 1	12.90'	**15.0" Round Header Pipe** L= 60.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 12.90' / 12.90' S= 0.0000 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.23 sf
#3	Device 2	12.90'	**10.000 in/hr Filtration over Surface area**
#4	Device 2	15.56'	**12.0" Vert. 12" Pipes X 3.00** C= 0.600

Primary OutFlow Max=10.67 cfs @ 12.20 hrs HW=18.76' TW=7.57' (Dynamic Tailwater)
- **1=Culvert** (Passes 10.67 cfs of 26.31 cfs potential flow)
  - **2=Header Pipe** (Inlet Controls 10.67 cfs @ 8.69 fps)
    - **3=Filtration** (Passes < 1.09 cfs potential flow)
    - **4=12" Pipes** (Passes < 18.63 cfs potential flow)

Pond 3P: Proposed Drainage Ring



Summary for Pond 4P: CBR 15036

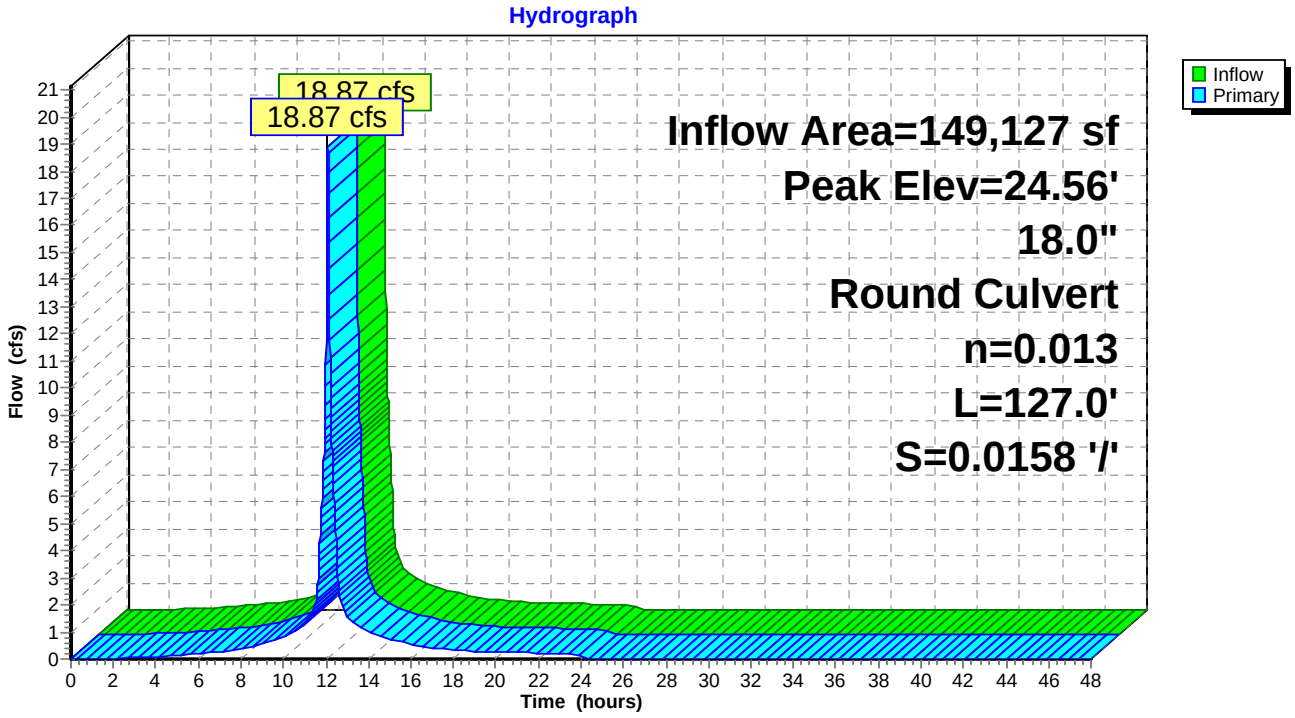
Inflow Area = 149,127 sf, 89.96% Impervious, Inflow Depth = 5.14" for 25-Year event
Inflow = 18.87 cfs @ 12.08 hrs, Volume= 63,912 cf
Outflow = 18.87 cfs @ 12.08 hrs, Volume= 63,912 cf, Atten= 0%, Lag= 0.0 min
Primary = 18.87 cfs @ 12.08 hrs, Volume= 63,912 cf

Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs / 2
Peak Elev= 24.56' @ 12.09 hrs
Flood Elev= 25.22'

Device	Routing	Invert	Outlet Devices
#1	Primary	14.91'	**18.0" Round Culvert** L= 127.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 14.91' / 12.90' S= 0.0158 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.77 sf

Primary OutFlow Max=18.84 cfs @ 12.08 hrs HW=24.46' TW=17.72' (Dynamic Tailwater)
1=Culvert (Outlet Controls 18.84 cfs @ 10.66 fps)

Pond 4P: CBR 15036



Summary for Pond 5P: CB 15031

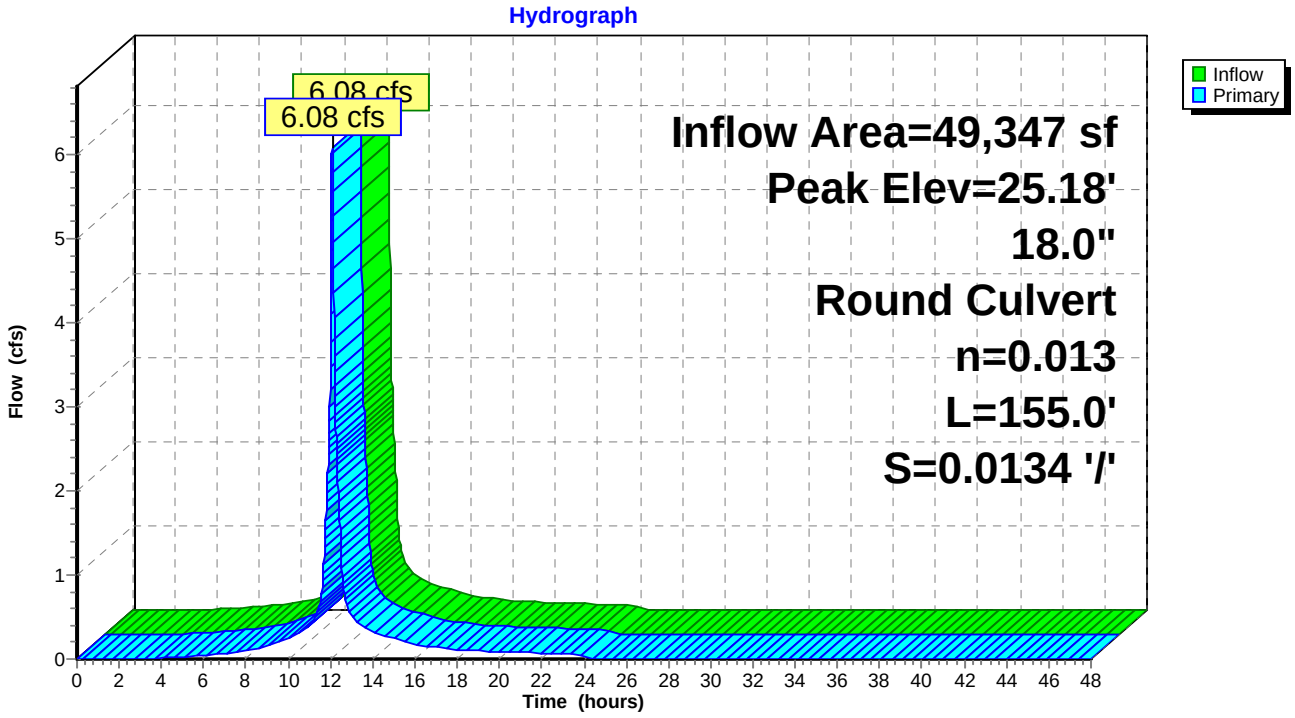
Inflow Area = 49,347 sf, 82.88% Impervious, Inflow Depth = 4.87" for 25-Year event
Inflow = 6.08 cfs @ 12.08 hrs, Volume= 20,039 cf
Outflow = 6.08 cfs @ 12.08 hrs, Volume= 20,039 cf, Atten= 0%, Lag= 0.0 min
Primary = 6.08 cfs @ 12.08 hrs, Volume= 20,039 cf

Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs / 2
Peak Elev= 25.18' @ 12.09 hrs
Flood Elev= 25.58'

Device	Routing	Invert	Outlet Devices
#1	Primary	20.38'	**18.0" Round Culvert** L= 155.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 20.38' / 18.30' S= 0.0134 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.77 sf

Primary OutFlow Max=5.36 cfs @ 12.08 hrs HW=25.09' TW=24.47' (Dynamic Tailwater)
1=Culvert (Outlet Controls 5.36 cfs @ 3.03 fps)

Pond 5P: CB 15031



Summary for Pond 6P: CBR 15040

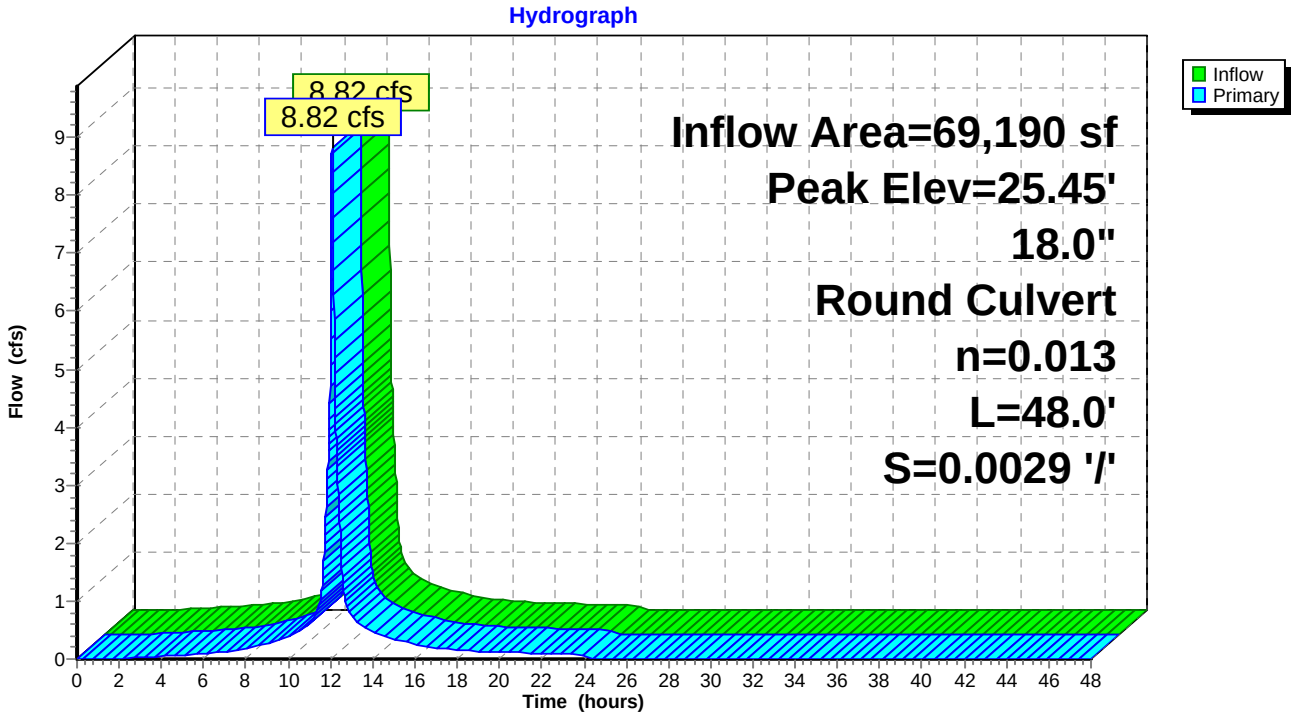
Inflow Area = 69,190 sf, 91.99% Impervious, Inflow Depth = 5.20" for 25-Year event
Inflow = 8.82 cfs @ 12.08 hrs, Volume= 29,994 cf
Outflow = 8.82 cfs @ 12.08 hrs, Volume= 29,994 cf, Atten= 0%, Lag= 0.0 min
Primary = 8.82 cfs @ 12.08 hrs, Volume= 29,994 cf

Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs / 2
Peak Elev= 25.45' @ 12.09 hrs
Flood Elev= 25.90'

Device	Routing	Invert	Outlet Devices
#1	Primary	15.83'	**18.0" Round Culvert** L= 48.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 15.83' / 15.69' S= 0.0029 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.77 sf

Primary OutFlow Max=8.05 cfs @ 12.08 hrs HW=25.36' TW=24.46' (Dynamic Tailwater)
1=Culvert (Inlet Controls 8.05 cfs @ 4.56 fps)

Pond 6P: CBR 15040



Summary for Pond 8P: CBR 15042

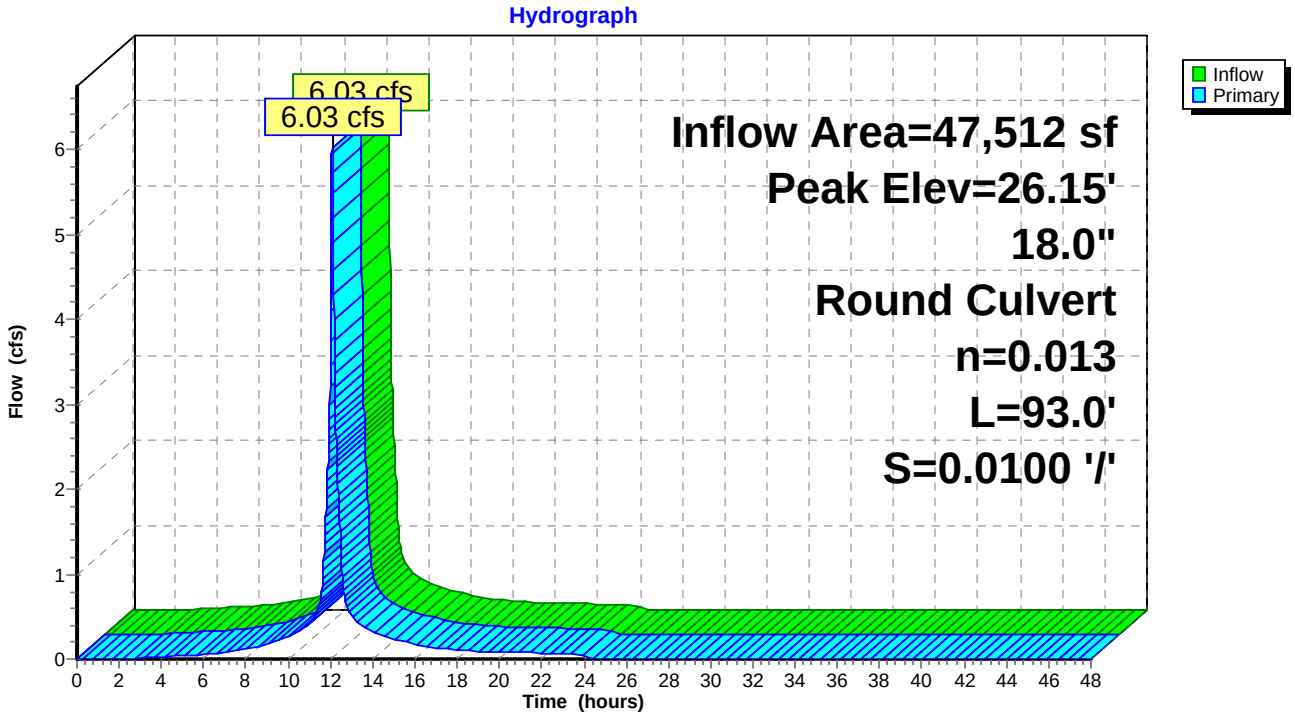
Inflow Area = 47,512 sf, 91.18% Impervious, Inflow Depth = 5.14" for 25-Year event
Inflow = 6.03 cfs @ 12.08 hrs, Volume= 20,369 cf
Outflow = 6.03 cfs @ 12.08 hrs, Volume= 20,369 cf, Atten= 0%, Lag= 0.0 min
Primary = 6.03 cfs @ 12.08 hrs, Volume= 20,369 cf

Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs / 2
Peak Elev= 26.15' @ 12.10 hrs
Flood Elev= 27.09'

Device	Routing	Invert	Outlet Devices
#1	Primary	16.46'	**18.0" Round Culvert** L= 93.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 16.46' / 15.53' S= 0.0100 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.77 sf

Primary OutFlow Max=5.47 cfs @ 12.08 hrs HW=25.83' TW=25.36' (Dynamic Tailwater)
1=Culvert (Outlet Controls 5.47 cfs @ 3.09 fps)

Pond 8P: CBR 15042



Summary for Pond 10.02P: UDSF-1

Inflow Area = 55,468 sf, 0.00% Impervious, Inflow Depth = 5.33" for 25-Year event
Inflow = 7.12 cfs @ 12.08 hrs, Volume= 24,629 cf
Outflow = 2.37 cfs @ 12.37 hrs, Volume= 24,629 cf, Atten= 67%, Lag= 16.8 min
Primary = 2.37 cfs @ 12.37 hrs, Volume= 24,629 cf
Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0 cf

Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs / 2
Peak Elev= 15.33' @ 12.37 hrs Surf.Area= 4,611 sf Storage= 8,871 cf
Flood Elev= 17.00' Surf.Area= 4,882 sf Storage= 9,680 cf

Plug-Flow detention time= (not calculated: outflow precedes inflow)
Center-of-Mass det. time= 158.6 min (917.7 - 759.1)

Volume	Invert	Avail.Storage	Storage Description
#1	11.16'	9,680 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

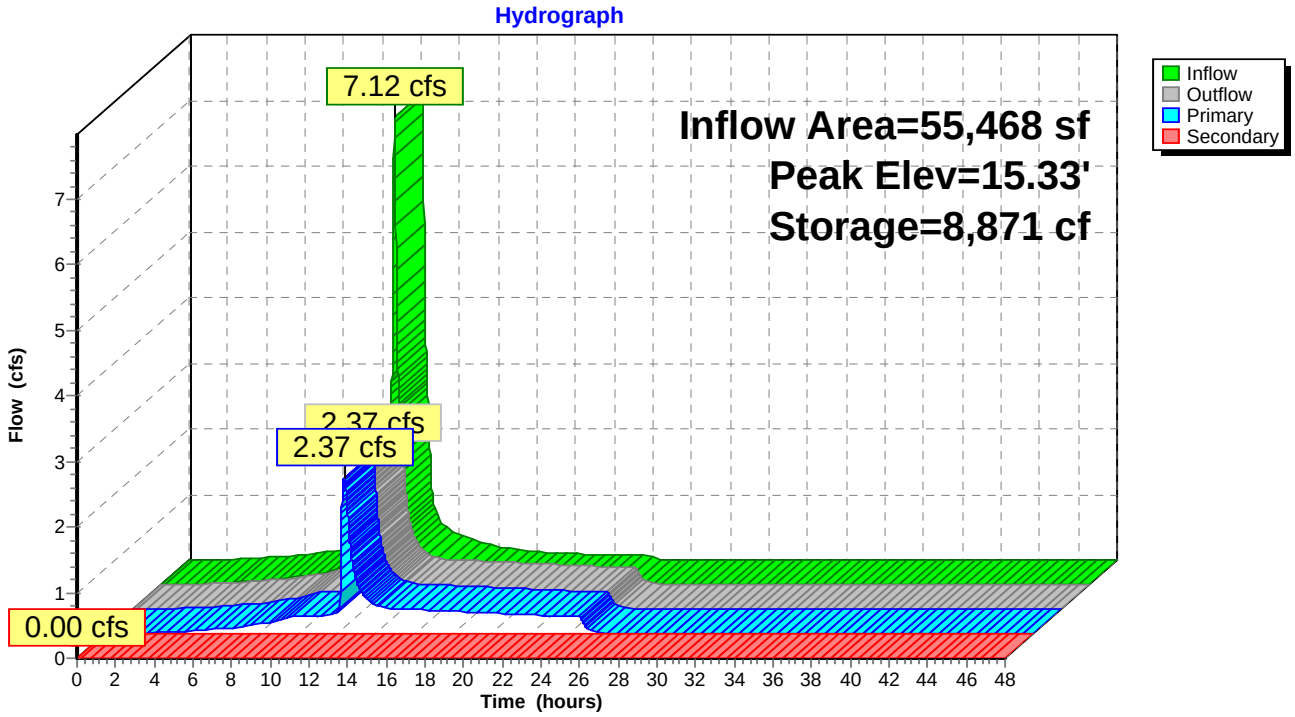
Elevation (feet)	Surf.Area (sq-ft)	Voids (%)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
11.16	3,003	0.0	0	0
11.17	3,003	30.0	9	9
13.49	3,003	30.0	2,090	2,099
13.50	3,003	100.0	30	2,129
14.00	3,351	100.0	1,589	3,718
15.00	4,088	100.0	3,720	7,437
15.50	4,882	100.0	2,243	9,680

Device	Routing	Invert	Outlet Devices
#1	Primary	11.00'	**15.0" Round Outfall** L= 28.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 11.00' / 8.50' S= 0.0893 '/' Cc= 0.900 n= 0.013, Flow Area= 1.23 sf
#2	Device 1	11.05'	**6.0" Round UD Header** L= 7.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 11.05' / 11.03' S= 0.0029 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.20 sf
#3	Device 2	11.16'	**4.000 in/hr Filtration over Surface area**
#4	Device 1	15.00'	**12.0" Horiz. Grate** C= 0.600 Limited to weir flow at low heads
#5	Secondary	15.50'	**12.0' long x 4.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 3.50 4.00 4.50 5.00 5.50 Coef. (English) 2.38 2.54 2.69 2.68 2.67 2.67 2.65 2.66 2.66 2.68 2.72 2.73 2.76 2.79 2.88 3.07 3.32

Primary OutFlow Max=2.37 cfs @ 12.37 hrs HW=15.33' TW=7.80' (Dynamic Tailwater)
└─**1=Outfall** (Passes 2.37 cfs of 8.98 cfs potential flow)
  └─**2=UD Header** (Passes 0.43 cfs of 1.50 cfs potential flow)
    └─**3=Filtration** (Exfiltration Controls 0.43 cfs)
  └─**4=Grate** (Weir Controls 1.94 cfs @ 1.88 fps)

Secondary OutFlow Max=0.00 cfs @ 0.00 hrs HW=11.16' TW=6.00' (Dynamic Tailwater)
└─**5=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

Pond 10.02P: UDSF-1



Summary for Pond 10P: CB 16

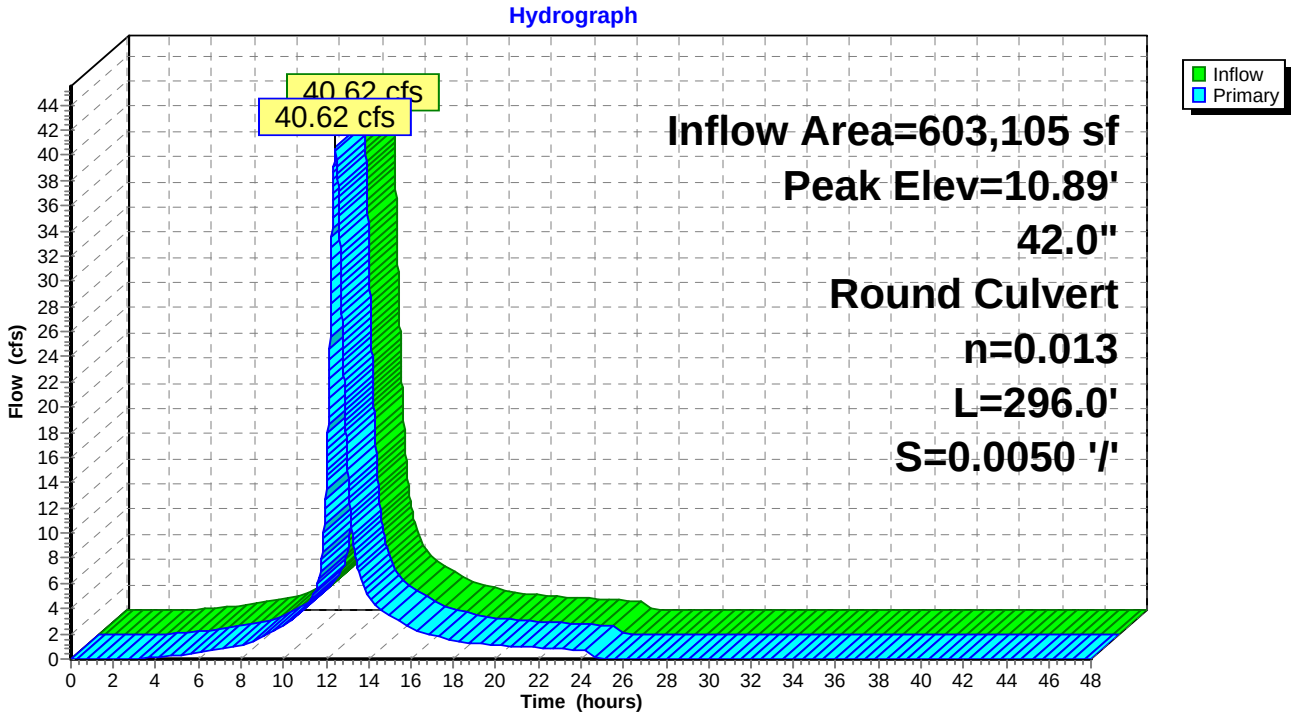
Inflow Area = 603,105 sf, 86.65% Impervious, Inflow Depth = 4.99" for 25-Year event
Inflow = 40.62 cfs @ 12.46 hrs, Volume= 250,553 cf
Outflow = 40.62 cfs @ 12.46 hrs, Volume= 250,553 cf, Atten= 0%, Lag= 0.0 min
Primary = 40.62 cfs @ 12.46 hrs, Volume= 250,553 cf

Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs / 2
Peak Elev= 10.89' @ 12.46 hrs
Flood Elev= 14.50'

Device	Routing	Invert	Outlet Devices
#1	Primary	7.61'	**42.0" Round Culvert** L= 296.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 7.61' / 6.14' S= 0.0050 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 9.62 sf

Primary OutFlow Max=40.62 cfs @ 12.46 hrs HW=10.89' TW=9.27' (Dynamic Tailwater)
1=Culvert (Outlet Controls 40.62 cfs @ 5.63 fps)

Pond 10P: CB 16



Summary for Pond 11P: DMH 1

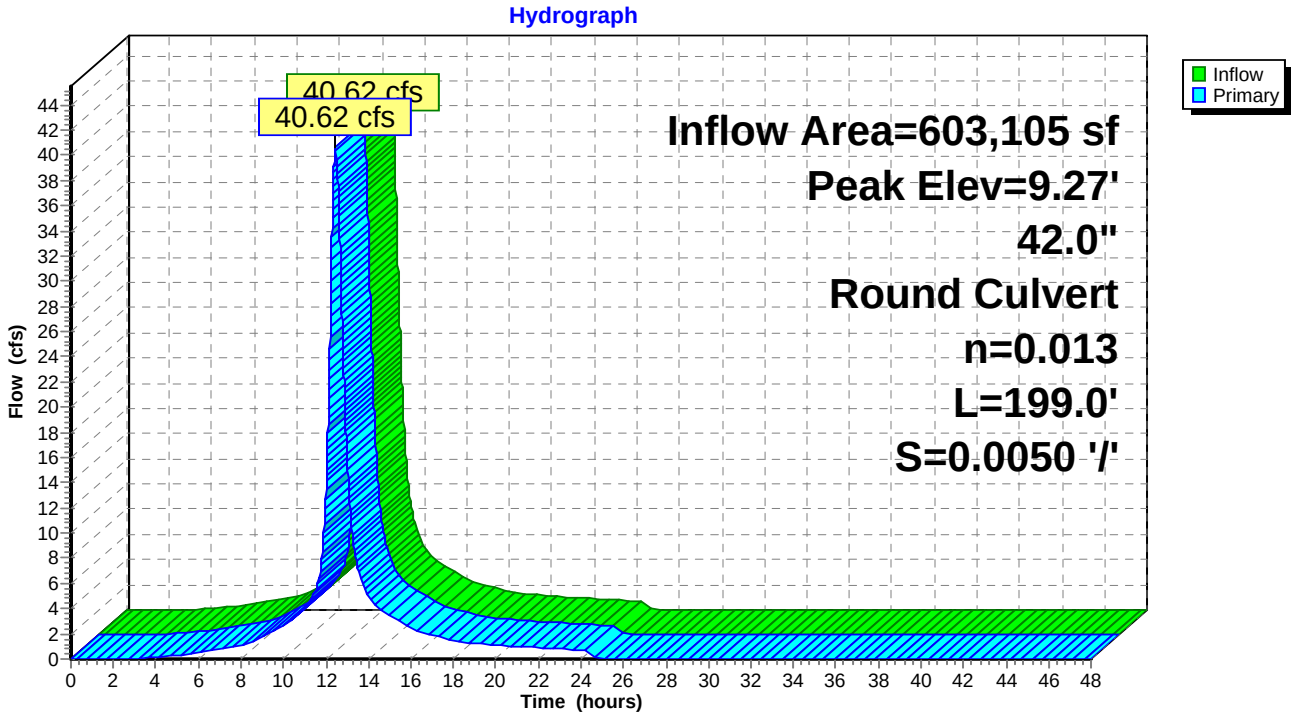
Inflow Area = 603,105 sf, 86.65% Impervious, Inflow Depth = 4.99" for 25-Year event
Inflow = 40.62 cfs @ 12.46 hrs, Volume= 250,553 cf
Outflow = 40.62 cfs @ 12.46 hrs, Volume= 250,553 cf, Atten= 0%, Lag= 0.0 min
Primary = 40.62 cfs @ 12.46 hrs, Volume= 250,553 cf

Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs / 2
Peak Elev= 9.27' @ 12.46 hrs
Flood Elev= 14.00'

Device	Routing	Invert	Outlet Devices
#1	Primary	6.04'	**42.0" Round Culvert** L= 199.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 6.04' / 5.05' S= 0.0050 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 9.62 sf

Primary OutFlow Max=40.61 cfs @ 12.46 hrs HW=9.27' TW=7.82' (Dynamic Tailwater)
1=Culvert (Outlet Controls 40.61 cfs @ 5.73 fps)

Pond 11P: DMH 1



Summary for Pond 12P: UDSF-2

Inflow Area = 73,328 sf, 0.00% Impervious, Inflow Depth = 5.21" for 25-Year event
Inflow = 9.36 cfs @ 12.08 hrs, Volume= 31,855 cf
Outflow = 2.79 cfs @ 12.40 hrs, Volume= 31,855 cf, Atten= 70%, Lag= 19.0 min
Primary = 2.79 cfs @ 12.40 hrs, Volume= 31,855 cf
Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0 cf

Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs / 2
Peak Elev= 15.37' @ 12.40 hrs Surf.Area= 5,634 sf Storage= 11,917 cf
Flood Elev= 17.00' Surf.Area= 6,200 sf Storage= 15,673 cf

Plug-Flow detention time= (not calculated: outflow precedes inflow)
Center-of-Mass det. time= 165.9 min (930.3 - 764.5)

Volume	Invert	Avail.Storage	Storage Description
#1	11.16'	15,673 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

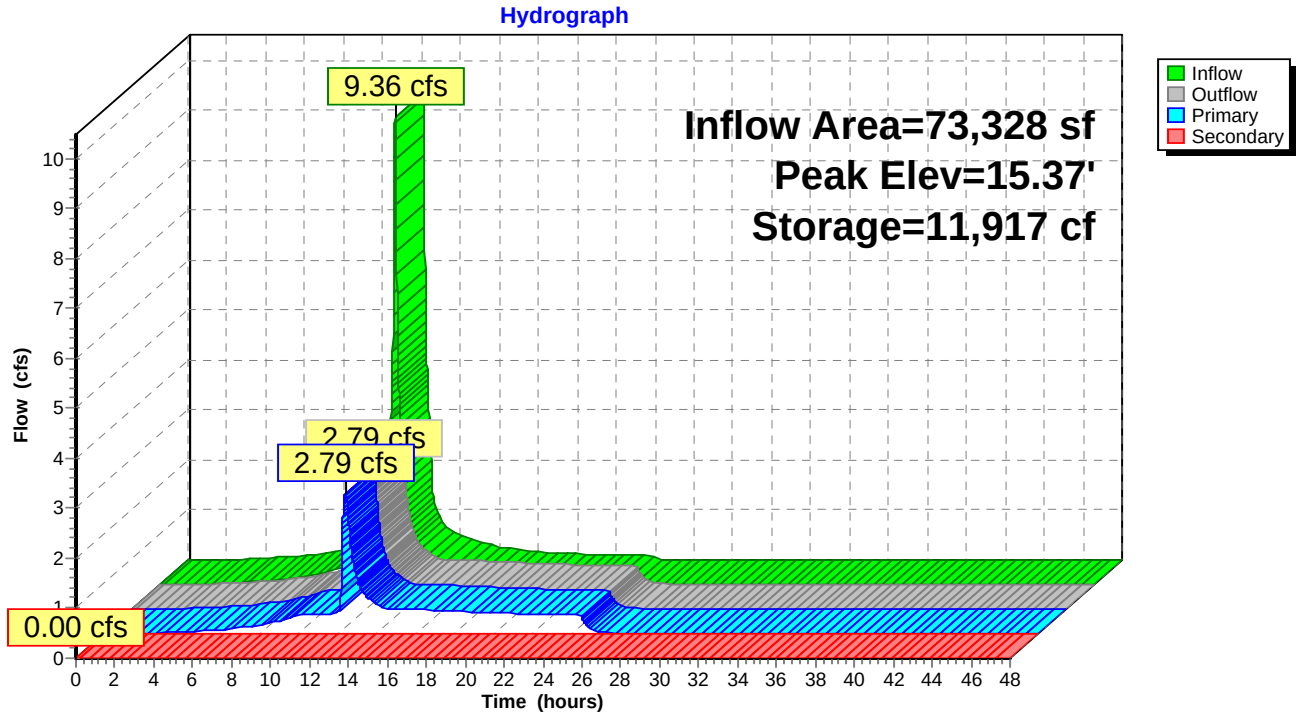
Elevation (feet)	Surf.Area (sq-ft)	Voids (%)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
11.16	4,077	0.0	0	0
11.17	4,077	30.0	12	12
13.49	4,077	30.0	2,838	2,850
13.50	4,077	100.0	41	2,891
14.00	4,473	100.0	2,138	5,028
15.00	5,308	100.0	4,891	9,919
16.00	6,200	100.0	5,754	15,673

Device	Routing	Invert	Outlet Devices
#1	Primary	11.00'	**15.0" Round Outfall** L= 26.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 11.00' / 8.50' S= 0.0962 '/' Cc= 0.900 n= 0.013, Flow Area= 1.23 sf
#2	Device 1	11.05'	**6.0" Round UD Header** L= 5.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 11.05' / 11.03' S= 0.0040 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.20 sf
#3	Device 2	11.16'	**4.000 in/hr Filtration over Surface area**
#4	Device 1	15.00'	**12.0" Horiz. Grate** C= 0.600 Limited to weir flow at low heads
#5	Secondary	15.50'	**12.0' long x 4.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 3.50 4.00 4.50 5.00 5.50 Coef. (English) 2.38 2.54 2.69 2.68 2.67 2.67 2.65 2.66 2.66 2.68 2.72 2.73 2.76 2.79 2.88 3.07 3.32

Primary OutFlow Max=2.79 cfs @ 12.40 hrs HW=15.37' TW=7.82' (Dynamic Tailwater)
└─**1=Outfall** (Passes 2.79 cfs of 9.02 cfs potential flow)
  └─**2=UD Header** (Passes 0.52 cfs of 1.50 cfs potential flow)
    └─**3=Filtration** (Exfiltration Controls 0.52 cfs)
  └─**4=Grate** (Weir Controls 2.27 cfs @ 1.98 fps)

Secondary OutFlow Max=0.00 cfs @ 0.00 hrs HW=11.16' TW=6.00' (Dynamic Tailwater)
└─**5=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

Pond 12P: UDSF-2



Summary for Pond 15P: Existing (4)-36" Culverts

Inflow Area = 715,271 sf, 52.78% Impervious, Inflow Depth = 4.55" for 25-Year event
Inflow = 64.90 cfs @ 12.44 hrs, Volume= 271,041 cf
Outflow = 64.77 cfs @ 12.45 hrs, Volume= 270,325 cf, Atten= 0%, Lag= 0.8 min
Primary = 64.77 cfs @ 12.45 hrs, Volume= 270,325 cf

Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs / 2
Peak Elev= 6.94' @ 12.45 hrs Surf.Area= 3,143 sf Storage= 4,668 cf
Flood Elev= 10.00' Surf.Area= 5,367 sf Storage= 17,878 cf

Plug-Flow detention time= 4.7 min calculated for 270,268 cf (100% of inflow)
Center-of-Mass det. time= 3.1 min (823.3 - 820.2)

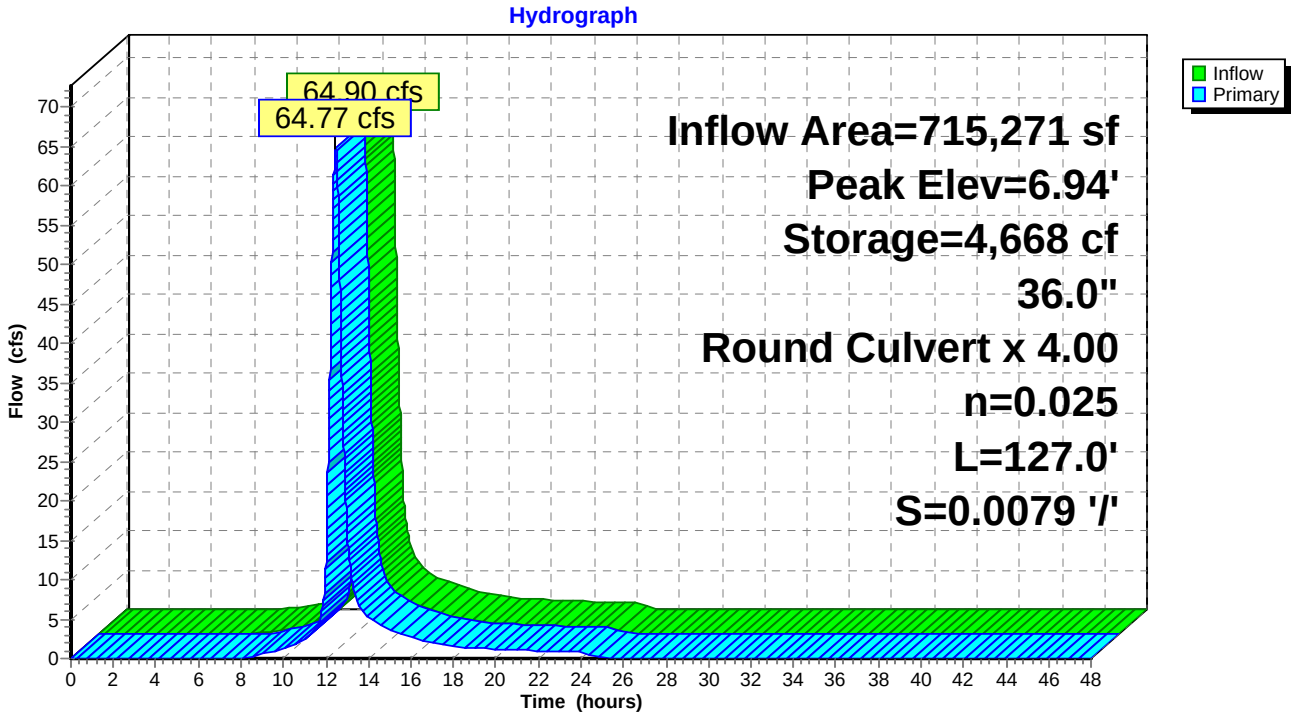
Volume	Invert	Avail.Storage	Storage Description
#1	4.00'	17,878 cf	**Custom Stage Data (Prismatic)**Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
4.00	500	0	0
5.00	1,302	901	901
6.00	1,700	1,501	2,402
7.00	3,242	2,471	4,873
8.00	4,020	3,631	8,504
9.00	4,680	4,350	12,854
10.00	5,367	5,024	17,878

Device	Routing	Invert	Outlet Devices
#1	Primary	4.85'	**36.0" Round Culvert X 4.00** L= 127.0' CMP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 4.85' / 3.85' S= 0.0079 '/' Cc= 0.900 n= 0.025 Corrugated metal, Flow Area= 7.07 sf

Primary OutFlow Max=64.75 cfs @ 12.45 hrs HW=6.94' TW=0.00' (Dynamic Tailwater)
1=Culvert (Barrel Controls 64.75 cfs @ 4.34 fps)

Pond 15P: Existing (4)-36" Culverts



Summary for Pond 25P: CB 15029

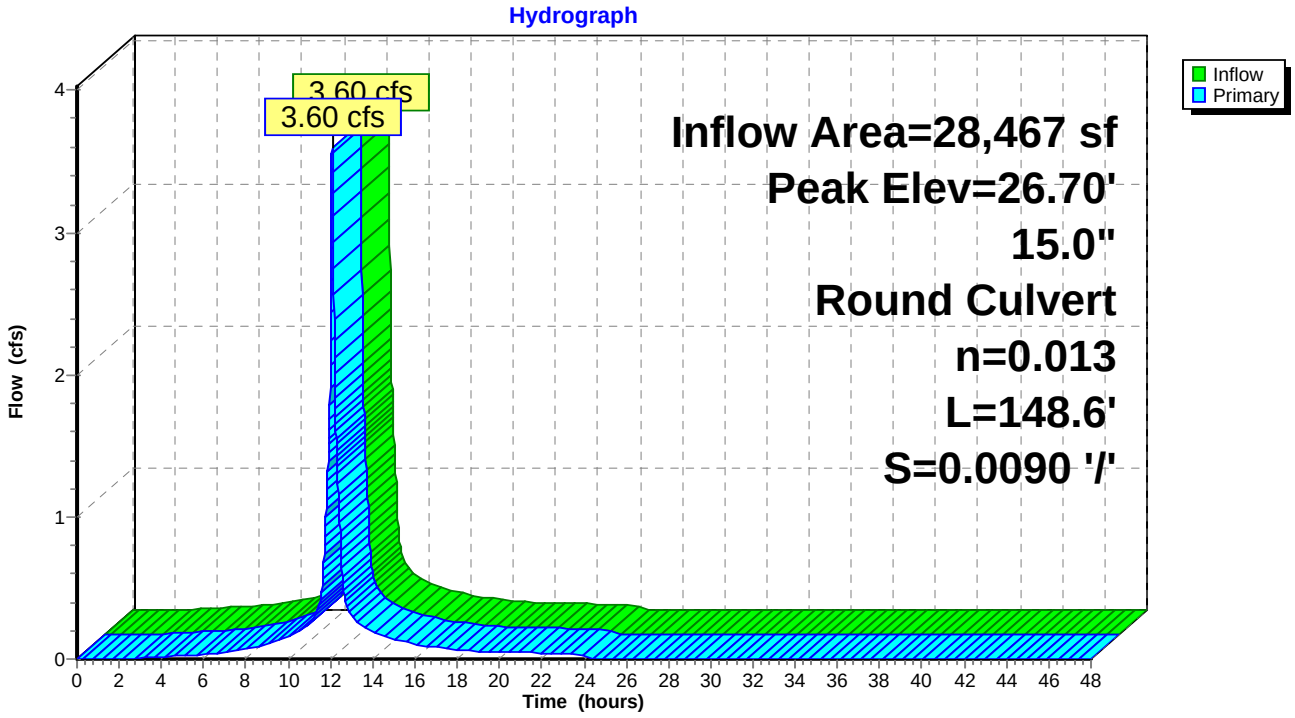
Inflow Area = 28,467 sf, 89.98% Impervious, Inflow Depth = 5.10" for 25-Year event
Inflow = 3.60 cfs @ 12.08 hrs, Volume= 12,095 cf
Outflow = 3.60 cfs @ 12.08 hrs, Volume= 12,095 cf, Atten= 0%, Lag= 0.0 min
Primary = 3.60 cfs @ 12.08 hrs, Volume= 12,095 cf

Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs / 2
Peak Elev= 26.70' @ 12.10 hrs
Flood Elev= 29.47'

Device	Routing	Invert	Outlet Devices
#1	Primary	22.80'	**15.0" Round Culvert** L= 148.6' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 22.80' / 21.47' S= 0.0090 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.23 sf

Primary OutFlow Max=3.08 cfs @ 12.08 hrs HW=26.36' TW=25.84' (Dynamic Tailwater)
1=Culvert (Outlet Controls 3.08 cfs @ 2.51 fps)

Pond 25P: CB 15029



Summary for Pond EX WTLND: Existing Wetland

Inflow Area = 1,006,351 sf, 67.87% Impervious, Inflow Depth = 4.85" for 25-Year event
Inflow = 58.56 cfs @ 12.39 hrs, Volume= 406,501 cf
Outflow = 58.27 cfs @ 12.43 hrs, Volume= 406,495 cf, Atten= 1%, Lag= 2.3 min
Primary = 32.34 cfs @ 12.43 hrs, Volume= 356,111 cf
Secondary = 25.93 cfs @ 12.43 hrs, Volume= 50,384 cf

Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs / 2
Peak Elev= 7.82' @ 12.43 hrs Surf.Area= 5,727 sf Storage= 6,042 cf
Flood Elev= 9.00' Surf.Area= 8,965 sf Storage= 14,683 cf

Plug-Flow detention time= (not calculated: outflow precedes inflow)
Center-of-Mass det. time= 0.8 min (818.8 - 817.9)

Volume	Invert	Avail.Storage	Storage Description
#1	6.00'	14,683 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

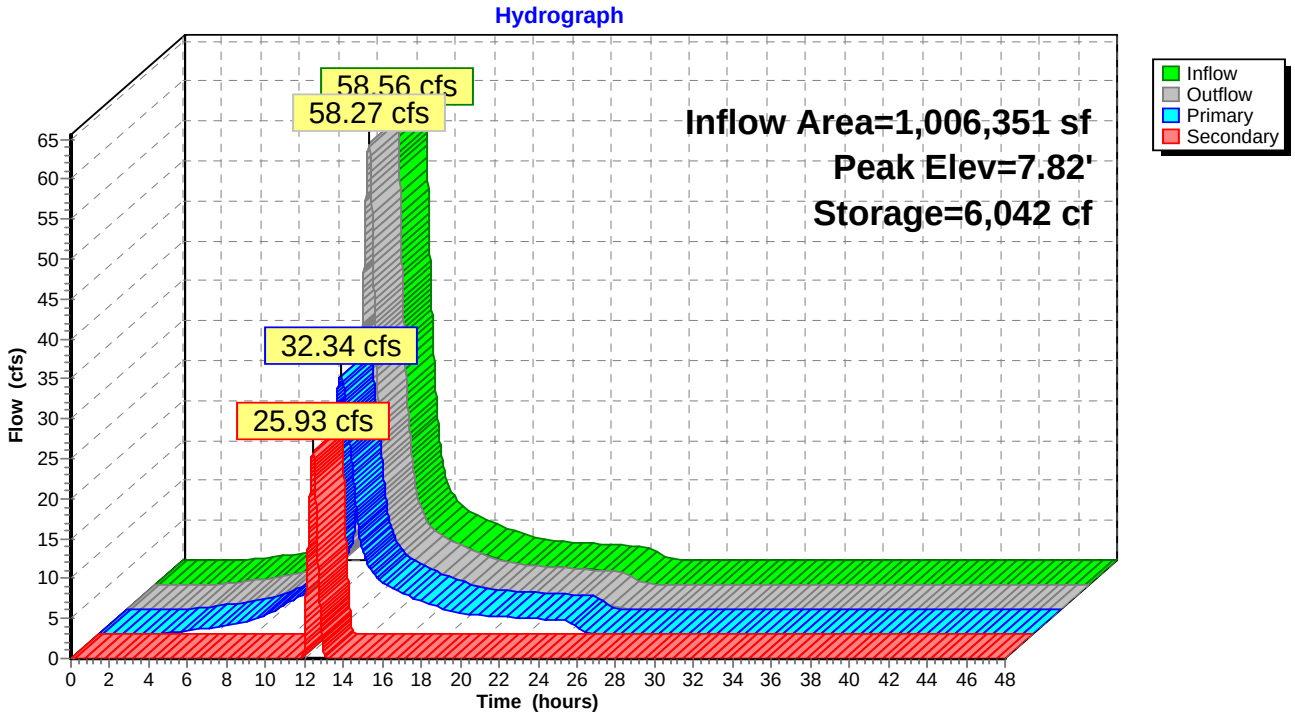
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
6.00	821	0	0
7.00	3,601	2,211	2,211
8.00	6,189	4,895	7,106
9.00	8,965	7,577	14,683

Device	Routing	Invert	Outlet Devices
#1	Primary	4.89'	**36.0" Round Culvert** L= 80.0' CMP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 4.89' / 3.61' S= 0.0160 '/' Cc= 0.900 n= 0.025 Corrugated metal, Flow Area= 7.07 sf
#2	Secondary	7.00'	**13.0' long x 4.0' breadth Overflow** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 3.50 4.00 4.50 5.00 5.50 Coef. (English) 2.38 2.54 2.69 2.68 2.67 2.67 2.65 2.66 2.66 2.68 2.72 2.73 2.76 2.79 2.88 3.07 3.32

Primary OutFlow Max=32.34 cfs @ 12.43 hrs HW=7.82' TW=0.00' (Dynamic Tailwater)
1=Culvert (Inlet Controls 32.34 cfs @ 4.60 fps)

Secondary OutFlow Max=25.92 cfs @ 12.43 hrs HW=7.82' TW=6.93' (Dynamic Tailwater)
2=Overflow (Weir Controls 25.92 cfs @ 2.43 fps)

Pond EX WTLND: Existing Wetland

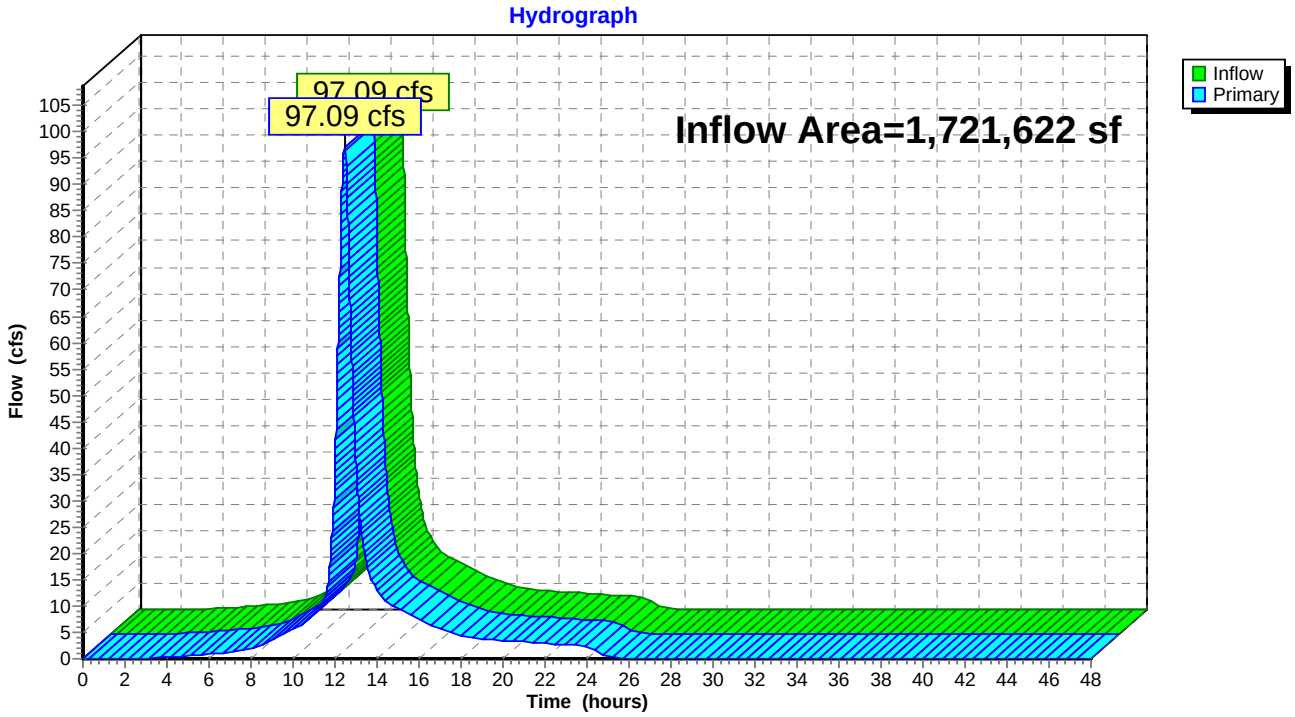


Summary for Link SP-1: Study Point 1

Inflow Area = 1,721,622 sf, 61.60% Impervious, Inflow Depth = 4.37" for 25-Year event
Inflow = 97.09 cfs @ 12.45 hrs, Volume= 626,436 cf
Primary = 97.09 cfs @ 12.45 hrs, Volume= 626,436 cf, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs

Link SP-1: Study Point 1

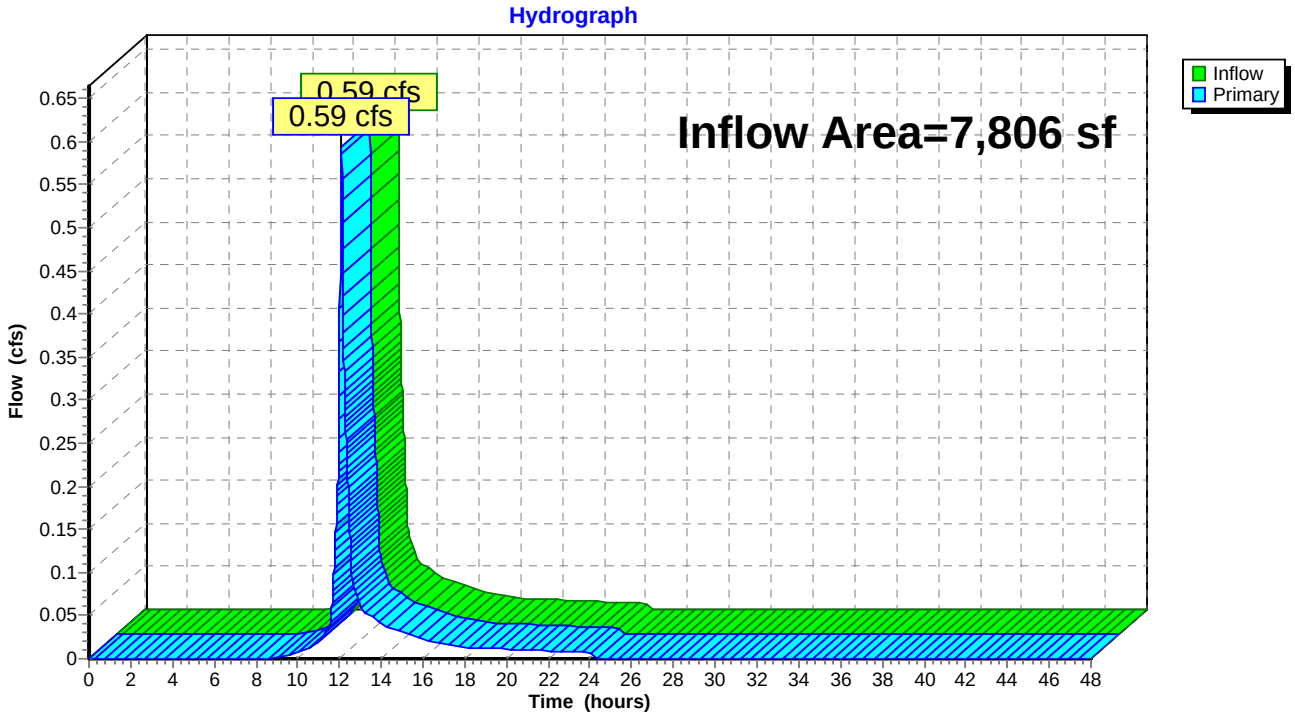


Summary for Link SP-2: Study Point 2

Inflow Area = 7,806 sf, 28.72% Impervious, Inflow Depth = 2.83" for 25-Year event
Inflow = 0.59 cfs @ 12.09 hrs, Volume= 1,841 cf
Primary = 0.59 cfs @ 12.09 hrs, Volume= 1,841 cf, Atten= 0%, Lag= 0.0 min

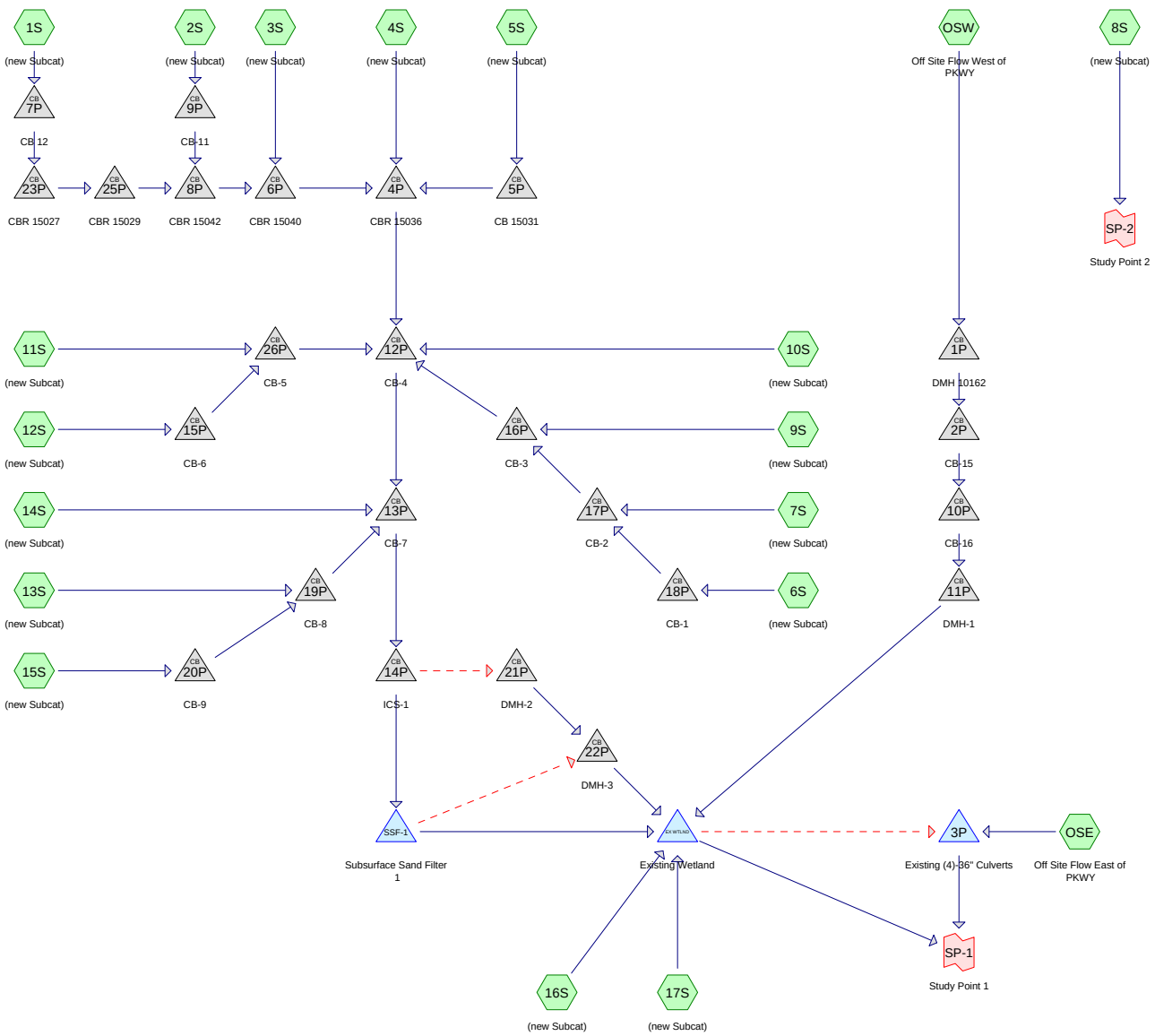
Primary outflow = Inflow, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs

Link SP-2: Study Point 2



Attachment D

Post-Development Stormwater Modeling



Routing Diagram for 99607 Post

Prepared by Sebago Techincs, Printed 6/18/2018

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Area Listing (all nodes)

Area (sq-ft)	CN	Description (subcatchment-numbers)
406,625	61	>75% Grass cover, Good, HSG B (1S, 2S, 3S, 4S, 5S, 6S, 7S, 8S, 9S, 10S, 16S, 17S, OSE)
66,656	80	>75% Grass cover, Good, HSG D (6S, 7S, 10S, 11S, 13S, 14S, 15S, 16S)
605,763	98	Paved parking, HSG B (1S, 2S, 3S, 4S, 5S, 6S, 7S, 8S, 9S, 10S, 11S, 12S, 15S, 17S, OSE, OSW)
98,586	98	Paved parking, HSG D (6S, 7S, 9S, 10S, 11S, 12S, 13S, 14S, 15S)
14,924	98	Roofs, HSG B (1S, 2S, 16S, 17S)
536,874	92	Urban commercial, 85% imp, HSG B (OSW)
1,729,428	**87**	**TOTAL AREA**

Soil Listing (all nodes)

Area (sq-ft)	Soil Group	Subcatchment Numbers
0	HSG A	
1,564,186	HSG B	1S, 2S, 3S, 4S, 5S, 6S, 7S, 8S, 9S, 10S, 11S, 12S, 15S, 16S, 17S, OSE, OSW
0	HSG C	
165,242	HSG D	6S, 7S, 9S, 10S, 11S, 12S, 13S, 14S, 15S, 16S
0	Other	
1,729,428		**TOTAL AREA**

Time span=0.00-48.00 hrs, dt=0.01 hrs, 4801 points x 2
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Dyn-Stor-Ind method - Pond routing by Dyn-Stor-Ind method

Subcatchment1S: (new Subcat) Runoff Area=28,835 sf 82.21% Impervious Runoff Depth=2.16"
Flow Length=132' Slope=0.0100 '/' Tc=6.0 min CN=91 Runoff=1.66 cfs 5,201 cf

Subcatchment2S: (new Subcat) Runoff Area=27,182 sf 88.34% Impervious Runoff Depth=2.45"
Flow Length=164' Slope=0.0180 '/' Tc=6.0 min CN=94 Runoff=1.72 cfs 5,543 cf

Subcatchment3S: (new Subcat) Runoff Area=15,213 sf 80.21% Impervious Runoff Depth=2.16"
Flow Length=161' Slope=0.0150 '/' Tc=6.0 min CN=91 Runoff=0.87 cfs 2,744 cf

Subcatchment4S: (new Subcat) Runoff Area=28,840 sf 96.87% Impervious Runoff Depth=2.76"
Flow Length=178' Slope=0.0160 '/' Tc=6.0 min CN=97 Runoff=1.96 cfs 6,627 cf

Subcatchment5S: (new Subcat) Runoff Area=49,425 sf 82.25% Impervious Runoff Depth=2.16"
Flow Length=281' Slope=0.0100 '/' Tc=6.0 min CN=91 Runoff=2.84 cfs 8,915 cf

Subcatchment6S: (new Subcat) Runoff Area=15,879 sf 76.74% Impervious Runoff Depth=2.08"
Flow Length=231' Tc=6.1 min CN=90 Runoff=0.88 cfs 2,747 cf

Subcatchment7S: (new Subcat) Runoff Area=7,643 sf 92.45% Impervious Runoff Depth=2.65"
Flow Length=180' Slope=0.0250 '/' Tc=6.0 min CN=96 Runoff=0.51 cfs 1,688 cf

Subcatchment8S: (new Subcat) Runoff Area=7,438 sf 31.78% Impervious Runoff Depth=0.92"
Flow Length=45' Slope=0.0800 '/' Tc=6.0 min CN=73 Runoff=0.17 cfs 570 cf

Subcatchment9S: (new Subcat) Runoff Area=12,873 sf 97.59% Impervious Runoff Depth=2.76"
Flow Length=215' Slope=0.0220 '/' Tc=6.0 min CN=97 Runoff=0.87 cfs 2,958 cf

Subcatchment10S: (new Subcat) Runoff Area=16,424 sf 95.28% Impervious Runoff Depth=2.76"
Flow Length=195' Tc=6.0 min CN=97 Runoff=1.12 cfs 3,774 cf

Subcatchment11S: (new Subcat) Runoff Area=14,521 sf 95.72% Impervious Runoff Depth=2.76"
Flow Length=230' Slope=0.0250 '/' Tc=6.0 min CN=97 Runoff=0.99 cfs 3,337 cf

Subcatchment12S: (new Subcat) Runoff Area=9,667 sf 100.00% Impervious Runoff Depth=2.87"
Flow Length=257' Slope=0.0240 '/' Tc=6.0 min CN=98 Runoff=0.67 cfs 2,310 cf

Subcatchment13S: (new Subcat) Runoff Area=12,123 sf 88.89% Impervious Runoff Depth=2.65"
Flow Length=274' Slope=0.0210 '/' Tc=6.0 min CN=96 Runoff=0.81 cfs 2,678 cf

Subcatchment14S: (new Subcat) Runoff Area=8,897 sf 92.62% Impervious Runoff Depth=2.76"
Flow Length=188' Slope=0.0250 '/' Tc=6.0 min CN=97 Runoff=0.60 cfs 2,044 cf

Subcatchment15S: (new Subcat) Runoff Area=30,398 sf 93.40% Impervious Runoff Depth=2.76"
Flow Length=331' Tc=6.0 min CN=97 Runoff=2.06 cfs 6,985 cf

Subcatchment16S: (new Subcat) Runoff Area=91,275 sf 0.98% Impervious Runoff Depth=0.97"
Flow Length=109' Tc=6.0 min CN=74 Runoff=2.25 cfs 7,395 cf

Subcatchment 17S: (new Subcat) Runoff Area=34,419 sf 73.63% Impervious Runoff Depth=1.91"
Flow Length=144' Slope=0.0200 '/' Tc=6.0 min CN=88 Runoff=1.76 cfs 5,471 cf

Subcatchment OSE: Off Site Flow East of Runoff Area=715,271 sf 52.78% Impervious Runoff Depth=1.39"
Flow Length=725' Tc=32.1 min CN=81 Runoff=14.53 cfs 82,901 cf

Subcatchment OSW: Off Site Flow West Runoff Area=603,105 sf 86.65% Impervious Runoff Depth=2.35"
Flow Length=1,076' Tc=34.1 min CN=93 Runoff=19.88 cfs 118,098 cf

Pond 1P: DMH 10162 Peak Elev=11.31' Inflow=19.88 cfs 118,098 cf
42.0" Round Culvert n=0.011 L=147.0' S=0.0044 '/' Outflow=19.88 cfs 118,098 cf

Pond 2P: CB-15 Peak Elev=10.58' Inflow=19.88 cfs 118,098 cf
42.0" Round Culvert n=0.013 L=147.0' S=0.0050 '/' Outflow=19.88 cfs 118,098 cf

Pond 3P: Existing (4)-36" Culverts Peak Elev=5.82' Storage=2,107 cf Inflow=15.83 cfs 83,772 cf
36.0" Round Culvert x 4.00 n=0.025 L=127.0' S=0.0079 '/' Outflow=15.79 cfs 83,055 cf

Pond 4P: CBR 15036 Peak Elev=17.27' Inflow=9.04 cfs 29,030 cf
24.0" Round Culvert n=0.013 L=234.0' S=0.0052 '/' Outflow=9.04 cfs 29,030 cf

Pond 5P: CB 15031 Peak Elev=21.17' Inflow=2.84 cfs 8,915 cf
18.0" Round Culvert n=0.013 L=155.0' S=0.0134 '/' Outflow=2.84 cfs 8,915 cf

Pond 6P: CBR 15040 Peak Elev=17.52' Inflow=4.25 cfs 13,488 cf
18.0" Round Culvert n=0.013 L=48.0' S=0.0029 '/' Outflow=4.25 cfs 13,488 cf

Pond 7P: CB 12 Peak Elev=25.48' Inflow=1.66 cfs 5,201 cf
12.0" Round Culvert n=0.013 L=10.4' S=0.0106 '/' Outflow=1.66 cfs 5,201 cf

Pond 8P: CBR 15042 Peak Elev=17.82' Inflow=3.37 cfs 10,744 cf
18.0" Round Culvert n=0.013 L=93.0' S=0.0100 '/' Outflow=3.37 cfs 10,744 cf

Pond 9P: CB-11 Peak Elev=22.40' Inflow=1.72 cfs 5,543 cf
12.0" Round Culvert n=0.013 L=13.8' S=0.0051 '/' Outflow=1.72 cfs 5,543 cf

Pond 10P: CB-16 Peak Elev=9.64' Inflow=19.88 cfs 118,098 cf
42.0" Round Culvert n=0.013 L=296.0' S=0.0050 '/' Outflow=19.88 cfs 118,098 cf

Pond 11P: DMH-1 Peak Elev=8.17' Inflow=19.88 cfs 118,098 cf
42.0" Round Culvert n=0.013 L=199.0' S=0.0050 '/' Outflow=19.88 cfs 118,098 cf

Pond 12P: CB-4 Peak Elev=16.12' Inflow=14.07 cfs 45,845 cf
30.0" Round Culvert n=0.013 L=105.3' S=0.0239 '/' Outflow=14.07 cfs 45,845 cf

Pond 13P: CB-7 Peak Elev=13.87' Inflow=17.54 cfs 57,552 cf
36.0" Round Culvert n=0.013 L=1.3' S=0.0154 '/' Outflow=17.54 cfs 57,552 cf

Pond 14P: ICS-1 Peak Elev=13.18' Inflow=17.54 cfs 57,552 cf
Primary=17.54 cfs 52,367 cf Secondary=1.44 cfs 5,185 cf Outflow=17.54 cfs 57,552 cf

Pond 15P: CB-6 Peak Elev=16.47' Inflow=0.67 cfs 2,310 cf
12.0" Round Culvert n=0.013 L=59.5' S=0.0050 '/' Outflow=0.67 cfs 2,310 cf

Pond 16P: CB-3 Peak Elev=16.38' Inflow=2.26 cfs 7,394 cf
15.0" Round Culvert n=0.013 L=75.5' S=0.0101 '/' Outflow=2.26 cfs 7,394 cf

Pond 17P: CB-2 Peak Elev=16.97' Inflow=1.38 cfs 4,435 cf
12.0" Round Culvert n=0.013 L=77.3' S=0.0127 '/' Outflow=1.38 cfs 4,435 cf

Pond 18P: CB-1 Peak Elev=17.51' Inflow=0.88 cfs 2,747 cf
12.0" Round Culvert n=0.013 L=63.5' S=0.0101 '/' Outflow=0.88 cfs 2,747 cf

Pond 19P: CB-8 Peak Elev=13.93' Inflow=2.87 cfs 9,663 cf
24.0" Round Culvert n=0.013 L=66.0' S=0.0050 '/' Outflow=2.87 cfs 9,663 cf

Pond 20P: CB-9 Peak Elev=14.18' Inflow=2.06 cfs 6,985 cf
18.0" Round Culvert n=0.013 L=159.0' S=0.0051 '/' Outflow=2.06 cfs 6,985 cf

Pond 21P: DMH-2 Peak Elev=11.52' Inflow=1.44 cfs 5,185 cf
18.0" Round Culvert n=0.013 L=133.0' S=0.0200 '/' Outflow=1.44 cfs 5,185 cf

Pond 22P: DMH-3 Peak Elev=8.68' Inflow=1.94 cfs 52,489 cf
18.0" Round Culvert n=0.013 L=30.1' S=0.0316 '/' Outflow=1.94 cfs 52,489 cf

Pond 23P: CBR 15027 Peak Elev=24.46' Inflow=1.66 cfs 5,201 cf
12.0" Round Culvert n=0.013 L=87.8' S=0.0066 '/' Outflow=1.66 cfs 5,201 cf

Pond 25P: CBR 15029 Peak Elev=23.52' Inflow=1.66 cfs 5,201 cf
15.0" Round Culvert n=0.013 L=148.6' S=0.0090 '/' Outflow=1.66 cfs 5,201 cf

Pond 26P: CB-5 Peak Elev=16.42' Inflow=1.65 cfs 5,647 cf
12.0" Round Culvert n=0.013 L=42.0' S=0.0052 '/' Outflow=1.65 cfs 5,647 cf

Pond EX WTLND: Existing Wetland Peak Elev=7.13' Storage=2,692 cf Inflow=24.25 cfs 188,520 cf
Primary=22.53 cfs 187,648 cf Secondary=1.41 cfs 871 cf Outflow=23.94 cfs 188,519 cf

Pond SSF-1: Subsurface Sand Filter 1 Peak Elev=13.17' Storage=26,505 cf Inflow=17.54 cfs 52,367 cf
Primary=1.42 cfs 5,066 cf Secondary=0.51 cfs 47,304 cf Outflow=1.92 cfs 52,371 cf

Link SP-1: Study Point 1 Inflow=38.32 cfs 270,703 cf
Primary=38.32 cfs 270,703 cf

Link SP-2: Study Point 2 Inflow=0.17 cfs 570 cf
Primary=0.17 cfs 570 cf

Total Runoff Area = 1,729,428 sf Runoff Volume = 271,987 cf Average Runoff Depth = 1.89"
32.02% Pervious = 553,812 sf 67.98% Impervious = 1,175,616 sf

Time span=0.00-48.00 hrs, dt=0.01 hrs, 4801 points x 2
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Dyn-Stor-Ind method - Pond routing by Dyn-Stor-Ind method

Subcatchment1S: (new Subcat) Runoff Area=28,835 sf 82.21% Impervious Runoff Depth=3.59"
Flow Length=132' Slope=0.0100 '/' Tc=6.0 min CN=91 Runoff=2.69 cfs 8,638 cf

Subcatchment2S: (new Subcat) Runoff Area=27,182 sf 88.34% Impervious Runoff Depth=3.91"
Flow Length=164' Slope=0.0180 '/' Tc=6.0 min CN=94 Runoff=2.68 cfs 8,865 cf

Subcatchment3S: (new Subcat) Runoff Area=15,213 sf 80.21% Impervious Runoff Depth=3.59"
Flow Length=161' Slope=0.0150 '/' Tc=6.0 min CN=91 Runoff=1.42 cfs 4,557 cf

Subcatchment4S: (new Subcat) Runoff Area=28,840 sf 96.87% Impervious Runoff Depth=4.25"
Flow Length=178' Slope=0.0160 '/' Tc=6.0 min CN=97 Runoff=2.95 cfs 10,211 cf

Subcatchment5S: (new Subcat) Runoff Area=49,425 sf 82.25% Impervious Runoff Depth=3.59"
Flow Length=281' Slope=0.0100 '/' Tc=6.0 min CN=91 Runoff=4.60 cfs 14,805 cf

Subcatchment6S: (new Subcat) Runoff Area=15,879 sf 76.74% Impervious Runoff Depth=3.49"
Flow Length=231' Tc=6.1 min CN=90 Runoff=1.44 cfs 4,620 cf

Subcatchment7S: (new Subcat) Runoff Area=7,643 sf 92.45% Impervious Runoff Depth=4.14"
Flow Length=180' Slope=0.0250 '/' Tc=6.0 min CN=96 Runoff=0.77 cfs 2,634 cf

Subcatchment8S: (new Subcat) Runoff Area=7,438 sf 31.78% Impervious Runoff Depth=1.97"
Flow Length=45' Slope=0.0800 '/' Tc=6.0 min CN=73 Runoff=0.39 cfs 1,222 cf

Subcatchment9S: (new Subcat) Runoff Area=12,873 sf 97.59% Impervious Runoff Depth=4.25"
Flow Length=215' Slope=0.0220 '/' Tc=6.0 min CN=97 Runoff=1.32 cfs 4,558 cf

Subcatchment10S: (new Subcat) Runoff Area=16,424 sf 95.28% Impervious Runoff Depth=4.25"
Flow Length=195' Tc=6.0 min CN=97 Runoff=1.68 cfs 5,815 cf

Subcatchment11S: (new Subcat) Runoff Area=14,521 sf 95.72% Impervious Runoff Depth=4.25"
Flow Length=230' Slope=0.0250 '/' Tc=6.0 min CN=97 Runoff=1.49 cfs 5,141 cf

Subcatchment12S: (new Subcat) Runoff Area=9,667 sf 100.00% Impervious Runoff Depth=4.36"
Flow Length=257' Slope=0.0240 '/' Tc=6.0 min CN=98 Runoff=1.00 cfs 3,515 cf

Subcatchment13S: (new Subcat) Runoff Area=12,123 sf 88.89% Impervious Runoff Depth=4.14"
Flow Length=274' Slope=0.0210 '/' Tc=6.0 min CN=96 Runoff=1.23 cfs 4,178 cf

Subcatchment14S: (new Subcat) Runoff Area=8,897 sf 92.62% Impervious Runoff Depth=4.25"
Flow Length=188' Slope=0.0250 '/' Tc=6.0 min CN=97 Runoff=0.91 cfs 3,150 cf

Subcatchment15S: (new Subcat) Runoff Area=30,398 sf 93.40% Impervious Runoff Depth=4.25"
Flow Length=331' Tc=6.0 min CN=97 Runoff=3.11 cfs 10,762 cf

Subcatchment16S: (new Subcat) Runoff Area=91,275 sf 0.98% Impervious Runoff Depth=2.05"
Flow Length=109' Tc=6.0 min CN=74 Runoff=4.99 cfs 15,589 cf

Subcatchment 17S: (new Subcat) Runoff Area=34,419 sf 73.63% Impervious Runoff Depth=3.29"
Flow Length=144' Slope=0.0200 '/' Tc=6.0 min CN=88 Runoff=2.99 cfs 9,438 cf

Subcatchment OSE: Off Site Flow East of Runoff Area=715,271 sf 52.78% Impervious Runoff Depth=2.63"
Flow Length=725' Tc=32.1 min CN=81 Runoff=27.86 cfs 157,046 cf

Subcatchment OSW: Off Site Flow West Runoff Area=603,105 sf 86.65% Impervious Runoff Depth=3.81"
Flow Length=1,076' Tc=34.1 min CN=93 Runoff=31.45 cfs 191,269 cf

Pond 1P: DMH 10162 Peak Elev=12.12' Inflow=31.45 cfs 191,269 cf
42.0" Round Culvert n=0.011 L=147.0' S=0.0044 '/' Outflow=31.45 cfs 191,269 cf

Pond 2P: CB-15 Peak Elev=11.36' Inflow=31.45 cfs 191,269 cf
42.0" Round Culvert n=0.013 L=147.0' S=0.0050 '/' Outflow=31.45 cfs 191,269 cf

Pond 3P: Existing (4)-36" Culverts Peak Elev=6.49' Storage=3,422 cf Inflow=42.61 cfs 183,755 cf
36.0" Round Culvert x 4.00 n=0.025 L=127.0' S=0.0079 '/' Outflow=42.54 cfs 183,039 cf

Pond 4P: CBR 15036 Peak Elev=18.36' Inflow=14.33 cfs 47,076 cf
24.0" Round Culvert n=0.013 L=234.0' S=0.0052 '/' Outflow=14.33 cfs 47,076 cf

Pond 5P: CB 15031 Peak Elev=21.43' Inflow=4.60 cfs 14,805 cf
18.0" Round Culvert n=0.013 L=155.0' S=0.0134 '/' Outflow=4.60 cfs 14,805 cf

Pond 6P: CBR 15040 Peak Elev=18.97' Inflow=6.78 cfs 22,060 cf
18.0" Round Culvert n=0.013 L=48.0' S=0.0029 '/' Outflow=6.78 cfs 22,060 cf

Pond 7P: CB 12 Peak Elev=25.81' Inflow=2.69 cfs 8,638 cf
12.0" Round Culvert n=0.013 L=10.4' S=0.0106 '/' Outflow=2.69 cfs 8,638 cf

Pond 8P: CBR 15042 Peak Elev=19.44' Inflow=5.36 cfs 17,503 cf
18.0" Round Culvert n=0.013 L=93.0' S=0.0100 '/' Outflow=5.36 cfs 17,503 cf

Pond 9P: CB-11 Peak Elev=22.82' Inflow=2.68 cfs 8,865 cf
12.0" Round Culvert n=0.013 L=13.8' S=0.0051 '/' Outflow=2.68 cfs 8,865 cf

Pond 10P: CB-16 Peak Elev=10.35' Inflow=31.45 cfs 191,269 cf
42.0" Round Culvert n=0.013 L=296.0' S=0.0050 '/' Outflow=31.45 cfs 191,269 cf

Pond 11P: DMH-1 Peak Elev=8.82' Inflow=31.45 cfs 191,269 cf
42.0" Round Culvert n=0.013 L=199.0' S=0.0050 '/' Outflow=31.45 cfs 191,269 cf

Pond 12P: CB-4 Peak Elev=16.92' Inflow=22.03 cfs 73,359 cf
30.0" Round Culvert n=0.013 L=105.3' S=0.0239 '/' Outflow=22.03 cfs 73,359 cf

Pond 13P: CB-7 Peak Elev=14.54' Inflow=27.28 cfs 91,449 cf
36.0" Round Culvert n=0.013 L=1.3' S=0.0154 '/' Outflow=27.28 cfs 91,449 cf

Pond 14P: ICS-1 Peak Elev=13.62' Inflow=27.28 cfs 91,449 cf
Primary=21.65 cfs 71,885 cf Secondary=7.24 cfs 19,565 cf Outflow=27.28 cfs 91,449 cf

Pond 15P: CB-6 Peak Elev=17.72' Inflow=1.00 cfs 3,515 cf
12.0" Round Culvert n=0.013 L=59.5' S=0.0050 '/' Outflow=1.00 cfs 3,515 cf

Pond 16P: CB-3 Peak Elev=17.50' Inflow=3.53 cfs 11,812 cf
15.0" Round Culvert n=0.013 L=75.5' S=0.0101 '/' Outflow=3.53 cfs 11,812 cf

Pond 17P: CB-2 Peak Elev=18.04' Inflow=2.22 cfs 7,254 cf
12.0" Round Culvert n=0.013 L=77.3' S=0.0127 '/' Outflow=2.22 cfs 7,254 cf

Pond 18P: CB-1 Peak Elev=18.28' Inflow=1.44 cfs 4,620 cf
12.0" Round Culvert n=0.013 L=63.5' S=0.0101 '/' Outflow=1.44 cfs 4,620 cf

Pond 19P: CB-8 Peak Elev=14.68' Inflow=4.34 cfs 14,940 cf
24.0" Round Culvert n=0.013 L=66.0' S=0.0050 '/' Outflow=4.34 cfs 14,940 cf

Pond 20P: CB-9 Peak Elev=14.89' Inflow=3.11 cfs 10,762 cf
18.0" Round Culvert n=0.013 L=159.0' S=0.0051 '/' Outflow=3.11 cfs 10,762 cf

Pond 21P: DMH-2 Peak Elev=12.81' Inflow=7.24 cfs 19,565 cf
18.0" Round Culvert n=0.013 L=133.0' S=0.0200 '/' Outflow=7.24 cfs 19,565 cf

Pond 22P: DMH-3 Peak Elev=10.02' Inflow=7.71 cfs 72,691 cf
18.0" Round Culvert n=0.013 L=30.1' S=0.0316 '/' Outflow=7.71 cfs 72,691 cf

Pond 23P: CBR 15027 Peak Elev=24.78' Inflow=2.69 cfs 8,638 cf
12.0" Round Culvert n=0.013 L=87.8' S=0.0066 '/' Outflow=2.69 cfs 8,638 cf

Pond 25P: CBR 15029 Peak Elev=23.77' Inflow=2.69 cfs 8,638 cf
15.0" Round Culvert n=0.013 L=148.6' S=0.0090 '/' Outflow=2.69 cfs 8,638 cf

Pond 26P: CB-5 Peak Elev=17.62' Inflow=2.48 cfs 8,657 cf
12.0" Round Culvert n=0.013 L=42.0' S=0.0052 '/' Outflow=2.48 cfs 8,657 cf

Pond EX WTLND: Existing Wetland Peak Elev=7.58' Storage=4,716 cf Inflow=44.72 cfs 307,746 cf
Primary=29.41 cfs 281,034 cf Secondary=15.20 cfs 26,709 cf Outflow=44.61 cfs 307,743 cf

Pond SSF-1: Subsurface Sand Filter 1 Peak Elev=13.57' Storage=31,040 cf Inflow=21.65 cfs 71,885 cf
Primary=8.28 cfs 18,759 cf Secondary=0.51 cfs 53,126 cf Outflow=8.75 cfs 71,885 cf

Link SP-1: Study Point 1 Inflow=71.84 cfs 464,073 cf
Primary=71.84 cfs 464,073 cf

Link SP-2: Study Point 2 Inflow=0.39 cfs 1,222 cf
Primary=0.39 cfs 1,222 cf

Total Runoff Area = 1,729,428 sf Runoff Volume = 466,013 cf Average Runoff Depth = 3.23"
32.02% Pervious = 553,812 sf 67.98% Impervious = 1,175,616 sf

Time span=0.00-48.00 hrs, dt=0.01 hrs, 4801 points x 2
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Dyn-Stor-Ind method - Pond routing by Dyn-Stor-Ind method

Subcatchment1S: (new Subcat) Runoff Area=28,835 sf 82.21% Impervious Runoff Depth=4.76"
Flow Length=132' Slope=0.0100 '/' Tc=6.0 min CN=91 Runoff=3.50 cfs 11,442 cf

Subcatchment2S: (new Subcat) Runoff Area=27,182 sf 88.34% Impervious Runoff Depth=5.10"
Flow Length=164' Slope=0.0180 '/' Tc=6.0 min CN=94 Runoff=3.43 cfs 11,549 cf

Subcatchment3S: (new Subcat) Runoff Area=15,213 sf 80.21% Impervious Runoff Depth=4.76"
Flow Length=161' Slope=0.0150 '/' Tc=6.0 min CN=91 Runoff=1.85 cfs 6,037 cf

Subcatchment4S: (new Subcat) Runoff Area=28,840 sf 96.87% Impervious Runoff Depth=5.44"
Flow Length=178' Slope=0.0160 '/' Tc=6.0 min CN=97 Runoff=3.74 cfs 13,085 cf

Subcatchment5S: (new Subcat) Runoff Area=49,425 sf 82.25% Impervious Runoff Depth=4.76"
Flow Length=281' Slope=0.0100 '/' Tc=6.0 min CN=91 Runoff=6.00 cfs 19,612 cf

Subcatchment6S: (new Subcat) Runoff Area=15,879 sf 76.74% Impervious Runoff Depth=4.65"
Flow Length=231' Tc=6.1 min CN=90 Runoff=1.89 cfs 6,155 cf

Subcatchment7S: (new Subcat) Runoff Area=7,643 sf 92.45% Impervious Runoff Depth=5.33"
Flow Length=180' Slope=0.0250 '/' Tc=6.0 min CN=96 Runoff=0.98 cfs 3,394 cf

Subcatchment8S: (new Subcat) Runoff Area=7,438 sf 31.78% Impervious Runoff Depth=2.92"
Flow Length=45' Slope=0.0800 '/' Tc=6.0 min CN=73 Runoff=0.58 cfs 1,812 cf

Subcatchment9S: (new Subcat) Runoff Area=12,873 sf 97.59% Impervious Runoff Depth=5.44"
Flow Length=215' Slope=0.0220 '/' Tc=6.0 min CN=97 Runoff=1.67 cfs 5,841 cf

Subcatchment10S: (new Subcat) Runoff Area=16,424 sf 95.28% Impervious Runoff Depth=5.44"
Flow Length=195' Tc=6.0 min CN=97 Runoff=2.13 cfs 7,452 cf

Subcatchment11S: (new Subcat) Runoff Area=14,521 sf 95.72% Impervious Runoff Depth=5.44"
Flow Length=230' Slope=0.0250 '/' Tc=6.0 min CN=97 Runoff=1.88 cfs 6,589 cf

Subcatchment12S: (new Subcat) Runoff Area=9,667 sf 100.00% Impervious Runoff Depth=5.56"
Flow Length=257' Slope=0.0240 '/' Tc=6.0 min CN=98 Runoff=1.26 cfs 4,481 cf

Subcatchment13S: (new Subcat) Runoff Area=12,123 sf 88.89% Impervious Runoff Depth=5.33"
Flow Length=274' Slope=0.0210 '/' Tc=6.0 min CN=96 Runoff=1.56 cfs 5,383 cf

Subcatchment14S: (new Subcat) Runoff Area=8,897 sf 92.62% Impervious Runoff Depth=5.44"
Flow Length=188' Slope=0.0250 '/' Tc=6.0 min CN=97 Runoff=1.15 cfs 4,037 cf

Subcatchment15S: (new Subcat) Runoff Area=30,398 sf 93.40% Impervious Runoff Depth=5.44"
Flow Length=331' Tc=6.0 min CN=97 Runoff=3.94 cfs 13,792 cf

Subcatchment16S: (new Subcat) Runoff Area=91,275 sf 0.98% Impervious Runoff Depth=3.02"
Flow Length=109' Tc=6.0 min CN=74 Runoff=7.41 cfs 22,951 cf

Subcatchment 17S: (new Subcat) Runoff Area=34,419 sf 73.63% Impervious Runoff Depth=4.43"
Flow Length=144' Slope=0.0200 '/' Tc=6.0 min CN=88 Runoff=3.98 cfs 12,716 cf

Subcatchment OSE: Off Site Flow East of Runoff Area=715,271 sf 52.78% Impervious Runoff Depth=3.70"
Flow Length=725' Tc=32.1 min CN=81 Runoff=39.02 cfs 220,658 cf

Subcatchment OSW: Off Site Flow West Runoff Area=603,105 sf 86.65% Impervious Runoff Depth=4.99"
Flow Length=1,076' Tc=34.1 min CN=93 Runoff=40.62 cfs 250,553 cf

Pond 1P: DMH 10162 Peak Elev=12.90' Inflow=40.62 cfs 250,553 cf
42.0" Round Culvert n=0.011 L=147.0' S=0.0044 '/' Outflow=40.62 cfs 250,553 cf

Pond 2P: CB-15 Peak Elev=12.13' Inflow=40.62 cfs 250,553 cf
42.0" Round Culvert n=0.013 L=147.0' S=0.0050 '/' Outflow=40.62 cfs 250,553 cf

Pond 3P: Existing (4)-36" Culverts Peak Elev=6.97' Storage=4,790 cf Inflow=66.90 cfs 277,970 cf
36.0" Round Culvert x 4.00 n=0.025 L=127.0' S=0.0079 '/' Outflow=66.78 cfs 277,253 cf

Pond 4P: CBR 15036 Peak Elev=20.42' Inflow=18.53 cfs 61,725 cf
24.0" Round Culvert n=0.013 L=234.0' S=0.0052 '/' Outflow=18.53 cfs 61,725 cf

Pond 5P: CB 15031 Peak Elev=21.73' Inflow=6.00 cfs 19,612 cf
18.0" Round Culvert n=0.013 L=155.0' S=0.0134 '/' Outflow=6.00 cfs 19,612 cf

Pond 6P: CBR 15040 Peak Elev=21.48' Inflow=8.79 cfs 29,027 cf
18.0" Round Culvert n=0.013 L=48.0' S=0.0029 '/' Outflow=8.79 cfs 29,027 cf

Pond 7P: CB 12 Peak Elev=26.28' Inflow=3.50 cfs 11,442 cf
12.0" Round Culvert n=0.013 L=10.4' S=0.0106 '/' Outflow=3.50 cfs 11,442 cf

Pond 8P: CBR 15042 Peak Elev=22.20' Inflow=6.94 cfs 22,991 cf
18.0" Round Culvert n=0.013 L=93.0' S=0.0100 '/' Outflow=6.94 cfs 22,991 cf

Pond 9P: CB-11 Peak Elev=23.48' Inflow=3.43 cfs 11,549 cf
12.0" Round Culvert n=0.013 L=13.8' S=0.0051 '/' Outflow=3.43 cfs 11,549 cf

Pond 10P: CB-16 Peak Elev=10.89' Inflow=40.62 cfs 250,553 cf
42.0" Round Culvert n=0.013 L=296.0' S=0.0050 '/' Outflow=40.62 cfs 250,553 cf

Pond 11P: DMH-1 Peak Elev=9.28' Inflow=40.62 cfs 250,553 cf
42.0" Round Culvert n=0.013 L=199.0' S=0.0050 '/' Outflow=40.62 cfs 250,553 cf

Pond 12P: CB-4 Peak Elev=18.10' Inflow=28.35 cfs 95,635 cf
30.0" Round Culvert n=0.013 L=105.3' S=0.0239 '/' Outflow=28.35 cfs 95,635 cf

Pond 13P: CB-7 Peak Elev=15.81' Inflow=35.01 cfs 118,847 cf
36.0" Round Culvert n=0.013 L=1.3' S=0.0154 '/' Outflow=35.01 cfs 118,847 cf

Pond 14P: ICS-1 Peak Elev=14.29' Inflow=35.01 cfs 118,847 cf
Primary=27.28 cfs 90,264 cf Secondary=8.34 cfs 28,583 cf Outflow=35.01 cfs 118,847 cf

Pond 15P: CB-6 Peak Elev=19.34' Inflow=1.26 cfs 4,481 cf
12.0" Round Culvert n=0.013 L=59.5' S=0.0050 '/' Outflow=1.26 cfs 4,481 cf

Pond 16P: CB-3 Peak Elev=19.00' Inflow=4.55 cfs 15,389 cf
15.0" Round Culvert n=0.013 L=75.5' S=0.0101 '/' Outflow=4.55 cfs 15,389 cf

Pond 17P: CB-2 Peak Elev=19.93' Inflow=2.88 cfs 9,548 cf
12.0" Round Culvert n=0.013 L=77.3' S=0.0127 '/' Outflow=2.88 cfs 9,548 cf

Pond 18P: CB-1 Peak Elev=20.28' Inflow=1.89 cfs 6,155 cf
12.0" Round Culvert n=0.013 L=63.5' S=0.0101 '/' Outflow=1.89 cfs 6,155 cf

Pond 19P: CB-8 Peak Elev=16.02' Inflow=5.51 cfs 19,175 cf
24.0" Round Culvert n=0.013 L=66.0' S=0.0050 '/' Outflow=5.51 cfs 19,175 cf

Pond 20P: CB-9 Peak Elev=16.37' Inflow=3.94 cfs 13,792 cf
18.0" Round Culvert n=0.013 L=159.0' S=0.0051 '/' Outflow=3.94 cfs 13,792 cf

Pond 21P: DMH-2 Peak Elev=13.19' Inflow=8.34 cfs 28,583 cf
18.0" Round Culvert n=0.013 L=133.0' S=0.0200 '/' Outflow=8.34 cfs 28,583 cf

Pond 22P: DMH-3 Peak Elev=10.43' Inflow=8.83 cfs 85,144 cf
18.0" Round Culvert n=0.013 L=30.1' S=0.0316 '/' Outflow=8.83 cfs 85,144 cf

Pond 23P: CBR 15027 Peak Elev=25.42' Inflow=3.50 cfs 11,442 cf
12.0" Round Culvert n=0.013 L=87.8' S=0.0066 '/' Outflow=3.50 cfs 11,442 cf

Pond 25P: CBR 15029 Peak Elev=23.98' Inflow=3.50 cfs 11,442 cf
15.0" Round Culvert n=0.013 L=148.6' S=0.0090 '/' Outflow=3.50 cfs 11,442 cf

Pond 26P: CB-5 Peak Elev=19.15' Inflow=3.15 cfs 11,069 cf
12.0" Round Culvert n=0.013 L=42.0' S=0.0052 '/' Outflow=3.15 cfs 11,069 cf

Pond EX WTLND: Existing Wetland Peak Elev=7.87' Storage=6,314 cf Inflow=61.15 cfs 405,073 cf
Primary=32.76 cfs 347,756 cf Secondary=28.16 cfs 57,312 cf Outflow=60.91 cfs 405,068 cf

Pond SSF-1: Subsurface Sand Filter 1 Peak Elev=14.17' Storage=36,342 cf Inflow=27.28 cfs 90,264 cf
Primary=12.93 cfs 33,708 cf Secondary=0.51 cfs 56,561 cf Outflow=13.41 cfs 90,268 cf

Link SP-1: Study Point 1 Inflow=99.49 cfs 625,009 cf
Primary=99.49 cfs 625,009 cf

Link SP-2: Study Point 2 Inflow=0.58 cfs 1,812 cf
Primary=0.58 cfs 1,812 cf

Total Runoff Area = 1,729,428 sf Runoff Volume = 627,538 cf Average Runoff Depth = 4.35"
32.02% Pervious = 553,812 sf 67.98% Impervious = 1,175,616 sf

Summary for Subcatchment 1S: (new Subcat)

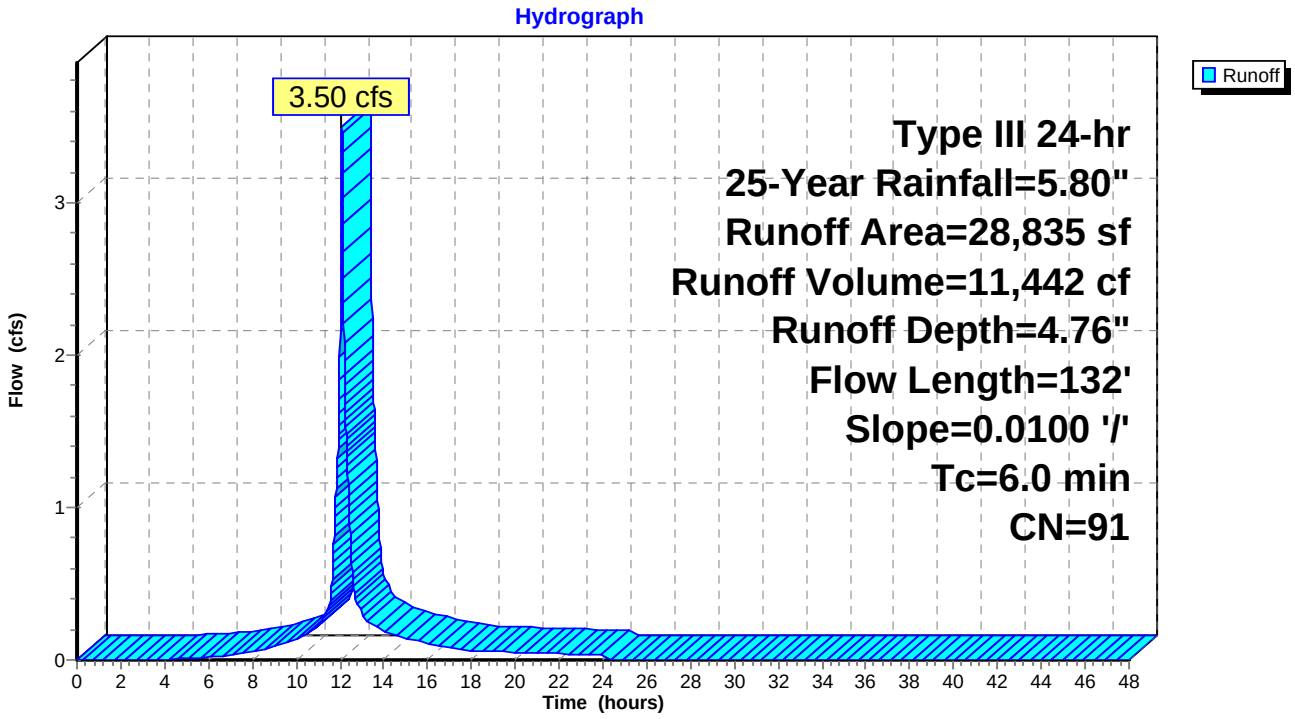
Runoff = 3.50 cfs @ 12.08 hrs, Volume= 11,442 cf, Depth= 4.76"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Type III 24-hr 25-Year Rainfall=5.80"

Area (sf)	CN	Description
4,290	98	Roofs, HSG B
19,414	98	Paved parking, HSG B
5,131	61	>75% Grass cover, Good, HSG B
28,835	91	Weighted Average
5,131		17.79% Pervious Area
23,704		82.21% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.1	58	0.0100	0.92		**Sheet Flow,** Smooth surfaces n= 0.011 P2= 3.10"
0.6	74	0.0100	2.03		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
4.3					**Direct Entry,**
6.0	132	Total			

Subcatchment 1S: (new Subcat)



Summary for Subcatchment 2S: (new Subcat)

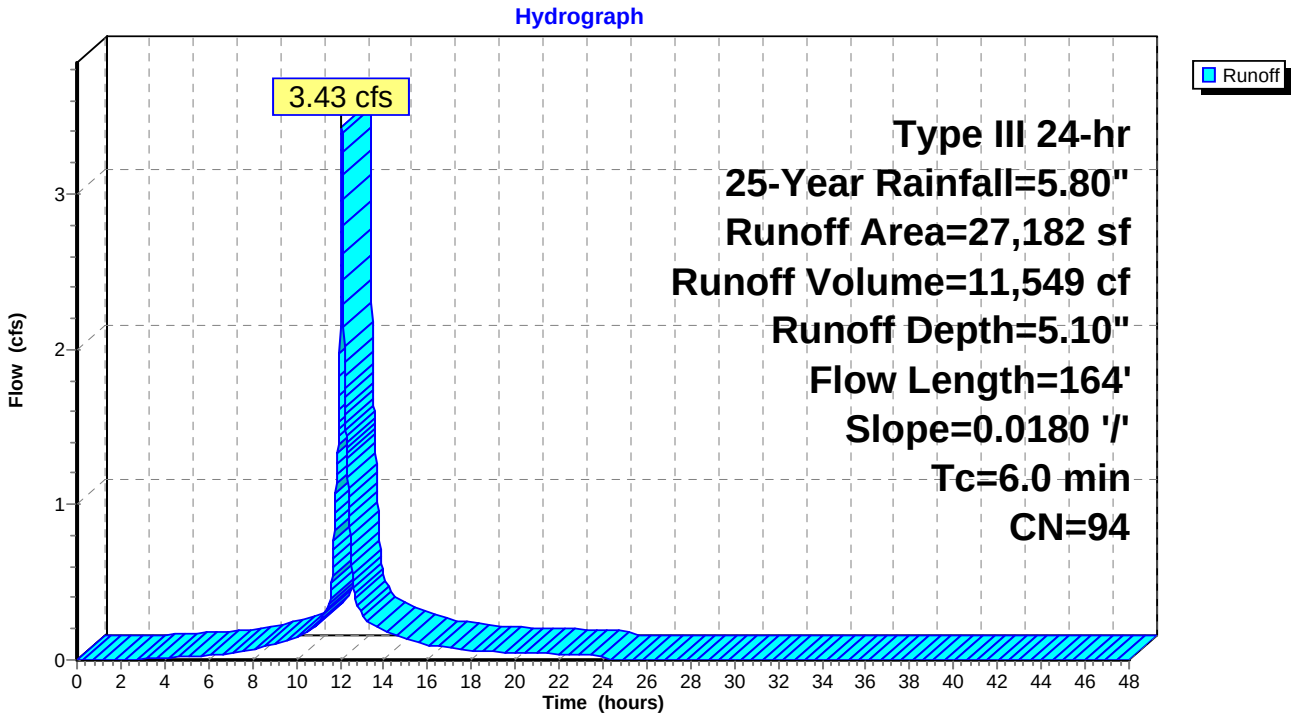
Runoff = 3.43 cfs @ 12.08 hrs, Volume= 11,549 cf, Depth= 5.10"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Type III 24-hr 25-Year Rainfall=5.80"

Area (sf)	CN	Description
1,939	98	Roofs, HSG B
22,074	98	Paved parking, HSG B
3,169	61	>75% Grass cover, Good, HSG B
27,182	94	Weighted Average
3,169		11.66% Pervious Area
24,013		88.34% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.3	100	0.0180	1.30		**Sheet Flow,** Smooth surfaces n= 0.011 P2= 3.10"
0.4	64	0.0180	2.72		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
4.3					**Direct Entry,**
6.0	164	Total			

Subcatchment 2S: (new Subcat)



Summary for Subcatchment 3S: (new Subcat)

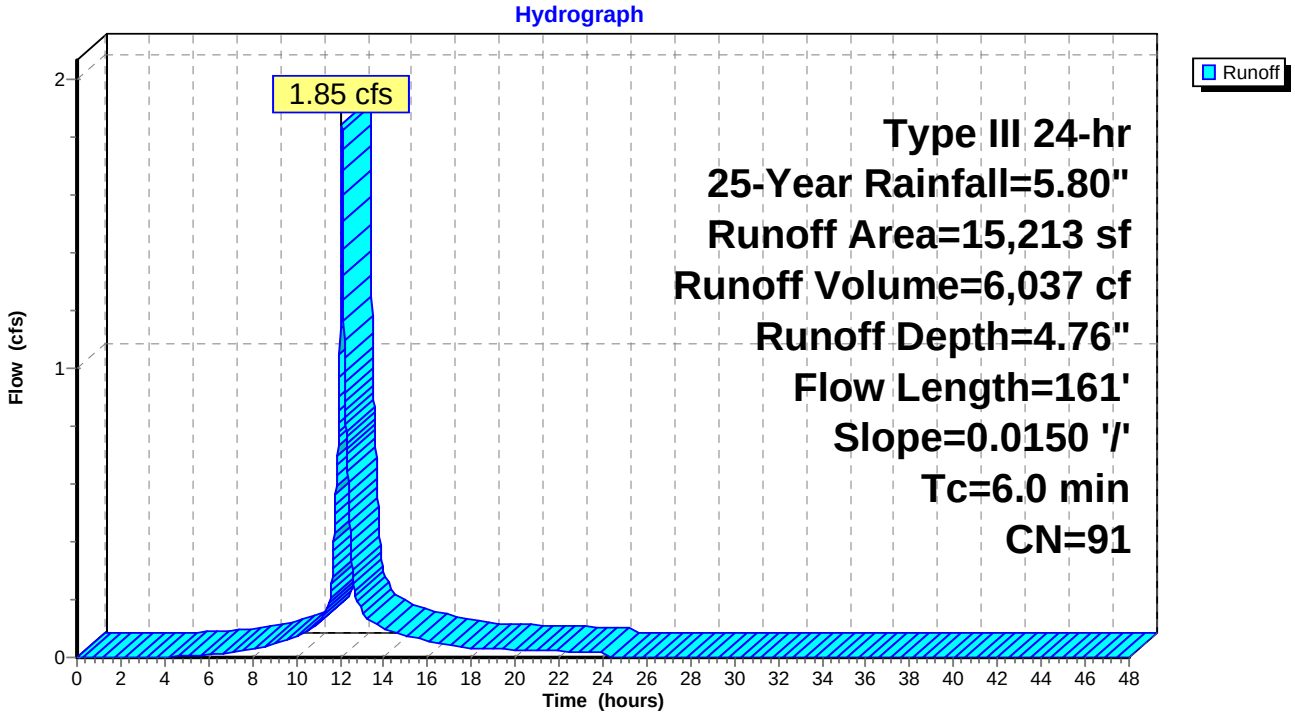
Runoff = 1.85 cfs @ 12.08 hrs, Volume= 6,037 cf, Depth= 4.76"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Type III 24-hr 25-Year Rainfall=5.80"

Area (sf)	CN	Description
12,202	98	Paved parking, HSG B
3,011	61	>75% Grass cover, Good, HSG B
15,213	91	Weighted Average
3,011		19.79% Pervious Area
12,202		80.21% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
4.6	33	0.0150	0.12		**Sheet Flow,** Grass: Short n= 0.150 P2= 3.10"
0.9	128	0.0150	2.49		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
0.5					**Direct Entry,**
6.0	161	Total			

Subcatchment 3S: (new Subcat)



Summary for Subcatchment 4S: (new Subcat)

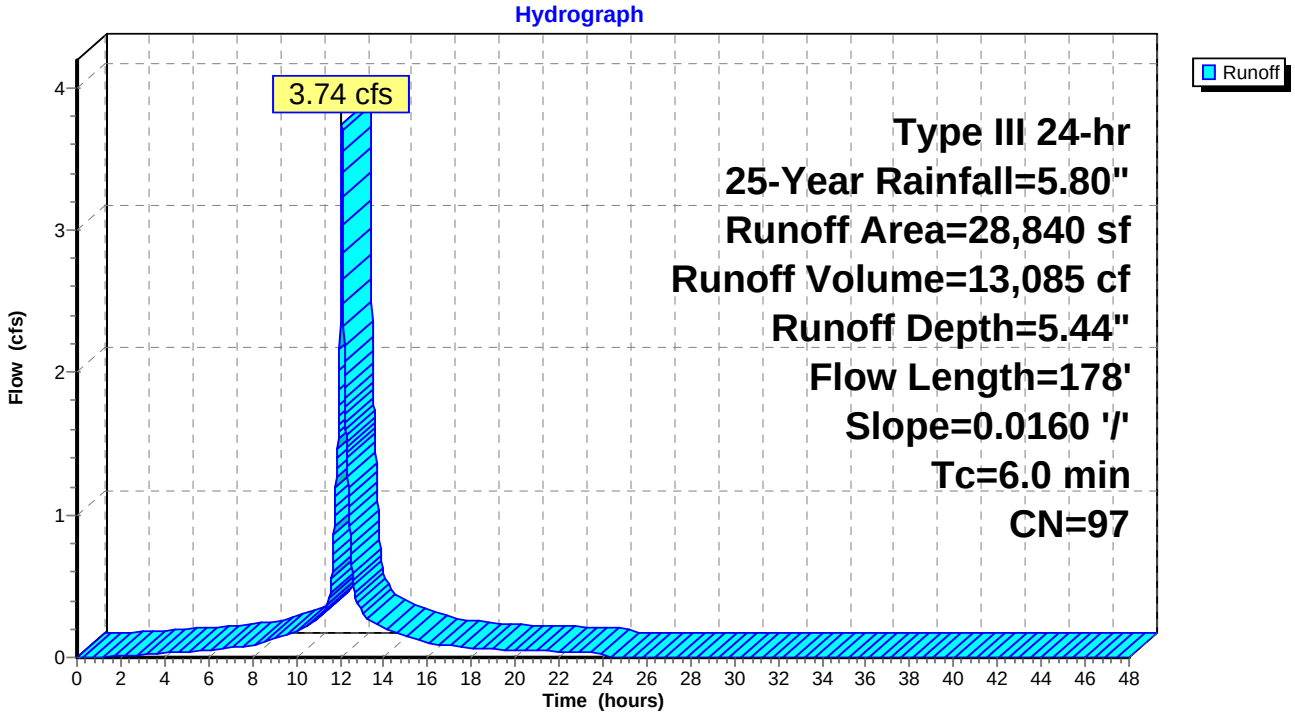
Runoff = 3.74 cfs @ 12.08 hrs, Volume= 13,085 cf, Depth= 5.44"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Type III 24-hr 25-Year Rainfall=5.80"

Area (sf)	CN	Description
27,938	98	Paved parking, HSG B
902	61	>75% Grass cover, Good, HSG B
28,840	97	Weighted Average
902		3.13% Pervious Area
27,938		96.87% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.3	100	0.0160	1.24		**Sheet Flow,** Smooth surfaces n= 0.011 P2= 3.10"
0.5	78	0.0160	2.57		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
4.2					**Direct Entry,**
6.0	178	Total			

Subcatchment 4S: (new Subcat)



Summary for Subcatchment 5S: (new Subcat)

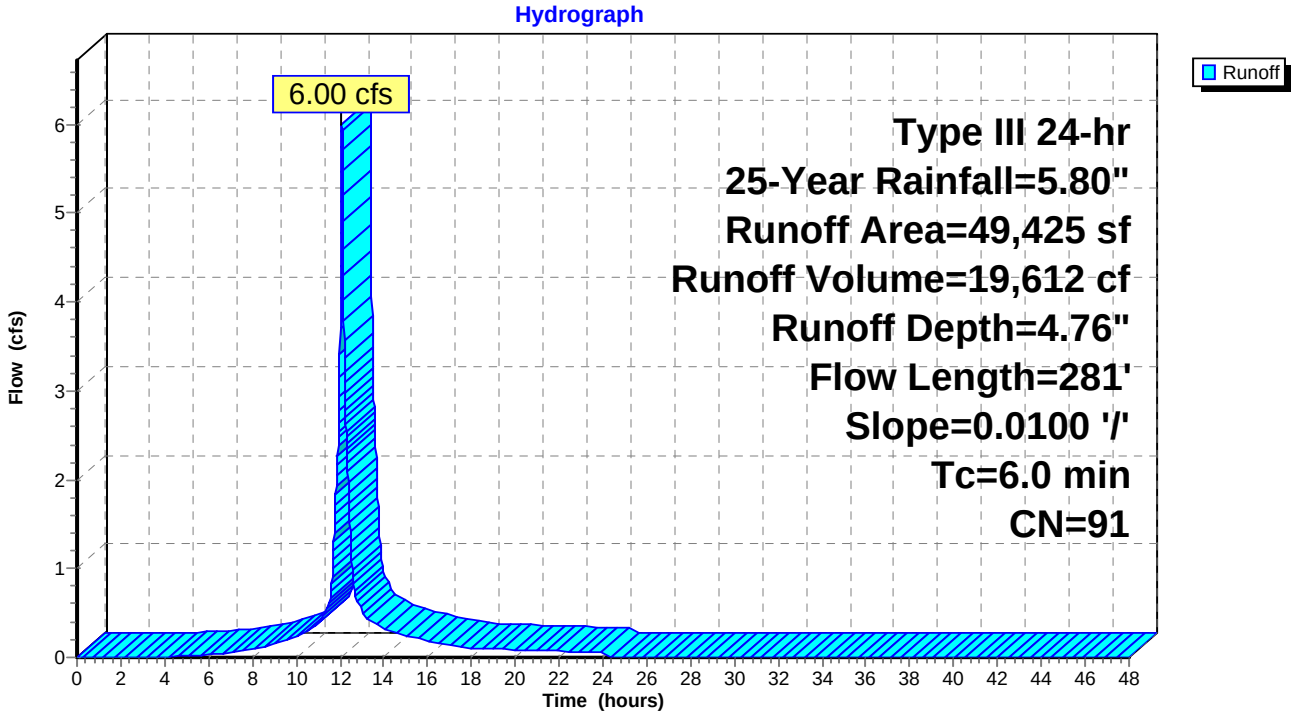
Runoff = 6.00 cfs @ 12.08 hrs, Volume= 19,612 cf, Depth= 4.76"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Type III 24-hr 25-Year Rainfall=5.80"

Area (sf)	CN	Description
40,650	98	Paved parking, HSG B
8,775	61	>75% Grass cover, Good, HSG B
49,425	91	Weighted Average
8,775		17.75% Pervious Area
40,650		82.25% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.6	100	0.0100	1.03		**Sheet Flow,** Smooth surfaces n= 0.011 P2= 3.10"
1.5	181	0.0100	2.03		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
2.9					**Direct Entry,**
6.0	281	Total			

Subcatchment 5S: (new Subcat)



Summary for Subcatchment 6S: (new Subcat)

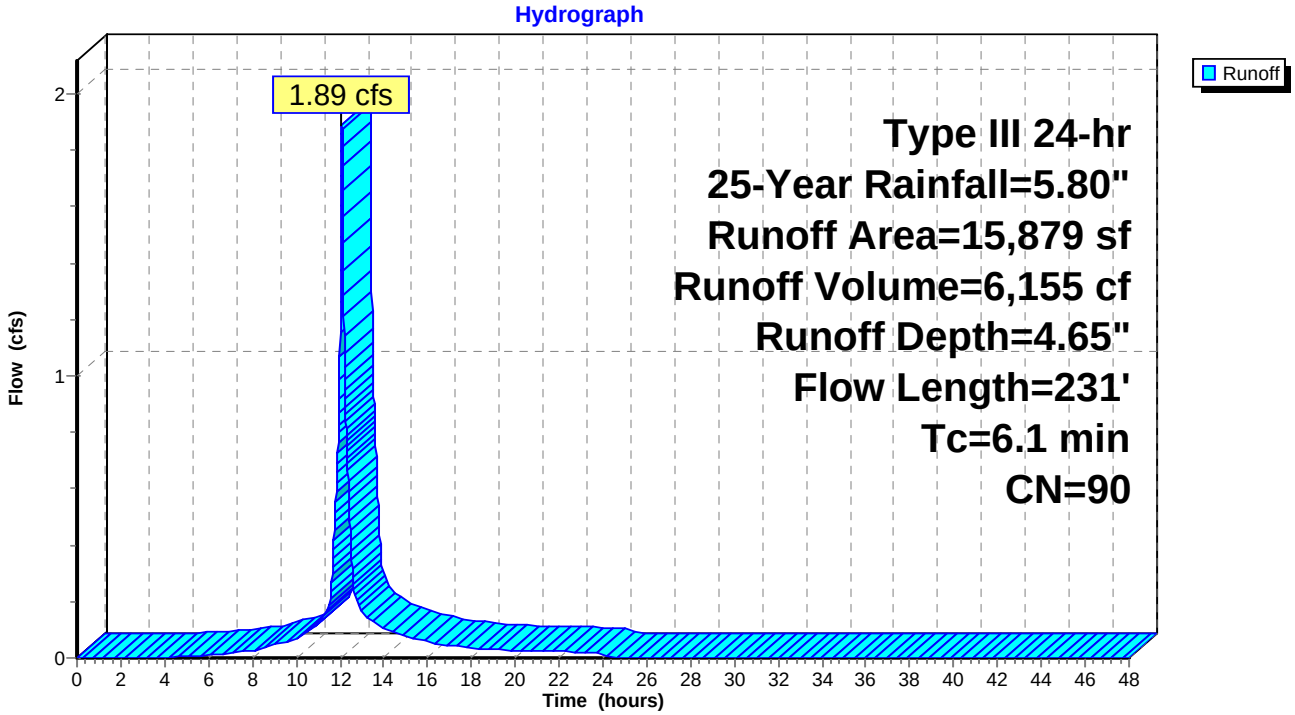
Runoff = 1.89 cfs @ 12.09 hrs, Volume= 6,155 cf, Depth= 4.65"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Type III 24-hr 25-Year Rainfall=5.80"

Area (sf)	CN	Description
8,219	98	Paved parking, HSG B
3,967	98	Paved parking, HSG D
3,328	61	>75% Grass cover, Good, HSG B
365	80	>75% Grass cover, Good, HSG D
15,879	90	Weighted Average
3,693		23.26% Pervious Area
12,186		76.74% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.2	66	0.0450	0.21		**Sheet Flow,** Grass: Short n= 0.150 P2= 3.10"
0.9	165	0.0250	3.21		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
6.1	231	Total			

Subcatchment 6S: (new Subcat)



Summary for Subcatchment 7S: (new Subcat)

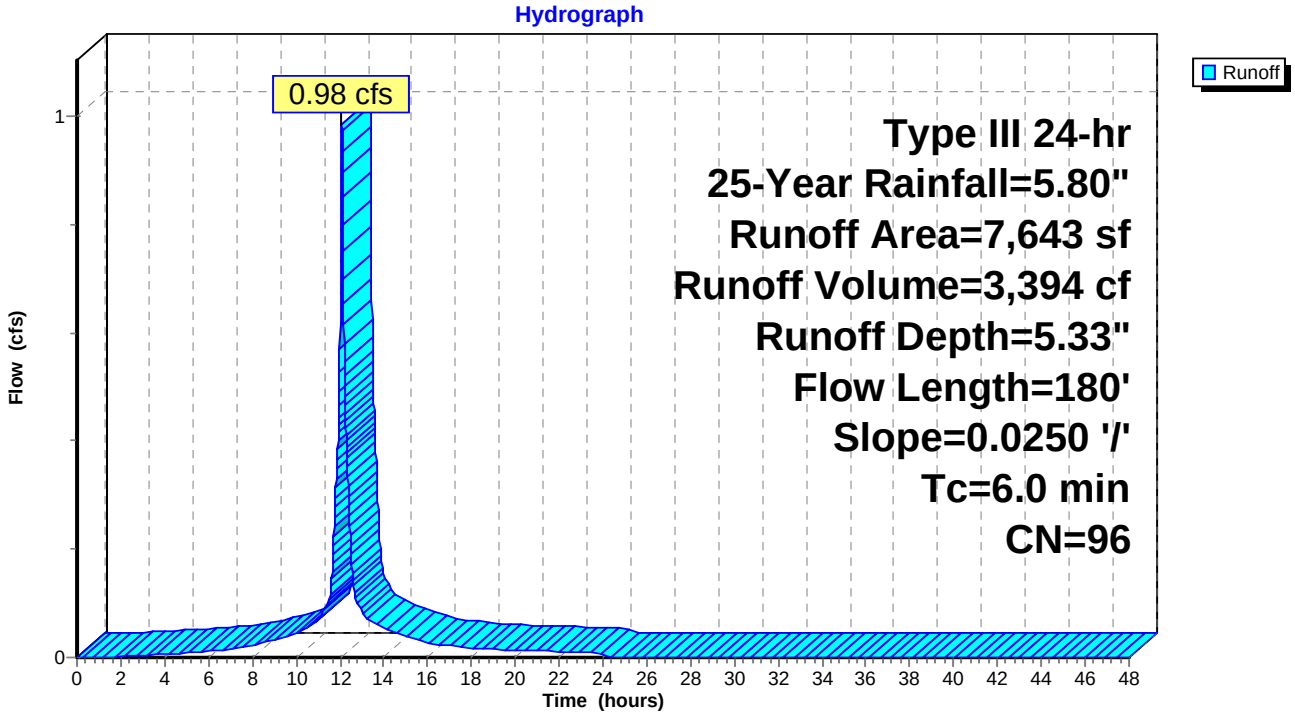
Runoff = 0.98 cfs @ 12.08 hrs, Volume= 3,394 cf, Depth= 5.33"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Type III 24-hr 25-Year Rainfall=5.80"

Area (sf)	CN	Description
2,645	98	Paved parking, HSG B
4,421	98	Paved parking, HSG D
183	61	>75% Grass cover, Good, HSG B
394	80	>75% Grass cover, Good, HSG D
7,643	96	Weighted Average
577		7.55% Pervious Area
7,066		92.45% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.1	100	0.0250	1.48		**Sheet Flow,** Smooth surfaces n= 0.011 P2= 3.10"
0.4	80	0.0250	3.21		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
4.5					**Direct Entry,**
6.0	180	Total			

Subcatchment 7S: (new Subcat)



Summary for Subcatchment 8S: (new Subcat)

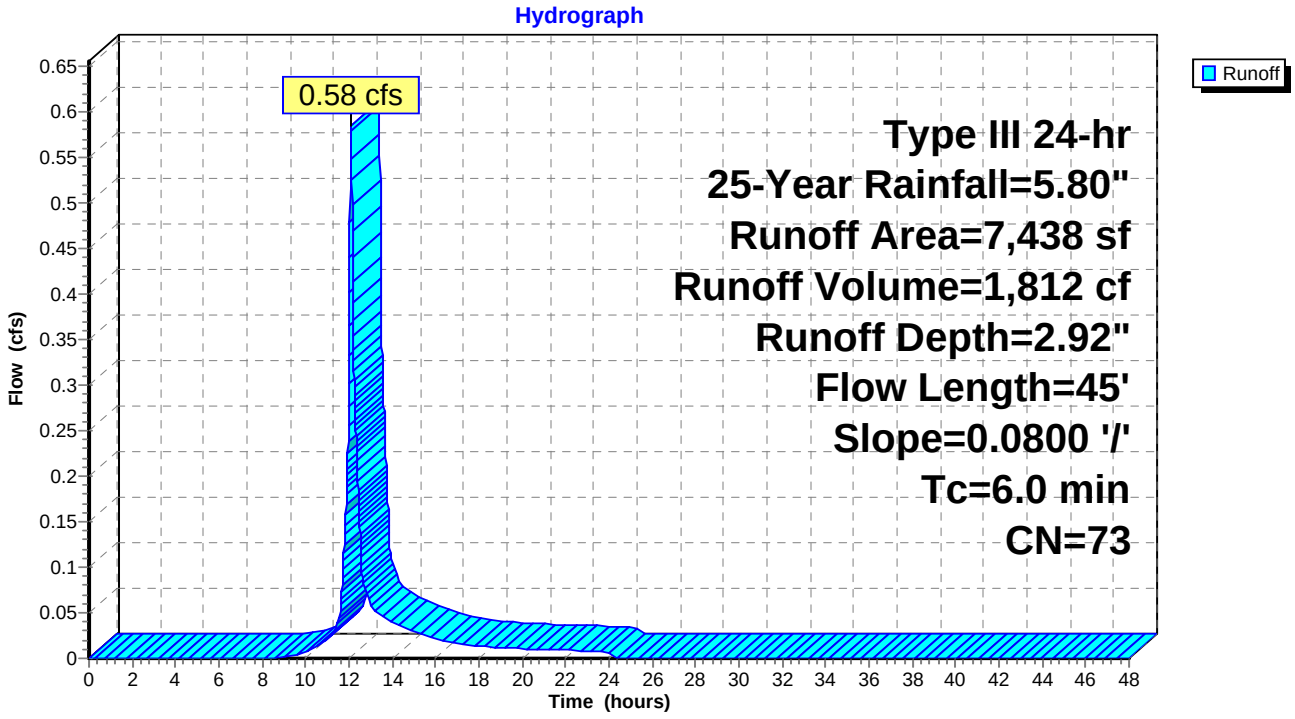
Runoff = 0.58 cfs @ 12.09 hrs, Volume= 1,812 cf, Depth= 2.92"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Type III 24-hr 25-Year Rainfall=5.80"

Area (sf)	CN	Description
2,364	98	Paved parking, HSG B
5,074	61	>75% Grass cover, Good, HSG B
7,438	73	Weighted Average
5,074		68.22% Pervious Area
2,364		31.78% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
3.0	45	0.0800	0.25		**Sheet Flow,** Grass: Short n= 0.150 P2= 3.10"
3.0					**Direct Entry,**
6.0	45	Total			

Subcatchment 8S: (new Subcat)



Summary for Subcatchment 9S: (new Subcat)

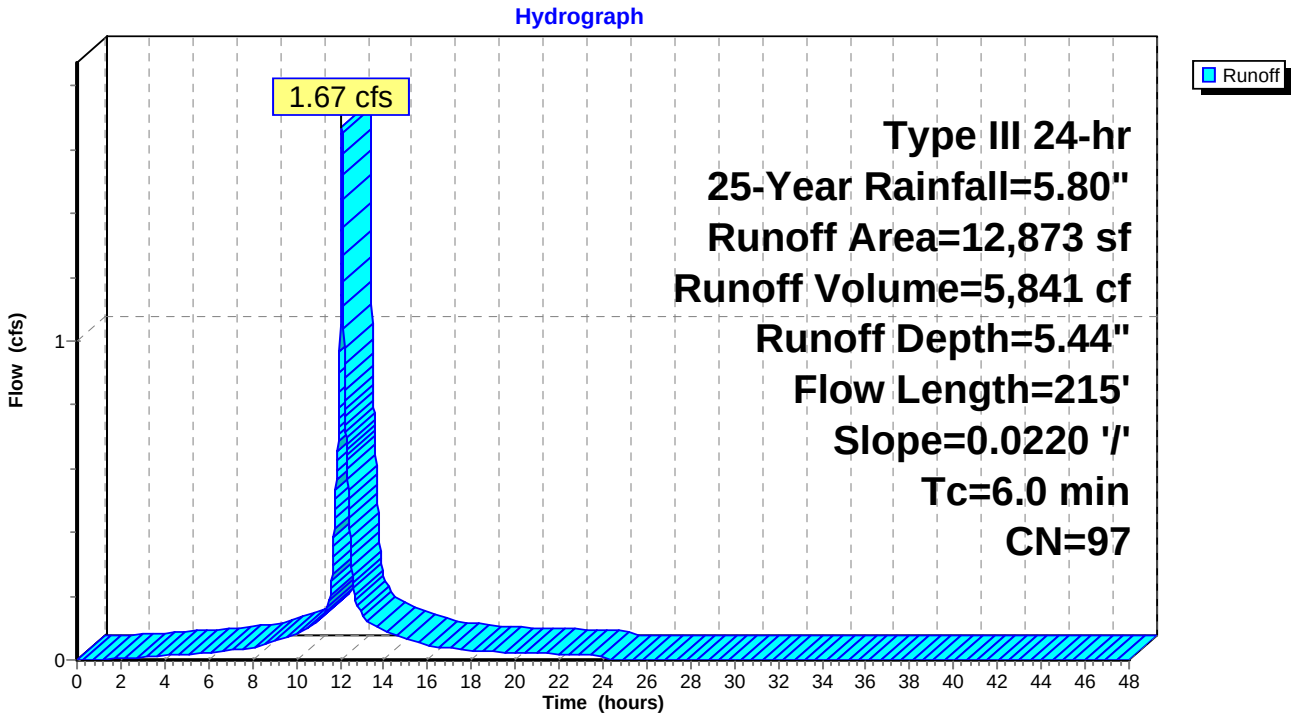
Runoff = 1.67 cfs @ 12.08 hrs, Volume= 5,841 cf, Depth= 5.44"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Type III 24-hr 25-Year Rainfall=5.80"

Area (sf)	CN	Description
2,193	98	Paved parking, HSG B
10,370	98	Paved parking, HSG D
310	61	>75% Grass cover, Good, HSG B
12,873	97	Weighted Average
310		2.41% Pervious Area
12,563		97.59% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.2	100	0.0220	1.41		**Sheet Flow,** Smooth surfaces n= 0.011 P2= 3.10"
0.6	115	0.0220	3.01		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
4.2					**Direct Entry,**
6.0	215	Total			

Subcatchment 9S: (new Subcat)



Summary for Subcatchment 10S: (new Subcat)

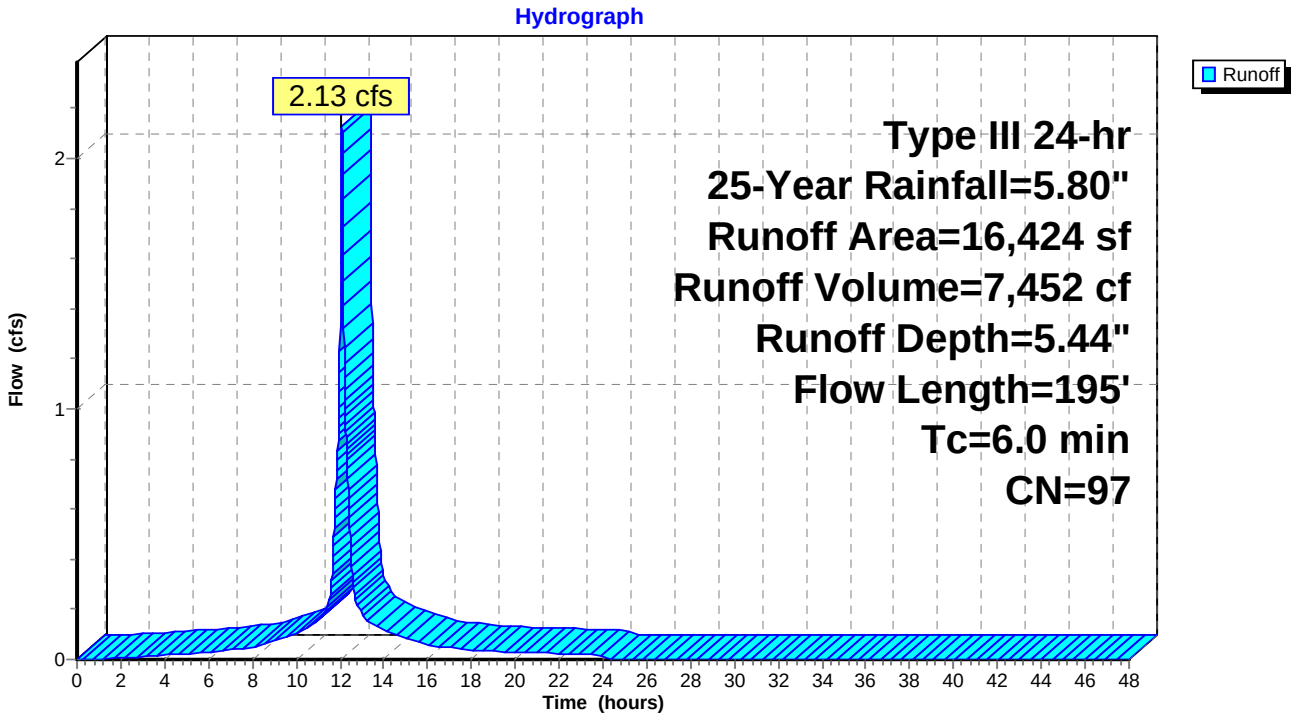
Runoff = 2.13 cfs @ 12.08 hrs, Volume= 7,452 cf, Depth= 5.44"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Type III 24-hr 25-Year Rainfall=5.80"

Area (sf)	CN	Description
1,869	98	Paved parking, HSG B
13,780	98	Paved parking, HSG D
465	61	>75% Grass cover, Good, HSG B
310	80	>75% Grass cover, Good, HSG D
16,424	97	Weighted Average
775		4.72% Pervious Area
15,649		95.28% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.2	100	0.0226	1.42		**Sheet Flow,** Smooth surfaces n= 0.011 P2= 3.10"
0.5	95	0.0260	3.27		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
4.3					**Direct Entry,**
6.0	195	Total			

Subcatchment 10S: (new Subcat)



Summary for Subcatchment 11S: (new Subcat)

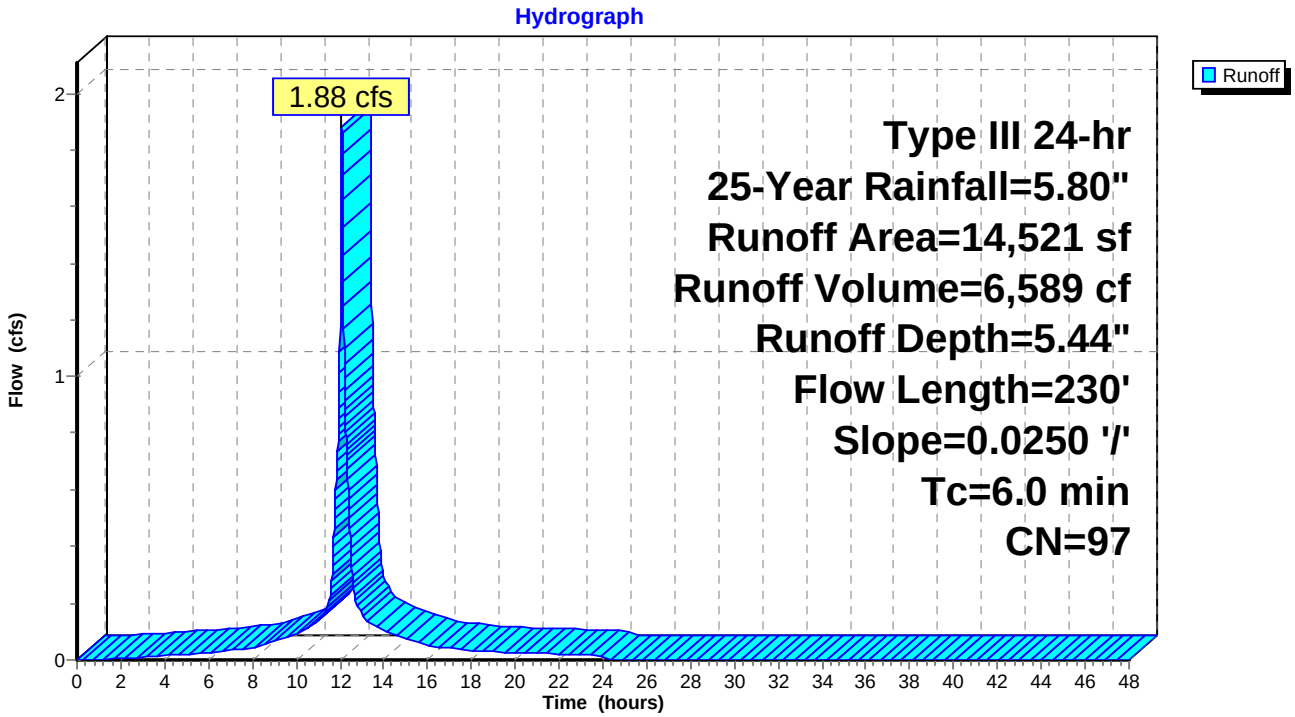
Runoff = 1.88 cfs @ 12.08 hrs, Volume= 6,589 cf, Depth= 5.44"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Type III 24-hr 25-Year Rainfall=5.80"

Area (sf)	CN	Description
1,962	98	Paved parking, HSG B
11,938	98	Paved parking, HSG D
621	80	>75% Grass cover, Good, HSG D
14,521	97	Weighted Average
621		4.28% Pervious Area
13,900		95.72% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.1	100	0.0250	1.48		**Sheet Flow,** Smooth surfaces n= 0.011 P2= 3.10"
0.7	130	0.0250	3.21		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
4.2					**Direct Entry,**
6.0	230	Total			

Subcatchment 11S: (new Subcat)



Summary for Subcatchment 12S: (new Subcat)

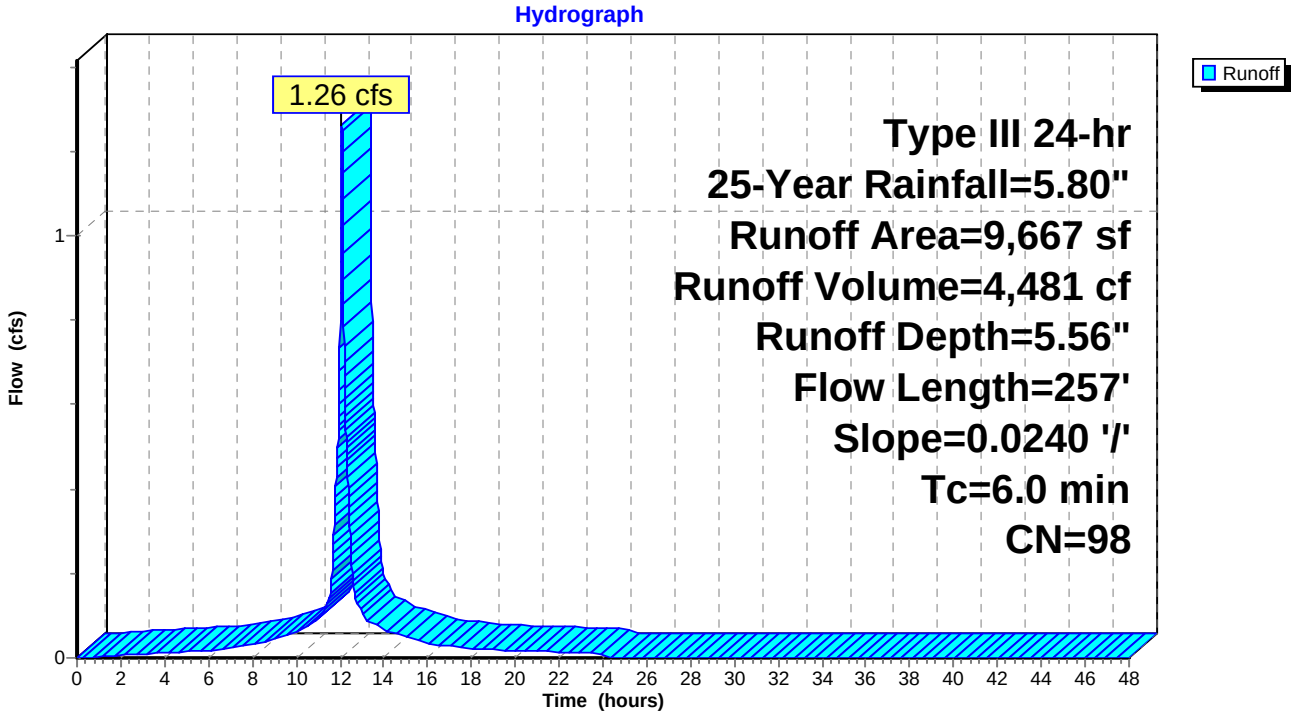
Runoff = 1.26 cfs @ 12.08 hrs, Volume= 4,481 cf, Depth= 5.56"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Type III 24-hr 25-Year Rainfall=5.80"

Area (sf)	CN	Description
2,861	98	Paved parking, HSG B
6,806	98	Paved parking, HSG D
9,667	98	Weighted Average
9,667		100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.1	100	0.0240	1.46		**Sheet Flow,** Smooth surfaces n= 0.011 P2= 3.10"
0.8	157	0.0240	3.14		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
4.1					**Direct Entry,**
6.0	257	Total			

Subcatchment 12S: (new Subcat)



Summary for Subcatchment 13S: (new Subcat)

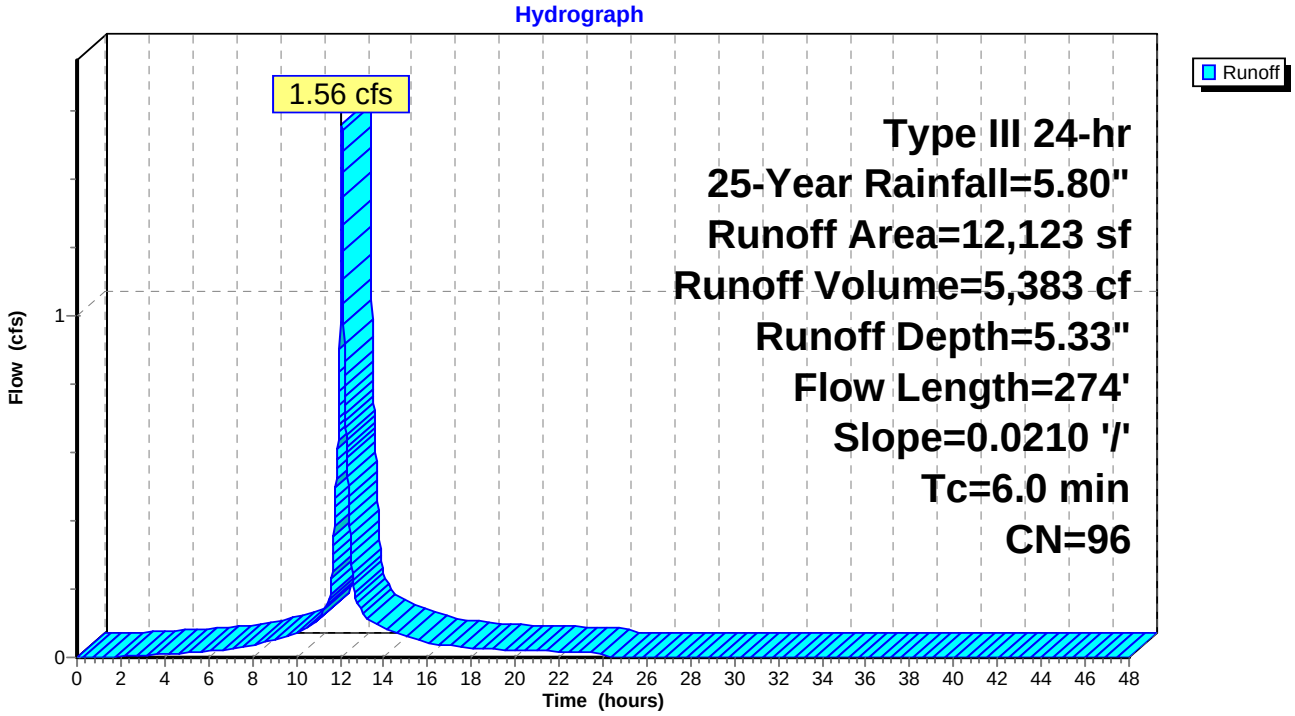
Runoff = 1.56 cfs @ 12.08 hrs, Volume= 5,383 cf, Depth= 5.33"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Type III 24-hr 25-Year Rainfall=5.80"

Area (sf)	CN	Description
10,776	98	Paved parking, HSG D
1,347	80	>75% Grass cover, Good, HSG D
12,123	96	Weighted Average
1,347		11.11% Pervious Area
10,776		88.89% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.2	100	0.0210	1.38		**Sheet Flow,** Smooth surfaces n= 0.011 P2= 3.10"
1.0	174	0.0210	2.94		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
3.8					**Direct Entry,**
6.0	274	Total			

Subcatchment 13S: (new Subcat)



Summary for Subcatchment 14S: (new Subcat)

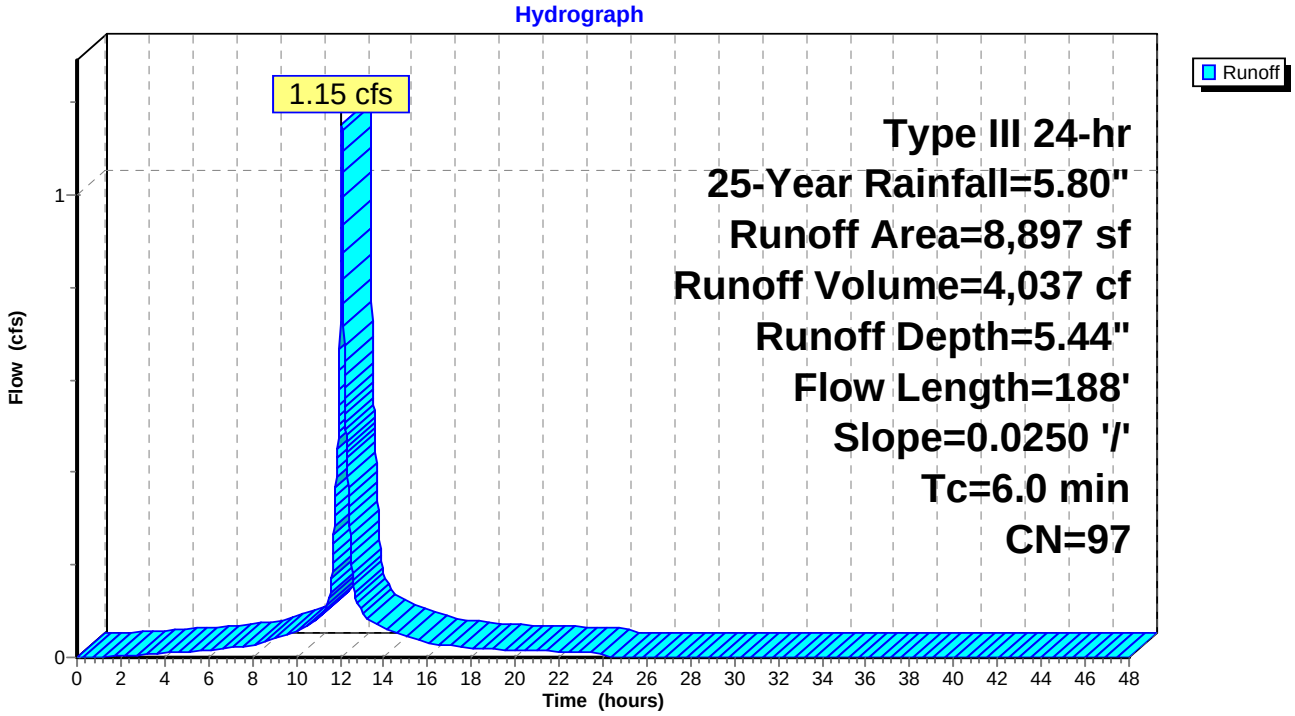
Runoff = 1.15 cfs @ 12.08 hrs, Volume= 4,037 cf, Depth= 5.44"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Type III 24-hr 25-Year Rainfall=5.80"

Area (sf)	CN	Description
8,240	98	Paved parking, HSG D
657	80	>75% Grass cover, Good, HSG D
8,897	97	Weighted Average
657		7.38% Pervious Area
8,240		92.62% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.1	100	0.0250	1.48		**Sheet Flow,** Smooth surfaces n= 0.011 P2= 3.10"
0.5	88	0.0250	3.21		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
4.4					**Direct Entry,**
6.0	188	Total			

Subcatchment 14S: (new Subcat)



Summary for Subcatchment 15S: (new Subcat)

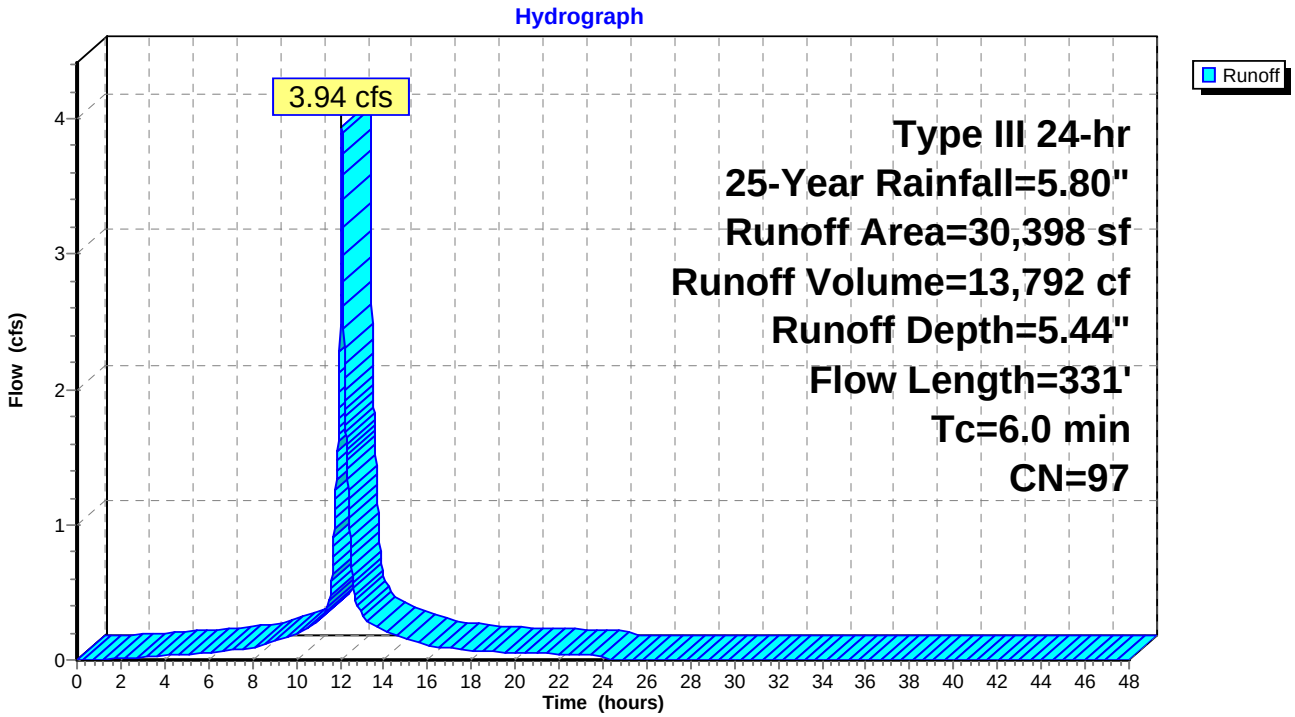
Runoff = 3.94 cfs @ 12.08 hrs, Volume= 13,792 cf, Depth= 5.44"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Type III 24-hr 25-Year Rainfall=5.80"

Area (sf)	CN	Description
104	98	Paved parking, HSG B
28,288	98	Paved parking, HSG D
2,006	80	>75% Grass cover, Good, HSG D
30,398	97	Weighted Average
2,006		6.60% Pervious Area
28,392		93.40% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.2	100	0.0225	1.42		**Sheet Flow,** Smooth surfaces n= 0.011 P2= 3.10"
1.7	231	0.0130	2.31		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
3.1					**Direct Entry,**
6.0	331	Total			

Subcatchment 15S: (new Subcat)



Summary for Subcatchment 16S: (new Subcat)

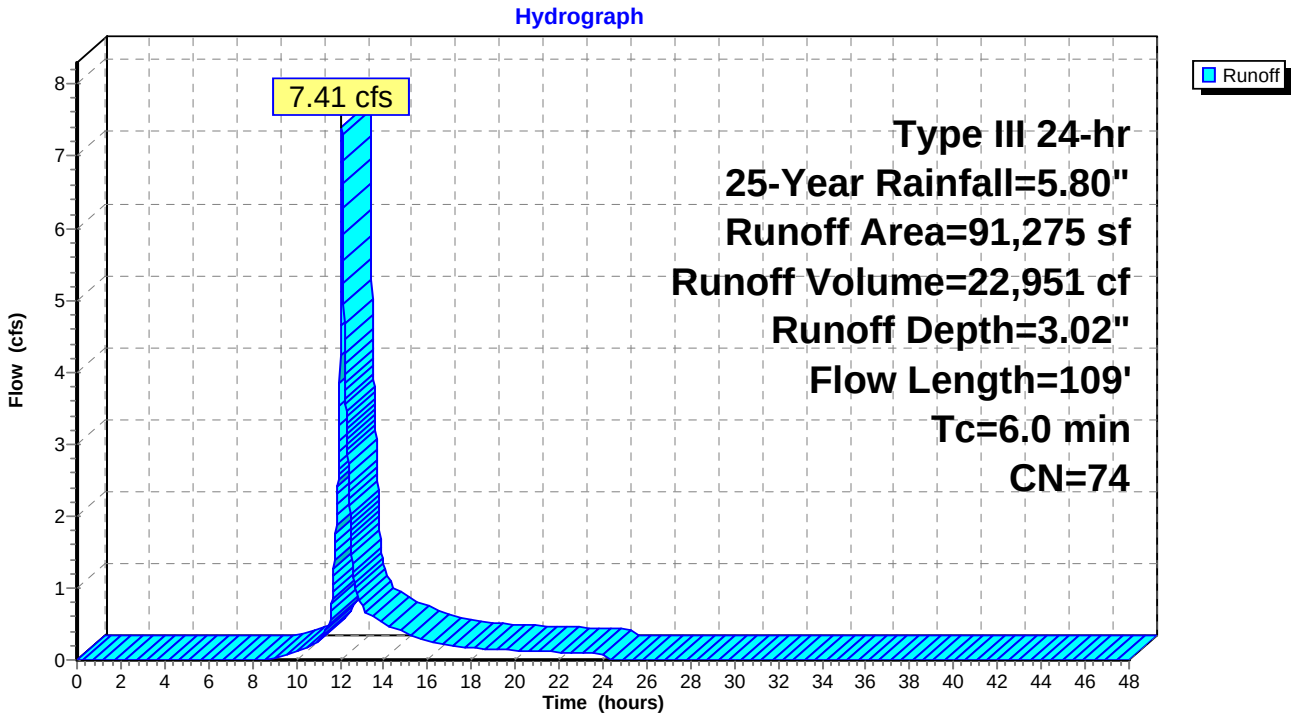
Runoff = 7.41 cfs @ 12.09 hrs, Volume= 22,951 cf, Depth= 3.02"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Type III 24-hr 25-Year Rainfall=5.80"

Area (sf)	CN	Description
892	98	Roofs, HSG B
29,427	61	>75% Grass cover, Good, HSG B
60,956	80	>75% Grass cover, Good, HSG D
91,275	74	Weighted Average
90,383		99.02% Pervious Area
892		0.98% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.3	71	0.0490	0.22		**Sheet Flow,** Grass: Short n= 0.150 P2= 3.10"
0.1	38	0.4300	4.59		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
0.6					**Direct Entry,**
6.0	109	Total			

Subcatchment 16S: (new Subcat)



Summary for Subcatchment 17S: (new Subcat)

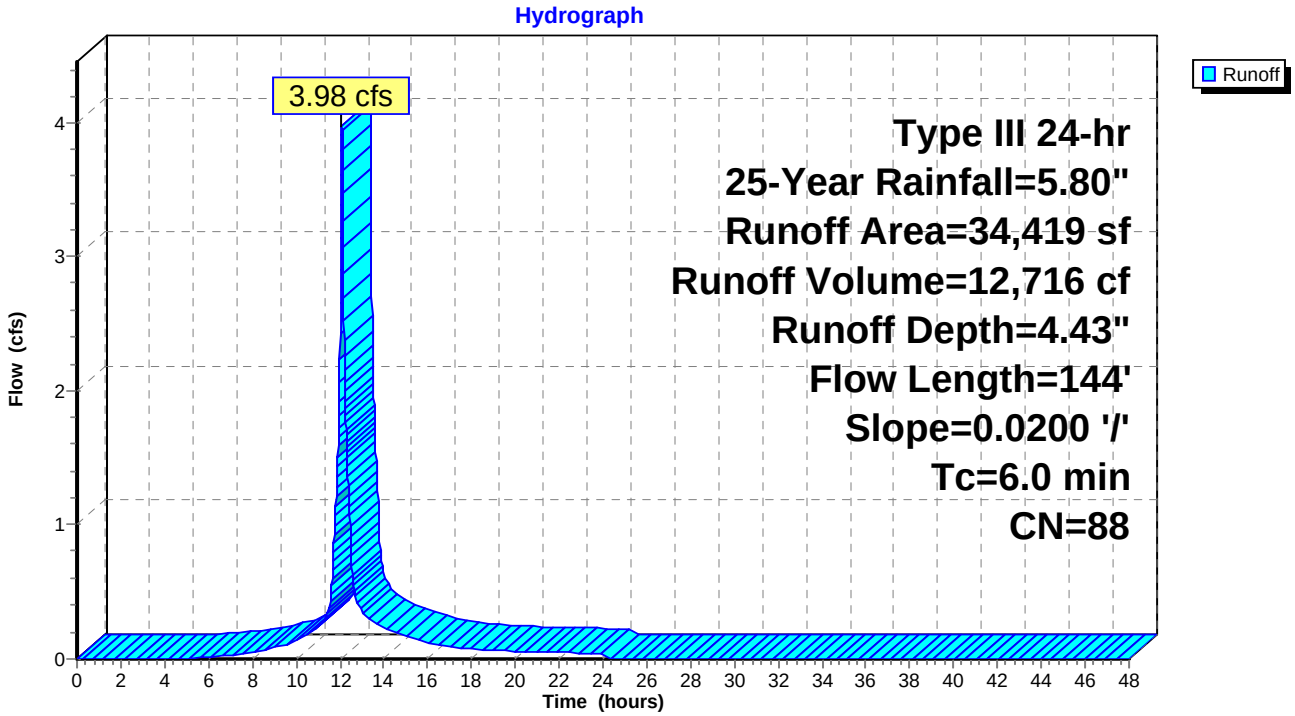
Runoff = 3.98 cfs @ 12.09 hrs, Volume= 12,716 cf, Depth= 4.43"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Type III 24-hr 25-Year Rainfall=5.80"

Area (sf)	CN	Description
17,541	98	Paved parking, HSG B
7,803	98	Roofs, HSG B
9,075	61	>75% Grass cover, Good, HSG B
34,419	88	Weighted Average
9,075		26.37% Pervious Area
25,344		73.63% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.2	100	0.0200	1.35		**Sheet Flow,** Smooth surfaces n= 0.011 P2= 3.10"
0.1	20	0.0200	2.87		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
0.4	24	0.0200	0.99		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
4.3					**Direct Entry,**
6.0	144	Total			

Subcatchment 17S: (new Subcat)



Summary for Subcatchment OSE: Off Site Flow East of PKWY

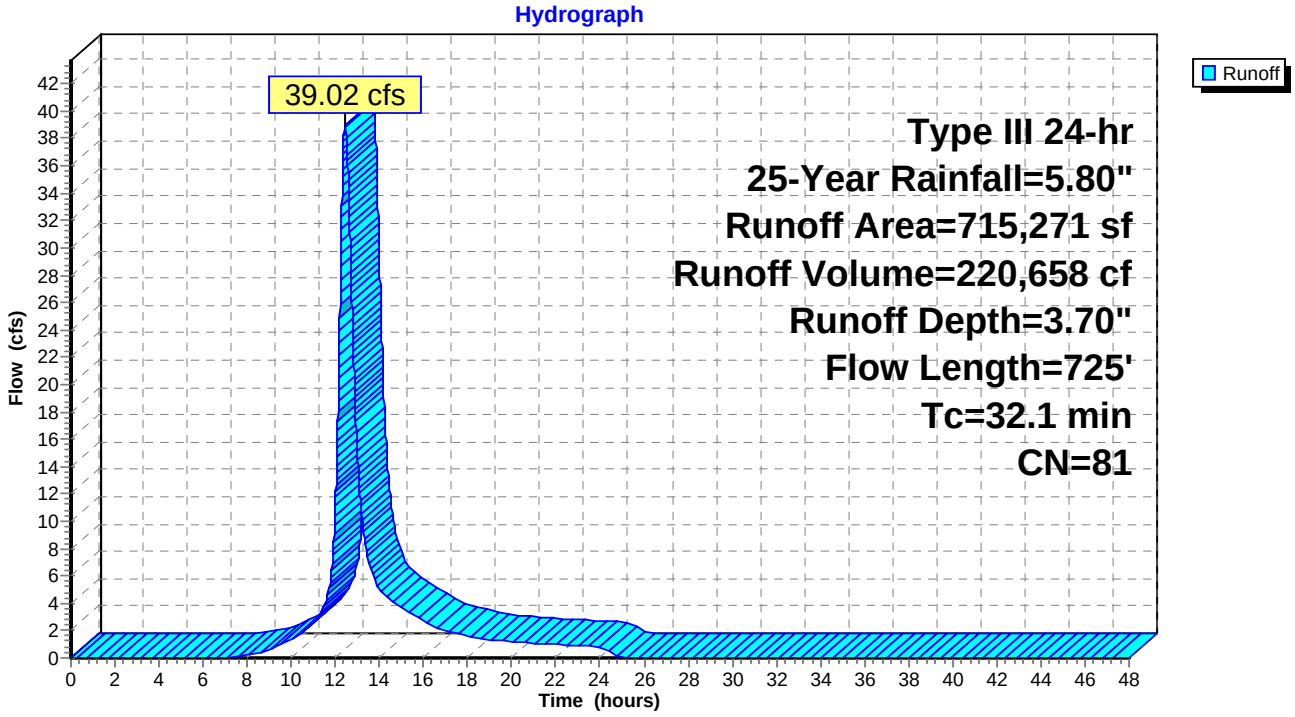
Runoff = 39.02 cfs @ 12.45 hrs, Volume= 220,658 cf, Depth= 3.70"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Type III 24-hr 25-Year Rainfall=5.80"

Area (sf)	CN	Description
377,496	98	Paved parking, HSG B
337,775	61	>75% Grass cover, Good, HSG B
715,271	81	Weighted Average
337,775		47.22% Pervious Area
377,496		52.78% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
20.9	100	0.0080	0.08		**Sheet Flow,** Grass: Dense n= 0.240 P2= 3.10"
6.4	240	0.0080	0.63		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
4.8	385	0.0370	1.35		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
32.1	725	Total			

Subcatchment OSE: Off Site Flow East of PKWY



Summary for Subcatchment OSW: Off Site Flow West of PKWY

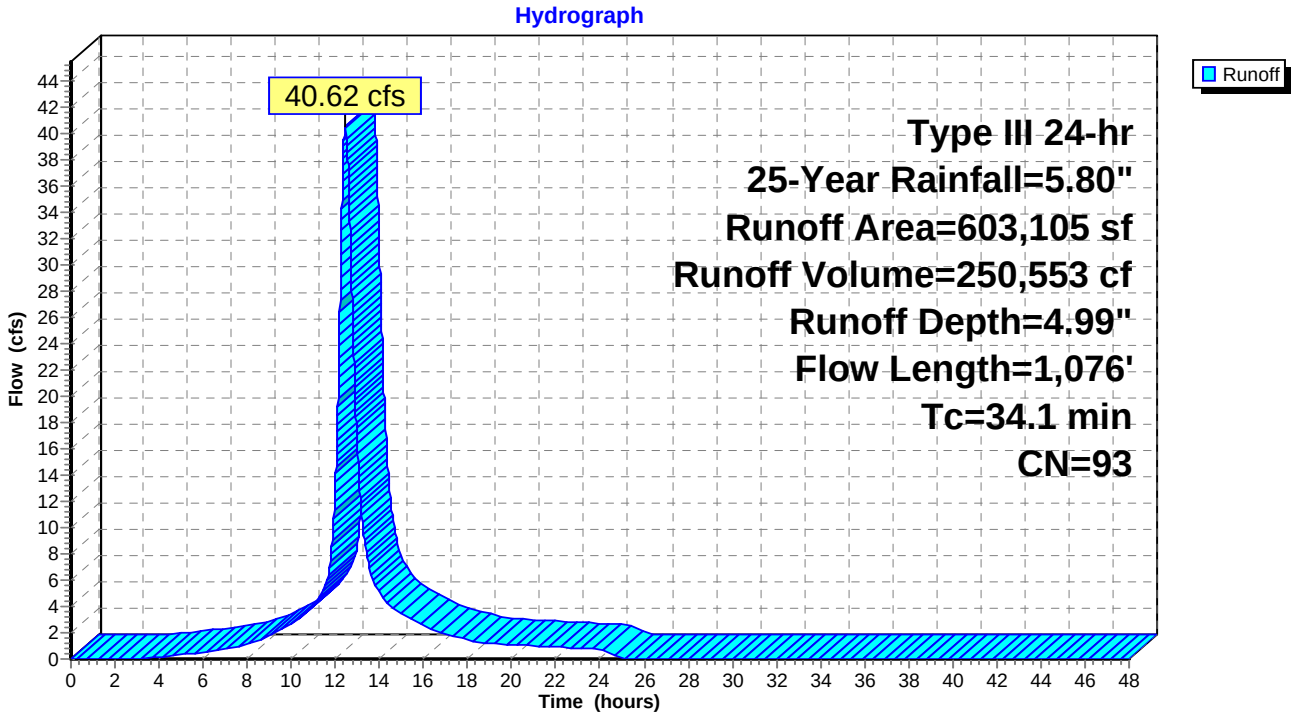
Runoff = 40.62 cfs @ 12.46 hrs, Volume= 250,553 cf, Depth= 4.99"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Type III 24-hr 25-Year Rainfall=5.80"

Area (sf)	CN	Description
536,874	92	Urban commercial, 85% imp, HSG B
66,231	98	Paved parking, HSG B
603,105	93	Weighted Average
80,531		13.35% Pervious Area
522,574		86.65% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
19.1	100	0.0100	0.09		**Sheet Flow,** Grass: Dense n= 0.240 P2= 3.10"
3.5	146	0.0100	0.70		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
4.1	258	0.0230	1.06		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
7.4	572	0.0340	1.29		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
34.1	1,076	Total			

Subcatchment OSW: Off Site Flow West of PKWY



Summary for Pond 1P: DMH 10162

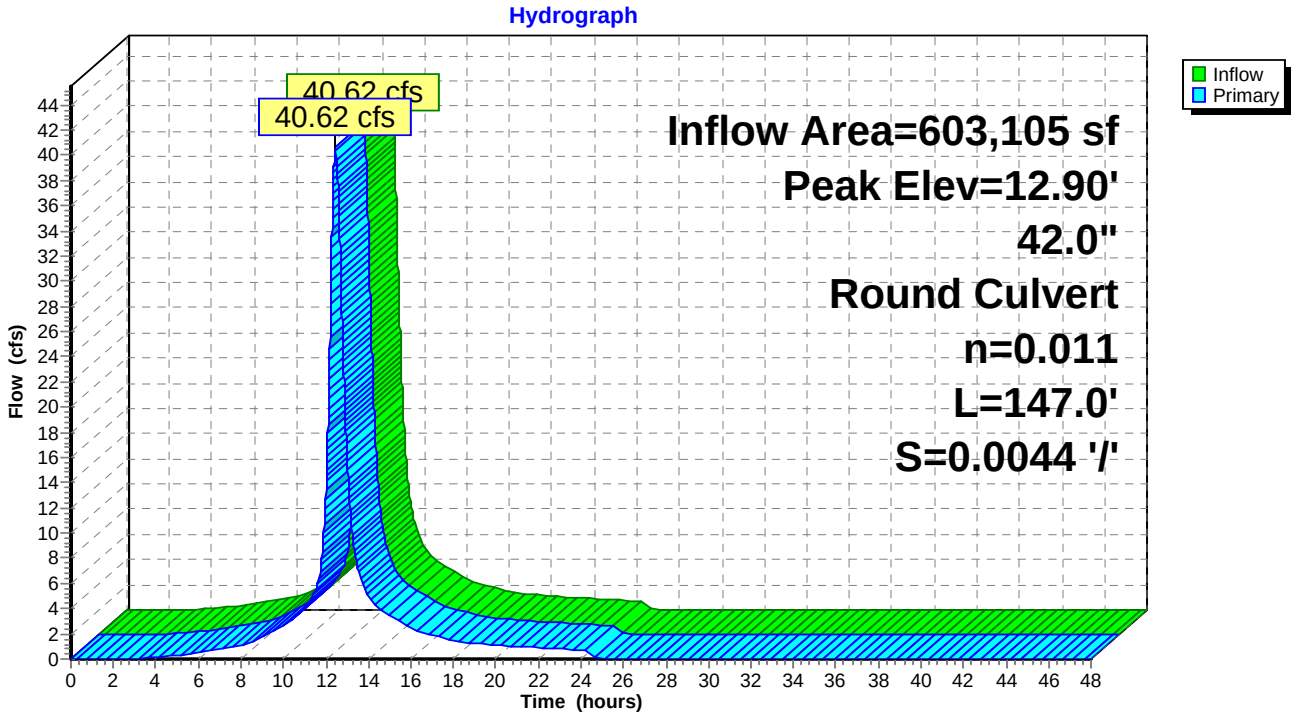
Inflow Area = 603,105 sf, 86.65% Impervious, Inflow Depth = 4.99" for 25-Year event
Inflow = 40.62 cfs @ 12.46 hrs, Volume= 250,553 cf
Outflow = 40.62 cfs @ 12.46 hrs, Volume= 250,553 cf, Atten= 0%, Lag= 0.0 min
Primary = 40.62 cfs @ 12.46 hrs, Volume= 250,553 cf

Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs / 2
Peak Elev= 12.90' @ 12.46 hrs
Flood Elev= 28.14'

Device	Routing	Invert	Outlet Devices
#1	Primary	9.18'	**42.0" Round Culvert** L= 147.0' RCP, sq.cut end projecting, Ke= 0.500 Inlet / Outlet Invert= 9.18' / 8.54' S= 0.0044 '/' Cc= 0.900 n= 0.011 Concrete pipe, straight & clean, Flow Area= 9.62 sf

Primary OutFlow Max=40.59 cfs @ 12.46 hrs HW=12.89' TW=12.13' (Dynamic Tailwater)
1=Culvert (Inlet Controls 40.59 cfs @ 4.22 fps)

Pond 1P: DMH 10162



Summary for Pond 2P: CB-15

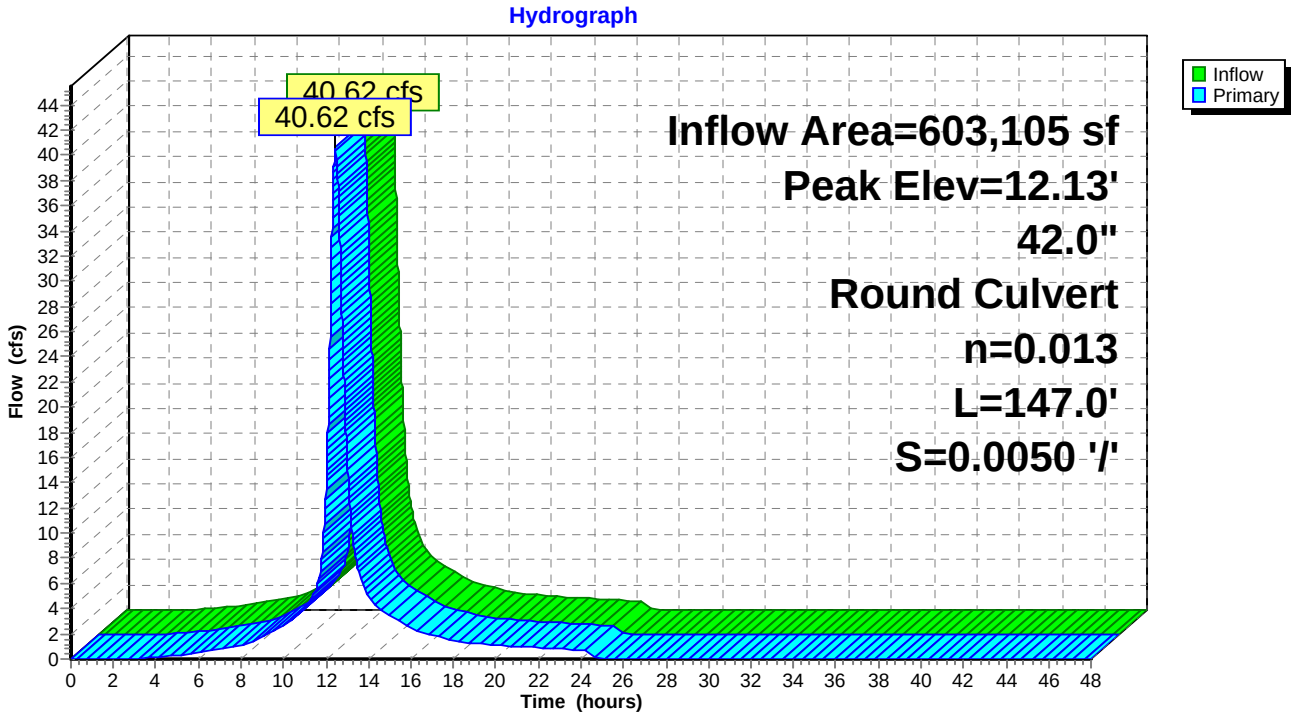
Inflow Area = 603,105 sf, 86.65% Impervious, Inflow Depth = 4.99" for 25-Year event
Inflow = 40.62 cfs @ 12.46 hrs, Volume= 250,553 cf
Outflow = 40.62 cfs @ 12.46 hrs, Volume= 250,553 cf, Atten= 0%, Lag= 0.0 min
Primary = 40.62 cfs @ 12.46 hrs, Volume= 250,553 cf

Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs / 2
Peak Elev= 12.13' @ 12.46 hrs
Flood Elev= 14.50'

Device	Routing	Invert	Outlet Devices
#1	Primary	8.44'	**42.0" Round Culvert** L= 147.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 8.44' / 7.71' S= 0.0050 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 9.62 sf

Primary OutFlow Max=40.61 cfs @ 12.46 hrs HW=12.13' TW=10.89' (Dynamic Tailwater)
↑**1=Culvert** (Inlet Controls 40.61 cfs @ 4.22 fps)

Pond 2P: CB-15



Summary for Pond 3P: Existing (4)-36" Culverts

Inflow Area = 715,271 sf, 52.78% Impervious, Inflow Depth = 4.66" for 25-Year event
Inflow = 66.90 cfs @ 12.42 hrs, Volume= 277,970 cf
Outflow = 66.78 cfs @ 12.44 hrs, Volume= 277,253 cf, Atten= 0%, Lag= 1.1 min
Primary = 66.78 cfs @ 12.44 hrs, Volume= 277,253 cf

Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs / 2
Peak Elev= 6.97' @ 12.44 hrs Surf.Area= 3,202 sf Storage= 4,790 cf
Flood Elev= 10.00' Surf.Area= 5,367 sf Storage= 17,878 cf

Plug-Flow detention time= 4.8 min calculated for 277,253 cf (100% of inflow)
Center-of-Mass det. time= 3.0 min (821.0 - 818.0)

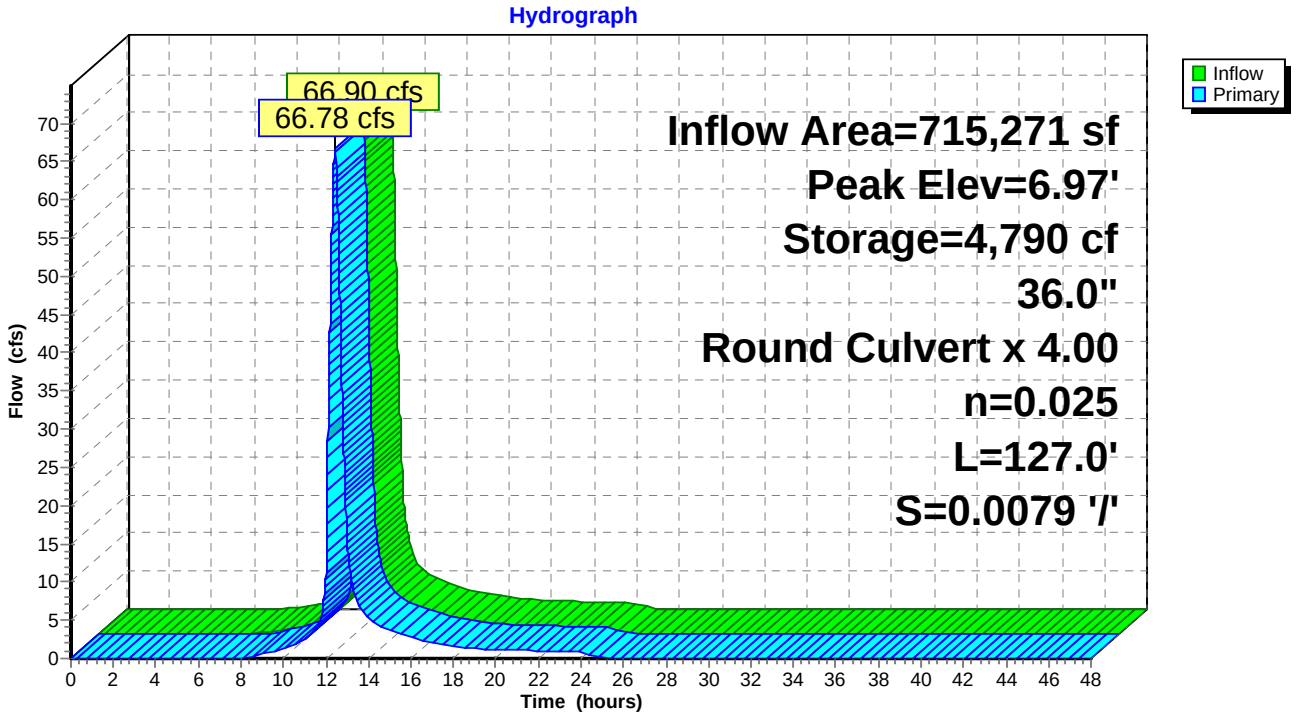
Volume	Invert	Avail.Storage	Storage Description
#1	4.00'	17,878 cf	**Custom Stage Data (Prismatic)**Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
4.00	500	0	0
5.00	1,302	901	901
6.00	1,700	1,501	2,402
7.00	3,242	2,471	4,873
8.00	4,020	3,631	8,504
9.00	4,680	4,350	12,854
10.00	5,367	5,024	17,878

Device	Routing	Invert	Outlet Devices
#1	Primary	4.85'	**36.0" Round Culvert X 4.00** L= 127.0' CMP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 4.85' / 3.85' S= 0.0079 '/' Cc= 0.900 n= 0.025 Corrugated metal, Flow Area= 7.07 sf

Primary OutFlow Max=66.78 cfs @ 12.44 hrs HW=6.97' TW=0.00' (Dynamic Tailwater)
1=Culvert (Barrel Controls 66.78 cfs @ 4.38 fps)

Pond 3P: Existing (4)-36" Culverts



Summary for Pond 4P: CBR 15036

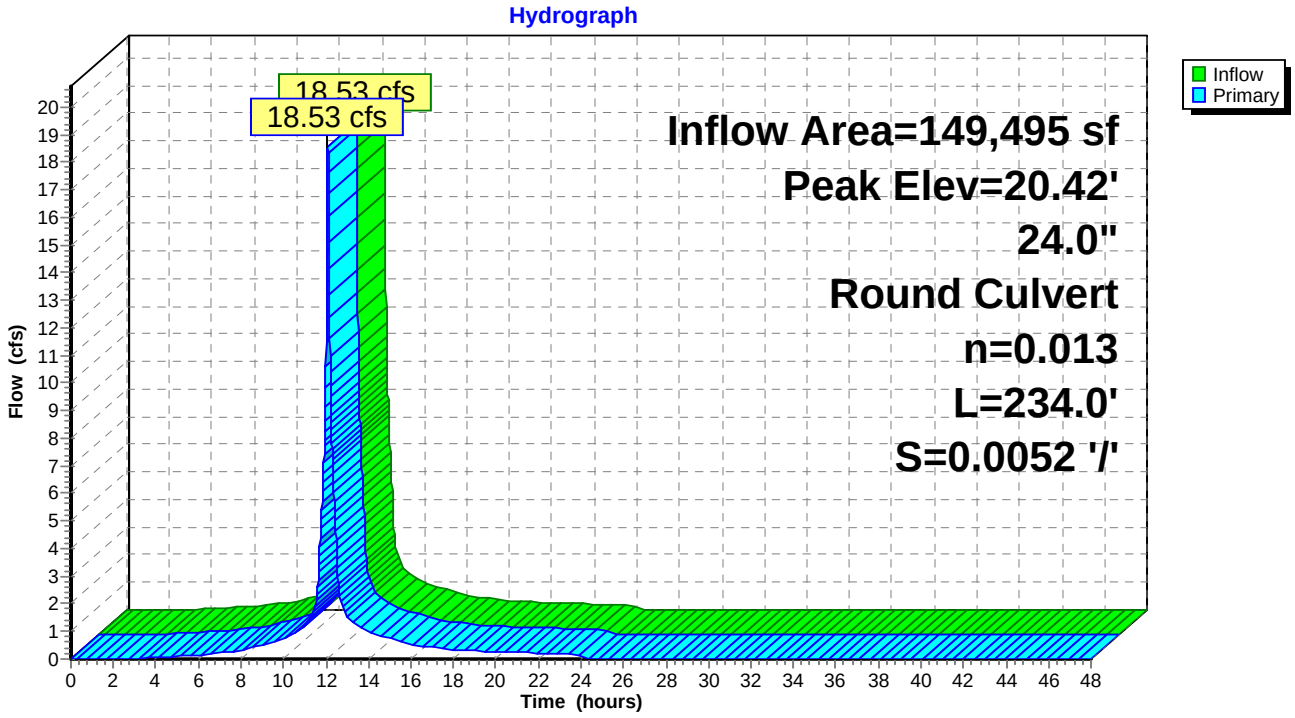
Inflow Area = 149,495 sf, 85.96% Impervious, Inflow Depth = 4.95" for 25-Year event
Inflow = 18.53 cfs @ 12.08 hrs, Volume= 61,725 cf
Outflow = 18.53 cfs @ 12.08 hrs, Volume= 61,725 cf, Atten= 0%, Lag= 0.0 min
Primary = 18.53 cfs @ 12.08 hrs, Volume= 61,725 cf

Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs / 2
Peak Elev= 20.42' @ 12.09 hrs
Flood Elev= 25.22'

Device	Routing	Invert	Outlet Devices
#1	Primary	15.59'	**24.0" Round Culvert** L= 234.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 15.59' / 14.38' S= 0.0052 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 3.14 sf

Primary OutFlow Max=18.20 cfs @ 12.08 hrs HW=20.36' TW=18.06' (Dynamic Tailwater)
└**1=Culvert** (Outlet Controls 18.20 cfs @ 5.79 fps)

Pond 4P: CBR 15036



Summary for Pond 5P: CB 15031

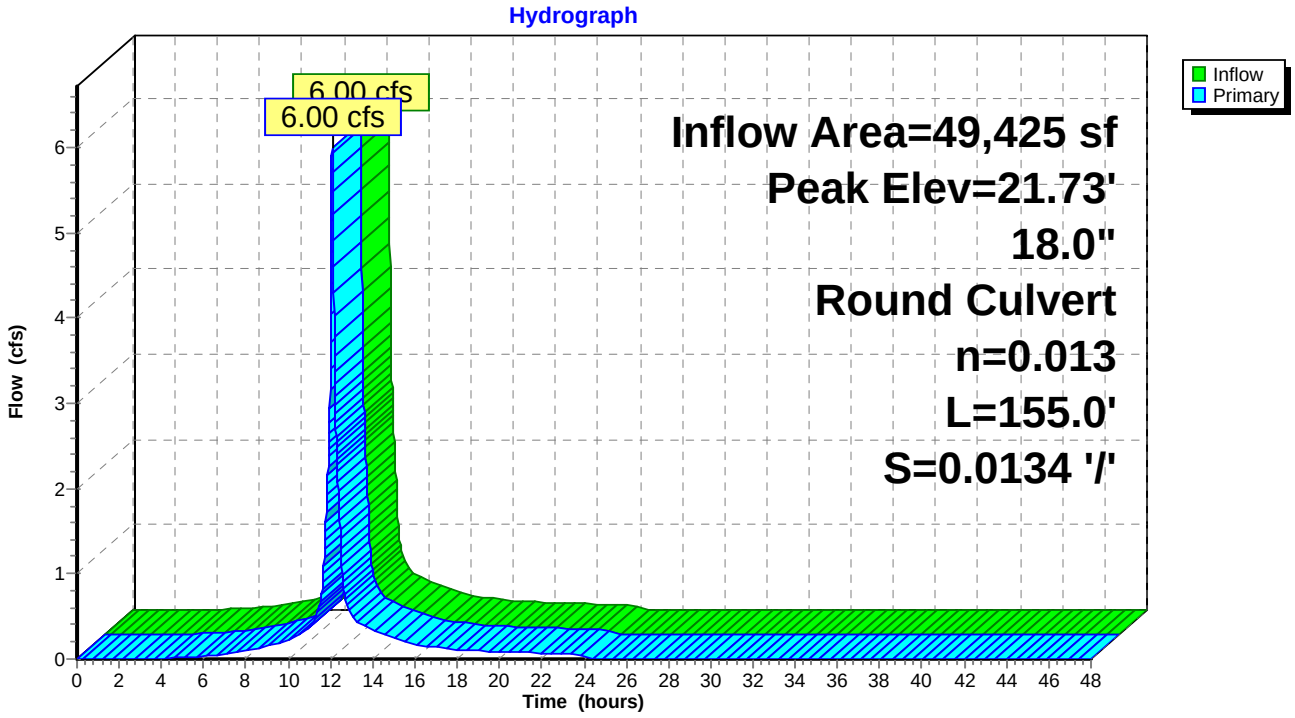
Inflow Area = 49,425 sf, 82.25% Impervious, Inflow Depth = 4.76" for 25-Year event
Inflow = 6.00 cfs @ 12.08 hrs, Volume= 19,612 cf
Outflow = 6.00 cfs @ 12.08 hrs, Volume= 19,612 cf, Atten= 0%, Lag= 0.0 min
Primary = 6.00 cfs @ 12.08 hrs, Volume= 19,612 cf

Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs / 2
Peak Elev= 21.73' @ 12.09 hrs
Flood Elev= 25.58'

Device	Routing	Invert	Outlet Devices
#1	Primary	20.38'	**18.0" Round Culvert** L= 155.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 20.38' / 18.30' S= 0.0134 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.77 sf

Primary OutFlow Max=5.88 cfs @ 12.08 hrs HW=21.70' TW=20.37' (Dynamic Tailwater)
└**1=Culvert** (Outlet Controls 5.88 cfs @ 4.74 fps)

Pond 5P: CB 15031



Summary for Pond 6P: CBR 15040

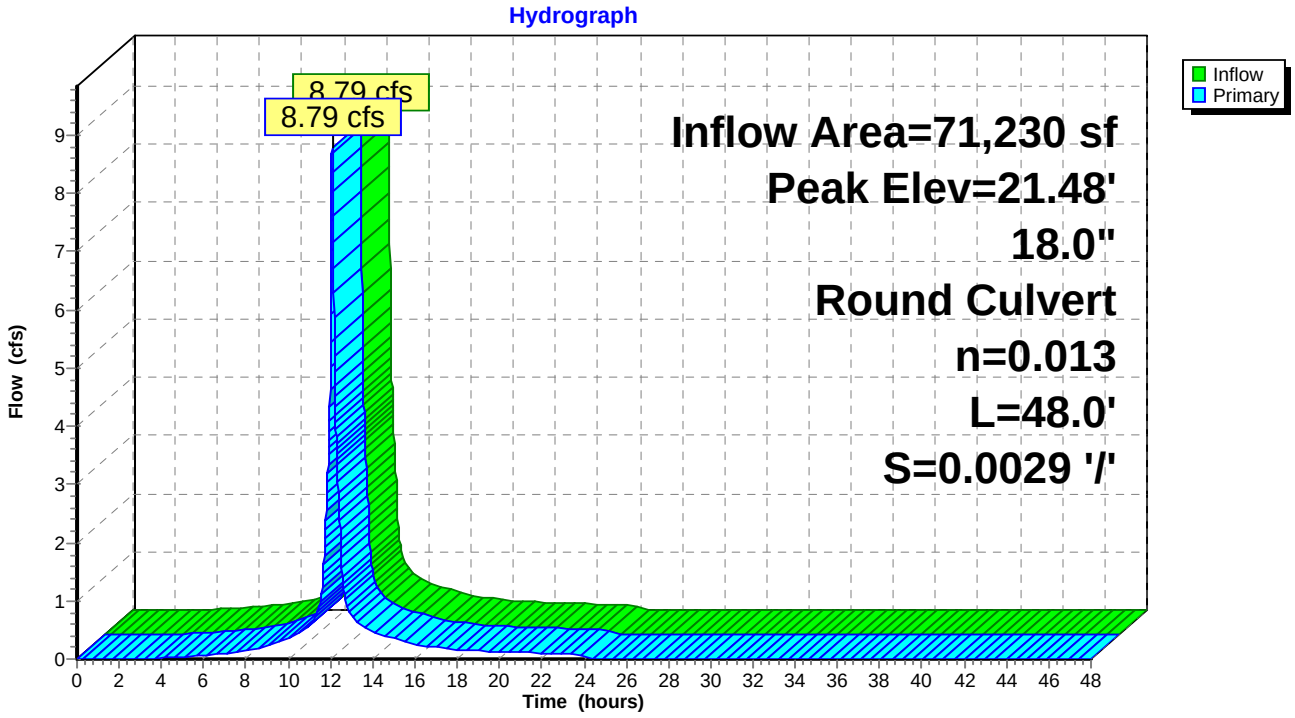
Inflow Area = 71,230 sf, 84.12% Impervious, Inflow Depth = 4.89" for 25-Year event
Inflow = 8.79 cfs @ 12.08 hrs, Volume= 29,027 cf
Outflow = 8.79 cfs @ 12.08 hrs, Volume= 29,027 cf, Atten= 0%, Lag= 0.0 min
Primary = 8.79 cfs @ 12.08 hrs, Volume= 29,027 cf

Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs / 2
Peak Elev= 21.48' @ 12.09 hrs
Flood Elev= 25.90'

Device	Routing	Invert	Outlet Devices
#1	Primary	15.83'	**18.0" Round Culvert** L= 48.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 15.83' / 15.69' S= 0.0029 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.77 sf

Primary OutFlow Max=8.53 cfs @ 12.08 hrs HW=21.37' TW=20.36' (Dynamic Tailwater)
1=Culvert (Inlet Controls 8.53 cfs @ 4.83 fps)

Pond 6P: CBR 15040



Summary for Pond 7P: CB 12

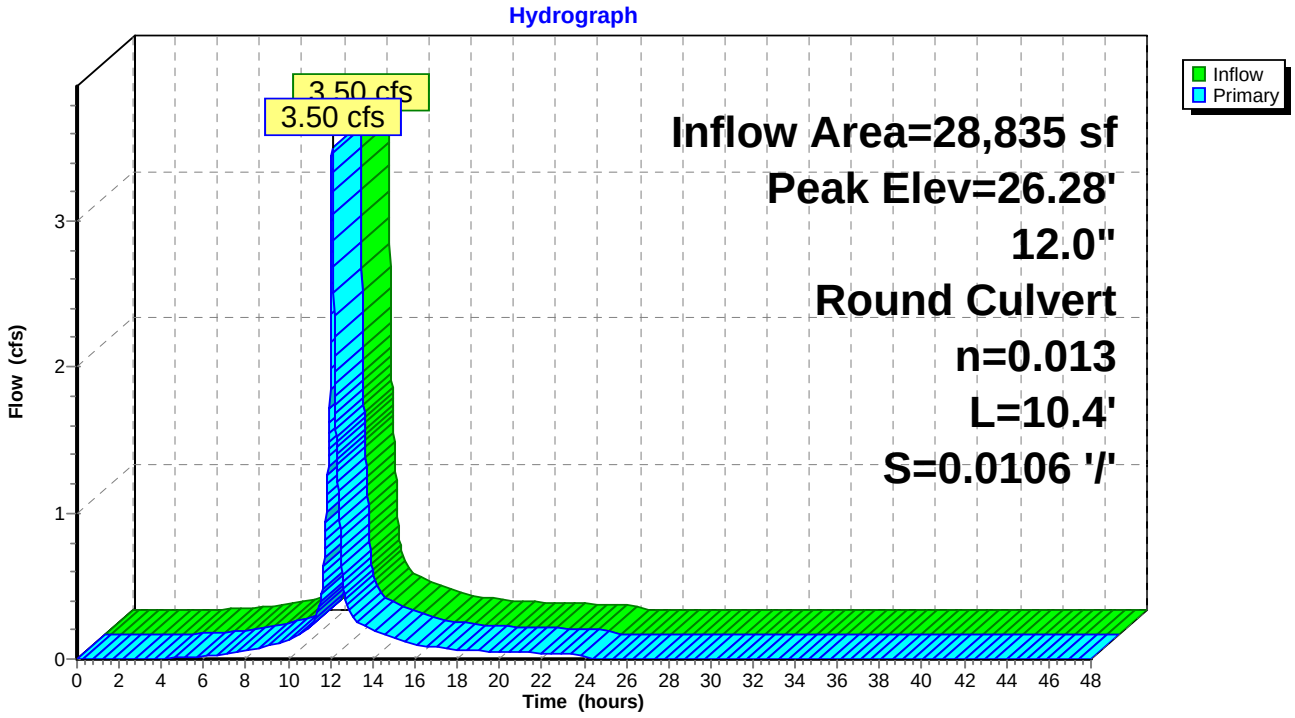
Inflow Area = 28,835 sf, 82.21% Impervious, Inflow Depth = 4.76" for 25-Year event
Inflow = 3.50 cfs @ 12.08 hrs, Volume= 11,442 cf
Outflow = 3.50 cfs @ 12.08 hrs, Volume= 11,442 cf, Atten= 0%, Lag= 0.0 min
Primary = 3.50 cfs @ 12.08 hrs, Volume= 11,442 cf

Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs / 2
Peak Elev= 26.28' @ 12.08 hrs
Flood Elev= 29.60'

Device	Routing	Invert	Outlet Devices
#1	Primary	24.68'	**12.0" Round Culvert** L= 10.4' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 24.68' / 24.57' S= 0.0106 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.79 sf

Primary OutFlow Max=3.50 cfs @ 12.08 hrs HW=26.27' TW=25.42' (Dynamic Tailwater)
1=Culvert (Inlet Controls 3.50 cfs @ 4.45 fps)

Pond 7P: CB 12



Summary for Pond 8P: CBR 15042

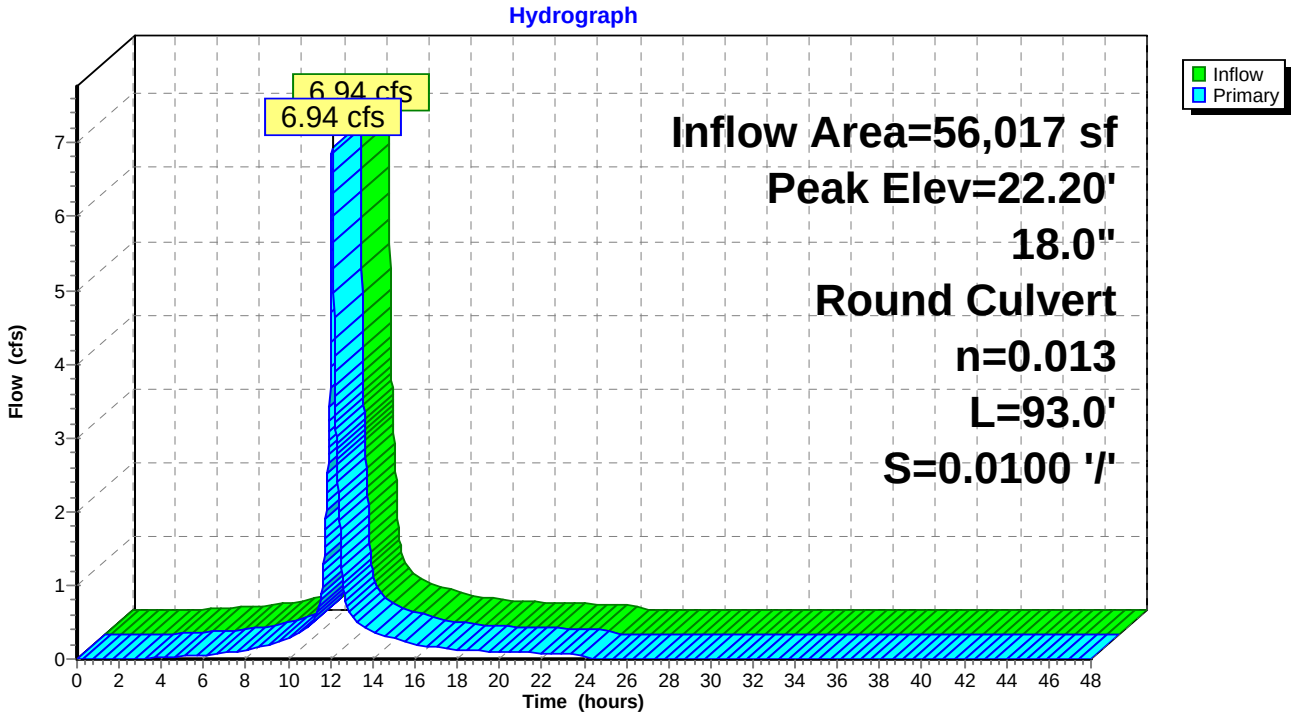
Inflow Area = 56,017 sf, 85.18% Impervious, Inflow Depth = 4.93" for 25-Year event
Inflow = 6.94 cfs @ 12.08 hrs, Volume= 22,991 cf
Outflow = 6.94 cfs @ 12.08 hrs, Volume= 22,991 cf, Atten= 0%, Lag= 0.0 min
Primary = 6.94 cfs @ 12.08 hrs, Volume= 22,991 cf

Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs / 2
Peak Elev= 22.20' @ 12.10 hrs
Flood Elev= 27.09'

Device	Routing	Invert	Outlet Devices
#1	Primary	16.46'	**18.0" Round Culvert** L= 93.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 16.46' / 15.53' S= 0.0100 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.77 sf

Primary OutFlow Max=6.35 cfs @ 12.08 hrs HW=22.01' TW=21.37' (Dynamic Tailwater)
1=Culvert (Outlet Controls 6.35 cfs @ 3.60 fps)

Pond 8P: CBR 15042



Summary for Pond 9P: CB-11

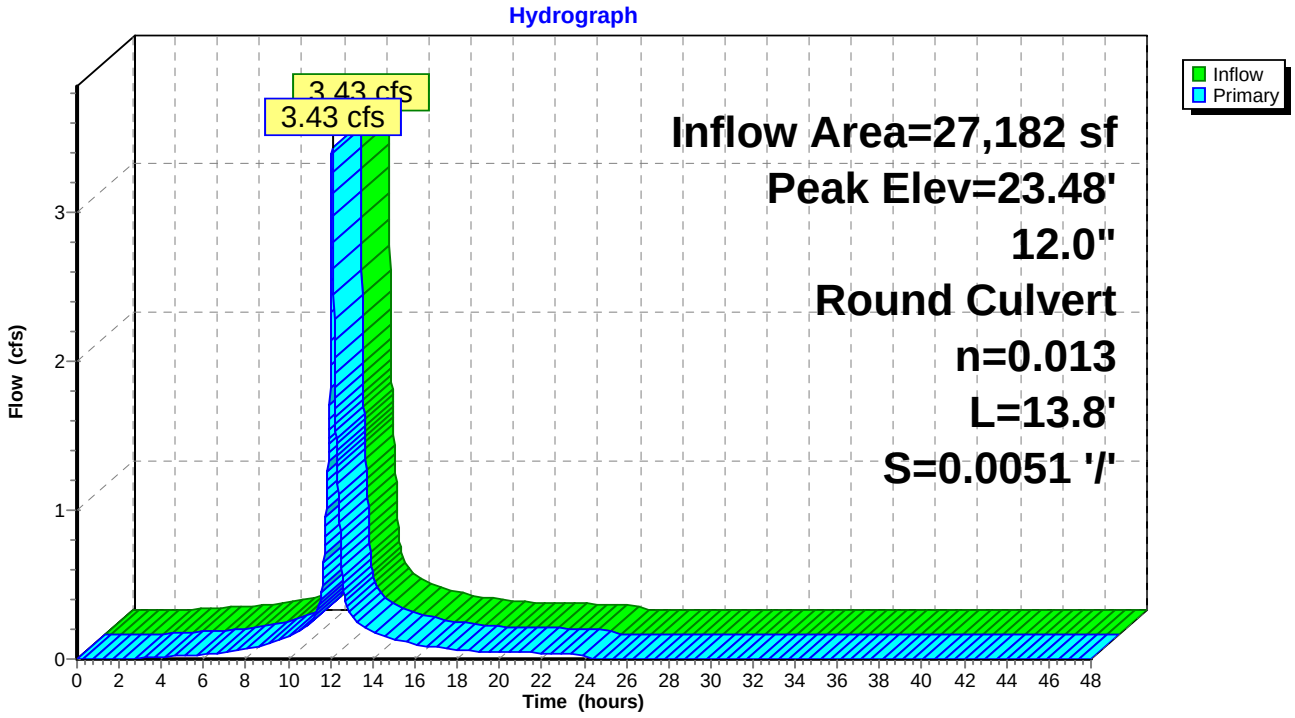
Inflow Area = 27,182 sf, 88.34% Impervious, Inflow Depth = 5.10" for 25-Year event
Inflow = 3.43 cfs @ 12.08 hrs, Volume= 11,549 cf
Outflow = 3.43 cfs @ 12.08 hrs, Volume= 11,549 cf, Atten= 0%, Lag= 0.0 min
Primary = 3.43 cfs @ 12.08 hrs, Volume= 11,549 cf

Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs / 2
Peak Elev= 23.48' @ 12.10 hrs
Flood Elev= 27.50'

Device	Routing	Invert	Outlet Devices
#1	Primary	21.47'	**12.0" Round Culvert** L= 13.8' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 21.47' / 21.40' S= 0.0051 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.79 sf

Primary OutFlow Max=3.43 cfs @ 12.08 hrs HW=23.32' TW=22.00' (Dynamic Tailwater)
1=Culvert (Inlet Controls 3.43 cfs @ 4.37 fps)

Pond 9P: CB-11



Summary for Pond 10P: CB-16

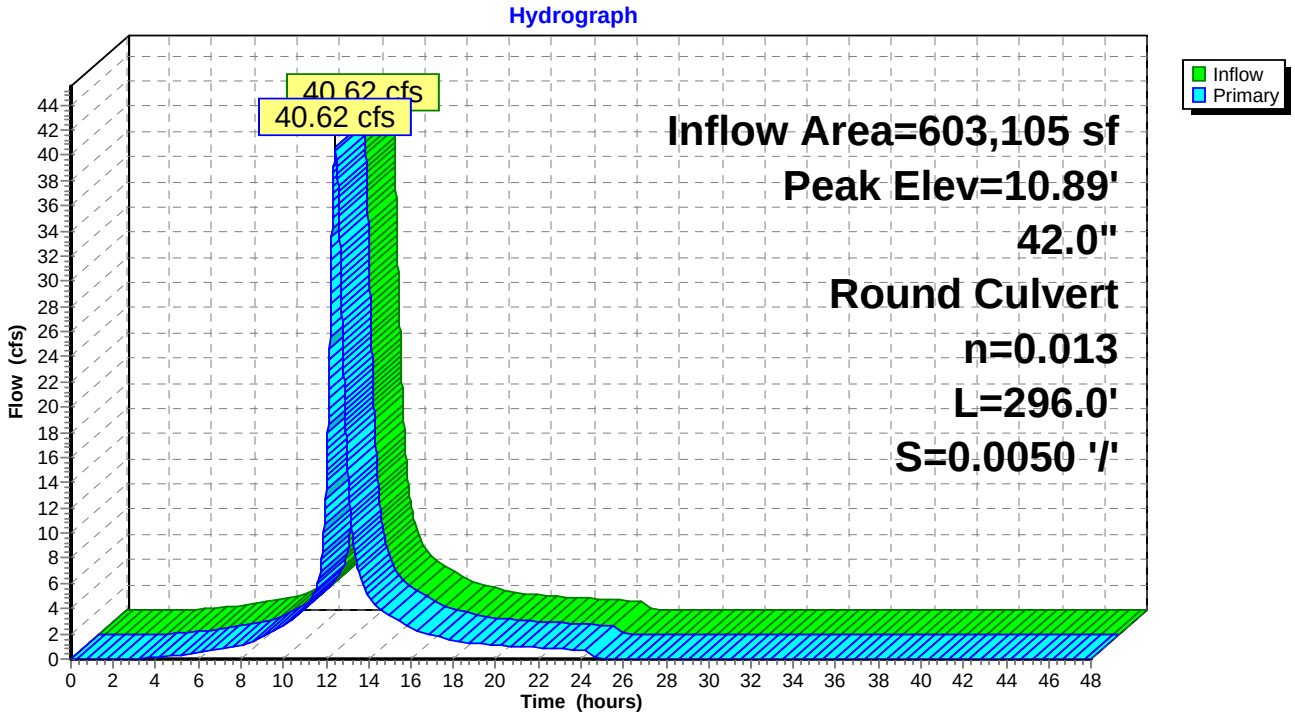
Inflow Area = 603,105 sf, 86.65% Impervious, Inflow Depth = 4.99" for 25-Year event
Inflow = 40.62 cfs @ 12.46 hrs, Volume= 250,553 cf
Outflow = 40.62 cfs @ 12.46 hrs, Volume= 250,553 cf, Atten= 0%, Lag= 0.0 min
Primary = 40.62 cfs @ 12.46 hrs, Volume= 250,553 cf

Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs / 2
Peak Elev= 10.89' @ 12.46 hrs
Flood Elev= 14.50'

Device	Routing	Invert	Outlet Devices
#1	Primary	7.61'	**42.0" Round Culvert** L= 296.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 7.61' / 6.14' S= 0.0050 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 9.62 sf

Primary OutFlow Max=40.64 cfs @ 12.46 hrs HW=10.89' TW=9.28' (Dynamic Tailwater)
1=Culvert (Outlet Controls 40.64 cfs @ 5.62 fps)

Pond 10P: CB-16



Summary for Pond 11P: DMH-1

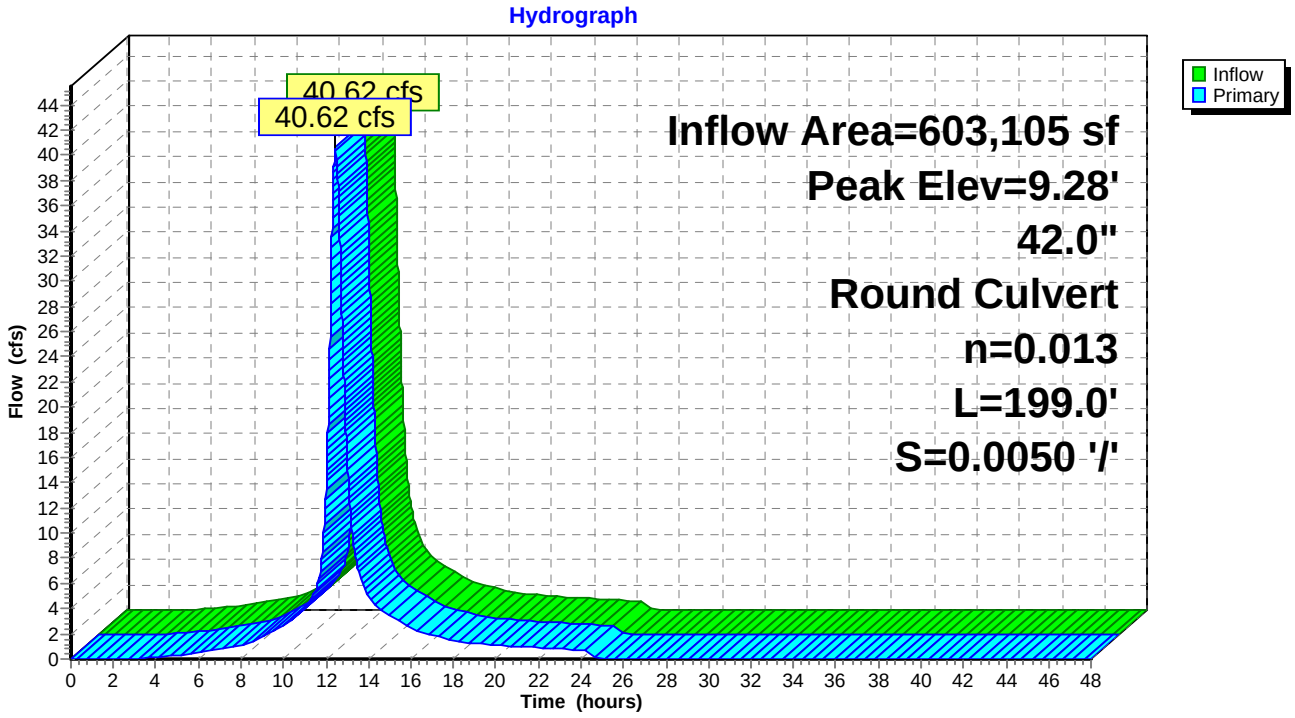
Inflow Area = 603,105 sf, 86.65% Impervious, Inflow Depth = 4.99" for 25-Year event
Inflow = 40.62 cfs @ 12.46 hrs, Volume= 250,553 cf
Outflow = 40.62 cfs @ 12.46 hrs, Volume= 250,553 cf, Atten= 0%, Lag= 0.0 min
Primary = 40.62 cfs @ 12.46 hrs, Volume= 250,553 cf

Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs / 2
Peak Elev= 9.28' @ 12.44 hrs
Flood Elev= 14.00'

Device	Routing	Invert	Outlet Devices
#1	Primary	6.04'	**42.0" Round Culvert** L= 199.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 6.04' / 5.05' S= 0.0050 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 9.62 sf

Primary OutFlow Max=40.64 cfs @ 12.46 hrs HW=9.28' TW=7.85' (Dynamic Tailwater)
1=Culvert (Outlet Controls 40.64 cfs @ 5.70 fps)

Pond 11P: DMH-1



Summary for Pond 12P: CB-4

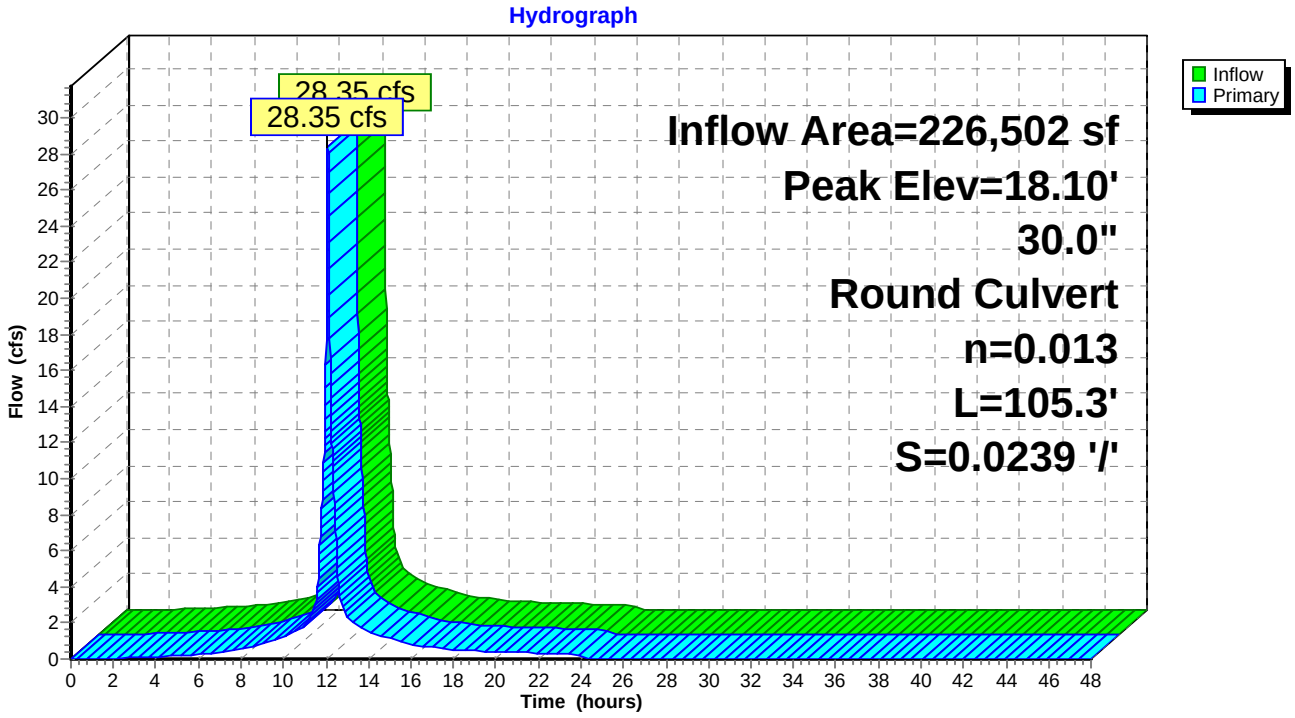
Inflow Area = 226,502 sf, 88.10% Impervious, Inflow Depth = 5.07" for 25-Year event
Inflow = 28.35 cfs @ 12.08 hrs, Volume= 95,635 cf
Outflow = 28.35 cfs @ 12.08 hrs, Volume= 95,635 cf, Atten= 0%, Lag= 0.0 min
Primary = 28.35 cfs @ 12.08 hrs, Volume= 95,635 cf

Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs / 2
Peak Elev= 18.10' @ 12.09 hrs
Flood Elev= 20.69'

Device	Routing	Invert	Outlet Devices
#1	Primary	14.28'	**30.0" Round Culvert** L= 105.3' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 14.28' / 11.76' S= 0.0239 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 4.91 sf

Primary OutFlow Max=28.21 cfs @ 12.08 hrs HW=18.06' TW=15.77' (Dynamic Tailwater)
1=Culvert (Inlet Controls 28.21 cfs @ 5.75 fps)

Pond 12P: CB-4



Summary for Pond 13P: CB-7

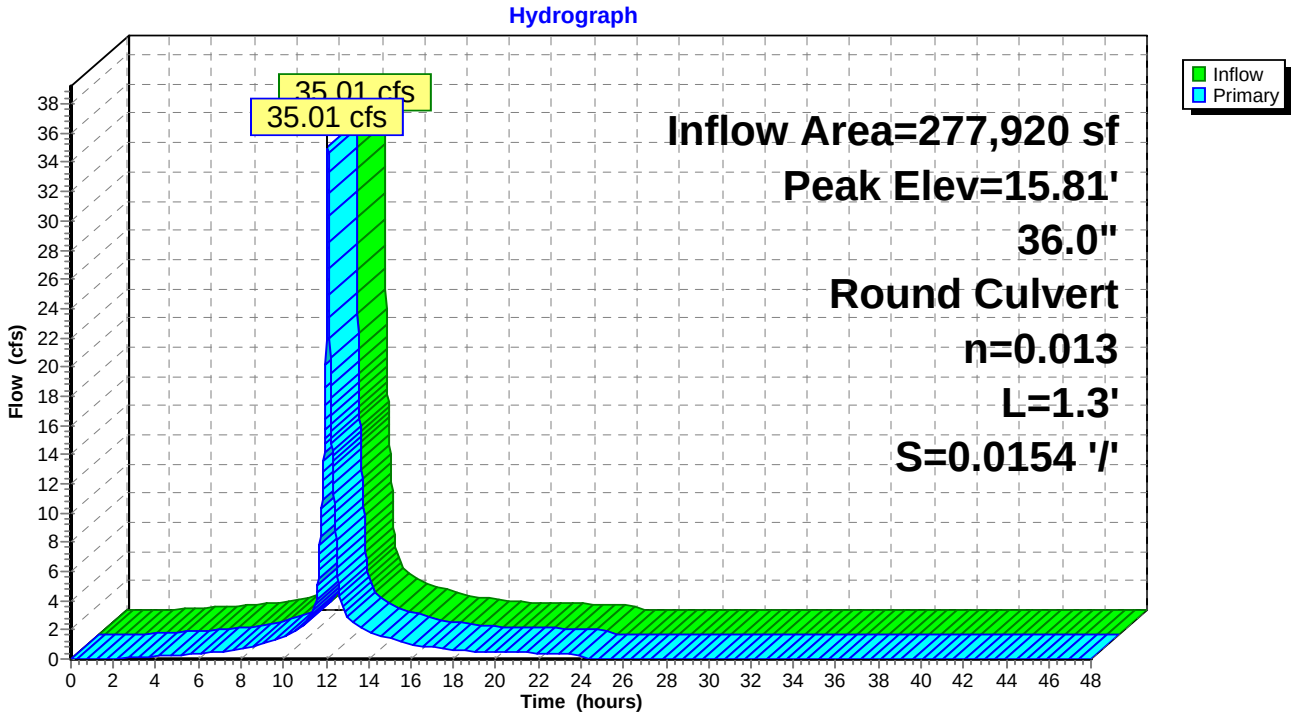
Inflow Area = 277,920 sf, 88.86% Impervious, Inflow Depth = 5.13" for 25-Year event
Inflow = 35.01 cfs @ 12.08 hrs, Volume= 118,847 cf
Outflow = 35.01 cfs @ 12.08 hrs, Volume= 118,847 cf, Atten= 0%, Lag= 0.0 min
Primary = 35.01 cfs @ 12.08 hrs, Volume= 118,847 cf

Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs / 2
Peak Elev= 15.81' @ 12.09 hrs
Flood Elev= 19.40'

Device	Routing	Invert	Outlet Devices
#1	Primary	11.66'	**36.0" Round Culvert** L= 1.3' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 11.66' / 11.64' S= 0.0154 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 7.07 sf

Primary OutFlow Max=34.41 cfs @ 12.08 hrs HW=15.77' TW=14.13' (Dynamic Tailwater)
↑**1=Culvert** (Inlet Controls 34.41 cfs @ 4.87 fps)

Pond 13P: CB-7



Summary for Pond 14P: ICS-1

Inflow Area = 277,920 sf, 88.86% Impervious, Inflow Depth = 5.13" for 25-Year event
Inflow = 35.01 cfs @ 12.08 hrs, Volume= 118,847 cf
Outflow = 35.01 cfs @ 12.08 hrs, Volume= 118,847 cf, Atten= 0%, Lag= 0.0 min
Primary = 27.28 cfs @ 12.08 hrs, Volume= 90,264 cf
Secondary = 8.34 cfs @ 12.16 hrs, Volume= 28,583 cf

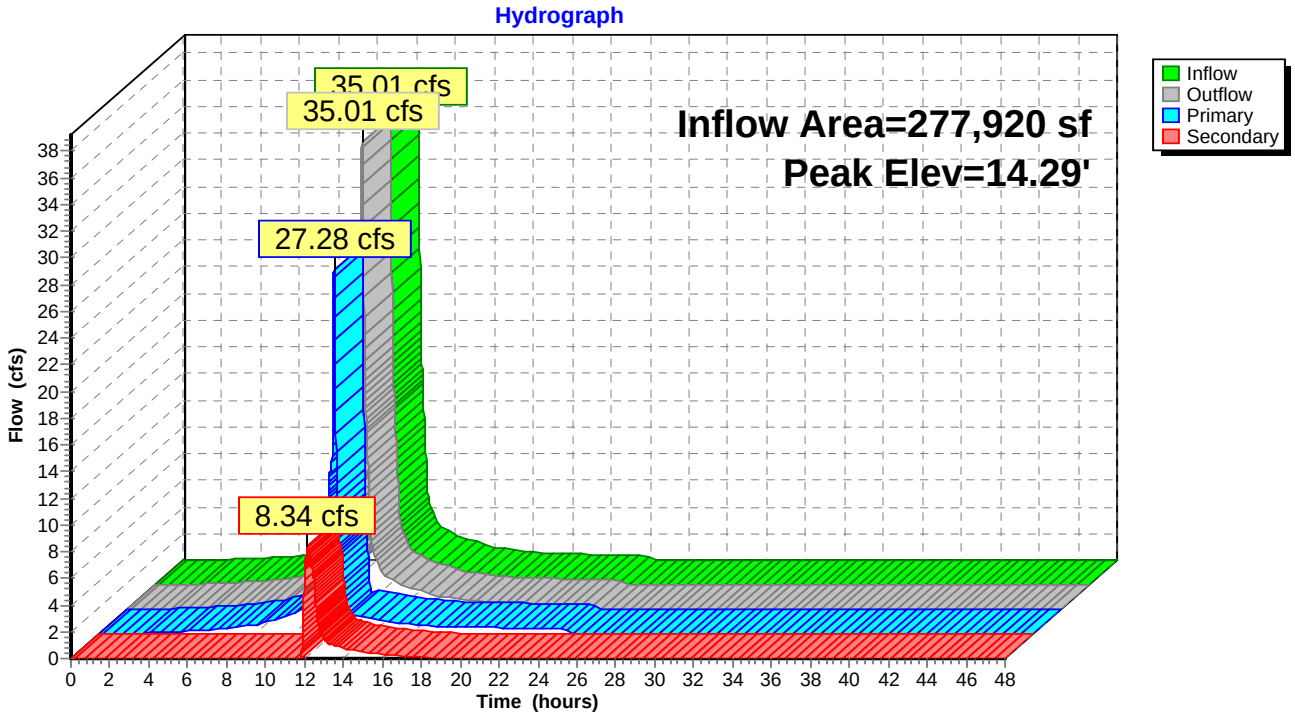
Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs / 2
Peak Elev= 14.29' @ 12.14 hrs
Flood Elev= 19.43'

Device	Routing	Invert	Outlet Devices
#1	Primary	11.54'	**24.0" Round Culvert X 4.00** L= 2.7' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 11.54' / 11.49' S= 0.0185 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 3.14 sf
#2	Secondary	11.54'	**18.0" Round Bypass Culvert** L= 27.5' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 11.54' / 11.00' S= 0.0196 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.77 sf
#3	Device 2	13.00'	**6.0' long Overflow Weir** 2 End Contraction(s)

Primary OutFlow Max=27.30 cfs @ 12.08 hrs HW=14.12' TW=13.79' (Dynamic Tailwater)
└**1=Culvert** (Inlet Controls 27.30 cfs @ 2.17 fps)

Secondary OutFlow Max=7.02 cfs @ 12.16 hrs HW=14.28' TW=13.19' (Dynamic Tailwater)
└**2=Bypass Culvert** (Inlet Controls 7.02 cfs @ 3.97 fps)
└**3=Overflow Weir** (Passes 7.02 cfs of 26.65 cfs potential flow)

Pond 14P: ICS-1



Summary for Pond 15P: CB-6

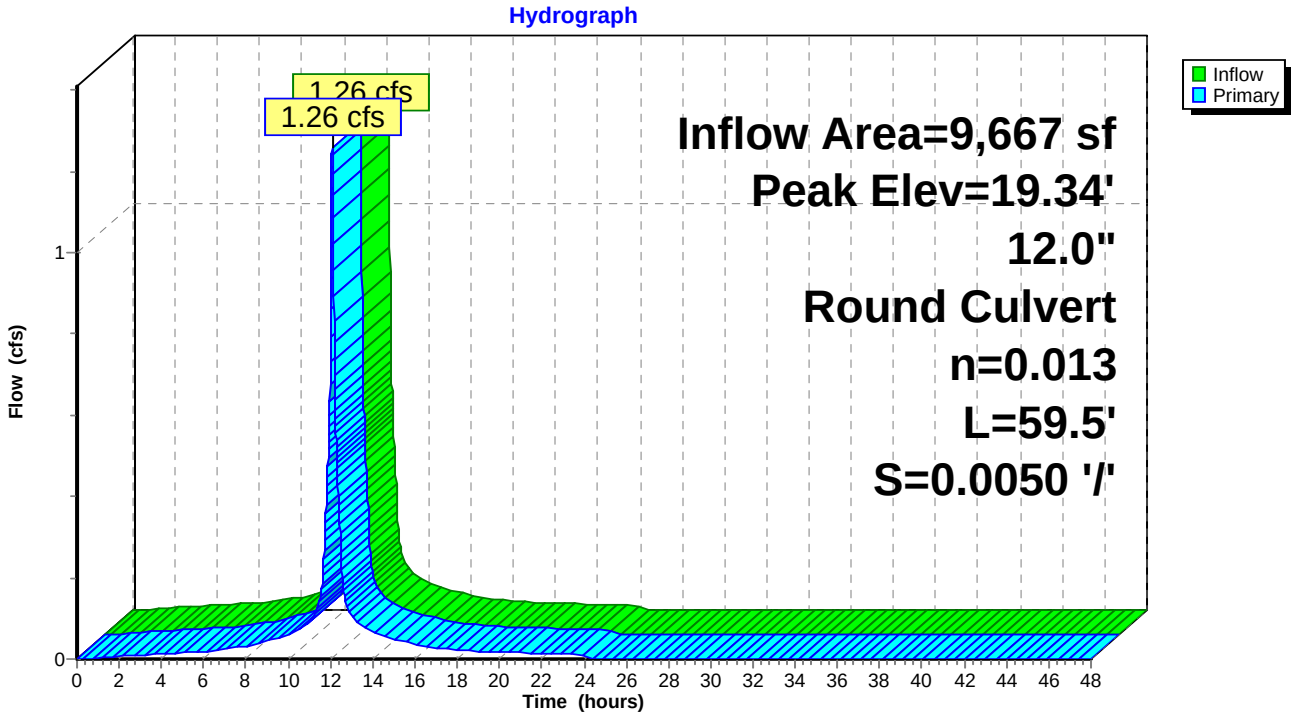
Inflow Area = 9,667 sf,100.00% Impervious, Inflow Depth = 5.56" for 25-Year event
Inflow = 1.26 cfs @ 12.08 hrs, Volume= 4,481 cf
Outflow = 1.26 cfs @ 12.08 hrs, Volume= 4,481 cf, Atten= 0%, Lag= 0.0 min
Primary = 1.26 cfs @ 12.08 hrs, Volume= 4,481 cf

Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs / 2
Peak Elev= 19.34' @ 12.10 hrs
Flood Elev= 20.47'

Device	Routing	Invert	Outlet Devices
#1	Primary	15.06'	**12.0" Round Culvert** L= 59.5' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 15.06' / 14.76' S= 0.0050 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.79 sf

Primary OutFlow Max=1.00 cfs @ 12.08 hrs HW=19.20' TW=19.08' (Dynamic Tailwater)
1=Culvert (Inlet Controls 1.00 cfs @ 1.28 fps)

Pond 15P: CB-6



Summary for Pond 16P: CB-3

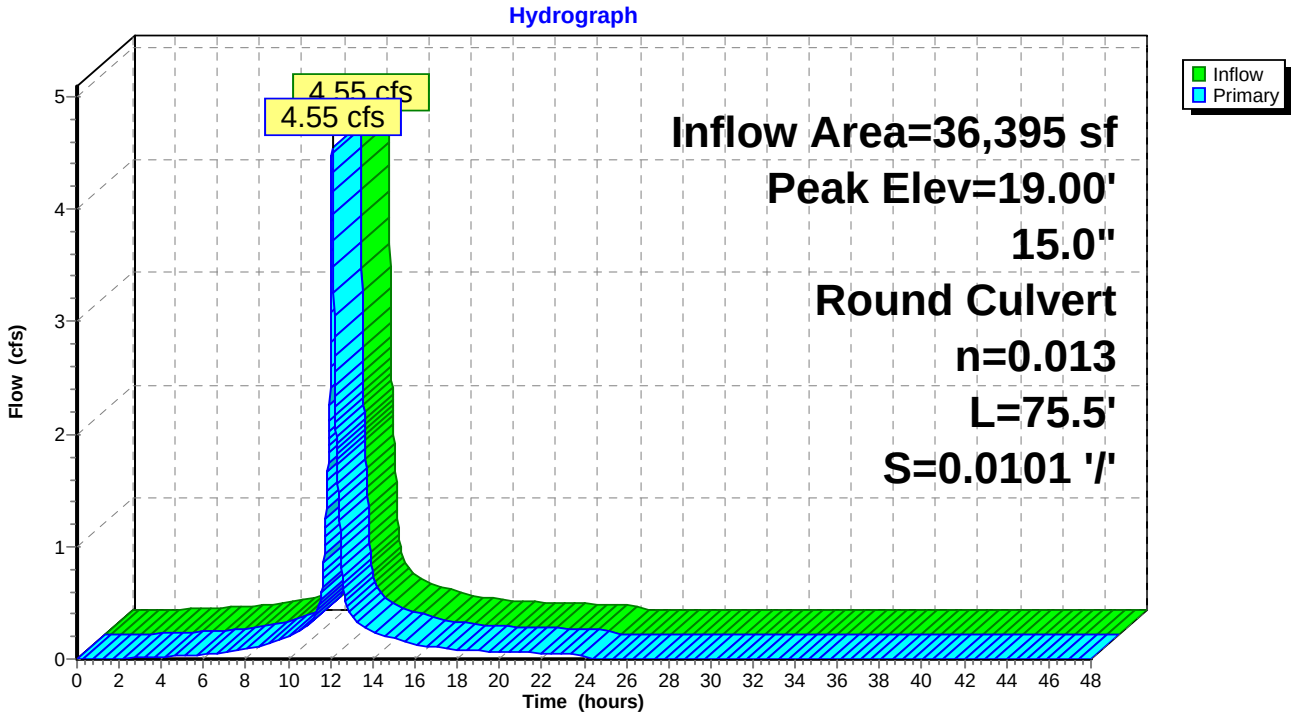
Inflow Area = 36,395 sf, 87.42% Impervious, Inflow Depth = 5.07" for 25-Year event
Inflow = 4.55 cfs @ 12.08 hrs, Volume= 15,389 cf
Outflow = 4.55 cfs @ 12.08 hrs, Volume= 15,389 cf, Atten= 0%, Lag= 0.0 min
Primary = 4.55 cfs @ 12.08 hrs, Volume= 15,389 cf

Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs / 2
Peak Elev= 19.00' @ 12.09 hrs
Flood Elev= 21.02'

Device	Routing	Invert	Outlet Devices
#1	Primary	15.14'	**15.0" Round Culvert** L= 75.5' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 15.14' / 14.38' S= 0.0101 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.23 sf

Primary OutFlow Max=4.36 cfs @ 12.08 hrs HW=18.94' TW=18.06' (Dynamic Tailwater)
└**1=Culvert** (Inlet Controls 4.36 cfs @ 3.55 fps)

Pond 16P: CB-3



Summary for Pond 17P: CB-2

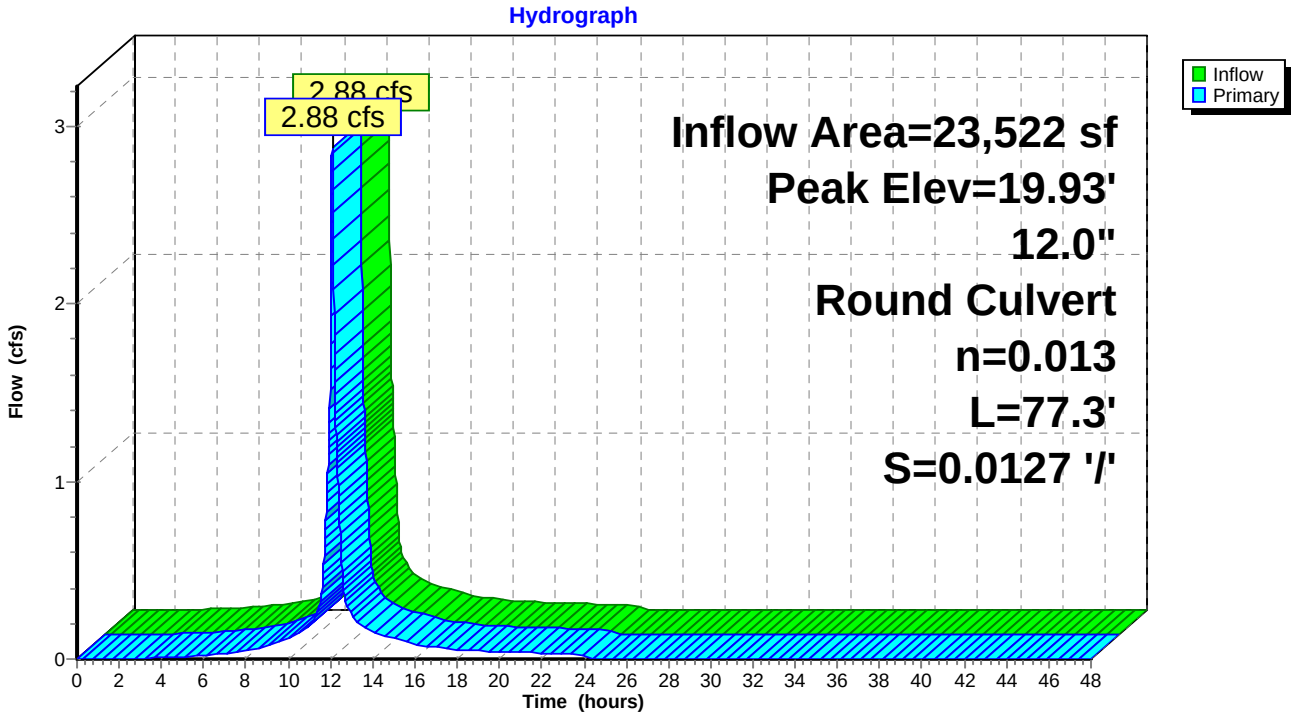
Inflow Area = 23,522 sf, 81.85% Impervious, Inflow Depth = 4.87" for 25-Year event
Inflow = 2.88 cfs @ 12.08 hrs, Volume= 9,548 cf
Outflow = 2.88 cfs @ 12.08 hrs, Volume= 9,548 cf, Atten= 0%, Lag= 0.0 min
Primary = 2.88 cfs @ 12.08 hrs, Volume= 9,548 cf

Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs / 2
Peak Elev= 19.93' @ 12.10 hrs
Flood Elev= 21.02'

Device	Routing	Invert	Outlet Devices
#1	Primary	16.22'	**12.0" Round Culvert** L= 77.3' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 16.22' / 15.24' S= 0.0127 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.79 sf

Primary OutFlow Max=2.79 cfs @ 12.08 hrs HW=19.81' TW=18.94' (Dynamic Tailwater)
1=Culvert (Inlet Controls 2.79 cfs @ 3.55 fps)

Pond 17P: CB-2



Summary for Pond 18P: CB-1

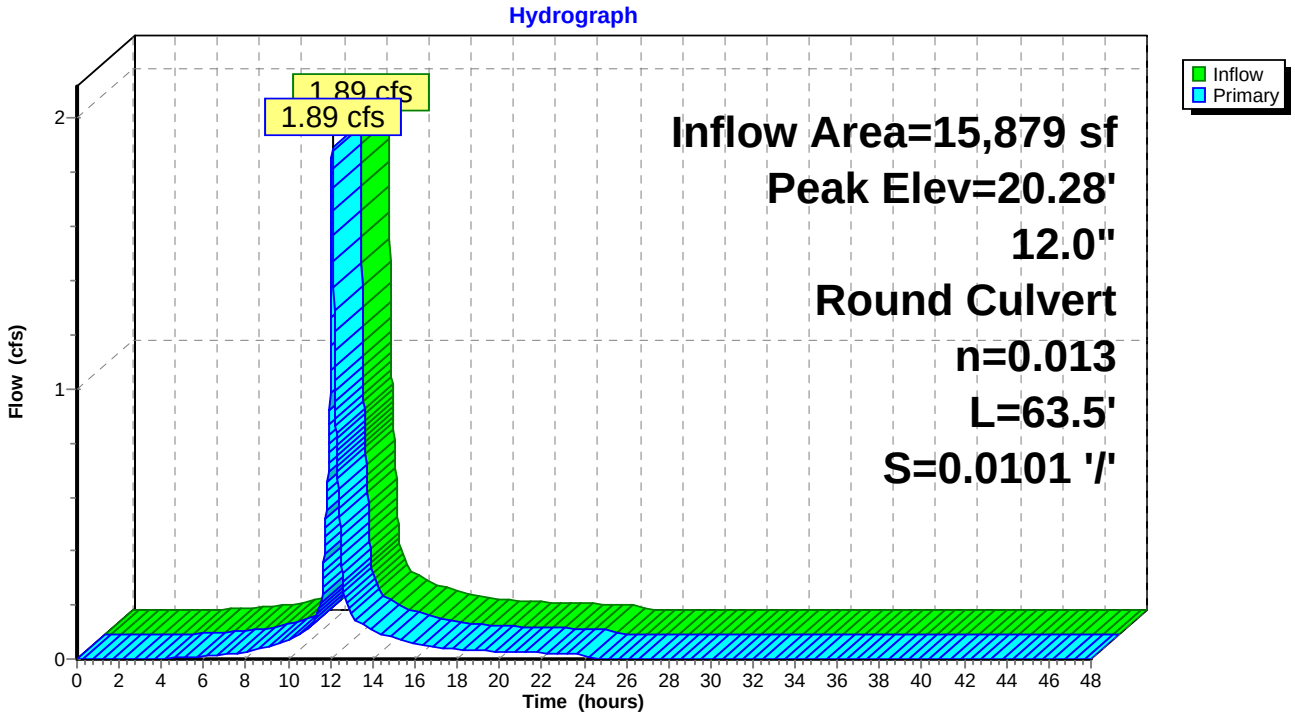
Inflow Area = 15,879 sf, 76.74% Impervious, Inflow Depth = 4.65" for 25-Year event
Inflow = 1.89 cfs @ 12.09 hrs, Volume= 6,155 cf
Outflow = 1.89 cfs @ 12.09 hrs, Volume= 6,155 cf, Atten= 0%, Lag= 0.0 min
Primary = 1.89 cfs @ 12.09 hrs, Volume= 6,155 cf

Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs / 2
Peak Elev= 20.28' @ 12.10 hrs
Flood Elev= 23.45'

Device	Routing	Invert	Outlet Devices
#1	Primary	16.96'	**12.0" Round Culvert** L= 63.5' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 16.96' / 16.32' S= 0.0101 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.79 sf

Primary OutFlow Max=1.64 cfs @ 12.09 hrs HW=20.13' TW=19.83' (Dynamic Tailwater)
└**1=Culvert** (Inlet Controls 1.64 cfs @ 2.09 fps)

Pond 18P: CB-1



Summary for Pond 19P: CB-8

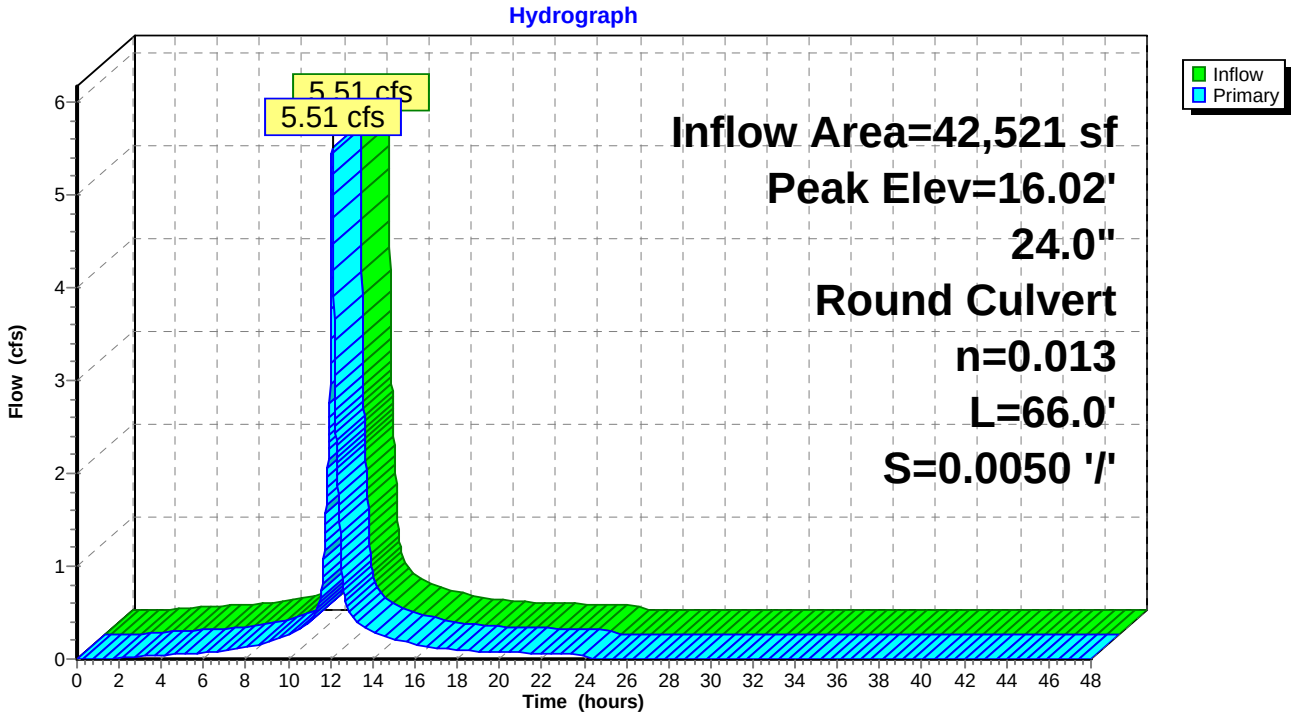
Inflow Area = 42,521 sf, 92.11% Impervious, Inflow Depth = 5.41" for 25-Year event
Inflow = 5.51 cfs @ 12.08 hrs, Volume= 19,175 cf
Outflow = 5.51 cfs @ 12.08 hrs, Volume= 19,175 cf, Atten= 0%, Lag= 0.0 min
Primary = 5.51 cfs @ 12.08 hrs, Volume= 19,175 cf

Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs / 2
Peak Elev= 16.02' @ 12.09 hrs
Flood Elev= 18.55'

Device	Routing	Invert	Outlet Devices
#1	Primary	12.09'	**24.0" Round Culvert** L= 66.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 12.09' / 11.76' S= 0.0050 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 3.14 sf

Primary OutFlow Max=5.30 cfs @ 12.08 hrs HW=15.97' TW=15.77' (Dynamic Tailwater)
1=Culvert (Inlet Controls 5.30 cfs @ 1.69 fps)

Pond 19P: CB-8



Summary for Pond 20P: CB-9

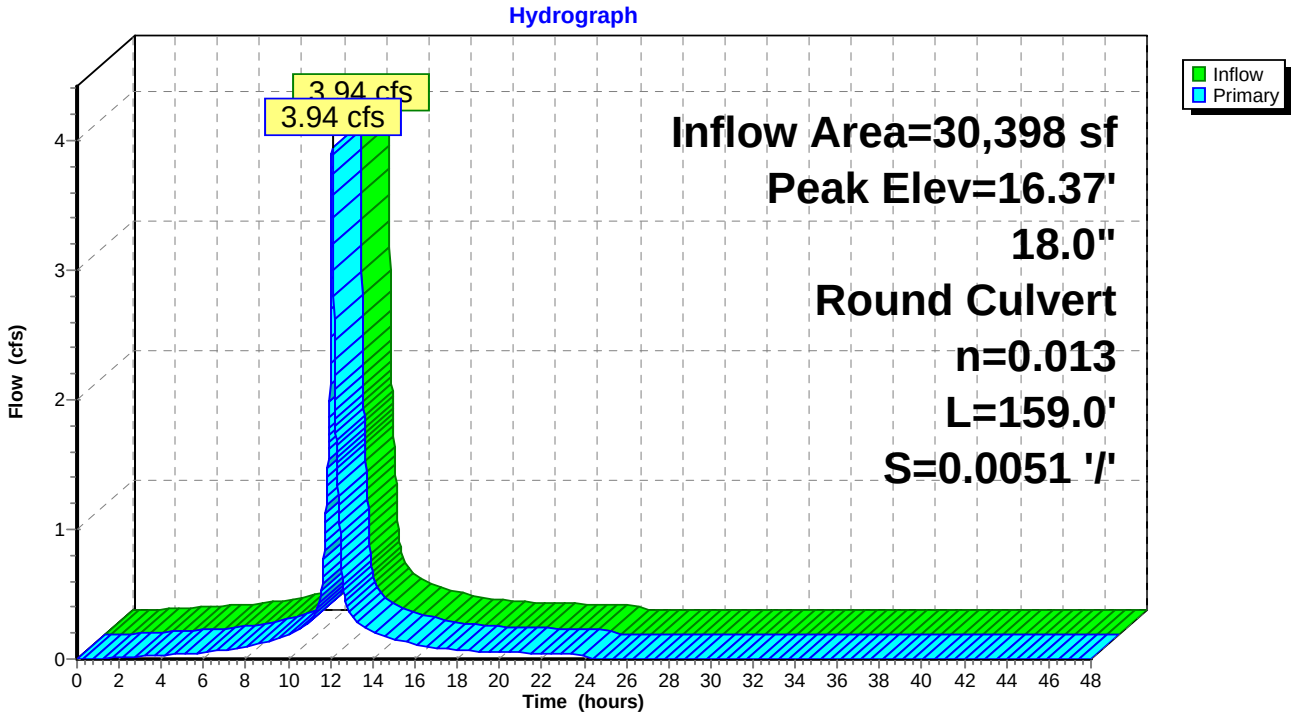
Inflow Area = 30,398 sf, 93.40% Impervious, Inflow Depth = 5.44" for 25-Year event
Inflow = 3.94 cfs @ 12.08 hrs, Volume= 13,792 cf
Outflow = 3.94 cfs @ 12.08 hrs, Volume= 13,792 cf, Atten= 0%, Lag= 0.0 min
Primary = 3.94 cfs @ 12.08 hrs, Volume= 13,792 cf

Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs / 2
Peak Elev= 16.37' @ 12.10 hrs
Flood Elev= 16.50'

Device	Routing	Invert	Outlet Devices
#1	Primary	13.00'	**18.0" Round Culvert** L= 159.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 13.00' / 12.19' S= 0.0051 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.77 sf

Primary OutFlow Max=3.49 cfs @ 12.08 hrs HW=16.26' TW=15.97' (Dynamic Tailwater)
↑**1=Culvert** (Outlet Controls 3.49 cfs @ 1.98 fps)

Pond 20P: CB-9



Summary for Pond 21P: DMH-2

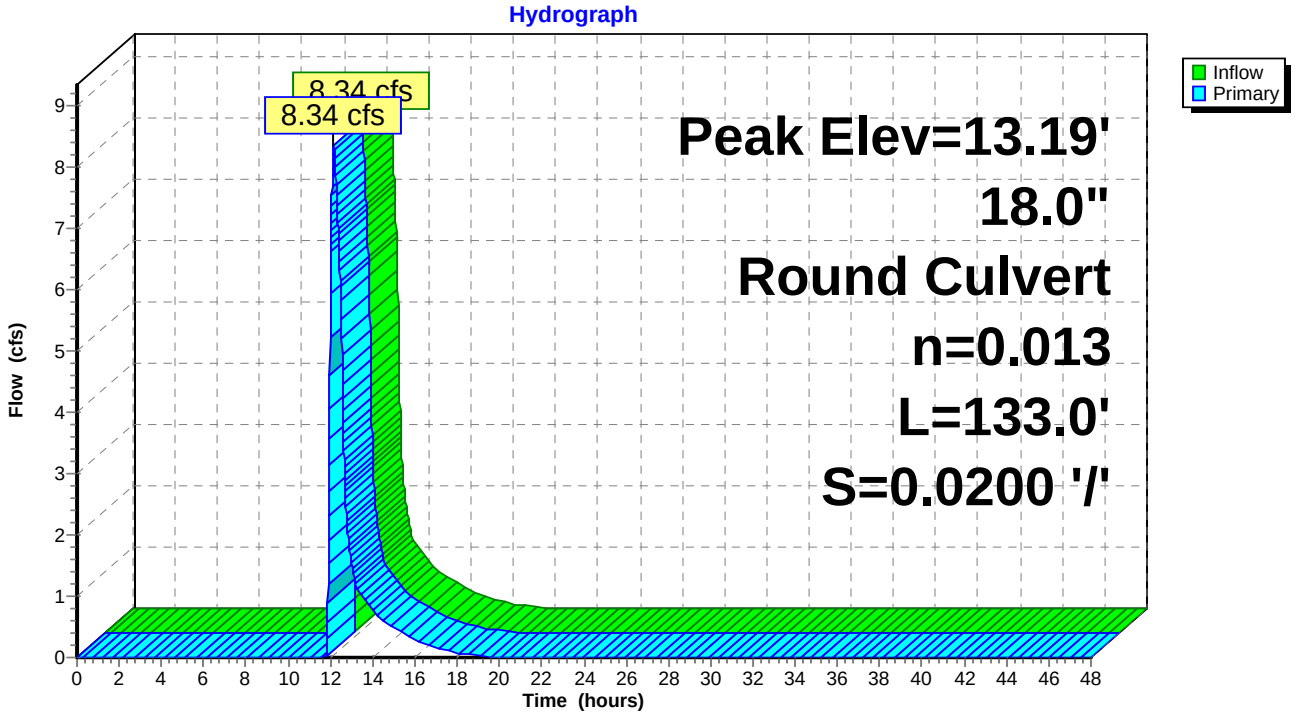
Inflow	=	8.34 cfs @	12.16 hrs, Volume=	28,583 cf
Outflow	=	8.34 cfs @	12.16 hrs, Volume=	28,583 cf, Atten= 0%, Lag= 0.0 min
Primary	=	8.34 cfs @	12.16 hrs, Volume=	28,583 cf

Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs / 2
Peak Elev= 13.19' @ 12.16 hrs
Flood Elev= 18.67'

Device	Routing	Invert	Outlet Devices
#1	Primary	10.90'	**18.0" Round Culvert** L= 133.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 10.90' / 8.24' S= 0.0200 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.77 sf

Primary OutFlow Max=8.34 cfs @ 12.16 hrs HW=13.19' TW=10.43' (Dynamic Tailwater)
└**1=Culvert** (Inlet Controls 8.34 cfs @ 4.72 fps)

Pond 21P: DMH-2



Summary for Pond 22P: DMH-3

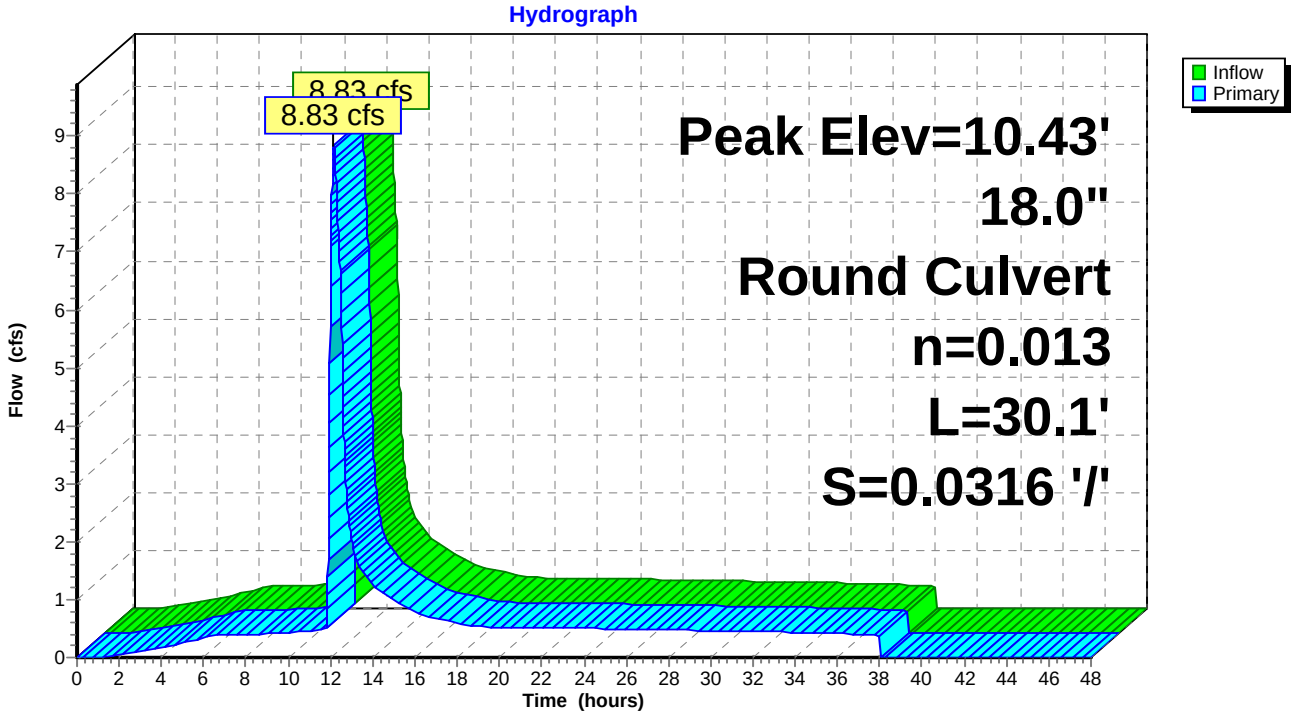
Inflow	=	8.83 cfs @	12.16 hrs, Volume=	85,144 cf
Outflow	=	8.83 cfs @	12.16 hrs, Volume=	85,144 cf, Atten= 0%, Lag= 0.0 min
Primary	=	8.83 cfs @	12.16 hrs, Volume=	85,144 cf

Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs / 2
Peak Elev= 10.43' @ 12.16 hrs
Flood Elev= 17.04'

Device	Routing	Invert	Outlet Devices
#1	Primary	7.95'	**18.0" Round Culvert** L= 30.1' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 7.95' / 7.00' S= 0.0316 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.77 sf

Primary OutFlow Max=8.83 cfs @ 12.16 hrs HW=10.43' TW=7.70' (Dynamic Tailwater)
└**1=Culvert** (Inlet Controls 8.83 cfs @ 4.99 fps)

Pond 22P: DMH-3



Summary for Pond 23P: CBR 15027

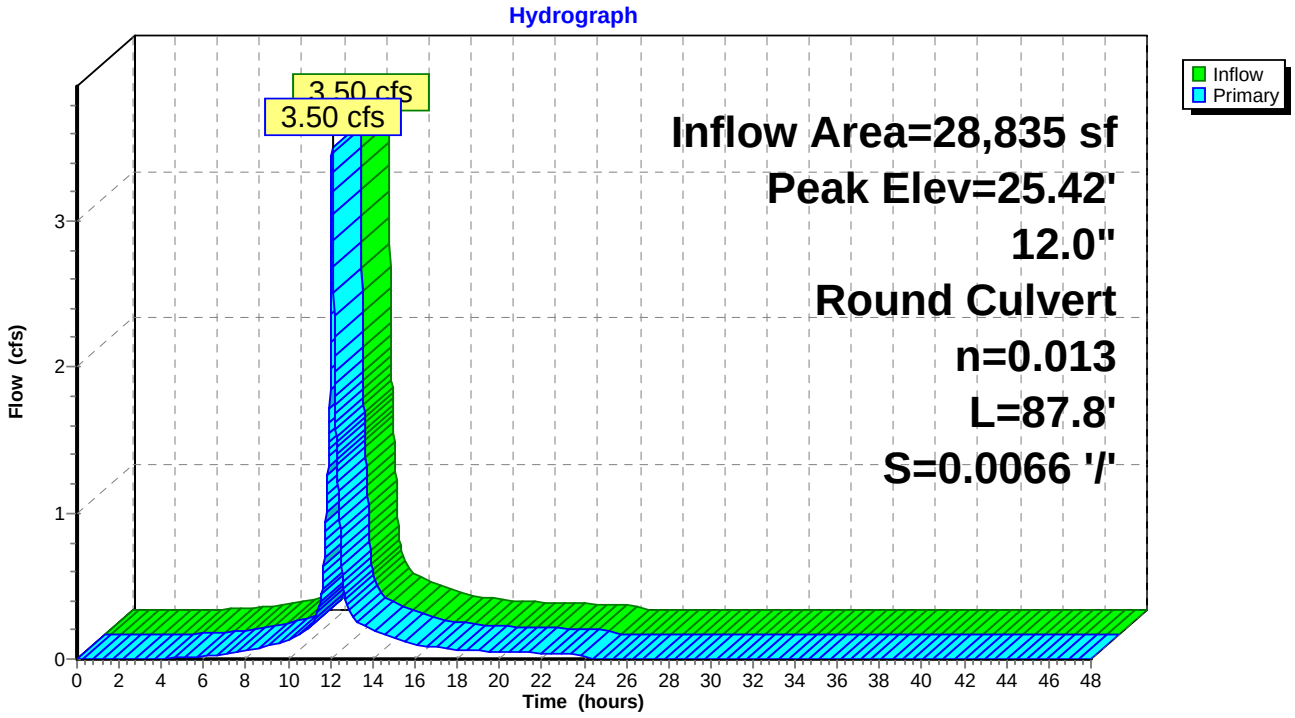
Inflow Area = 28,835 sf, 82.21% Impervious, Inflow Depth = 4.76" for 25-Year event
Inflow = 3.50 cfs @ 12.08 hrs, Volume= 11,442 cf
Outflow = 3.50 cfs @ 12.08 hrs, Volume= 11,442 cf, Atten= 0%, Lag= 0.0 min
Primary = 3.50 cfs @ 12.08 hrs, Volume= 11,442 cf

Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs / 2
Peak Elev= 25.42' @ 12.08 hrs
Flood Elev= 29.60'

Device	Routing	Invert	Outlet Devices
#1	Primary	23.69'	**12.0" Round Culvert** L= 87.8' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 23.69' / 23.11' S= 0.0066 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.79 sf

Primary OutFlow Max=3.50 cfs @ 12.08 hrs HW=25.42' TW=23.98' (Dynamic Tailwater)
1=Culvert (Barrel Controls 3.50 cfs @ 4.45 fps)

Pond 23P: CBR 15027



Summary for Pond 25P: CBR 15029

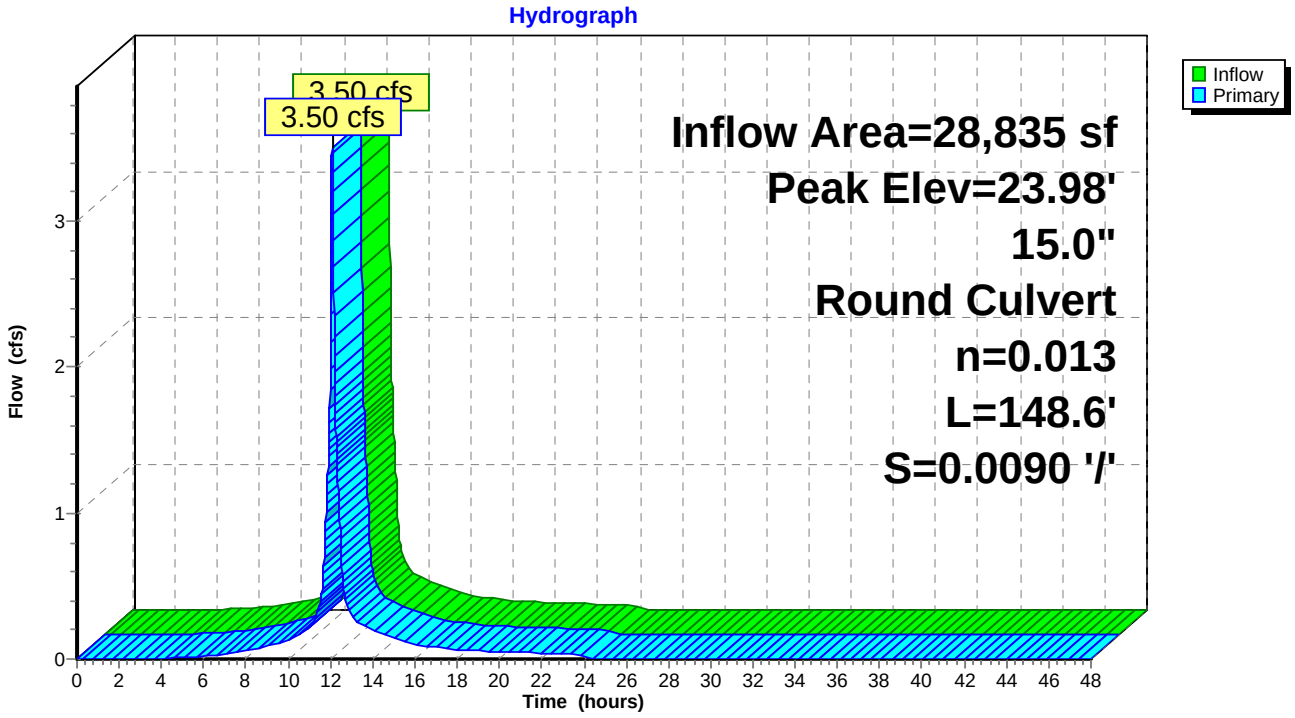
Inflow Area = 28,835 sf, 82.21% Impervious, Inflow Depth = 4.76" for 25-Year event
Inflow = 3.50 cfs @ 12.08 hrs, Volume= 11,442 cf
Outflow = 3.50 cfs @ 12.08 hrs, Volume= 11,442 cf, Atten= 0%, Lag= 0.0 min
Primary = 3.50 cfs @ 12.08 hrs, Volume= 11,442 cf

Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs / 2
Peak Elev= 23.98' @ 12.08 hrs
Flood Elev= 29.47'

Device	Routing	Invert	Outlet Devices
#1	Primary	22.80'	**15.0" Round Culvert** L= 148.6' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 22.80' / 21.47' S= 0.0090 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.23 sf

Primary OutFlow Max=3.50 cfs @ 12.08 hrs HW=23.98' TW=22.02' (Dynamic Tailwater)
↳**1=Culvert** (Inlet Controls 3.50 cfs @ 2.92 fps)

Pond 25P: CBR 15029



Summary for Pond 26P: CB-5

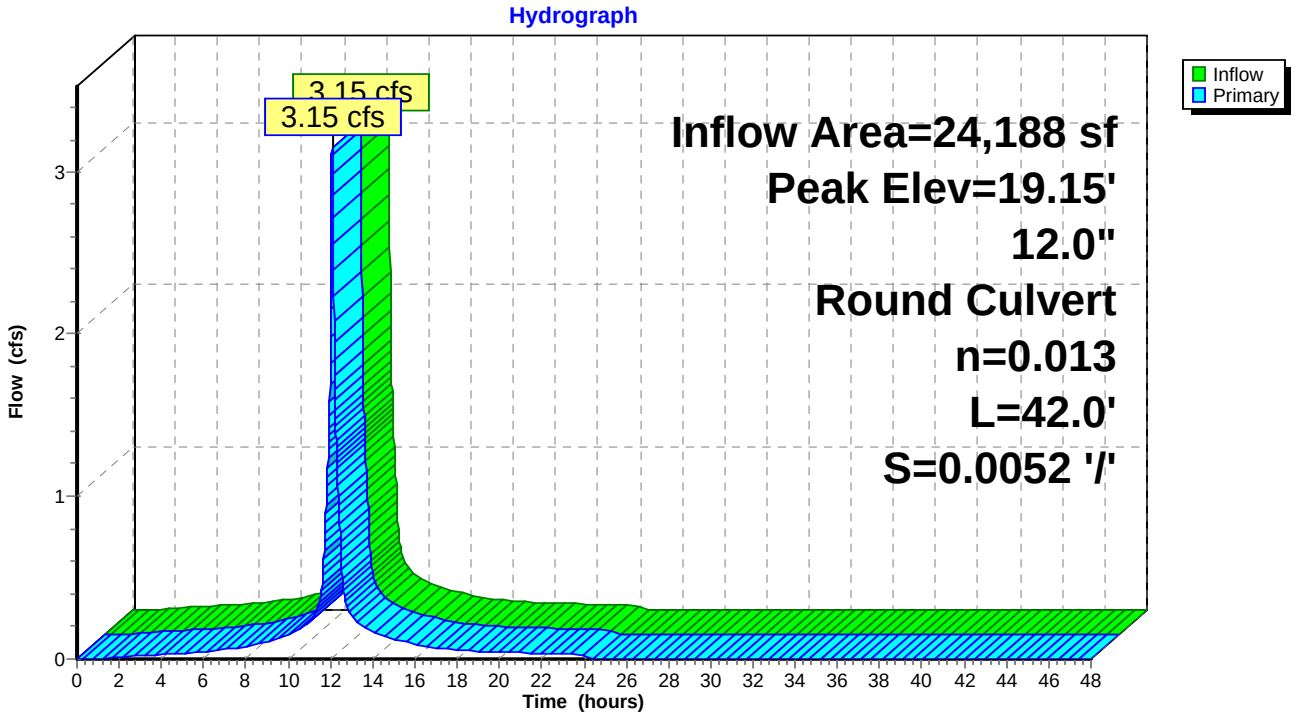
Inflow Area = 24,188 sf, 97.43% Impervious, Inflow Depth = 5.49" for 25-Year event
Inflow = 3.15 cfs @ 12.08 hrs, Volume= 11,069 cf
Outflow = 3.15 cfs @ 12.08 hrs, Volume= 11,069 cf, Atten= 0%, Lag= 0.0 min
Primary = 3.15 cfs @ 12.08 hrs, Volume= 11,069 cf

Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs / 2
Peak Elev= 19.15' @ 12.09 hrs
Flood Elev= 20.55'

Device	Routing	Invert	Outlet Devices
#1	Primary	14.66'	**12.0" Round Culvert** L= 42.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 14.66' / 14.44' S= 0.0052 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.79 sf

Primary OutFlow Max=3.03 cfs @ 12.08 hrs HW=19.08' TW=18.06' (Dynamic Tailwater)
1=Culvert (Inlet Controls 3.03 cfs @ 3.85 fps)

Pond 26P: CB-5



Summary for Pond EX WTLND: Existing Wetland

Inflow Area = 1,006,719 sf, 79.04% Impervious, Inflow Depth = 4.83" for 25-Year event
Inflow = 61.15 cfs @ 12.39 hrs, Volume= 405,073 cf
Outflow = 60.91 cfs @ 12.40 hrs, Volume= 405,068 cf, Atten= 0%, Lag= 1.0 min
Primary = 32.76 cfs @ 12.40 hrs, Volume= 347,756 cf
Secondary = 28.16 cfs @ 12.40 hrs, Volume= 57,312 cf

Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs / 2
Peak Elev= 7.87' @ 12.40 hrs Surf.Area= 5,848 sf Storage= 6,314 cf
Flood Elev= 9.00' Surf.Area= 8,965 sf Storage= 14,683 cf

Plug-Flow detention time= (not calculated: outflow precedes inflow)
Center-of-Mass det. time= 0.9 min (864.3 - 863.5)

Volume	Invert	Avail.Storage	Storage Description
#1	6.00'	14,683 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

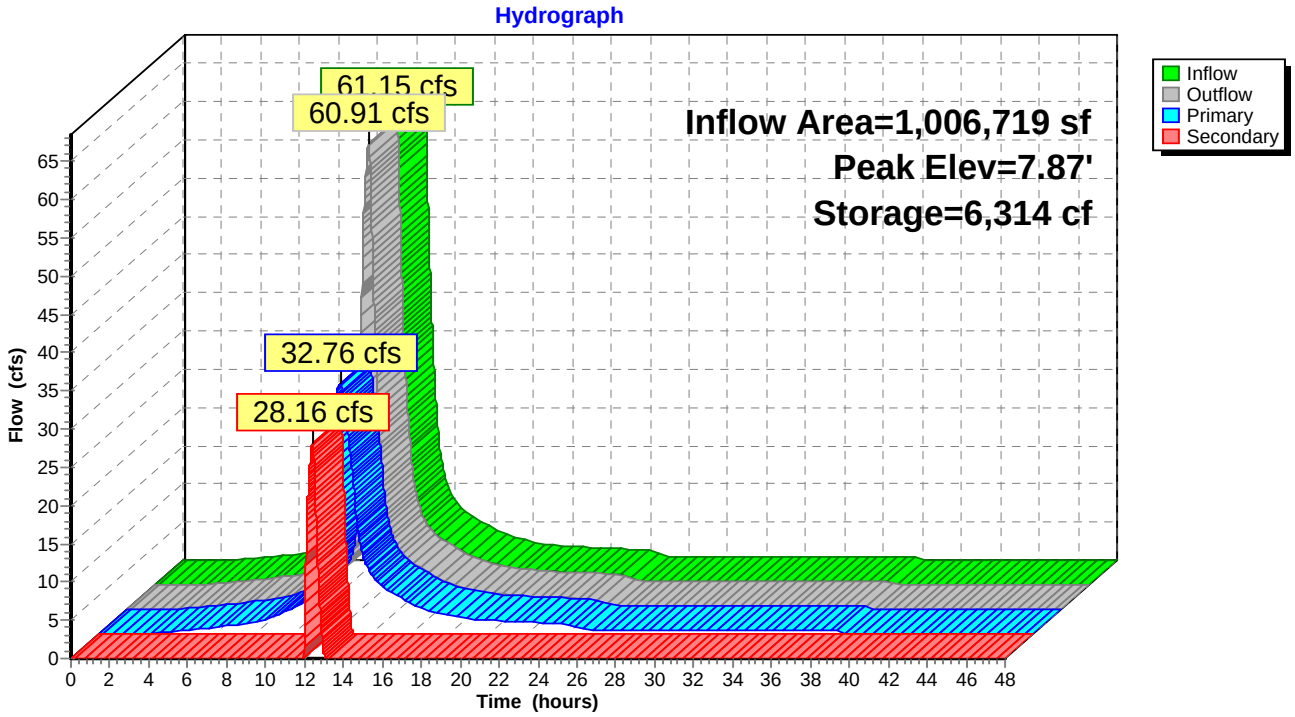
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
6.00	821	0	0
7.00	3,601	2,211	2,211
8.00	6,189	4,895	7,106
9.00	8,965	7,577	14,683

Device	Routing	Invert	Outlet Devices
#1	Primary	4.89'	**36.0" Round Culvert** L= 80.0' CMP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 4.89' / 3.61' S= 0.0160 '/' Cc= 0.900 n= 0.025 Corrugated metal, Flow Area= 7.07 sf
#2	Secondary	7.00'	**13.0' long x 4.0' breadth Overflow** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 3.50 4.00 4.50 5.00 5.50 Coef. (English) 2.38 2.54 2.69 2.68 2.67 2.67 2.65 2.66 2.66 2.68 2.72 2.73 2.76 2.79 2.88 3.07 3.32

Primary OutFlow Max=32.75 cfs @ 12.40 hrs HW=7.87' TW=0.00' (Dynamic Tailwater)
1=Culvert (Inlet Controls 32.75 cfs @ 4.64 fps)

Secondary OutFlow Max=28.15 cfs @ 12.40 hrs HW=7.87' TW=6.96' (Dynamic Tailwater)
2=Overflow (Weir Controls 28.15 cfs @ 2.49 fps)

Pond EX WTLND: Existing Wetland



Summary for Pond SSF-1: Subsurface Sand Filter 1

Inflow Area = 277,920 sf, 88.86% Impervious, Inflow Depth = 3.90" for 25-Year event
Inflow = 27.28 cfs @ 12.08 hrs, Volume= 90,264 cf
Outflow = 13.41 cfs @ 12.18 hrs, Volume= 90,268 cf, Atten= 51%, Lag= 6.1 min
Primary = 12.93 cfs @ 12.18 hrs, Volume= 33,708 cf
Secondary = 0.51 cfs @ 19.46 hrs, Volume= 56,561 cf

Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs / 2
Peak Elev= 14.17' @ 12.18 hrs Surf.Area= 20,088 sf Storage= 36,342 cf
Flood Elev= 19.43' Surf.Area= 20,269 sf Storage= 38,911 cf

Plug-Flow detention time= (not calculated: outflow precedes inflow)
Center-of-Mass det. time= 323.5 min (1,083.6 - 760.0)

Volume	Invert	Avail.Storage	Storage Description
#1A	10.99'	19,065 cf	**133.00'W x 137.78'L x 3.50'H Field A Z=1.0** 67,509 cf Overall - 19,846 cf Embedded = 47,663 cf x 40.0% Voids
#2A	11.49'	19,846 cf	**ADS_StormTech SC-740 +Cap** x 432 Inside #1 Effective Size= 44.6"W x 30.0"H => 6.45 sf x 7.12'L = 45.9 cf Overall Size= 51.0"W x 30.0"H x 7.56'L with 0.44' Overlap 24 Rows of 18 Chambers
		38,911 cf	Total Available Storage

Storage Group A created with Chamber Wizard

Device	Routing	Invert	Outlet Devices
#1	Primary	10.40'	**24.0" Round Culvert** L= 34.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 10.40' / 7.00' S= 0.1000 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 3.14 sf
#2	Secondary	8.15'	**3.0" Vert. UD Orifice** C= 0.600
#3	Device 2	8.15'	**6.0" Round Header Pipe** L= 3.3' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 8.15' / 8.10' S= 0.0152 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.20 sf
#4	Device 1	13.00'	**6.0' long Weir Wall** 2 End Contraction(s)
#5	Device 3	10.99'	**4.000 in/hr Filtration over Surface area**
#6	Device 4	11.49'	**24.0" Round Culvert** L= 3.3' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 11.49' / 11.44' S= 0.0152 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 3.14 sf

Primary OutFlow Max=12.92 cfs @ 12.18 hrs HW=14.17' TW=7.72' (Dynamic Tailwater)
└**1=Culvert** (Passes 12.92 cfs of 25.18 cfs potential flow)
└**4=Weir Wall** (Passes 12.92 cfs of 23.90 cfs potential flow)
└**6=Culvert** (Inlet Controls 12.92 cfs @ 4.11 fps)

Secondary OutFlow Max=0.51 cfs @ 19.46 hrs HW=13.01' TW=8.31' (Dynamic Tailwater)
└**2=UD Orifice** (Orifice Controls 0.51 cfs @ 10.44 fps)
└**3=Header Pipe** (Passes 0.51 cfs of 2.03 cfs potential flow)
└**5=Filtration** (Passes 0.51 cfs of 1.80 cfs potential flow)

Pond SSF-1: Subsurface Sand Filter 1 - Chamber Wizard Field A

Chamber Model = ADS_StormTech SC-740 +Cap (ADS StormTech® SC-740 with cap length)
Effective Size= 44.6"W x 30.0"H => 6.45 sf x 7.12'L = 45.9 cf
Overall Size= 51.0"W x 30.0"H x 7.56'L with 0.44' Overlap

51.0" Wide + 12.0" Spacing = 63.0" C-C Row Spacing

18 Chambers/Row x 7.12' Long +0.81' Cap Length x 2 = 129.78' Row Length +48.0" End Stone x 2 = 137.78' Base Length
24 Rows x 51.0" Wide + 12.0" Spacing x 23 + 48.0" Side Stone x 2 = 133.00' Base Width
6.0" Base + 30.0" Chamber Height + 6.0" Cover = 3.50' Field Height

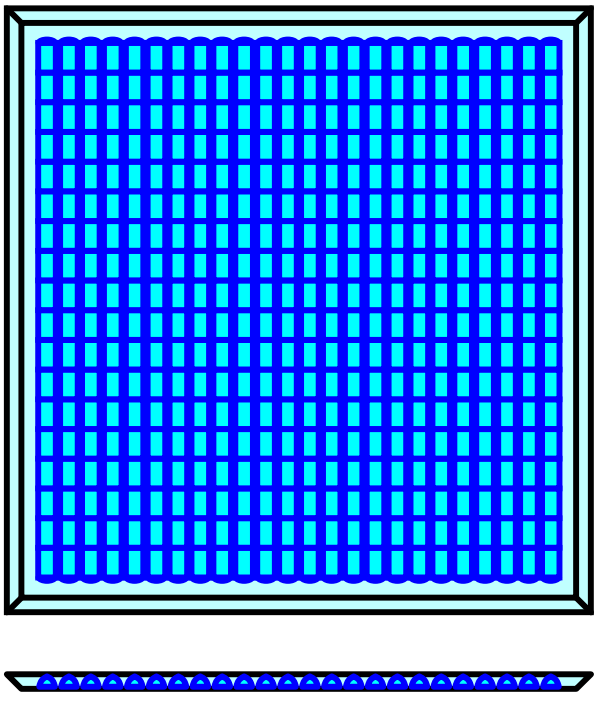
1.0 '/' Side-Z x Height = 42.0" Flare/Side
Base Length + Flare x 2 = 144.78' Top Length
Base Width + Flare x 2 = 140.00' Top Width

432 Chambers x 45.9 cf = 19,846.1 cf Chamber Storage

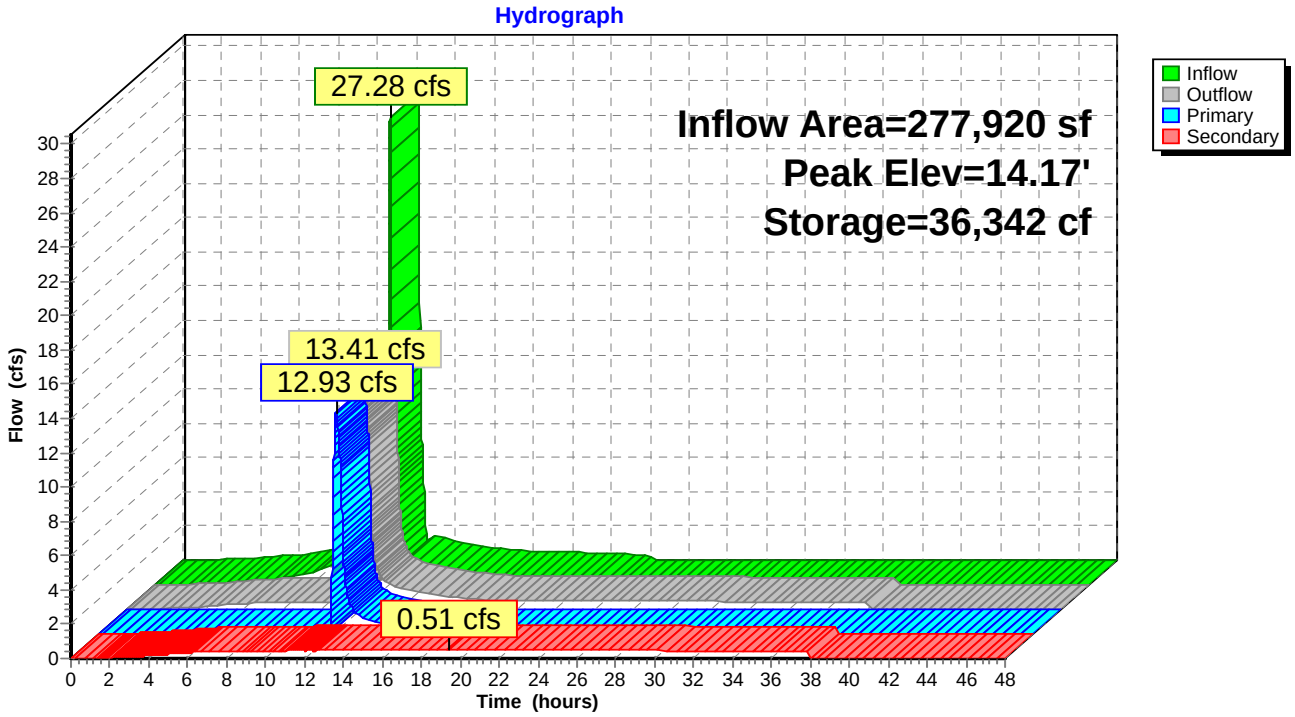
67,509.2 cf Field - 19,846.1 cf Chambers = 47,663.1 cf Stone x 40.0% Voids = 19,065.3 cf Stone Storage

Chamber Storage + Stone Storage = 38,911.3 cf = 0.893 af
Overall Storage Efficiency = 57.6%
Overall System Size = 137.78' x 133.00' x 3.50'

432 Chambers
2,500.3 cy Field
1,765.3 cy Stone



Pond SSF-1: Subsurface Sand Filter 1

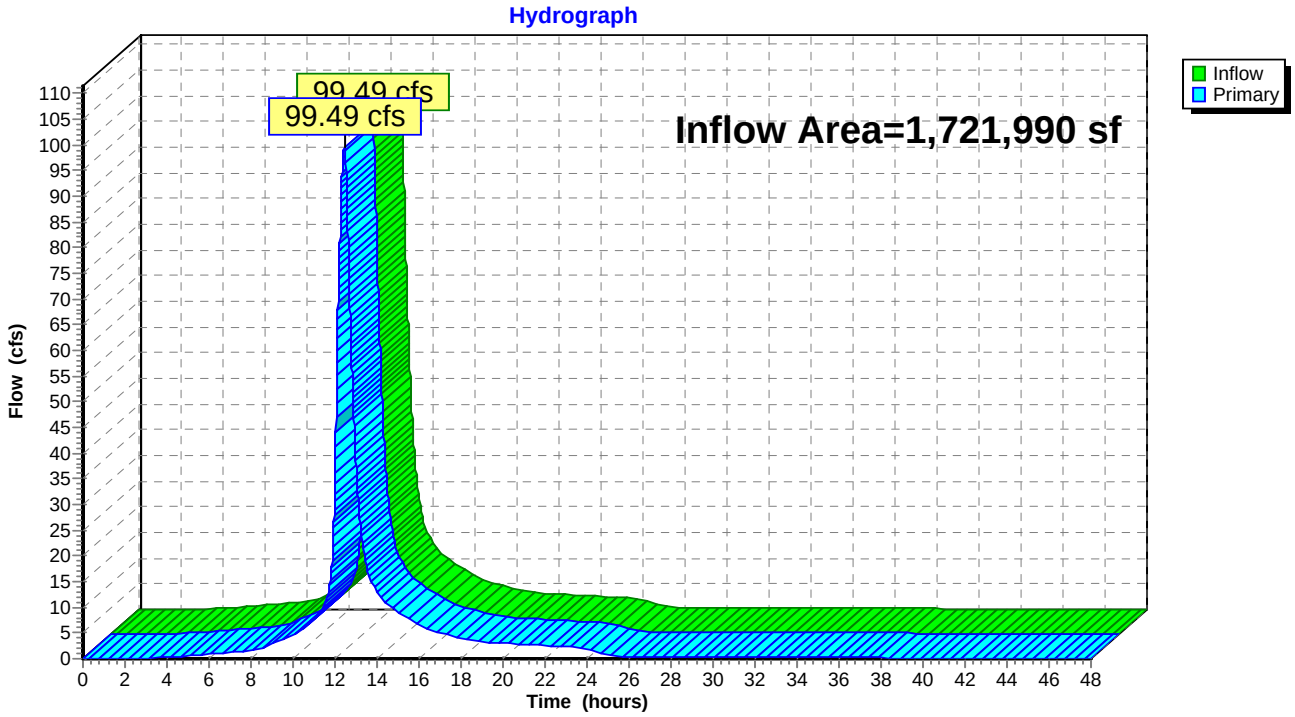


Summary for Link SP-1: Study Point 1

Inflow Area = 1,721,990 sf, 68.13% Impervious, Inflow Depth = 4.36" for 25-Year event
Inflow = 99.49 cfs @ 12.44 hrs, Volume= 625,009 cf
Primary = 99.49 cfs @ 12.44 hrs, Volume= 625,009 cf, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs

Link SP-1: Study Point 1

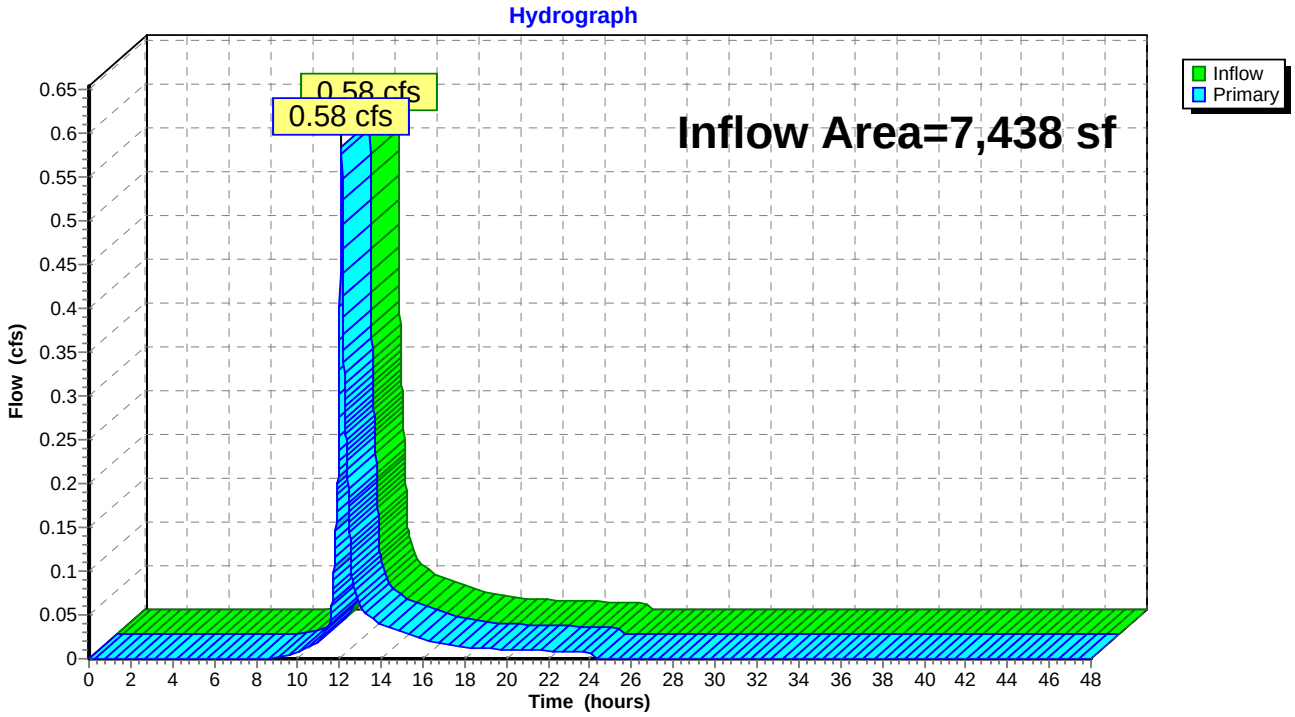


Summary for Link SP-2: Study Point 2

Inflow Area = 7,438 sf, 31.78% Impervious, Inflow Depth = 2.92" for 25-Year event
Inflow = 0.58 cfs @ 12.09 hrs, Volume= 1,812 cf
Primary = 0.58 cfs @ 12.09 hrs, Volume= 1,812 cf, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs

Link SP-2: Study Point 2



Attachment E

Inspection, Maintenance, and Housekeeping Plan

INSPECTION, MAINTENANCE, AND HOUSEKEEPING PLAN
Portland Transportation Center
Thompson's Point Connector
Portland, Maine

Introduction

The following plan outlines the anticipated inspection and maintenance procedures for the erosion and sedimentation control measures as well as stormwater management facilities for the project. This plan also outlines several housekeeping requirements that shall be followed during and after construction. These procedures shall be followed in order to ensure the intended function of the designed measures and to prevent unreasonably adverse impacts to the surrounding environment.

The procedures outlined in this Inspection, Maintenance and Housekeeping Plan are provided as an overview of the anticipated practices to be used on this site. In some instances, additional measures may be required due to unexpected conditions. For additional detail on any of the erosion and sedimentation control measures or stormwater management devices to be utilized on this project, refer to the most recently revised edition of the "Maine Erosion and Sedimentation Control BMP" manual and/or the "Stormwater Management for Maine: Best Management Practices" manual as published by the Maine Department of Environmental Protection (MDEP).

During Construction

1. **Inspection:** During the construction process, it is the Contractor's responsibility to comply with the inspection and maintenance procedures outlined in this section and the erosion and sedimentation control plan for the project. These responsibilities include inspecting disturbed and impervious areas, erosion control measures, materials storage areas that are exposed to precipitation, and locations where vehicles enter or exit the site. These areas shall be inspected at least once a week as well as before and after a storm event, and prior to completing permanent stabilization measures. A person with knowledge of erosion and stormwater control, including the standards and conditions in any applicable permits, shall conduct the inspections.

2. **Maintenance:** All measures shall be maintained in an effective operating condition until areas are permanently stabilized. If Best Management Practices (BMPs) need to be maintained or modified, additional BMPs are necessary, or other corrective action is needed, implementation must be completed within 7 calendar days and prior to any storm event (rainfall).

3. **Documentation:** A log summarizing the inspections and any corrective action taken must be maintained on-site. Corrective action shall be performed in general conformance with the Maine Construction General Permit and Maine DEP Chapter 500 Stormwater standards. The log must include the name(s) and qualifications of the person making the inspections, the date(s) of the inspections, and major observations about the operation and maintenance of erosion and sedimentation controls, material storage areas, and vehicle access points to the site. Major observations must include BMPs that need maintenance, BMPs that failed to operate as designed or proved inadequate for a particular location, and locations where additional BMPs are needed. For each BMP requiring maintenance, BMP needing replacement, and location needing additional BMPs, note in the log the corrective action taken and when it was taken. The log must be made

accessible to the appropriate regulatory agency upon request. The permittee shall retain a copy of the log for a period of at least three years from the completion of permanent stabilization.

4. **Specific Inspection and Maintenance Tasks:** The following is a list of erosion control and stormwater management measures and the specific inspection and maintenance tasks to be performed during construction.

A. Filter Berms:

- Hay bale barriers, silt fences, and filter berms shall be inspected immediately after each rainfall and at least daily during prolonged rainfall.
- If the fabric on a silt fence or filter barrier should decompose or become ineffective prior to the end of the expected usable life and the barrier is still necessary, it shall be replaced.
- Sediment deposits should be removed after each storm event. They must be removed before deposits reach approximately one-half the height of the barrier.
- Filter berms shall be reshaped as needed.
- Any sediment deposits remaining in place after the silt fence or filter barrier is no longer required should be dressed to conform to the existing grade, prepared, and seeded.

B. Stone Check Dams:

- Inspect the center of the dam to make sure it is lower than the edges. Erosion caused by high flows around the edges of the dam must be corrected.
- Sediment accumulation shall be removed prior to reaching half of the original design height.
- Areas beneath stone check dams must be seeded and mulched upon removal.

C. Riprap Materials:

- Once a riprap installation has been completed, it should require very little maintenance. It shall, however, be inspected periodically to determine if high flows have caused scour beneath the riprap or dislodged any of the stone.

D. Erosion Control Blankets:

- Inspect these reinforced areas semi-annually and after significant rainfall events for slumping, sliding, seepage, and scour. Pay close attention to unreinforced areas adjacent to the erosion control blankets, which may experience accelerated erosion.
- Review all applicable inspection and maintenance procedures recommended by the specific blanket manufacturer. These tasks shall be included in addition to the requirements of this plan.

E. Stabilized Construction Entrances/Exits:

- The exit shall be maintained in a condition that will prevent tracking of sediment onto public rights-of-way.

- When the control pad becomes ineffective, the stone shall be removed along with the collected soil material. The entrance should then be reconstructed.
- Areas that have received mud-tracking or sediment deposits shall be swept or washed. Washing shall be done on an area stabilized with aggregate, which drains into an approved sediment-trapping device (not into storm drains, ditches, or waterways).

F. Temporary Seed and Mulch:

- Mulched areas should be inspected after rain events to check for rill erosion.
- If less than 90% of the soil surface is covered by mulch, additional mulch shall be applied in bare areas.
- In applications where seeding and mulch have been applied in conjunction with erosion control blankets, the blankets must be inspected after rain events for dislocation or undercutting.
- Mulch shall continue to be reapplied until 95% of the soil surface has established temporary vegetative cover.

G. Stabilized Temporary Drainage Swales:

- Sediment accumulation in the swale shall be removed once the cross section of the swale is reduced by 25%.
- The swales shall be inspected after rainfall events. Any evidence of sloughing of the side slopes or channel erosion shall be repaired and corrective action should be taken to prevent reoccurrence of the problem.
- In addition to the stabilized lining of the channel (i.e. erosion control blankets), stone check dams may be needed to further reduce channel velocity.

5. **Housekeeping:** The following general performance standards apply to the proposed project.

A. Spill prevention: Controls must be used to prevent pollutants from being discharged from materials on-site, including storage practices to minimize exposure of the materials to stormwater, and appropriate spill prevention, containment, and response planning and implementation. A Spill, Prevention, Control and Countermeasures Plan is created for the project and is to be kept onsite at all times.

B. Groundwater protection: During construction, liquid petroleum products and other hazardous materials with the potential to contaminate groundwater may not be stored or handled in areas of the site draining to an infiltration area. An "infiltration area" is any area of the site that by design or as a result of soils, topography and other relevant factors, accumulates runoff that infiltrates into the soil. Dikes, berms, sumps, and other forms of secondary containment that prevent discharge to groundwater may be used to isolate portions of the site for the purposes of storage and handling of these materials.

C. Fugitive sediment and dust: Actions must be taken to insure that activities do not result in noticeable erosion of soils or fugitive dust emissions during or after construction. Oil may not be used for dust control.

D. Debris and other materials: Litter, construction debris, and chemicals exposed to stormwater must be prevented from becoming a pollutant source.

E. Trench dewatering: Trench dewatering is the removal of water from trenches, foundations, cofferdams, ponds, and other areas within the construction area that retain water after excavation. In most cases, the collected water is heavily silted and hinders correct and safe construction practices. The collected water must be removed from the ponded area, either through gravity or pumping, and must be spread through natural wooded buffers or removed to areas that are specifically designed to collect the maximum amount of sediment possible, like a cofferdam sedimentation basin. Avoid allowing the water to flow over disturbed areas of the site. Equivalent measures may be taken if approved.

During Preload Construction Phase

1. **Inspection:** During the Preload construction process, it is the Contractor's responsibility to comply with the inspection and maintenance procedures outlined in this section and the erosion and sedimentation control plan for the project. These responsibilities include inspecting disturbed and impervious areas, erosion control measures, materials storage areas that are exposed to precipitation, and locations where vehicles enter or exit the site. These areas shall be inspected at least once a week as well as before and after a storm event, and prior to completing permanent stabilization measures. A person with knowledge of erosion and stormwater control, including the standards and conditions in any applicable permits, shall conduct the inspections.

2. **Maintenance:** All measures shall be maintained in an effective operating condition until areas are permanently stabilized. If Best Management Practices (BMPs) need to be maintained or modified, additional BMPs are necessary, or other corrective action is needed, implementation must be completed within 7 calendar days and prior to any storm event (rainfall).

3. **Documentation:** A log summarizing the inspections and any corrective action taken must be maintained on-site. Corrective action shall be performed in general conformance with the Maine Construction General Permit and Maine DEP Chapter 500 Stormwater standards. The log must include the name(s) and qualifications of the person making the inspections, the date(s) of the inspections, and major observations about the operation and maintenance of erosion and sedimentation controls, material storage areas, and vehicle access points to the site. Major observations must include BMPs that need maintenance, BMPs that failed to operate as designed or proved inadequate for a particular location, and locations where additional BMPs are needed. For each BMP requiring maintenance, BMP needing replacement, and location needing additional BMPs, note in the log the corrective action taken and when it was taken. The log must be made accessible to the appropriate regulatory agency upon request. The permittee shall retain a copy of the log for a period of at least three years from the completion of permanent stabilization.

4. **Specific Inspection and Maintenance Tasks:** The following is a list of erosion control and stormwater management measures and the specific inspection and maintenance tasks to be performed during construction.

   A. Filter Berms:

   - Hay bale barriers, silt fences, and filter berms shall be inspected immediately after each rainfall and at least daily during prolonged rainfall.

- If the fabric on a silt fence or filter barrier should decompose or become ineffective prior to the end of the expected usable life and the barrier is still necessary, it shall be replaced.
- Sediment deposits should be removed after each storm event. They must be removed before deposits reach approximately one-half the height of the barrier.
- Filter berms shall be reshaped as needed.
- Any sediment deposits remaining in place after the silt fence or filter barrier is no longer required should be dressed to conform to the existing grade, prepared, and seeded.

B. Stone Check Dams:

- Inspect the center of the dam to make sure it is lower than the edges. Erosion caused by high flows around the edges of the dam must be corrected.
- Sediment accumulation shall be removed prior to reaching half of the original design height.
- Areas beneath stone check dams must be seeded and mulched upon removal.

C. Riprap Materials:

- Once a riprap installation has been completed, it should require very little maintenance. It shall, however, be inspected periodically to determine if high flows have caused scour beneath the riprap or dislodged any of the stone.

D. Erosion Control Blankets:

- Inspect these reinforced areas semi-annually and after significant rainfall events for slumping, sliding, seepage, and scour. Pay close attention to unreinforced areas adjacent to the erosion control blankets, which may experience accelerated erosion.
- Review all applicable inspection and maintenance procedures recommended by the specific blanket manufacturer. These tasks shall be included in addition to the requirements of this plan.

E. Stabilized Construction Entrances/Exits:

- The exit shall be maintained in a condition that will prevent tracking of sediment onto public rights-of-way.
- When the control pad becomes ineffective, the stone shall be removed along with the collected soil material. The entrance should then be reconstructed.
- Areas that have received mud-tracking or sediment deposits shall be swept or washed. Washing shall be done on an area stabilized with aggregate, which drains into an approved sediment-trapping device (not into storm drains, ditches, or waterways).

F. Temporary Seed and Mulch:

- Mulched areas should be inspected after rain events to check for rill erosion.
- If less than 90% of the soil surface is covered by mulch, additional mulch shall be

applied in bare areas.

- In applications where seeding and mulch have been applied in conjunction with erosion control blankets, the blankets must be inspected after rain events for dislocation or undercutting.
- Mulch shall continue to be reapplied until 95% of the soil surface has established temporary vegetative cover.

G. Stabilized Temporary Drainage Swales:

- Sediment accumulation in the swale shall be removed once the cross section of the swale is reduced by 25%.
- The swales shall be inspected after rainfall events. Any evidence of sloughing of the side slopes or channel erosion shall be repaired and corrective action should be taken to prevent reoccurrence of the problem.
- In addition to the stabilized lining of the channel (i.e. erosion control blankets), stone check dams may be needed to further reduce channel velocity.

H. Reclaim Asphalt Parking Lot

- The swales shall be inspected after rainfall events. Any evidence of sloughing of the side slopes or channel erosion shall be repaired and corrective action should be taken to prevent reoccurrence of the problem.
- Parking lot surface shall be inspected after rainfall events for any erosion or channelizing or runoff.

5. **Housekeeping:** The following general performance standards apply to the proposed project.

A. Spill prevention: Controls must be used to prevent pollutants from being discharged from materials on-site, including storage practices to minimize exposure of the materials to stormwater, and appropriate spill prevention, containment, and response planning and implementation. A Spill, Prevention, Control and Countermeasures Plan is created for the project and is to be kept onsite at all times.

B. Groundwater protection: During construction, liquid petroleum products and other hazardous materials with the potential to contaminate groundwater may not be stored or handled in areas of the site draining to an infiltration area. An "infiltration area" is any area of the site that by design or as a result of soils, topography and other relevant factors, accumulates runoff that infiltrates into the soil. Dikes, berms, sumps, and other forms of secondary containment that prevent discharge to groundwater may be used to isolate portions of the site for the purposes of storage and handling of these materials.

C. Fugitive sediment and dust: Actions must be taken to insure that activities do not result in noticeable erosion of soils or fugitive dust emissions during or after construction. Oil may not be used for dust control.

D. Debris and other materials: Litter, construction debris, and chemicals exposed to stormwater must be prevented from becoming a pollutant source.

Trench dewatering: Trench dewatering is the removal of water from trenches, foundations, cofferdams,

ponds, and other areas within the construction area that retain water after excavation. In most cases, the collected water is heavily silted and hinders correct and safe construction practices. The collected water must be removed from the ponded area, either through gravity or pumping, and must be spread through natural wooded buffers or removed to areas that are specifically designed to collect the maximum amount of sediment possible, like a cofferdam sedimentation basin. Avoid allowing the water to flow over disturbed areas of the site. Equivalent measures may be taken if approved.

Post- Preload Construction Phase

1. **Inspection:** After construction, it is the responsibility of Langdon Street Real Estate to comply with the inspection and maintenance procedures outlined in this section. All measures must be maintained in effective operating condition. A person with knowledge of erosion and stormwater control, including the standards and conditions in all applicable permits, shall conduct the inspections.

2. **Specific Inspection and Maintenance Tasks:** The following is a list of permanent erosion control and stormwater management measures and the inspection and maintenance tasks to be performed after construction.

   A. Vegetated Areas:
   - Inspect vegetated areas, particularly slopes and embankments, early in the growing season or after heavy rains to identify active or potential erosion problems.
   - Replant bare areas or areas with sparse growth. Where rill erosion is evident, armor the area with an appropriate lining or divert the erosive flows to on-site areas able to withstand the concentrated flows.

   B. Ditches, Swales and Other Open Channels:

   - Inspect ditches, swales, level spreaders and other open stormwater channels in the spring, in the late fall, and after heavy rains to remove any obstructions to flow. Remove accumulated sediments and debris, remove woody vegetative growth that could obstruct flow, and repair any erosion of the ditch lining.
   - Vegetated ditches must be mowed at least annually or otherwise maintained to control the growth of woody vegetation and maintain flow capacity.
   - Any woody vegetation growing through riprap linings must also be removed. Repair any slumping side slopes as soon as practicable.
   - If the ditch has a riprap lining, replace riprap in areas where any underlying filter fabric or underdrain gravel is showing through the stone or where stones have dislodged.

   C. Winter Sanding:

   - Clear accumulations of winter sand along access road and parking lots at least once a year, preferably in the spring.
   - Accumulations of sand along road shoulders may be removed by grading excess sand to the pavement edge and removing it manually or by a front-end loader

or other acceptable method.

D. Culverts:

- Inspect culverts in the spring, in the late fall, and after heavy rains to remove any obstructions to flow.
- Remove accumulated sediments and debris at the inlet, at the outlet, and within the conduit.
- Inspect and repair any erosion damage at the culvert's inlet and outlet.

E. Subsurface Sand Filter:

- Inspect the site monthly for the first few months after construction. Then inspections can occur on an annual basis, preferably after rain events when clogging will be obvious.
- Make any repairs necessary to ensure the measure is operating properly.
- Regular maintenance is necessary to remove surface sediment, trash, debris, and leaf litter.
- Outlets and chambers need to be cleaned/repaired when drawdown times in the filter exceed 36 hours.
- In certain cases, layers of sand may need to be replaced every 3 to 5 years.

3. Documentation:

A. A log summarizing the inspections and any corrective action taken must be maintained. The log must include the name(s) and qualifications of the person making the inspections, the date(s) of the inspections, and major observations about the operation and maintenance of controls. Major observations must include BMPs that need maintenance, BMPs that failed to operate as designed or proved inadequate for a particular location, and locations where additional BMPs are needed. For each BMP requiring maintenance, BMP needing replacement, and location needing additional BMPs, note in the log the corrective action taken and when it was taken. The log must be made accessible to the appropriate regulatory agency upon request. A sample "Stormwater Inspection and Maintenance Form" has been included as Attachment 1 of this Inspection, Maintenance, and Housekeeping Plan.

Post-Construction

1. **Inspection:** After construction, it is the responsibility of Langdon Street Real Estate to comply with the inspection and maintenance procedures outlined in this section. All measures must be maintained in effective operating condition. A person with knowledge of erosion and stormwater control, including the standards and conditions in all applicable permits, shall conduct the inspections.

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4. Maine DEP Recertification: A certification of the following shall be submitted to the MDEP within three months of the expiration of each five year interval from the date of issuance of MDEP permits.

A. Identification and repair of erosion problems. All areas of the project site have been inspected for areas of erosion, and appropriate steps have been taken to permanently stabilize these areas.

B. Inspection and repair of stormwater control system. All aspects of the stormwater control system have been inspected for damage, wear, and malfunction, and appropriate steps have been taken to repair or replace the system, or portions of the system.

C. The Inspection, Maintenance, and Housekeeping Plan for the site is being implemented as written, or modifications to the plan have been submitted to and approved by the MDEP, and the maintenance log is being maintained.

5. Duration of Maintenance: Perform maintenance as described and required for any associated permits unless and until the system is formally accepted by a municipality or quasi-municipal district, or is placed under the jurisdiction of a legally created association that will be responsible for the maintenance of the system. If a municipality or quasi-municipal district chooses to accept a stormwater management system, or a component of a stormwater system, it must provide a letter to the MDEP stating that it assumes responsibility for the system. The letter must specify the components of the system for which the municipality or district will assume responsibility, and that the municipality or district agrees to maintain those components of the system in compliance with MDEP standards. Upon such assumption of responsibility, and approval by the MDEP, the municipality, quasi-municipal district, or association becomes a co-permittee for this purpose only and must comply with all terms and conditions of the permit.

Attachments

Attachment 1 – Stormwater Inspection and Maintenance Log Form

ATTACHMENT 1 – STORMWATER INSPECTION AND MAINTENANCE LOG

Portland Transportation Center
Thompson's Point Connector
Portland, Maine

This log is intended to accompany the Inspection, Maintenance and Housekeeping Plan for the proposed Portland Transportation Center. The following items shall be checked, cleaned and maintained on a regular basis as specified in the Maintenance Plan and as described in the table below. This log shall be kept on file for a minimum of five (5) years and shall be available for review by the municipality and MDEP. Qualified personnel familiar with the onsite drainage systems and soils shall perform all inspections. Attached is a copy of the construction and post-construction maintenance logs.

Items	INSPECTOR NAME	DATE PERFORMED	SUGGESTED INTERVAL
Vegetated Areas			
Inspect all slopes and embankments			Annually
Replant bare areas or areas with sparse growth			Annually
Reclaim and Paved Surfaces			
Clear accumulated winter sand			Annually
Remove sediment along edges and in pockets			Annually
Ditches & Swales			
Remove any obstructions and accumulated sediments and debris			Monthly
Repair any erosion of ditch lining			Annually
Mow vegetated ditches			Annually
Remove woody vegetation growing through riprap			Annually
Repair any slumping side slopes			Annually
Replace riprap where stones have dislodged			Annually
Catch Basins			
Remove accumulated sediments and debris in the sump and at grate			Annually
Culverts			
Remove accumulated sediments and debris at the inlet, outlet, within conduit			Annually
Repair any erosion at inlet and outlet			Annually
Sump Depth			Annually

Subsurface Sand Filter				
	Inspection of subsurface structure following major storm events			Semi-Annually (during first year)
	Inspection after major storm to ensure proper function			Bi-Annually
	Remove sediment and debris			Annually
	Clean/repair outlets and chambers			When drawdown times in filter exceed 48 hrs

STERLING

Stormwater Maintenance Services

Stormwater Compliance Proposal

Site Name: Portland Transportation Center

Location: Portland, Maine

Quote Number: 17112P

Quote Date: 6/13/2018

Contract Term: 5 Years - To Begin Once Construction Has been Completed

Stormwater Compliance Program

Item #	Description[1]	Annual Fee
1	Stormwater Compliance Service	$1,800.00

Notes:

1. Service consists of semi-annual inspection of stormwater components on the site including catch basins, drain manholes, control structures, and a subsurface stormwater facility comprised of Stormtech chambers with isolator rows. Inspection includes a thorough evaluation of each stormwater component from an operational and maintenance perspective.

   Maintenance of the stormwater components will be performed as needed with the permission of client. JetVac services will be provided at a rate of $200 per hour and $75 per ton for disposal. Other maintenance services will be quoted as needed.

   Inspection service also includes the preparation and submittal of semi-annual stormwater compliance report as well as 5-year recertification submittal for the Maine DEP..

Terms & Conditions:

1. Invoice will be sent upon completion of semi-annual inspection and will reflect ½ of total annual fee. Payment is agreed to be made within 30 days of receipt of invoice.
2. STERLING Stormwater Maintenance Services is not the manufacturer nor was it involved in the design of the above listed stormwater management systems and therefore accepts no responsibility for the actual performance of the storm water management systems.

As an authorized representative of the above referenced site, I hereby accept this contract and the associated terms and conditions:

Print Name:_____ Sign Here: _____ Date: _____

SEBAGO TECHNICS

CIVIL ENGINEERING • SURVEYING • LANDSCAPE ARCHITECTURE

Amendment
Site Location of Development Permit Application
Portland Transportation Center

Prepared for
Langdon Street Real Estate
7 Langdon Street
Concord, New Hampshire 03301

Prepared by
Sebago Technics
75 John Roberts Rd.
South Portland, ME 04106

February 2018
99607

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Department of Environmental Protection
Bureau of Land & Water Quality
17 State House Station
Augusta, Maine 04333
Telephone: 207-287-3901

FOR DEP USE
ATS # _____
L-_____
Total Fees: _____
Date: Received _____

FORM A PAGE 1

****

SITE LOCATION OF DEVELOPMENT PERMIT APPLICATION 38 M.R.S.A. §§481-490

PLEASE TYPE OR PRINT IN *INK ONLY*

This application is for: (CHECK THE ONE THAT APPLIES)	☐ 20 acre development ☐ Planning Permit ☐ Metallic Mining	☐ Marine Oil Terminal ☐ Structure ☐ Subdivision	☐ Major Amendment ■ Minor Amendment

1. Name of Applicant:	Langdon Street Real Estate	**6. Name of Agent (if applicable):**	Sebago Technics, Inc
2. Applicant's Mailing Address:	7 Langdon Street Concord NH	**7. Agent's Mailing Address:**	75 John Roberts Rd, So Portland
3. Applicant's Daytime Phone #:	603-228-3535	**8. Agent's Daytime Phone # :**	207-200-2082
4. Applicant's Fax # (if available):	603-228-3524	**9. Agent's Fax # (if available):**	207-856-2206
5. Applicant's *e-mail address* (REQUIRED -license will be sent via: e-mail):	bblunt@concordcoachlines.com	**10. Agent's *e-mail address* (REQUIRED - license will be sent via e-mail):**	ssawyer@sebagotechnics.com

PROJECT INFORMATION

11. Name of Development:	Portland Transportation Center Parking Expansion						
12. Map and Lot #'s:	**Map #:** 077	**Lot #:** A001	**13. Deed Reference #'s:**		**Book #:** 12719	**Page #:** 277	
14. Location of Project City/Town:	Portland		**15. County:**	Cumberland	**16. UTM Northing**		**17. UTM Easting**
18. Brief Description of Project including total parcel size:	The proposed project involves the expansion of an existing parking lot associated with the Portland Transportation Center. Subject Parcel size is approximately ? acres.						

19. Type of Direct Watershed: (Check all that apply)

☐ Lake not most at risk ☐ River, stream or brook ☐ Coastal wetland
☐ Lake most at risk ☐ Urban impaired stream ☐ Wellhead or public water
☐ Lake most at risk, severely blooming ☐ Freshwater wetland

20. Name of Waterbody Project Site drains to:	Fore River		
21. Amount of Developed Area:	Total acres: 7.362	Existing Developed area: 4.42 acres	New Developed area: 2.9 acres
22. Amount of Impervious Area:	Total acres: 6.326	Existing Impervious areas 3.46 acres	New Impervious area: 2.8 acres

23. Development started prior to obtaining a license?:	☐ Yes ■ No				
24. .Development or any portion of the site subject to enforcement action?	☐ Yes ■ No	**If yes,** name of enforcement staff involved?			
25. Common scheme of development?:	☐ Yes ■ No	**26. Title, Right or Interest:**	☒ own ☐ lease	☐ purchase option ☐ written agreement	
27. Natural Resources Protection Act permit required?:	■ Yes ☐ No	**If yes:**	☐ PBR	☐ Tier 1 ☐ Tier 2	☐ Full Permit
28. Existing DEP Permit number (if applicable):	number unknown				
29. Names of DEP staff person(s) present at the pre-application meeting:	City Review				
30. Does agent have an interest in project? If yes, what is the interest?	☐ Yes ■ No				

CERTIFICATIONS AND SIGNATURES LOCATED ON PAGE 2

IMPORTANT: IF THE SIGNATURE BELOW IS NOT THE APPLICANT'S SIGNATURE, ATTACH LETTER OF AGENT AUTHORIZATION SIGNED BY THE APPLICANT.

By signing below the applicant (or authorized agent), certifies that he or she has read and understood the following :

CERTIFICATIONS / SIGNATURES

"I certify under penalty of law that I have personally examined the information submitted in this document and all attachments thereto and that, based on my inquiry of those individuals immediately responsible for obtaining the information, I believe the information is true, accurate, and complete. I am aware there are significant penalties for submitting false information, including the possibility of fine and imprisonment. I authorize the Department to enter the property that is the subject of this application, at reasonable hours, including buildings, structures or conveyances on the property, to determine the accuracy of any information provided herein.

Further, I hereby authorize the DEP to send me an electronically signed decision on the license I am applying for with this application by emailing the decision to the electronic address located on the front page of this application (see #5 for the applicant and #10 for the agent)"..

Signed: Stephen S Sawyer Jr **Title** Senior Vice President Sebago Technics **Date:** 2/27/18

Notice of Intent to Comply with Maine Construction General Permit	**With this Site Law application form and my signature, I am filing notice of my intent to carry out work which meets the requirements of the Maine Construction General Permit (MCGP). I have read and will comply with all of the MCGP standards.** **If this form is not being signed by the landowner or lessee of the property, attach documentation showing authorization to sign.** **Signed** Stephen S Sawyer Jr. **Date:** 2/27/18

NOTE: You must file a MCGP Notice of Termination (Form K) within 20 days of completing permanent stabilization of the project site.

CERTIFICATION

The person responsible for preparing this application and/or attaching pertinent site and design information hereto, by signing below, certifies that the application for development approval is complete and accurate to the best of his/her knowledge.

Signature: Stephen S Sawyer Jr

Name (print): Stephen S. Sawyer, Jr.

Date: 2/27/18

Re/Cert/Lic No.: _____

Engineer ME PE 3736

Geologist _____

Soil Scientist _____

Land Surveyor _____

Site Evaluator _____

Active Member of the Maine Bar _____

Professional Landscape Architect _____

Other _____

CONCORD COACH LINES

February 21, 2018

To Whom It May Concern:

I hereby authorize Stephen S. Sawyer Jr. to act as the permitting agent responsible for the Natural Resources Protection Act Permit for the proposed Portland Transportation Center Parking Expansion Project located at 100 Thompsons Point Road, Portland, Maine.

I can be contacted at (603) 228-3535 if there are any questions regarding this matter.

Sincerely,

Harry W. Blunt
President

7 Langdon Street | Concord, New Hampshire 03301 | Phone: 603-228-3535 | Fax: 603-228-3524 | concordcoachlines.com

Section 1

Development Description

Section 1

Development Description

A. Narrative

The proposed development involves the construction of 127,966 s.f. addition to the existing parking at the Portland Transportation Center located at 100 Thompsons Point Road in Portland. This proposed development would result in the addition of 300 +/- parking spaces. The subject site is comprised of the existing Portland Transportation Center parcel (6.82 acres) and an adjacent MDOT parcel (1.92 acres) for an approximate total of 8.74 acres. The site is depicted on Tax Map 77 Lot A001 in the City of Portland database. The project site is located in the City of Portland's D and B5 Zoning Districts.

The proposed project seeks to address the existing parking and traffic flow constraints at the site by expanding the current parking supply in a manner which is economically feasible for the ongoing operations of this public transportation hub. As such, this project proposes to add 300+/- parking spaces and modify the existing vehicle access to the terminal entrance in a manner that meets the engineering design criteria as described below:

- The total project development cost shall not to exceed $16,000 per parking space, which would require in excess of a $5/day parking price to finance the project. Anything greater would ultimately dissuade transit users from parking and riding.
- Provide expansion and redesign of the short-term parking lot to meet current demand and avoid unsafe stacking onto the Thompson's Point Connector roadway.
- Provide additional parking for patrons so that the facility is in a better position to construct a new terminal on site or a parking garage on the MaineDOT Park-and-Ride Lot across the street from a space and economic standpoint.

The applicant has conducted a thorough alternatives analysis as part of their design development process and have concluded that the only available and practicable alternative for accomplishing the project objectives is to expand the existing parking lot adjacent to the terminal by constructing 300 +/- spaces over an existing 2.03-acre wetland. The applicant has offset these environmental impacts by constructing an extensive underground stormwater management system, and contributing to the state's In-Lieu-Fee program governing situations like this.

A Natural Resource Protection Act application has been submitted to the Maine Department of Environmental Protection for review.

Project Background

The Portland Transportation Center was constructed in 1996 with 205 long-term parking spaces and 20 short-term spaces. In 2001 the site was redesigned and expanded to serve the Downeaster Amtrak service operated by the Northern New England Passenger Rail Authority. It appears the site underwent Site Law delegated review through the City of Portland at that time.

Utilities

The proposed project site is serviced by underground electrical, telephone, and cable service. The expansion of the parking lot will result in additional light structures which are within CMP service capacity of the site.

Stormwater

Runoff from the existing site generally flows from the western side of the property, where the building is located, across the parking lot to the eastern side of the property where the detention pond is located. The proposed improvements will involve the construction of paved surfaces for parking and vehicular traffic. The proposed development will increase the impervious surface approximately 2.86 acres over the existing impervious area on the site. Stormwater BMPs (subsurface sand filter) will be constructed to treat runoff prior to entering into the existing drainage system. The proposed BMPs have been designed to conform with the Maine Department of Environmental Protection's Chapter 500 stormwater standards.

B. Topographic Map

Attached as Figure 1.

C. Construction Plan

Site improvements are scheduled to begin in June 2018 with completion by August 2019.

Given the nature of the expansion the construction will occur in three phases:

Phase 1 will be comprised of importing the fill materials in the expansion area and installing an asphalt reclaim surface. This are will be in preload condition for approximately one year and will be used for parking at the time. The perimeter landscaping buffer will be installed during this Phase as well.

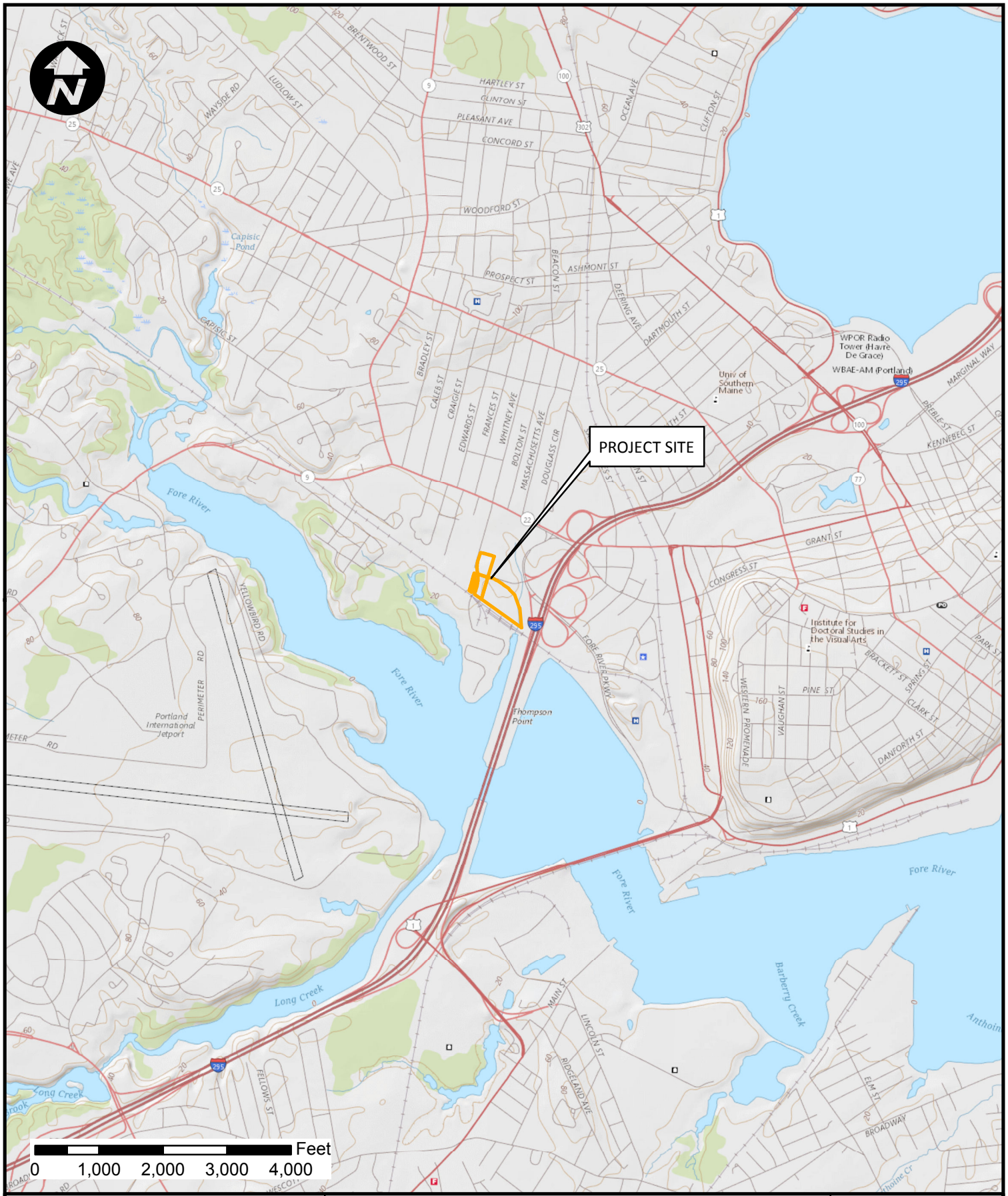
Phase 2 will involve the removal of reclaim surface in the expansion area, the installation of stormwater infrastructure, new pavement, curbing, sidewalk, landscape islands, and site lighting.

Phase 3 is to occur in the existing parking areas, reconfiguring vehicular and pedestrian circulation to match with the expansion area.

D. Drawings

All appropriate site drawings are attached. Individual plans are listed below.

Sheet Number	Sheet Title
1	Cover Sheet
2	Existing Conditions Plan
3	Demolition Plan – Part A
4	Demolition Plan – Part B
5	Overall Site Plan
6	Site Plan – Part A
7	Site Plan – Part B
8	Grading & Utility Plan – Part A
9	Grading & Utility Plan – Part B
10	Subsurface Sand Filter Plan
11	Landscape Plan – Part A
12	Landscape Plan – Part
13-16	Details
1	Pre Development Drainage Plan
2	Post Development Drainage Plan



SEBAGO TECHNICS

WWW.SEBAGOTECHNICS.COM
75 John Roberts Rd. - Suite 1A
South Portland, ME 04106
Tel. 207-200-2100

TITLE FOR:	SITE LOCATION MAP PORTLAND TRANSPORTATION CENTER	SCALE:	1 " = 2,000 '
		DATE:	02/15/2018
LOCATION:	100 Thompsons Point Portland, ME 04102	INFORMATION:	USGS Quadrangle: Portland West

99607_LocationMap.mxd

PROJECT NUMBER: 99607

Section 2

Title, Right or Interest

Section 2

Title, Right or Interest

The record owner of the parcel is Langdon Street Real Estate, Inc by a deed recorded at the Cumberland County Registry of Deed in Book 12719, Page 277. Please see this Section for a copy of the deed.

In order to accomplish the proposed parking lot expansion, the applicant proposes to acquire approximately 1.92 acres from an adjacent parcel owned by the Maine Department of Transportation. Please see this Section for a copy of the Option Agreement.

BK12719PG277

54320

QUITCLAIM DEED WITH COVENANT
(Maine Statutory Short Form)

MAINE REAL ESTATE TAX PAID

PETERSEN CORP., a Massachusetts corporation, of Andover, Massachusetts, grants to LANGDON STREET REAL ESTATE, INC., a New Hampshire corporation with a place of business and mailing address at 7 Langdon Street, Concord, New Hampshire 03301, with quitclaim covenants, the land situated in Portland, County of Cumberland and State of Maine, with all buildings and improvements thereon, if any, being more fully described on the attached Exhibit A.

Meaning and intending to convey and hereby conveying the same premises conveyed to Petersen Corp. by deed of Glen G. Grant dated September 25, 1995 and recorded in the Cumberland County Registry of Deeds in Book 12302, Page 130.

In Witness Whereof, Petersen Corp. has caused this instrument to be executed by Glen G. Grant, its President, thereunto duly authorized, this 12th day of September, 1996.

WITNESS

PETERSEN CORP.

By: _____
Glen G. Grant
Its President

STATE OF MAINE
COUNTY OF CUMBERLAND, ss. September 12, 1996

Personally appeared the above-named Glen G. Grant, President of Petersen Corp., and acknowledged the foregoing to be his free act and deed in his said capacity and the free act and deed of Petersen Corp.

Before me

_____
Notary Public/Attorney at Law

Print Name RICHARD A. SHINAY

78487.1

EXHIBIT A

Two certain lots or parcels of land, with all buildings and improvements thereon, situated in the City of Portland, Cumberland County, State of Maine, bounded and described as follows:

Parcel 1

Beginning on the east side of Sewall Street at a point on the northerly sideline and right-of-way now or formerly of the Portland Terminal Company, at or near, Valuation Station 43.12± as shown on Valuation Section 1-A, Sheet 1A of Federal Valuation Survey Plan of June 30, 1916. Said Valuation Plans are on file in the office of the Chief Engineer, Maine Central Railroad Company, Administration Building, Rigby Road West, P.O. Box 9701, Portland, Maine 04104, of Portland Terminal Company;

Thence southeasterly in said northerly sideline and right of way of Portland Terminal Company a distance of nine hundred five (905) feet, more or less, to a point;

Thence northerly in a line, along a fence, a distance of three hundred (300) feet, more or less, to a concrete monument, set in the ground;

Thence north-northwesterly in a line, along a fence, a distance of two hundred twenty (220) feet, more or less, to a concrete monument, set in the ground;

Thence northwesterly in a line, along a fence, a distance of one hundred twenty (120) feet, more or less, to a concrete monument, set in the ground;

Thence continuing northwesterly on an arc as shown on Valuation Section 1-A, Sheet 1A to the point of intersection with the southerly sideline of Hooper Street, so-called, at a point on a line perpendicular to and projected from Valuation Station 42.03±, as shown on said Valuation Plan;

Thence westerly in the southerly sideline of said Hooper Street, two hundred fifty-five (255) feet, more or less, to the point on intersection with the easterly sideline of Sewall Street;

Thence southerly in the easterly sideline of said Sewall Street to the point of beginning, said parcel containing 281,000 square feet, more or less.

Parcel 2

Beginning on the west side of Sewall Street at a point on the northerly sideline and right-of-way, now or formerly of the Portland Terminal Company, at or near, Valuation Station 43.62± as shown on Valuation Section 1-A, Sheet 1A of Federal Valuation Survey Plan of June 30, 1916. Said Valuation Plans are on file in the office of the Chief Engineer, Maine Central Railroad Company, Administration Building, Rigby Road West, P.O. Box 9701, Portland, Maine 04101, of Portland Terminal Company;

Thence northwesterly in the northerly sideline and right-of-way of Portland Terminal Company a distance of forty (40) feet, more or less, to a point;

Thence northerly in a line a distance of two hundred ninety (290) feet, more or less, to the point of intersection with the westerly sideline of said Sewall Street;

Thence southerly in the westerly sideline of said Sewall Street to the point of beginning, said parcel containing 8,900 square feet, more or less.

Further reference is made to a plan entitled "Subdivision Plan - Preliminary of Thompson's Point Subdivision, Sewall Street, Portland, Maine" made by Sebago Technics, 12 Westbrook Common, Westbrook, Maine, dated September 29, 1992, revised October 1, 1992, Project No. 92091.

Also hereby conveying all of the Grantor's right, title and interest, if any, in and to Sewall Street as it is located between Parcel 1 and Parcel 2, Sewall Street as it is located northwest of Parcel 2, and Hooper Street as it is adjacent to Parcel 1, the current location of Sewall Street and Parcel 2, but without any covenants of title with respect thereto.

78487.1

RECEIVED
RECORDED REGISTRY OF DEEDS
95 SEP 12 PM 2:43
CUMBERLAND COUNTY
John B O'Brien

OPTION AGREEMENT

This **OPTION AGREEMENT** (the "Agreement") is entered into this 29 day of January, 20 18, by and between the STATE OF MAINE, acting by and through its DEPARTMENT OF TRANSPORTATION,, an agency of the State of Maine, with headquarters at 16 State House Station, Augusta, Maine ("MaineDOT" or "Seller"), and LANGDON STREET REAL ESTATE, INC. with an address of 7 Langdon Street, Concord, New Hampshire (the "Buyer"),

RECITALS

A. Seller is the owner of a certain parcel of land located adjacent to Interstate 295 ("I-295") in Portland, County of Cumberland, State of Maine, acquired in connection with MaineDOT's construction of the Exit 6A southbound on-ramp accessing I-295.

B. Buyer is the owner of adjacent land improved with a facility commonly known as the Portland Transportation Center, having an address of 100 Thompson's Point, Portland, Maine (the "PTC"). Buyer is seeking to expand its property to allow for the development of additional parking areas to serve the PTC (the "Extended Parking Area").

C. Under the terms and conditions set out below, Seller is willing to grant to Buyer an exclusive option to purchase a portion of the Seller's property consisting of approximately 1.92± acres, as more particularly described in **Exhibit A** attached hereto and generally depicted as the orange shaded area on the plan attached hereto as **Exhibit B** (the "Premises).

AGREEMENT

NOW, THEREFORE, in consideration of the mutual covenants, agreements, and undertakings set out herein, the parties agree as follows:

1. **Option.** Subject to the terms and conditions set forth herein, the Seller hereby grants to the Buyer the exclusive option to purchase the Premises (the "Option") for anticipated uses associated with the development of the Extended Parking Area serving the PTC.

2. **Term.** This Option will remain in effect until five o'clock (5:00) p.m. on December 31, 2018, unless extended in writing by mutual agreement of the parties (the "Option Term") or unless previously terminated as set forth in this Agreement.

3. **Conditions.** During the Option Term, the parties shall proceed with satisfying each of the following conditions (the "Option Conditions"), which must all be completed to the satisfaction of MaineDOT prior to the parties entering into a formal Purchase and Sale Agreement and proceeding to a sale of the Premises:

    a. Buyer shall have completed, at its sole expense and to the satisfaction of the Seller, a full boundary survey and legal property description of the Premises, upon which a conveyance will be based.

b. Buyer shall have sought and secured, at its sole expense, all necessary permits and permissions from the United States Army Corps of Engineers, the Maine Department of Environmental Protection, and any applicable local entities approving the Buyer's development proposal to construct the Extended Parking Area.

c. Buyer shall have submitted to the Seller, at its sole expense, all necessary information required to support the Seller's request that the Federal Highway Administration ("FHWA") review and approve the Seller's proposal to convey the Premises to the Buyer. Required submissions shall include, but may not be limited to, the following:

   i. Identification of the party who will be responsible for developing and operating the development of the Premises;

   ii. A general statement of the proposed use;

   iii. The proposed design for the development of the Premises, including any facilities to be constructed thereon;

   iv. Maps, plans and/or sketches adequately demonstrating the relationship of the proposed use of the Premises to the adjacent I-295 highway improvements;

   v. An acceptable metes and bounds description of the Premises, as well as appropriate plans and/or cross sections clearly defining the vertical use limits of the proposed development.

d. MaineDOT shall have obtained all necessary approvals from FHWA to proceed with conveying the Premises to the Buyer;

e. Buyer shall have developed, at its sole expense and to the satisfaction of MaineDOT, a drainage design that adequately protects the adjacent I-295 highway corridor, and preserves the ability for MaineDOT to maintain, repair and replace its drainage installations serving the adjacent I-295 highway corridor. To this effect, the sale of the Premises shall be subject to the Seller's retention of any drainage easements necessary to support MaineDOT's highway maintenance needs.

f. MaineDOT shall have completed an appraisal determining the fair market value (the "FMV") of the Premises and, therefore, establishing the purchase price in accordance with FHWA's requirement that MaineDOT receive FMV for the sale of the Premises.

4. **Option Price.** Seller will waive establishing and collecting any cash Option Price for the Option Term, instead receiving consideration in the form of the engineering work

referenced herein; provided, however, that if the Option Term is extended beyond December 31, 2018, as set forth above, Seller retains the right to establish and collect an appropriate Option Price in consideration for extending Buyer's exclusive Option on the Premises.

5. **Exercise of Option and Purchase Price.** Upon satisfaction of all Option Conditions, Buyer's exercise of the Option shall be satisfied through delivery to Seller of Buyer's written intent to proceed with purchasing the Premises at the FMV determined by the Seller. Delivery of Buyer's written intent shall be made no later than the expiration of the Option Term via first class mail or hand delivery.

6. **Termination.** If Buyer does not exercise the Option by the end of the Option Term, the Option and this Agreement shall automatically terminate. Seller retains the right to terminate this Option at any time in the unlikely event that the Premises is required for transportation purposes.

7. **Purchase Agreement and Due Diligence.** Upon exercise of the Option, the parties shall promptly enter into a formal Purchase and Sale Agreement that provides for a closing to occur at a time and place mutually agreeable to the parties (the "Closing"). The Purchase and Sale Agreement shall set out the terms of Closing, including but not limited to the following: form of deed; proration of fees, if any; form of payment; appropriate due diligence periods; and conditions of Closing.

8. **Condition of and Access to Premises during Option Term.** Buyer acknowledges that Seller has made no representations or warranties of any kind whatsoever with respect to the condition of the Premises or the compliance of the Premises with any laws, rules, regulations, or ordinances, including (without limitation) any relating to zoning, the environment, or hazardous materials. During the Option Term, Seller will allow Buyer or its representatives access to the Premises upon reasonable advanced notice to MaineDOT, and Buyer or its representatives shall have the right to perform water, soil, septic system and engineering tests (including, without limitation, tests for hazardous wastes, toxic substances and for the existence of any underground tanks) on the Premises and to conduct boundary, resource and topographical surveys; provided, however, that (i) such access does not interfere with Seller's uses of the Premises; (ii) such persons enter on to the Premises at their own risk of loss or harm; and (iii) Buyer or its representatives will restore the Premises to the condition it was in prior to their inspection(s) to the extent reasonably practicable. All tests and survey results shall be made available to Seller upon request and shall become the property of Seller to the extent possible. In the event Buyer is not satisfied with the results of its tests, including water quality, hazardous wastes, underground tanks, or toxic substances, Buyer may terminate and release this Option. All tests and survey results shall be made available to Seller upon request and shall become the property of Seller to the extent possible.

9. **Conditions to Closing.** Buyer acknowledges that conveyance of the Premises will be conditioned on MaineDOT's retention of any drainage easements determined necessary to support MaineDOT's highway maintenance needs.

10. **No Assignment by Buyer.** Buyer may not assign the Option or this Agreement, and Buyer may not convey to any third party any rights under the Option or under this Agreement. Any such purported assignment or conveyance shall be void and of no effect.

11. **Capacity.** Each party represents to the other (a) that such party has full power and authority to perform its obligations hereunder; (b) that any person or entity executing this Agreement by or on behalf of the represented party has the authority to act on the behalf of and bind the represented party; (c) that any person or entity executing any closing documents by or on behalf of the represented party has been and will be duly authorized to act on behalf of the represented party; and, (d) that the performance of this Agreement will not be in violation of any law, ordinance, rule, regulation, order, or agreements to which the represented party is a party or by the terms of which it is bound.

12. **Governing Law.** This Agreement is made pursuant to and shall be governed in accordance with the laws of the State of Maine.

13. **Entire Agreement.** This Agreement contains the entire and only agreement between the parties, and no oral statements or representations or prior written matter not contained in this Agreement shall have any force or effect.

14. **Modification.** No provision of this Agreement may be waived, changed, or modified orally, but only by an agreement in writing signed by the parties.

15. **Notices.** Any communications, requests or notices required or appropriate to be given under this Agreement shall be in writing and mailed via U.S. Mail, Certified or Registered, Return Receipt Requested or sent via a recognized commercial carrier, such as but not limited to Federal Express, that requires a return receipt delivered to the sending party. Alternatively, communication may be sent via email and shall satisfy the delivery requirements of this section through express acknowledgement of receipt by the receiving party. Said communications, requests or notices shall be sent to the other party as follows:

Seller:	Buyer:
Maine Department of Transportation	Langdon Street Real Estate, Inc.
Toni L. Kemmerle, Chief Counsel	Attn: Ben Blunt
16 State House Station	7 Langdon St
Augusta Maine 04333-0016	Concord, NH 03301
E-mail: toni.kemmerle@maine.gov	Email: bblunt@concordcoachlines.com

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

STATE OF MAINE
Department of Transportation

By: _____
David Bernhardt, Commissioner
Duly authorized

LANGDON STREET REAL ESTATE, INC

By: _____
Print Name: Benjamin Blunt
Its: Vice President
Duly authorized

Exhibit A
Proposed Acquisition from the State of Maine

A certain lot or parcel of land situated on the westerly side of Fore River Parkway and the southerly side of Thompson Point Connector, in the City of Portland, County of Cumberland, State of Maine, as depicted on a plan entitled "Exhibit B – Land Acquisition Sketch of Portland Transportation Center, Thompson's Point Connector, Portland, Maine For Langdon Street Real Estate, Inc., 7 Langdon Street, Concord, NH 03301" dated January 12, 2018, and revised January 23, 2018, by Sebago Technics, Inc. (project number 99607), D.O.T. File No. 3-185D, on file at the Property Office of the Maine Department of Transportation, and being more particularly bounded and described as follows:

Beginning at an existing 6-inch square concrete highway monument, being the southerly corner of land now or formerly of Langdon Street Real Estate, Inc., as described in a deed recorded at the Cumberland County Registry of Deeds (CCRD) in Book 12719, Page 277;

Thence N 05°25'20" W, along land of Langdon Street Real Estate, Inc., a distance of 303.20 feet to an existing 6-inch square concrete highway monument;

Thence N 19°32'38" W, along land of Langdon Street Real Estate, Inc., a distance of 222.25 feet to a 6-inch square concrete highway monument at a point of curvature;

Thence along a non-tangent curve concave to the southwest and land of Langdon Street Real Estate, Inc. as defined by the following curve elements: having a radius of 854.53 feet, an arc length of 35.90 feet and a chord which bears N 41°08'09" W, a distance of 35.89 feet to a point;

Thence N 27°24'28" E, along land of Langdon Street Real Estate, Inc., a distance of 53.92 feet to a point;

Thence N 04°37'26" E, along land of Langdon Street Real Estate, Inc., a distance of 64.77 feet to a 5/8-inch rebar with plastic cap inscribed "STI PLS 2009" to be set on the southerly sideline of the Thompson's Point Connector;

Thence S 72°56'09" E, along Thompson's Point Connector and through land of the State of Maine, as described in deeds recorded at the CCRD in Book 3079, Page 336; Book 3153, Page 761 and Book 3367, Page 171, a distance of 143.69 feet to a 5/8-inch rebar with plastic cap inscribed "STI PLS 2009" to be set at the Fore River Parkway;

Thence S 06°38'37" E, along Fore River Parkway and through land of the State of Maine, a distance of 288.62 feet to a 5/8-inch rebar with plastic cap inscribed "STI PLS 2009" to be set;

Thence S 11°42'34" E, along Fore River Parkway and through land of the State of Maine, a distance of 226.50 feet to a 5/8-inch rebar with plastic cap inscribed "STI PLS 2009" to be set;

Thence S 13°20'40" W, along Fore River Parkway and through land of the State of Maine, a distance of 163.34 feet to a 5/8-inch rebar with plastic cap inscribed "STI PLS 2009" to be set at

land now or formerly of the Portland Terminal Company, as described in a deed recorded at the CCRD in Book 881, Page 318;

Thence N 54°30'09" W, along the land of the Portland Terminal Company, a distance of 101.27 feet to the Point of Beginning.

The herein described parcel contains approximately 83,608 square feet, more or less

Bearings herein are based on Grid North, Maine State Plane Coordinate System, West Zone 1802, NAD83.

Meaning and intending to convey a portion of the right of way of State Highway "295" as was acquired from the Portland Terminal Company by condemnation by the State of Maine, as described in a Notice of Layout and Taking recorded in Book 3217, Page 141.

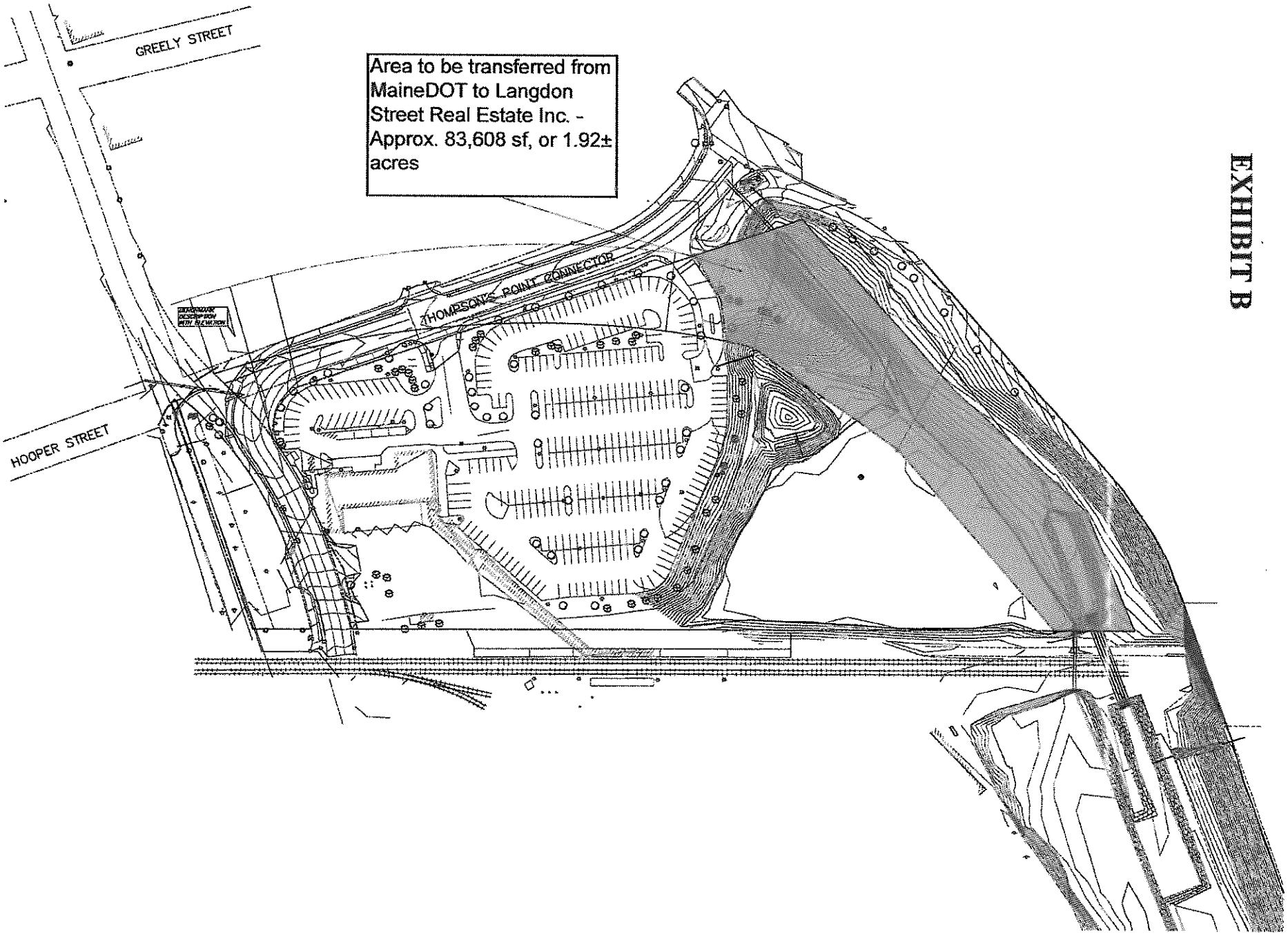

GREELY STREET
Area to be transferred from MaineDOT to Langdon Street Real Estate Inc. - Approx. 83,608 sf, or 1.92± acres
THOMPSONS POINT CONNECTOR
HOOPER STREET

EXHIBIT B

Section 3

Financial Capacity

Section 3

Financial Capacity

A. Estimated Costs

The anticipated construction cost of the proposed development is approximately $3,000,000.

B. Financing

Please see this Section for a letter of financial capacity from TD Bank.

TD Bank
America's Most Convenient Bank®
143 North Main Street
Concord, NH 03301

tdbank.com

City of Portland

January 23, 2018

To Whom it May Concern:

Per the request Langdon Street Real Estate, Inc. (LSRE) of Concord, NH, please accept this letter as confirmation that LSRE and Concord Coach Lines, Inc. (CCL) of Concord, NH have a banking relationship with TD Bank. They have multiple financings with the Bank including lines of credit with aggregate availability in the medium seven (7) figure range. Additionally, the companies maintain a depository relationship with the Bank with current available balances in the moderate seven (7) figure range.

It is my understanding is that LSRE is contemplating funding an expansion of their Portland, ME terminal facility utilizing their current resources, to include the above referenced lines of credit and deposits and without the need for additional financing. In the event that project did require additional funding TD Bank would be more than willing to review the request, subject to our normal underwriting guidelines.

TD has enjoyed a long time relationship with the companies and their obligations have always been handled in an exemplary manner. Should you require additional information I would be pleased to provide upon the request of LSRE.

Sincerely,

Thomas Potter | Vice President | Commercial Lending
TD Bank, America's Most Convenient Bank
NH1-080-000 | 143 North Main Street, Concord, NH 03301
T: 603 229 5911| F: 603 229 5949
E Mail: Thomas.Potter@td.com

Confidential

Section 4

Technical Ability

Section 4

Technical Ability

The applicant has the technical capacity to manage the planning and design of this project as they have done so with the existing facility as well as other transportation centers in New England. They had retained S.W. Cole to provide Geotechnical consulting and Sebago Technics, Inc., to provide survey, landscape architecture, civil engineering and permitting services for this project.

S.W. Cole, founded in 1979 provides services in geotechnical engineering, construction materials testing and special inspections, geo-environmental services and test boring explorations. With an employee base of more than 90 engineers, scientist and technicians they have provided services on more than 1,800 projects.

Timothy J. Boyce, P.E. is a Registered Professional Engineer in the State of Maine and has been practicing for over 21 years. Maine License #9263

Sebago Technics, Inc. (STI) is a multi-disciplinary engineering firm with over 35 years of experience that offers a wide range of services specializing in land development, planning, permitting, and engineering design services. We maintain a staff of multi-disciplinary professionals to provide services in the areas of general civil engineering, road and utility infrastructure design, construction management, permitting, landscape architecture, soil science, wetlands science, geotechnical services, land surveying, and environmental engineering. Resumes of key personnel will be provided upon request.

Section 5

Noise

Section 5

Noise

A. <u>Developments Producing a Minor Noise Impact</u>

The proposed project involves the parking lot expansion of an existing facility. It is not anticipated that the project will result in an increase of noise generated at this site. Abutting properties to the site consist of a connector to the Maine Turnpike and other commercial properties. As a result, a full noise study is not warranted. Temporary noise may arise during construction as a result of construction equipment working on the site. This noise potential is short-term and also not expected to be significant.

Chapter 30 Noise exemptions – 30-3 (u) Construction / machine overhaul noise from 7am – 9pm.

All construction activities will occur within the allowable times outlined in the City of Portland zoning ordinance.

Section 6

Visual Quality & Scenic Character

Section 6

Visual Quality

The proposed development involves a parking lot expansion of an existing facility. Given the nature of the project and the surround area, as well as the location of the subject site it is not anticipated that the parking lot expansion would result in an impact to the visual quality of the area. Please see the planset for a copy of the site plan and landscape plan.

Section 7

Wildlife and Fisheries

Section 7

Wildlife and Fisheries

Maine Inland Fisheries and Wildlife (IF&W) was contacted, and determined there would be no adverse impact to fisheries or wildlife. Please see this Section for a copy of the response letter dated October 2, 2017.

PAUL R. LEPAGE
GOVERNOR

STATE OF MAINE
DEPARTMENT OF
INLAND FISHERIES & WILDLIFE
284 STATE STREET
41 STATE HOUSE STATION
AUGUSTA ME 04333-0041

CHANDLER E. WOODCOCK
COMMISSIONER

October 2, 2017

Erik Lema
Normandeau Associates, Inc.
550 Forest Avenue, Suite 201
Portland, ME 04101

RE: Information Request - Portland Transportation Center, Portland

Dear Erik:

Per your request received September 12, 2017, we have reviewed current Maine Department of Inland Fisheries and Wildlife (MDIFW) information for known locations of Endangered, Threatened, and Special Concern species; designated Essential and Significant Wildlife Habitats; and fisheries habitat concerns within the vicinity of the *Portland Transportation Center Project* in Portland.

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

This consultation review has been conducted specifically for known MDIFW jurisdictional features and should not be interpreted as a comprehensive review for the presence of other regulated features that may occur in this area. Prior to the start of any future site disturbance we recommend additional consultation with the municipality, and other state resource agencies including the Maine Natural Areas Program and Maine Department of Environmental Protection in order to avoid unintended protected resource disturbance.

Please feel free to contact my office if you have any questions regarding this information, or if I can be of any further assistance.

Best regards,

John Perry
Environmental Review Coordinator

PHONE: (207) 287-5254
FISH AND WILDLIFE ON THE WEB: www.maine.gov/ifw
EMAIL ADDRESS: John.Perry@maine.gov

Section 8

Historic Sites

Section 8

Historic Sites

Maine Historic Preservation Commission (MHPC) was contacted and determined that provided no excavation was planned in the area of expansion (a wetland area) that there would be no adverse impact to any historic resources as a result of this project. There is no excavation within the wetland area proposed for this project. Please see this Section for a copy of the MHPC response letter dated November 3, 2017.

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

PAUL R. LEPAGE
GOVERNOR

KIRK F. MOHNEY
DIRECTOR

November 3, 2017

Mr. Erik Lema
Normandeau Associates
550 Forest Ave Suite 201
Portland, ME 04101

Project: MHPC #1410-17 Portland Transportation Center
Proposed Parking Lot Expansion

Town: Portland, ME

Dear Mr. Lema:

In response to your recent request, I have reviewed the information received October 12, 2017 to initiate consultation on the above referenced project in accordance with Maine Department of Environmental Protection.

Review of the proposed project showed that a portion of the Cumberland and Oxford Canal passed through this general area and that a water-filled estuary at the project area location and to its east likely served as a canal basin. The exact location of the canal is not known due to severe disturbance and extensive landfilling, which includes all of Thompson's Point. The most likely location for the canal bed is under the existing railroad tracks or immediately north of them within the project area. Due to this determination, a field check was conducted on October 22nd, 2017 to assess the area for potential vestiges of the canal. The project area primarily consists of wetland that drains under the railroad tracks via several large pipes at its southeastern extent. No clear remains of the canal were identified during the walkover with the possible exception of several large pieces of split granite that lay along the north side of the railroad track embankment opposite the waterway east of Thompson's Point. These stones may have been associated with a canal lock that was present in this area. It is assumed that the parking lot expansion will involve filling of the existing wetland. If the proposed project requires excavation of wetland soils prior to filling, then archaeological monitoring is recommended since the remains of canal-related features as well as canal boats could be present in this area. If the wetland is merely to be filled and left undisturbed, then no archaeological monitoring is recommended and the proposed parking lot expansion may proceed as planned. Attached is a list of approved contract archaeologists.

There will be no architectural or prehistoric archaeological resources affected by this undertaking.

If you have any questions regarding archaeology, please contact Dr. Leith Smith of this office, at Leith.Smith@maine.gov.

Sincerely,

Kirk F. Mohney

Kirk F. Mohney
State Historic Preservation Officer

PHONE: (207) 287-2132

FAX: (207) 287-2335

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

PAUL R. LEPAGE
GOVERNOR

KIRK F. MOHNEY
DIRECTOR

Prehistoric Archaeologists Approved List: Review and Compliance Consulting/Contracting (Active)

LEVEL 1 (Phase I and reconnaissance survey only)

Dr. Christopher Donta (401-273-9900)
HRA Gray and Pape, LLC
60 Valley Street, Suite 103
Providence, RI 02909
cdonta@graypape.com

James A Clark (207-930-0543)
PO 815
Belfast, Maine 04915
clark.ja@gmail.com

Mr. Michael Brigham
P. O. Box 274
New Vineyard, ME 04956
brigham@nearchaeology.com

Ms. Sarah Haugh (207-879-9496 x238)
Tetra Tech
451 Presumpscot St
Portland ME 04103
sarah.haugh@tetratech.com

Mark Penney (518-432-9545)
The Louis Berger Group Inc.
20 Corporate Woods Blvd.
Albany, NY 12211-2370
mpenney@louisberger.com

Mr. Jacob Tumelaire
Independent Archaeological Consulting
801 Islington St. Suite 31
Portsmouth, NH 03801
jtumelaire@iac-llc.net

Mary Lynne Rainey
RGA Cultural Resource Consultants
1376 Kingstown Road
Wakefield, RI 02789
marylynne.rainey@verizon.net

Ora Elquist
Public Archaeology Laboratory
26 Main Street
Pawtucket, RI 02860
401-728-8780
oelquist@palinc.com

LEVEL 2 (Phase I, II, III, data recovery, all phases of survey)

Dr Richard Will (207-667-4055)
TRC/Northeast Cultural Resources
71 Oak St
Ellsworth ME 04605
FAX: 207-667-0485
rwill@trcsolutions.com

Karen Mack (207-667-4055)
TRC/Northeast Cultural Resources
71 Oak St
Ellsworth ME 04605
FAX: 207-667-0485
kemack@trcsolutions.com

Dr Stuart Eldridge (207-869-1261)
Power Engineers, Inc.
303 US Rte 1
Freeport ME 04032
Stuart.Eldridge@powereng.com

Dr Ellen Cowie (207-860-4032)
Northeast Archaeology Research Center
382 Fairbanks Rd
Farmington ME 04938
cowie@nearchaeology.com

Robert N Bartone (207-860-4032)
Northeast Archaeology Research Center
382 Fairbanks Rd
Farmington ME 04938
bartone@nearchaeology.com

Dr Victoria Bunker (603-776-4306)
PO Box 16
New Durham NH 03809-0016
vbi@worldpath.net

Dr Nathan Hamilton (207-780-5324)
Dept of Geography & Anthropology
University of Southern Maine
Gorham ME 04038
casco@usm.maine.edu

David Putnam (207-762-6078)
47 Hilltop Rd
Chapman ME 04757
putnamd@umpi.edu

Dr. Robert Goodby (603-446-2366)
Monadnock Archaeological Consulting
16 Fox Hill Rd
Stoddard NH 03464
rgoodby@monadarch.com
www.monadarch.com

Dr. Dianna Doucette
Public Archaeology Laboratory
26 Main Street
Pawtucket, RI 02860
ddoucette@palinc.com

Dr William R Belcher
US Army CILHI
310 Worchester Ave Bldg 45
Hickam AFB HI 96853-5530
wbelcher@msn.com

Mr. Jacob A. Freedman
SEARCH, INC
P.O. Box 1080
Portsmouth, NH 03802
603-319-6939
www.searchinc.com
Jacob@searchinc.com

Dr. Gemma-Jayne Hudgell
Northeast Archaeology Research Center
382 Fairbanks Road
Farmington, Maine 04938
FAX: 207-860-4031
hudgell@nearchaeology.com

Dr. Daniel F. Cassedy
AECOM
791 Corporate Center Drive
Raleigh, NC 27607
919-854-6207
Daniel.cassedy@aecom.com

PHONE: (207) 287-2132

FAX: (207) 287-2335

Section 9

Unusual Natural Areas

Section 9

Unusual Natural Areas

The Maine Natural Areas program (MNAP) was contacted, and determined there would be no adverse impact as a result of this project. Please see this Section for a copy of the MNAP response letter dated September 13, 2017.

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

PAUL R. LEPAGE
GOVERNOR

WALTER E. WHITCOMB
COMMISSIONER

September 13, 2017

Erik Lema
Normandeau Associates
550 Forest Ave, Suite 201
Portland, ME 04101

Via email: elema@normandeau.com

Re: Rare and exemplary botanical features in proximity to: Portland Transportation Center Parking Lot Expansion, Portland, Maine

Dear Mr. Lema:

I have searched the Natural Areas Program's Biological and Conservation Data System files in response to your request received September 12, 2017 for information on the presence of rare or unique botanical features documented from the vicinity of the project in Portland, Maine. Rare and unique botanical features include the habitat of rare, threatened, or endangered plant species and unique or exemplary natural communities. Our review involves examining maps, manual and computerized records, other sources of information such as scientific articles or published references, and the personal knowledge of staff or cooperating experts.

Our official response covers only botanical features. For authoritative information and official response for zoological features you must make a similar request to the Maine Department of Inland Fisheries and Wildlife, 284 State Street, Augusta, Maine 04333.

According to the information currently in our Biological and Conservation Data System files, there are no rare botanical features documented specifically within the project area. Based on the information in our files and the landscape context of this project, there is a low probability that rare or significant botanical features occur at this project location. However, it was noted that several species of non-native invasive plants are growing through the area where the parking lot expansion is planned. MNAP recommends that the vegetation removed during the project be deposited off-site in an appropriate composting facility or landfill in order to prevent the further spread or introduction of invasive plants through plant material or propagules.

This finding is available and appropriate for preparation and review of environmental assessments, but it is not a substitute for on-site surveys. Comprehensive field surveys do not exist for all natural areas in Maine, and in the absence of a specific field investigation, the Maine Natural Areas Program cannot provide a definitive statement on the presence or absence of unusual natural features at this site.

The Natural Areas Program is continuously working to achieve a more comprehensive database of exemplary natural features in Maine. We would appreciate the contribution of any information obtained should you decide to do field work. The Natural Areas Program welcomes coordination with individuals or organizations proposing

MOLLY DOCHERTY, DIRECTOR
MAINE NATURAL AREAS PROGRAM

DEPARTMENT OF Agriculture Conservation & Forestry

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

environmental alteration, or conducting environmental assessments. If, however, data provided by the Natural Areas Program are to be published in any form, the Program should be informed at the outset and credited as the source.

The Natural Areas Program has instituted a fee structure of $75.00 an hour to recover the actual cost of processing your request for information. You will receive an invoice for $150.00 for two hours of our services.

Thank you for usi
ng the Natural Areas Program in the environmental review process. Please do not hesitate to contact me if you have further questions about the Natural Areas Program or about rare or unique botanical features on this site.

Sincerely,

Kristen Puryear | Ecologist | Maine Natural Areas Program
207-287-8043 | kristen.puryear@maine.gov

Section 10

Buffers

Section 10

Buffers

No specific stormwater treatment buffers are proposed as part of the development. As the project involves the expansion of an existing parking area and the surrounding parcels all consist of commercial uses, visual buffering consists only of retained vegetation and proposed landscaping as depicted on the Landscape Plan.

Section 11

Soils

Section 11

Soils

A. Soil Survey Map and Report

A Class 'D' Medium Intensity Soil Survey published by the United States Department of Agriculture, Natural Resources Conservation Service for Cumberland County, Maine has been provided in this Section.

Please see the pre- and post-development drainage plans for the Class 'D' soil delineation.

B. Soil Survey Intensity Level by Development Type

A class 'D' medium intensity soil survey was utilized on the drainage plans and a site specific geotechnical investigation was conducted for infrastructure improvements.

C. Geotechnical Investigation

A geotechnical investigation was completed by S.W. Cole Engineering, Inc. Please see this section for a copy of the January 8, 2018 report.

D. Hydric Soils Mapping

Wetlands are depicted on the plan set as identified by Erik Lema, Certified wetland Scientist, of Normandeau Associates, Inc. in September 2017. Please see this Section for a copy of the wetlands report.

REPORT

17-0938 S

January 8, 2018

Explorations and Geotechnical Engineering Services

Proposed Amtrak-Concord Coach
Parking Lot Expansion
Portland Transportation Center
100 Thompsons Point Road
Portland, Maine

Prepared For:
Sebago Technics, Inc.
Attention: Stephen S. Sawyer, Jr., P.E. – Vice President
75 John Roberts Road, Suite 1A
South Portland, Maine 04106

Prepared By:
S. W. Cole Engineering, Inc.
286 Portland Road
Gray, Maine 04039
T: 207-657-2866

S.W.COLE ENGINEERING, INC.

- *Geotechnical Engineering*
- *Construction Materials Testing and Special Inspections*
- *GeoEnvironmental Services*
- *Test Boring Explorations*

www.swcole.com

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17-0938 S

January 8, 2018

Sebago Technics, Inc.
Attention: Stephen S. Sawyer, Jr., P.E. – Vice President
75 John Roberts Road, Suite 1A
South Portland, Maine 04106

Subject: Explorations and Geotechnical Engineering Services
Proposed Amtrak-Concord Coach Parking Lot Expansion
Portland Transportation Center
100 Thompsons Point Road
Portland, Maine

Dear Steve:

In accordance with our Proposal, dated September 5, 2017, we have performed subsurface explorations for the subject project. This report summarizes our findings and geotechnical recommendations and its contents are subject to the limitations set forth in Appendix A.

1.0 INTRODUCTION

1.1 Scope and Purpose

The purpose of our services was to obtain subsurface information at the site in order to develop geotechnical recommendations relative to earthwork and pavement associated with the proposed construction. Our scope of services included a review of available prior explorations, three test boring explorations, one hand boring exploration, soils laboratory testing, a geotechnical analysis of the subsurface findings and preparation of this report.

1.2 Site and Proposed Construction

The site is an undeveloped, vegetated parcel located east of the existing Portland Transportation Center and west of the I-295 approach ramp in Portland, Maine. The site is principally occupied by low wet areas. We understand development plans

include a new, 507-space parking lot expansion. We understand proposed grades will roughly match that of the existing adjacent parking lot, then generally sloping down to the southeast, requiring tapered fills approaching 18 feet thick. A subsurface stormwater management gallery is proposed beneath the southern portion of the new parking lot. Proposed and existing site features are shown on the "Exploration Location Plan" attached in Appendix B.

2.0 EXPLORATION AND TESTING

2.1 Explorations

2.1.1 Current Explorations

Three test borings (B-101 through B-103) and one hand boring (HB-1) were made at the site on September 25 through 28, 2017 by S. W. Cole Explorations, LLC, a subsidiary of S. W. Cole Engineering, Inc. (S.W.COLE). The exploration locations were selected and established in the field by S.W.COLE using measurements from existing site features. The approximate exploration locations are shown on the "Exploration Location Plan" attached in Appendix B. Logs of the explorations and a key to the notes and symbols used on the logs are attached in Appendix C. The elevations shown on the logs were estimated based on topographic information shown on the "Exploration Location Plan".

2.1.2 Prior Explorations

Five test borings (B-1 through B-5) were made on the southwest side of the rail alignment abutting the southern site boundary in 2010 as part of a prior study by S.W.COLE for a then proposed train maintenance facility. The approximate locations of these borings are shown on the "Exploration Location Plan" attached in Appendix B. Logs of these explorations are attached in Appendix C.

2.2 Field Testing

The test borings were drilled using a combination of solid stem auger and cased wash-boring techniques. The soils were sampled at 2 to 10 foot intervals using a split spoon sampler and Standard Penetration Testing (SPT) techniques. Pocket Penetrometer Testing (PPT) was performed where relatively stiff cohesive soils were encountered. Shelby tube sampling, Vane Shear Testing (VST), and rod probing were performed where softer cohesive soils were encountered. SPT blow counts, PPT and VST results are shown on the logs.

2.3 Laboratory Testing

Soil samples obtained from the explorations were returned to our laboratory for further classification and testing. Atterberg Limits and moisture content test results are noted on the logs. The results of four, one-dimensional laboratory consolidation tests are attached in Appendix D.

3.0 SUBSURFACE CONDITIONS

3.1 Soil and Bedrock

Underlying pavement or surficial organics, the borings encountered a soils profile generally consisting of fill, overlying organic and bay mud deposits, overlying a relatively thick layer of glaciomarine clay, overlying glacial till and bedrock with depth. The principal soils are summarized below. Not all the strata were encountered at each exploration; refer to the attached logs for more detailed subsurface information.

Fill: The borings encountered fill extending to depths varying from about 4 to 23 feet. The fill consisted of very loose to medium dense sand with varying portions of silt and gravel. The fill at boring B-101 contained miscellaneous debris including brick, plastic and wood.

Organics and Bay Mud: Underlying the fill, the borings encountered deposits of organics and bay mud consisting of layered peat, relic marsh organics, and loose sands, silts and clays with shells and varying portions of organics. The bay mud varied in thickness from approximately to 3 to 27 feet, with peat layers up to about 5 feet thick.

Glaciomarine Soils: Underlying the organics and bay mud, the borings encountered glaciomarine silty clay. At several borings, the clay consists of an upper “crust” of hard to stiff brown and gray silty clay up to about 7 feet thick. The upper “crust”, where present, transitions to a relatively thick layer of softer gray silty clay extending to depths varying from about 47 to 65 feet. Vane Shear Testing performed on the gray silty clay indicates undrained shear strengths varying from approximately 490 to 1,000 psf. One-dimensional consolidation testing performed on the gray silty clay indicates the clay is overconsolidated by approximately 2 to 4 ksf. A layer of sand with varying portions of silt and gravel was present beneath the silty clay at several locations.

Glacial Till: Underlying the glaciomarine soils, several borings encountered up to about 4 feet glacial till, consisting of dense sand with varying portions of silt and gravel.

Bedrock: Underlying the glaciomarine soils and glacial till, where penetrated, the borings encountered bedrock at depths varying from about 64 to 71 feet.

3.2 Groundwater

Saturated soils and free water were encountered in the borings at depths varying from about 2 to 9 feet. Groundwater likely becomes perched on the relatively impervious silts and clays encountered at the test borings. Long term groundwater information is not available. It should be anticipated that groundwater levels will fluctuate, particularly in response to periods of snowmelt and precipitation, as well as changes in site use.

4.0 EVALUATION AND RECOMMENDATIONS

4.1 General Findings

Based on the subsurface findings, the proposed construction appears feasible from a geotechnical standpoint. The principle geotechnical considerations include:

- The site is underlain by compressible relic organics, peat, bay mud and a relatively thick layer of softer gray silty clay which will settle during and after construction. To reduce post-construction settlement, we recommend the site be preloaded prior to the installation of utilities, storm water drainage systems and surface finishes including paving, landscaping and lighting. We understand a preload period of 12 to 18 months is available.

- We recommend the site be filled to bottom of hot mix asphalt (HMA) elevation, including placing pavement subbase and base gravels. Following settlement through the preload period, the site should be shimmed back to plan grade with additional pavement base material. Similarly, the rail tracks may require re-ballasting to re-level the tracks after preloading.

- We recommend the site be instrumented with settlement platforms and a vibrating wire piezometer prior to filling to help monitor and forecast settlement progress

during and after the preload period. Additionally, we recommend survey points be established along the rail alignment and monitored throughout preloading.

- Imported Gravel Borrow, Granular Borrow, Common Borrow, and pavement gravels will be needed for construction.

4.2 Settlement and Stability

4.2.1 Settlement

The bay mud, organics and softer gray silty clay underlying the site are compressible under new loading from the proposed site fills. Based on the subsurface findings and proposed construction, we estimate that settlement may approach several feet during the preload period and several inches post-construction.

4.2.2 Global Stability

We performed global stability analysis for the fill slope along the rail alignment. The stability evaluation was made using a two-dimensional stability model and SLOPE/W computer software. Our global stability analysis utilized a method of slices assuming moment equilibrium, and was based on: 1) our current understanding of the project; 2) subsurface information obtained at the explorations; and, 3) proposed and existing site grades shown on Sheet 1. Our analysis indicates a safety factor of about 1.3 during filling and post-construction. Safety factors of 1.3 are considered acceptable for slopes supporting paved areas. Based on our analysis, the factors of safety against a deep rotational failure are at or above the acceptable thresholds for the proposed construction provided the geotechnical recommendations presented herein are followed. Slope stability output graphics are attached in Appendix E.

4.3 Site and Subgrade Preparation

We recommend that site preparation begin with the construction of an erosion control system to protect adjacent drainage ways and areas outside the construction limits. As much vegetation as possible should remain outside the construction areas to lessen the potential for erosion and site disturbance.

Prior to site filling, tree and shrub growth should be cut off at ground surface; surficial organics, wetland mat, topsoil, and grassy growth may remain in place where greater than 5 feet below proposed finished grade. Existing utilities should be removed and rerouted

from the fill area. Site filling should commence by placing a minimum of three feet of compacted MaineDOT 703.19 Granular Borrow for Underwater Backfill, or as much as required to fill one foot above free water, over the prepared subgrade. Above this elevation, MaineDOT 703.18 Common Borrow may be used to construct the fill embankment up to one-foot below pavement subgrade. The embankment should be capped with at least one-foot of MaineDOT 703.20 Gravel Borrow prior to placing pavement subbase and base gravels.

We recommend the site be filled to bottom of hot mix asphalt (HMA) elevation, including placing pavement subbase and base gravels. Following settlement through the preload period, the site should be shimmed back to plan grade with additional pavement base material prior to paving. Similarly, the railroad tracks may require re-ballasting to re-level the tracks during fill placement and after preloading.

Instrumentation and Monitoring: We recommend settlement plates and a vibrating-wire piezometer be installed after the initial lift of Granular Borrow is installed. We recommend the contractor furnish and install the settlement plates. Survey readings on the settlement plates should be obtained by the contractor on installation and weekly during filling. The settlement plates must be referenced to a benchmark established at least 100 feet away from the fill area. The piezometer should be installed by S.W.COLE and monitored weekly during filling. After site is filled, the settlement plates and piezometer should be read monthly and reviewed by S.W.COLE to monitor preload progress and assess appropriate complete dates and remaining post-construction settlement. Details of the geotechnical instruments (settlement monitoring plates and piezometer) are illustrated on Sheets 1 and 2 in Appendix B.

Preload Duration: At this time, we estimate a preload duration of 12 to 18 months will be required to consolidate the compressible soils beneath the site. The final determination of completion of the preload period should be made by S.W.COLE based upon readings from the geotechnical instruments (settlement monitoring plates and piezometers).

4.4 Excavation and Dewatering

Excavation work will generally encounter surficial organics and fills. Care must be exercised during construction to limit disturbance of the bearing soils. Earthwork and

grading activities should ideally occur during drier, non-freezing weather of Spring, Summer and Fall. Rubber tired construction equipment should not operate directly on the wetland mat or native silt and clays. Low ground pressure tracked equipment will be needed and temporary haul roads overlying geotextile fabric may be necessary.

Groundwater and free standing should be anticipated in the wetland areas. Dewatering prior to filling is not anticipated, as the site is proposed to be raised above free standing water. The contractor should anticipate temporary dewatering for utilities installed below the level of the existing wetlands.

Excavations must be properly shored or sloped in accordance with OSHA Regulations to prevent sloughing and caving of the sidewalls during construction. Care must be taken to preclude undermining adjacent structures, utilities and roadways. The design and planning of excavations, excavation support systems, and dewatering is the responsibility of the contractor.

4.5 Fill, Backfill and Compaction

We recommend the following fill and backfill materials: recycled products must also be tested in accordance with applicable environmental regulations and approved by a qualified environmental consultant.

Granular Borrow: The initial lifts of fill to raise grades in the wetland area should consist of at least 3 feet, and at least 1 foot above free water, of sand meeting the requirements of 2014 MaineDOT Standard Specification 703.19 Granular Borrow for Underwater Backfill.

Common Borrow: Fill to raise grades above the Granular Borrow and up to one-foot from bottom of pavement subbase should be non-organic compactable earth meeting the requirements of 2014 MaineDOT Standard Specification 703.18 Common Borrow.

Gravel Borrow: Fill to raise grades within one foot of pavement subbase should be sand and gravel meeting the requirements of 2014 MaineDOT Standard Specification 703.20 Gravel Borrow.

Structural Fill: Backfill for structures, such as light pole bases, should be clean, non-frost susceptible sand and gravel meeting the gradation requirements for Structural Fill as given below:

Structural Fill	
Sieve Size	**Percent Finer by Weight**
4 inch	100
3 inch	90 to 100
¼ inch	25 to 90
#40	0 to 30
#200	0 to 6

Reuse of Site Soils: The non-organic on-site soils may be suitable for reuse as Common Borrow, provided they are at a compactable moisture content at the time of reuse.

Placement and Compaction: Fill should be placed in horizontal lifts and compacted such that the desired density is achieved throughout the lift thickness with 3 to 5 passes of the compaction equipment. Loose lift thicknesses for grading, fill and backfill activities should not generally exceed 12 inches. We recommend that fill be compacted to at least 95 percent of its maximum dry density as determined by ASTM D-1557.

4.6 Weather Considerations

Construction activity should be limited during wet and freezing weather and the site soils may require drying or thawing before construction activities may continue. The contractor should anticipate the need for water to temper fills in order to facilitate compaction during dry weather. If construction takes place during cold weather, subgrades, foundations and floor slabs must be protected during freezing conditions. Fill must not be placed on frozen soil; and once placed, soil must be protected from freezing.

4.7 Paved Areas

We anticipate paved areas will be subjected primarily to passenger vehicle and light service truck traffic. Considering the site soils, and proposed usage, we offer the following pavement section for consideration.

FLEXIBLE (HMA) PAVEMENT SECTION – 2014 MaineDOT Standard Specs	
Pavement Layer	**Material Thickness**
MaineDOT 9.5 mm Hot Mix Asphalt	1 ½ inches
MaineDOT 19.0 mm Hot Mix Asphalt	2 ½ inches
MaineDOT 703.06 Aggregate Base Type A	3 inches
MaineDOT 703.06 Aggregate Subbase Type D	15 inches

The base and subbase materials should be compacted to at least 95 percent of their maximum dry density as determined by ASTM D-1557. Hot mix asphalt pavement should be compacted to 92 to 97 percent of its theoretical maximum density as determined by ASTM D-2041. A tack coat should be used between successive lifts of bituminous pavement.

It should be understood that frost penetration can be on the order of 4.5 feet in this area. If embankments are not constructed using non-frost susceptible fill or in the absence full depth excavation of frost susceptible soils and replacement with non-frost susceptible compacted fill, frost penetration into the subgrade will occur and some heaving and distress of pavement must be anticipated.

4.8 Design Review and Construction Testing

S.W.COLE should be retained to review the construction documents prior to bidding to determine that our earthwork and pavement recommendations have been properly interpreted and implemented.

A soils and concrete testing program should be implemented during construction to observe compliance with the design concepts, plans, and specifications. S.W.COLE is available to observe earthwork activities, as well as to provide testing services for soils, concrete, and asphalt construction materials.

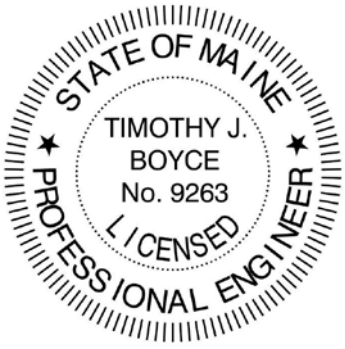
5.0 CLOSURE

It has been a pleasure to be of assistance to you with this phase of your project. We look forward to working with you during the construction phase of the project.

Sincerely,

S. W. Cole Engineering, Inc.

Evan M. Walker, P.E.
Geotechnical Engineer



Timothy J. Boyce, P.E.
Senior Geotechnical Engineer

EMW:tjb

APPENDIX A

Limitations

This report has been prepared for the exclusive use of Sebago Technics, Inc. for specific application to the proposed Amtrak-Concord Coach Parking Lot Expansion at the Portland Transportation Center at 100 Thompsons Point Road in Portland, Maine. S. W. Cole Engineering, Inc. (S.W.COLE) has endeavored to conduct our services in accordance with generally accepted soil and foundation engineering practices. No warranty, expressed or implied, is made.

The soil profiles described in the report are intended to convey general trends in subsurface conditions. The boundaries between strata are approximate and are based upon interpretation of exploration data and samples.

The analyses performed during this investigation and recommendations presented in this report are based in part upon the data obtained from subsurface explorations made at the site. Variations in subsurface conditions may occur between explorations and may not become evident until construction. If variations in subsurface conditions become evident after submission of this report, it will be necessary to evaluate their nature and to review the recommendations of this report.

Observations have been made during exploration work to assess site groundwater levels. Fluctuations in water levels will occur due to variations in rainfall, temperature, and other factors.

S.W.COLE's scope of services has not included the investigation, detection, or prevention of any Biological Pollutants at the project site or in any existing or proposed structure at the site. The term "Biological Pollutants" includes, but is not limited to, molds, fungi, spores, bacteria, and viruses, and the byproducts of any such biological organisms.

Recommendations contained in this report are based substantially upon information provided by others regarding the proposed project. In the event that any changes are made in the design, nature, or location of the proposed project, S.W.COLE should review such changes as they relate to analyses associated with this report. Recommendations contained in this report shall not be considered valid unless the changes are reviewed by S.W.COLE.

APPENDIX B

Figures

LEGEND:

- APPROXIMATE BORING LOCATION
- PROPOSED SETTLEMENT MONITORING PLATFORMS
- PROPOSED VIBRATING WIRE PIEZOMETER
- PROPOSED SURVEY MONITOR POINTS

NOTES:

1. EXPLORATION LOCATION PLAN WAS PREPARED FROM A SCALED PLAN OF THE SITE ENTITLED "PRELIMINARY SITE LAYOUT AND GRADING PLAN," PREPARED BY SEBAGO TECHNICS, INC., DATED OCTOBER 2017.
2. BORINGS B-101 THROUGH B-103 AND HB-1 WERE LOCATED IN THE FIELD BY TAPED MEASUREMENTS FROM EXISTING SITE FEATURES.
3. BORINGS B-1 THROUGH B-5 WERE PERFORMED UNDER THE DIRECTION OF S. W. COLE ENGINEERING, INC. IN 2010.
4. THIS PLAN SHOULD BE USED IN CONJUNCTION WITH THE ASSOCIATED S. W. COLE ENGINEERING, INC. GEOTECHNICAL REPORT.
5. THE PURPOSE OF THIS PLAN IS ONLY TO DEPICT THE LOCATION OF THE EXPLORATIONS IN RELATION TO THE EXISTING CONDITIONS AND PROPOSED CONSTRUCTION AND IS NOT TO BE USED FOR CONSTRUCTION.

0 80 160 Feet

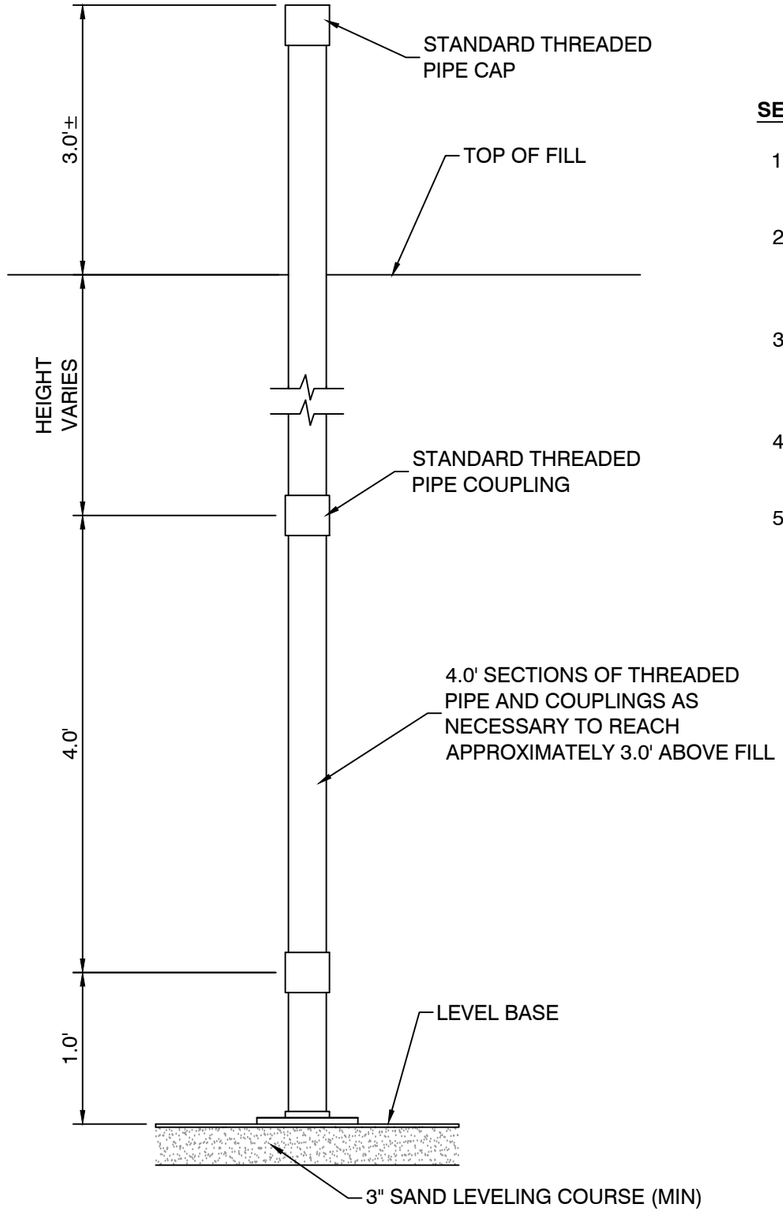
S.W.COLE ENGINEERING, INC.

SEBAGO TECHNICS

EXPLORATION LOCATION PLAN

PROPOSED AMTRAK-CONCORD COACH PARKING LOT EXPANSION
PORTLAND TRANSPORTATION CENTER
100 THOMPSONS POINT ROAD
PORTLAND, MAINE

Job No.:	17-0938	Scale:	1" = 80'
Date :	12/01/2017	Sheet:	1

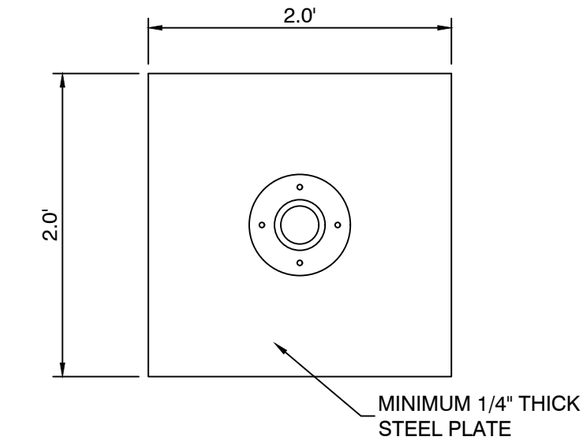


SETTLEMENT MONITORING PLATFORM INSTALLATION AND DETAIL

NOT TO SCALE

SETTLEMENT MONITORING PLATFORM NOTES:

1. SEE SHEET 1 FOR SETTLEMENT MONITORING PLATFORM LOCATIONS.
2. A COMPACTED 3" SAND LEVELING COURSE SHALL BE CONSTRUCTED UNDERNEATH BASES OF SETTLEMENT PLATES.
3. RECORD ELEVATION OF BASE AND TOP OF RISER AT TIME OF INSTALLATION, RECORD ELEVATION OF RISE AT EACH EXTENSION
4. AFFIX PLATE NUMBERS TO RISER PIPES AS SP-1 THROUGH SP-4.
5. CONTRACTOR SHALL TAKE CARE NOT TO DISTURB SETTLEMENT PLATES AFTER THEY HAVE BEEN INSTALLED. DISTURBED PLATES SHALL BE REPLACED.



SETTLEMENT PLATE - STEEL BASE CONSTRUCTION

NOT TO SCALE

S.W.COLE ENGINEERING, INC.

SEBAGO TECHNICS

INSTRUMENTATION DETAILS

PROPOSED AMTRAK-CONCORD COACH PARKING LOT EXPANSION
PORTLAND TRANSPORTATION CENTER
100 THOMPSONS POINT ROAD
PORTLAND, MAINE

Job No.:	17-0938	Scale:	As Noted
Date :	12/01/2017	Sheet:	2

APPENDIX C

Exploration Logs and Key

BORING LOG

S.W.COLE ENGINEERING, INC.

CLIENT: Sebago Technics, Inc.
PROJECT: Proposed Amtrak-Concord Coach Parking Lot Exp.
LOCATION: 100 Thompsons Point Road, Portland, Maine

BORING NO.: B-101
SHEET: 1 of 2
PROJECT NO. 17-0938
DATE START: 9/25/2017
DATE FINISH: 9/25/2017

Drilling Information

LOCATION: See Exploration Location Plan | **ELEVATION (FT):** 26' +/- | **TOTAL DEPTH (FT):** 67.0 | **LOGGED BY:** Patrick Otto
DRILLING CO.: S. W. Cole Explorations, LLC | **DRILLER:** Jeff Lee | **DRILLING METHOD:** Cased Boring
RIG TYPE: Track Mounted Mobile Drill B-53 | **AUGER ID/OD:** N/A / N/A | **SAMPLER:** Standard Split-Spoon
HAMMER TYPE: Safety | **HAMMER WEIGHT (lbs):** 140 / 140 | **CASING ID/OD:** 4 in / 4 1/2 in | **CORE BARREL:**
HAMMER EFFICIENCY FACTOR: | **HAMMER DROP (inch):** 30 / 30
WATER LEVEL DEPTHS (ft): ▽ 9 ft 9/25/2017 Soils saturated below 9'
GENERAL NOTES:

KEY TO NOTES AND SYMBOLS: Water Level; ▽ At time of Drilling; ▼ At Completion of Drilling; ▼ After Drilling; D = Split Spoon Sample; U = Thin Walled Tube Sample; R = Rock Core Sample; V = Field Vane Shear; Pen. = Penetration Length; Rec. = Recovery Length; bpf = Blows per Foot; mpf = Minute per Foot; WOR = Weight of Rods; WOH = Weight of Hammer; RQD = Rock Quality Designation; PID = Photoionization Detector; S_v = Field Vane Shear Strength, kips/sq.ft.; q_u = Unconfined Compressive Strength, kips/sq.ft.; N/A = Not Applicable

Elev. (ft)	Depth (ft)	Casing Pen. (bpf)	SAMPLE INFORMATION: Sample No.	Type	Depth (ft)	Pen./ Rec. (in)	Blow Count or RQD	Field / Lab Test Data	Graphic Log	Sample Description & Classification	H_20 Depth	Remarks
25			1D		0-2	24/15	7-14-8-5			0.5 6"+/- ASPHALT Medium dense, brown SAND and gravel, some silt (FILL) 1.8 Loose, gray gravelly silty SAND with shells, brick, plastic, wood fragments (FILL)		
20	5		2D		5-7	24/15	3-3-6-5				▽	
15	10		3D		10-12	24/15	6-4-2-3					
10	15		4D		15-17	24/4	2-1-3-4					
5	20		5D		20-22	24/0	2-2-5-5			23.0 Loose, dark brown PEAT (Relic Wetland Deposit)		
0	25		6D		25-27	24/12	2-3-4-7					
			7D		27-29	24/24	10-15-23-26			27.2 Medium dense, gray clayey SAND and silt with organics 28.0 Hard, gray-brown sandy SILT and CLAY		
-5	30		8D		30-32	24/20	8-16-20-25	q_P=9 ksf				
										33.5 Medium, olive-brown silty CLAY		
-10	35		9D		35-37	24/6	4-4-6-7	q_P=1 ksf				
										38.5 Medium to soft, gray silty CLAY		

Stratification lines represent approximate boundary between soil types, transitions may be gradual. Water level readings have been made at times and under conditions stated. Fluctuations of groundwater may occur due to other factors than those present at the time measurements were made.

(Continued Next Page)

BORING LOG

S.W.COLE ENGINEERING, INC.

CLIENT: Sebago Technics, Inc.
PROJECT: Proposed Amtrak-Concord Coach Parking Lot Exp.
LOCATION: 100 Thompsons Point Road, Portland, Maine

BORING NO.: B-101
SHEET: 2 of 2
PROJECT NO. 17-0938
DATE START: 9/25/2017
DATE FINISH: 9/25/2017

Elev. (ft)	Depth (ft)	Casing Pen. (bpf)	SAMPLE INFORMATION: Sample No.	Type	Depth (ft)	Pen./ Rec. (in)	Blow Count or RQD	Field / Lab Test Data	Graphic Log	Sample Description & Classification	H_20 Depth	Remarks
-15			10D		40-42	24/24	WOH-WOH-1-2					
	45		1V		45-45.8	9		S_V=0.86/0.05ksf		Medium to soft, gray silty CLAY		
-20			1V'		45.8-46.6	9		S_V=1.08/0.17ksf				
	50											
-25												
	55		2V		55-55.8	9		S_V=0.49/0.03ksf				
-30			2V'		55.8-56.6	9						No Vane Rotation @ 2V'
										56.5 Probable gray silty CLAY with frequent SAND layers		
	60											
-35												
										63.0 Dense, gray silty SAND and GRAVEL		
	65		11D		65-67	24/11	30-25-23-31					
-40										67.0 Bottom of Exploration at 67.0 feet		

Stratification lines represent approximate boundary between soil types, transitions may be gradual. Water level readings have been made at times and under conditions stated. Fluctuations of groundwater may occur due to other factors than those present at the time measurements were made.

BORING / WELL 17-0938.GPJ SWCE TEMPLATE.GDT 12/1/17

BORING LOG

CLIENT: Sebago Technics, Inc.
PROJECT: Proposed Amtrak-Concord Coach Parking Lot Exp.
LOCATION: 100 Thompsons Point Road, Portland, Maine

BORING NO.: B-102
SHEET: 1 of 2
PROJECT NO. 17-0938
DATE START: 9/25/2017
DATE FINISH: 9/26/2017

Drilling Information

LOCATION: See Exploration Location Plan | **ELEVATION (FT):** 14' +/- | **TOTAL DEPTH (FT):** 49.0 | **LOGGED BY:** Patrick Otto
DRILLING CO.: S. W. Cole Explorations, LLC | **DRILLER:** Jeff Lee | **DRILLING METHOD:** Cased Boring
RIG TYPE: Track Mounted Mobile Drill B-53 | **AUGER ID/OD:** N/A / N/A | **SAMPLER:** Standard Split-Spoon
HAMMER TYPE: Safety | **HAMMER WEIGHT (lbs):** 140 / 140 | **CASING ID/OD:** 4 in / 4 1/2 in | **CORE BARREL:**
HAMMER EFFICIENCY FACTOR: | **HAMMER DROP (inch):** 30 / 30
WATER LEVEL DEPTHS (ft): ▽ 9 ft 9/25/2017 Soils saturated below 9'
GENERAL NOTES:

KEY TO NOTES AND SYMBOLS: Water Level; ▽ At time of Drilling; ▼ At Completion of Drilling; ▼ After Drilling; D = Split Spoon Sample; U = Thin Walled Tube Sample; R = Rock Core Sample; V = Field Vane Shear; Pen. = Penetration Length; Rec. = Recovery Length; bpf = Blows per Foot; mpf = Minute per Foot; WOR = Weight of Rods; WOH = Weight of Hammer; RQD = Rock Quality Designation; PID = Photoionization Detector; S_v = Field Vane Shear Strength, kips/sq.ft.; q_u = Unconfined Compressive Strength, kips/sq.ft.; N/A = Not Applicable

Elev. (ft)	Depth (ft)	Casing Pen. (bpf)	SAMPLE INFORMATION: Sample No.	Type	Depth (ft)	Pen./ Rec. (in)	Blow Count or RQD	Field / Lab Test Data	Graphic Log	Sample Description & Classification	H_2O Depth	Remarks
			1D		0-2	24/10	2-4-7-14			Loose, brown SAND and silt with rootlets		
										1.5 Very loose to loose, brown SAND, some silt, trace gravel (FILL)		
10	5		2D		5-7	24/14	4-3-3-2					
5	10		3D		10-12	24/16	2-1-1-2				▽	
										13.0 Loose, dark gray clayey SILT with organics		
0	15		4D		15-17	24/16	1-3-6-6	q_P=5 - 6.5 ksf		16.0 Very stiff, brown silty clay with sand seams		
-5	20		5D		20-22	24/18	3-5-5-6					
-10	25		6D		25-27	24/24	WOH-WOH-2-1			23.5 Medium, gray silty CLAY with sand seams/layers		
-15	30		1U		30-32	24/24		W_L=43 W_P=23 w =44.5 % S_V=0.93/0.18ksf				
-20			1V		32-32.8	9						No Vane Penetration @ 1V'
	35		1V'		32.8-32.8	0						
-25												

Stratification lines represent approximate boundary between soil types, transitions may be gradual. Water level readings have been made at times and under conditions stated. Fluctuations of groundwater may occur due to other factors than those present at the time measurements were made.

(Continued Next Page)

BORING LOG

CLIENT: Sebago Technics, Inc.
PROJECT: Proposed Amtrak-Concord Coach Parking Lot Exp.
LOCATION: 100 Thompsons Point Road, Portland, Maine

BORING NO.: B-102
SHEET: 2 of 2
PROJECT NO. 17-0938
DATE START: 9/25/2017
DATE FINISH: 9/26/2017

Elev. (ft)	Depth (ft)	Casing Pen. (bpf)	SAMPLE INFORMATION: Sample No.	Type	Depth (ft)	Pen./ Rec. (in)	Blow Count or RQD	Field / Lab Test Data	Graphic Log	Sample Description & Classification	H_20 Depth	Remarks
			2U		40-42	24/22		W_L=34 W_P=19 w =36.2 %		Medium, gray silty CLAY with sand seams/layers		
-30	45		2V		42-42.8	9						No Vane Rotation @ 2V
										47.0 Probable glacial till or bedrock		
-35										49.0 Bottom of Exploration at 49.0 feet		

Stratification lines represent approximate boundary between soil types, transitions may be gradual. Water level readings have been made at times and under conditions stated. Fluctuations of groundwater may occur due to other factors than those present at the time measurements were made.

BORING / WELL 17-0938.GPJ SWCE TEMPLATE.GDT 12/1/17

BORING LOG

S.W.COLE ENGINEERING, INC.

CLIENT: Sebago Technics, Inc.
PROJECT: Proposed Amtrak-Concord Coach Parking Lot Exp.
LOCATION: 100 Thompsons Point Road, Portland, Maine

BORING NO.: B-103
SHEET: 1 of 2
PROJECT NO. 17-0938
DATE START: 9/26/2017
DATE FINISH: 9/27/2017

Drilling Information

LOCATION: See Exploration Location Plan | **ELEVATION (FT):** 12' +/- | **TOTAL DEPTH (FT):** 64.5 | **LOGGED BY:** P. Otto / E. Walker
DRILLING CO.: S. W. Cole Explorations, LLC | **DRILLER:** Jeff Lee | **DRILLING METHOD:** Cased Boring
RIG TYPE: Track Mounted Mobile Drill B-53 | **AUGER ID/OD:** N/A / N/A | **SAMPLER:** Standard Split-Spoon
HAMMER TYPE: Safety | **HAMMER WEIGHT (lbs):** 140 / 140 | **CASING ID/OD:** 4 in / 4 1/2 in | **CORE BARREL:**
HAMMER EFFICIENCY FACTOR: | **HAMMER DROP (inch):** 30 / 30
WATER LEVEL DEPTHS (ft): ▽ 5 ft 9/26/2017 Soils saturated below 5'
GENERAL NOTES:

KEY TO NOTES AND SYMBOLS: Water Level: ▽ At time of Drilling; ▼ At Completion of Drilling; ▼ After Drilling
D = Split Spoon Sample; U = Thin Walled Tube Sample; R = Rock Core Sample; V = Field Vane Shear
Pen. = Penetration Length; Rec. = Recovery Length; bpf = Blows per Foot; mpf = Minute per Foot
WOR = Weight of Rods; WOH = Weight of Hammer; RQD = Rock Quality Designation; PID = Photoionization Detector
S_v = Field Vane Shear Strength, kips/sq.ft.; q_u = Unconfined Compressive Strength, kips/sq.ft.; N/A = Not Applicable

Elev. (ft)	Depth (ft)	Casing Pen. (bpf)	SAMPLE INFORMATION: Sample No.	Type	Depth (ft)	Pen./ Rec. (in)	Blow Count or RQD	Field / Lab Test Data	Graphic Log	Sample Description & Classification	H_20 Depth	Remarks
10			1D		0-2	24/16	3-5-7-12			Medium dense, brown silty SAND, some gravel with rootlets top 12" (FILL)		
										4.0		
5	5		2D		5-7	24/15	1-1-1-1			Very loose, gray layered coarse SAND and silty CLAY with shells and few organics	▽	
0	10		3D		10-12	24/16	1-1-1-1			11.5 Loose, dark gray clayey SILT with shells and few organics		
										14.0 Soft to medium, gray silty CLAY with shells		
-5	15		4D		15-17	24/24	WOH					
-10	20		5D		20-22	24/24	WOH					
-15	25		1V		25-25.8	9		S_V=0.93/0.09ksf				
			1V'		25.8-26.6	9		S_V=0.89/0.12ksf				
-20	30		1U		30-32	24/10		W_L=40 W_P=20 w =21 %		31.0 Stiff to very stiff, gray silty CLAY, some sand		
			6D		32-34	24/24	7-10-11-16					
-25	35									38.0 Medium, gray, silty CLAY		

Stratification lines represent approximate boundary between soil types, transitions may be gradual. Water level readings have been made at times and under conditions stated. Fluctuations of groundwater may occur due to other factors than those present at the time measurements were made.

(Continued Next Page)

BORING LOG

CLIENT: Sebago Technics, Inc.
PROJECT: Proposed Amtrak-Concord Coach Parking Lot Exp.
LOCATION: 100 Thompsons Point Road, Portland, Maine

BORING NO.: B-103
SHEET: 2 of 2
PROJECT NO. 17-0938
DATE START: 9/26/2017
DATE FINISH: 9/27/2017

Elev. (ft)	Depth (ft)	Casing Pen. (bpf)	SAMPLE INFORMATION: Sample No.	Type	Depth (ft)	Pen./ Rec. (in)	Blow Count or RQD	Field / Lab Test Data	Graphic Log	Sample Description & Classification	H_20 Depth	Remarks
			2U		40-42	24/24		W_L=45 W_P=23				
-30			2V		42-42.8	9		w =46.4 % S_V=0.92/0.14ksf				
			2V'		42.8-43.6	9		S_V=0.92/0.13ksf				
	45											
-35												
	50		3U		50-52	24/24		W_L=37 W_P=21				
-40			3V		52-52.8	9		w =40.4 % S_V=0.92/0.16ksf				
			3V'		52.8-53.6	9		S_V=0.91/0.20ksf				
	55									Roller Cone Probe Below 53.6'		
-45												
	60											
-50										63.0 Probable Granular Soils - Advance by Roller Cone		
										64.0 Probable Boulder or Bedrock - Advance by Roller Cone		
										64.5 Refusal at 64.5 feet		

Stratification lines represent approximate boundary between soil types, transitions may be gradual. Water level readings have been made at times and under conditions stated. Fluctuations of groundwater may occur due to other factors than those present at the time measurements were made.

BORING / WELL 17-0938.GPJ SWCE TEMPLATE.GDT 12/1/17

BORING LOG

S.W.COLE ENGINEERING, INC.

CLIENT: Sebago Technics, Inc.
PROJECT: Proposed Amtrak-Concord Coach Parking Lot Exp.
LOCATION: 100 Thompsons Point Road, Portland, Maine

BORING NO.: HB-1
SHEET: 1 of 1
PROJECT NO. 17-0938
DATE START: 9/28/2017
DATE FINISH: 9/28/2017

Drilling Information

LOCATION: See Exploration Location Plan | **ELEVATION (FT):** 7' +/- | **TOTAL DEPTH (FT):** 17.0 | **LOGGED BY:** P. Otto
DRILLING CO.: S.W. Cole Engineering, Inc. | **DRILLER:** P. Otto | **DRILLING METHOD:**
RIG TYPE: Hand Auger/Tile Probe | **AUGER ID/OD:** N/A / N/A | **SAMPLER:**
HAMMER TYPE: N/A | **HAMMER WEIGHT (lbs):** N/A | **CASING ID/OD:** N/A /N/A | **CORE BARREL:**
HAMMER EFFICIENCY FACTOR: | **HAMMER DROP (inch):** N/A
WATER LEVEL DEPTHS (ft): ▽ 2 ft 9/28/2017 Free Water Below 2' +/-
GENERAL NOTES:

KEY TO NOTES AND SYMBOLS:
Water Level: ▽ At time of Drilling; ▼ At Completion of Drilling; ▼ After Drilling
D = Split Spoon Sample; U = Thin Walled Tube Sample; R = Rock Core Sample; V = Field Vane Shear
Pen. = Penetration Length; Rec. = Recovery Length; bpf = Blows per Foot; mpf = Minute per Foot
WOR = Weight of Rods; WOH = Weight of Hammer; RQD = Rock Quality Designation; PID = Photoionization Detector
S_v = Field Vane Shear Strength, kips/sq.ft.; q_u = Unconfined Compressive Strength, kips/sq.ft.; N/A = Not Applicable

Elev. (ft)	Depth (ft)	Casing Pen. (bpf)	SAMPLE INFORMATION: Sample No.	Type	Depth (ft)	Pen./ Rec. (in)	Blow Count or RQD	Field / Lab Test Data	Graphic Log	Sample Description & Classification	H_2O Depth	Remarks
5										Vegetation / Organics		
										1.0 Gray, clayey sandy SILT with shells and organics	▽	
	5									5.0 Gray, clayey sandy SILT		
0										Becomes More Clayey with Depth		
	10									Advance by Tile Probe Below 10'		
-5												
	15									15.0 Probable Sand Layer - Advance by Tile Probe		
-10										17.0 Bottom of Exploration at 17.0 feet		

Stratification lines represent approximate boundary between soil types, transitions may be gradual. Water level readings have been made at times and under conditions stated. Fluctuations of groundwater may occur due to other factors than those present at the time measurements were made.

BORING / WELL 17-0938.GPJ SWCE TEMPLATE.GDT 12/1/17

S.W.COLE ENGINEERING, INC.

BORING LOG

BORING NO.: **B-1**
SHEET: 1 OF 2
PROJECT NO.: 09-0538

PROJECT: PROPOSED NNEPRA LAYOVER FACILITY
CLIENT : VHB, INC.
LOCATION: THOMPSON'S POINT/SEWALL ROAD, PORTLAND, MAINE
DRILLING FIRM: NORTHERN TEST BORING DRILLER: MIKE NADEAU

DATE START: 7/22/2010
DATE FINISH: 7/22/2010
ELEVATION:
SWC REP.: E. WALKER

	TYPE	SIZE I.D.	HAMMER WT.	HAMMER FALL
CASING:	HW	4"	140 LBS.	30"
SAMPLER:	SS	1 3/8"	140 LBS.	30"
CORE BARREL:				

WATER LEVEL INFORMATION
SOILS DAMP TO WET BELOW 5'
SOILS SATURATED BELOW 7'

CASING BLOWS PER FOOT	SAMPLE NO.	PEN.	REC.	DEPTH @ BOT	SAMPLER BLOWS PER 6" 0-6	6-12	12-18	18-24	DEPTH	STRATA & TEST DATA
									3"	BITUMINOUS ASPHALT PAVEMENT
	1D	24"	14"	2.2'	12	7	8	9		BROWN AND BLACK SILTY SAND WITH SOME GRAVEL WITH COAL AND ASH (FILL)
	2D	24"	16"	4.2'	13	7	6	6		~ MEDIUM DENSE TO LOOSE ~
	3D	24"	18"	7.0'	4	3	2	3	6.3'	
	4D	24"	20"	9.0'	2	2	2	3	8.7'	ORANGE-BROWN SILTY FINE SAND ~ LOOSE ~
	5D	24"	10"	12.0'	1/12"		1/12"		12.0'	GRAY SILTY FINE SAND WITH OCCASIONAL SILT SEAMS ~ VERY LOOSE ~
										~ FREQUENT ORGANICS/PEAT IN WASH WATER 12' - 15' ~ ~ SOFT/LOOSE ~ GRAY CLAYEY SILT WITH FREQUENT ORGANICS AND PEAT SEAMS
									16.0'	w = 71.0%
	6D	24"	24"	17.0'	1/12"		1/12"			GRAY SILTY CLAY WITH VERY FREQUENT SHELLS AND ORGANICS ~ MEDIUM ~
									20.0'	
	1U	24"	24"	22.0'	PISTON SAMPLER					GRAY SILTY CLAY
	1V			22.8'	3-5/8" X 7" VANE					Sv = 0.90 KSF / 0.19 KSF
	1V'			23.6'	3-5/8" X 7" VANE					Sv = 0.93 KSF / 0.16 KSF ~ MEDIUM ~
										~ TRACE SHELL FRAGMENTS 35' - 37' ~
	7D	24"	24"	37.0'	WOH/24"					w = 52.0%

SAMPLES:
D = SPLIT SPOON
C = 3" SHELBY TUBE
U = 3.5" SHELBY TUBE

SOIL CLASSIFIED BY:
[ ] DRILLER - VISUALLY
[X] SOIL TECH. - VISUALLY
[X] LABORATORY TEST

REMARKS:
STRATIFICATION LINES REPRESENT THE APPROXIMATE BOUNDARY BETWEEN SOIL TYPES AND THE TRANSITION MAY BE GRADUAL.

BORING NO.: **B-1**

S.W.COLE ENGINEERING, INC.

BORING LOG

BORING NO.: **B-1**
SHEET: 2 OF 2
PROJECT NO.: 09-0538

PROJECT: PROPOSED NNEPRA LAYOVER FACILITY
CLIENT : VHB, INC.
LOCATION: THOMPSON'S POINT/SEWALL ROAD, PORTLAND, MAINE
DRILLING FIRM: NORTHERN TEST BORING DRILLER: MIKE NADEAU

DATE START: 7/22/2010
DATE FINISH: 7/22/2010
ELEVATION:
SWC REP.: E. WALKER

	TYPE	SIZE I.D.	HAMMER WT.	HAMMER FALL
CASING:	HW	4"	140 LBS.	30"
SAMPLER:	SS	1 3/8"	140 LBS.	30"
CORE BARREL:				

WATER LEVEL INFORMATION
SOILS DAMP TO WET BELOW 5'
SOILS SATURATED BELOW 7'

CASING BLOWS PER FOOT	SAMPLE NO.	PEN.	REC.	DEPTH @ BOT	SAMPLER BLOWS PER 6" 0-6	6-12	12-18	18-24	DEPTH	STRATA & TEST DATA
										GRAY SILTY CLAY
	8D	24"	24"	47.0'	WOH/24"					~ MEDIUM ~
	9D	24"	24"	57.0'	WOR/24"					
									64.0'	
	10D	24"	16"	67.0'	7	7	8	10	67.0'	GRAY SAND WITH SOME SILT AND SOME GRAVEL ~ MEDIUM DENSE ~
									71.3'	INCREASED RESISTANCE - FREQUENT COBBLES AND GRAVEL POSSIBLE GLACIAL TILL SOILS
									73.5'	PROBABLE BEDROCK ADVANCE BY ROLLER CONE
										BOTTOM OF EXPLORATION @ 73.5'

SAMPLES:
D = SPLIT SPOON
C = 3" SHELBY TUBE
U = 3.5" SHELBY TUBE

SOIL CLASSIFIED BY:
[ ] DRILLER - VISUALLY
[X] SOIL TECH. - VISUALLY
[X] LABORATORY TEST

REMARKS:
STRATIFICATION LINES REPRESENT THE APPROXIMATE BOUNDARY BETWEEN SOIL TYPES AND THE TRANSITION MAY BE GRADUAL.

BORING NO.: **B-1**

S.W.COLE ENGINEERING, INC.

BORING LOG

BORING NO.: **B-2**
SHEET: 1 OF 1
PROJECT NO.: 09-0538

PROJECT: PROPOSED NNEPRA LAYOVER FACILITY
CLIENT : VHB, INC.
LOCATION: THOMPSON'S POINT/SEWALL ROAD, PORTLAND, MAINE
DRILLING FIRM: NORTHERN TEST BORING DRILLER: MIKE NADEAU

DATE START: 7/23/2010
DATE FINISH: 7/23/2010
ELEVATION:
SWC REP.: E. WALKER

	TYPE	SIZE I.D.	HAMMER WT.	HAMMER FALL
CASING:	HSA	2 1/4"		
SAMPLER:	SS	1 3/8"	140 LBS.	30"
CORE BARREL:				

WATER LEVEL INFORMATION
SOILS DAMP TO WET BELOW 5'
SOILS SATURATED BELOW 7'

CASING BLOWS PER FOOT	SAMPLE NO.	PEN.	REC.	DEPTH @ BOT	SAMPLER BLOWS PER 6" 0-6	6-12	12-18	18-24	DEPTH	STRATA & TEST DATA
									3" +/-	BITUMINOUS ASPHALT PAVEMENT
									1.0'	BROWN GRAVELLY SAND WITH SOME SILT (FILL) ~ MEDIUM DENSE ~
	1D	24"	18"	2.2'	6	6	9	24	2.0'	BLACK SILTY SAND WITH TRACE GRAVEL WITH COAL & ASH (FILL) ~MED. DENSE~
										ORANGE BROWN SAND WITH SOMES SILT (FILL)
									6.0'	~ LOOSE ~
	2D	24"	18"	7.0'	5	6	3	4	7.0'	BROWN CLAYEY SILTY SAND ~ LOOSE ~
	3D	24"	14"	9.0'	2	3	3	4		GRAY SILTY FINE SAND
	4D	24"	6"	12.0'	1	1	1	1		~ LOOSE ~
									15.0'	
	5D	24"	22"	17.0'	1	1/12"		1		w = 70.2%, O = 7.8%
										DARK BROWN PEAT WITH FREQUENT GRAY CLAYEY SILT LAYERS
										~ VERY LOOSE ~
									20.3'	
	6D	24"	24"	20.0'	1/12"		1	1		GRAY SILTY CLAY WITH FREQUENT SHELLS
										~ MEDIUM ~
	7D	24"	24"	27.0'	1	1	1	1	27.0'	
										BOTTOM OF EXPLORATION @ 27.0'

SAMPLES:
D = SPLIT SPOON
C = 3" SHELBY TUBE
U = 3.5" SHELBY TUBE

SOIL CLASSIFIED BY:
[ ] DRILLER - VISUALLY
[X] SOIL TECH. - VISUALLY
[X] LABORATORY TEST

REMARKS:
STRATIFICATION LINES REPRESENT THE APPROXIMATE BOUNDARY BETWEEN SOIL TYPES AND THE TRANSITION MAY BE GRADUAL.

BORING NO.: **B-2**

S.W.COLE ENGINEERING, INC.

BORING LOG

BORING NO.: **B-3**
SHEET: 1 OF 2
PROJECT NO.: 09-0538

PROJECT: PROPOSED NNEPRA LAYOVER FACILITY
CLIENT : VHB, INC.
LOCATION: THOMPSON'S POINT/SEWALL ROAD, PORTLAND, MAINE
DRILLING FIRM: NORTHERN TEST BORING DRILLER: MIKE NADEAU

DATE START: 7/22/2010
DATE FINISH: 7/22/2010
ELEVATION:
SWC REP.: E. WALKER

	TYPE	SIZE I.D.	HAMMER WT.	HAMMER FALL
CASING:	HW	4"	140 LBS.	30"
SAMPLER:	SS	1 3/8"	140 LBS.	30"
CORE BARREL:	NQ	2"		

WATER LEVEL INFORMATION
SOILS DAMP TO WET BELOW 5'
SOILS SATURATED BELOW 7'

CASING BLOWS PER FOOT	SAMPLE NO.	PEN.	REC.	DEPTH @ BOT	SAMPLER BLOWS PER 6" 0-6	6-12	12-18	18-24	DEPTH	STRATA & TEST DATA
									3"	BITUMINOUS ASPHALT PAVEMENT
									1.0'	BROWN SILTY GRAVELLY SAND (FILL) ~ MEDIUM DENSE ~
	1D	24"	10"	2.2'	6	5	9	9	2.0'	BLACK SILTY SAND WITH ASH (FILL) ~ MEDIUM DENSE ~
	2D	24"	12"	4.2'	6	8	9	9		BROWN SAND WITH SOME SILT (FILL) ~ MEDIUM DENSE TO LOOSE ~
	3D	24"	16"	7.0'	4	2	3	4	6.5'	
	4D	24"	10"	9.0'	4	4	7	8	8.6'	BROWN SILTY CLAYEY SAND ~ LOOSE ~
									10.0'	ORANGE-RED MEDIUM SAND WITH SOME SILT ~ MEDIUM DENSE ~
	5D	24"	16"	12.0'	1	1	1	1	15.0'	GRAY CLAYEY SILT WITH OCCASIONAL FINE SAND SEAMS, VERY FREQUENT DARK BROWN ORGANIC/PEAT SEAMS ~ VERY LOOSE ~
									15.5'	DARK BROWN PEAT ~ STRONG ORGANIC ODOR ~ ~ VERY LOOSE ~
	6D	24"	22"	17.0'	1	1	2	2		w = 118.0%, O = 18.4% GRAY SILTY CLAY WITH OCCASIONAL SAND SEAMS, VERY FREQUENT ORGANIC/PEAT SEAMS ~ MEDIUM ~
	1V			20.0'	3-5/8" X 7" VANE				20.0'	VANE SHEAR ATTEMPTED @ 20' - NO PENETRATION
	7D	24"	20"	22.0'	1	2	4	6	25.0'	GRAY CLAYEY SILT WITH OCCASIONAL SAND SEAMS, FREQUENT SHELLS AND ORGANICS ~ MEDIUM ~
	8D	24"	22"	27.0'	7	9	10	10	30.0'	BROWN SILTY CLAY WITH FREQUENT SILT SEAMS q_p = 4.5 KSF ~ VERY STIFF ~
	9D	24"	24"	32.0'	1/12"		1/12"			GRAY SILTY CLAY
	1U	24"	24"	37.0'	PISTON SAMPLER					
	2V			37.8'	3-5/8" X 7" VANE					S_v = 1.06 KSF / 0.21 KSF ~ STIFF ~
	2V'			38.6'	3-5/8" X 7" VANE					S_v = 1.11 KSF / 0.21 KSF

SAMPLES:
D = SPLIT SPOON
C = 3" SHELBY TUBE
U = 3.5" SHELBY TUBE

SOIL CLASSIFIED BY:
[ ] DRILLER - VISUALLY
[X] SOIL TECH. - VISUALLY
[X] LABORATORY TEST

REMARKS: CONTINUED…

STRATIFICATION LINES REPRESENT THE APPROXIMATE BOUNDARY BETWEEN SOIL TYPES AND THE TRANSITION MAY BE GRADUAL.

BORING NO.: **B-3**

S.W.COLE ENGINEERING, INC.

BORING LOG

BORING NO.: **B-3**
SHEET: 2 OF 2
PROJECT NO.: 09-0538

PROJECT: PROPOSED NNEPRA LAYOVER FACILITY
CLIENT : VHB, INC.
LOCATION: THOMPSON'S POINT/SEWALL ROAD, PORTLAND, MAINE
DRILLING FIRM: NORTHERN TEST BORING DRILLER: MIKE NADEAU

DATE START: 7/22/2010
DATE FINISH: 7/22/2010
ELEVATION:
SWC REP.: E. WALKER

	TYPE	SIZE I.D.	HAMMER WT.	HAMMER FALL
CASING:	HW	4"	140 LBS.	30"
SAMPLER:	SS	1 3/8"	140 LBS.	30"
CORE BARREL:				

WATER LEVEL INFORMATION
SOILS DAMP TO WET BELOW 5'
SOILS SATURATED BELOW 7'

CASING BLOWS PER FOOT	SAMPLE NO.	PEN.	REC.	DEPTH @ BOT	SAMPLER BLOWS PER 6" 0-6	6-12	12-18	18-24	DEPTH	STRATA & TEST DATA
										GRAY SILTY CLAY
										~ MEDIUM TO SOFT ~
	10D	24"	24"	52.0'	WOH-24"					
	11D	24"	24"	62.0'	1	1	1	1		
									65.4'	
										INCREASED RESISTANCE @ 65.4'
									68.0'	PROBABLE GRANULAR GLACIAL TILL SOILS
									69.5'	BEDROCK - ADVANCE BY ROLLER CONE
										BEDROCK - SEE ROCK CORE LOG
	R1	5.0'	3.3'	74.5'					74.5'	RQD = 57%
										BOTTOM OF EXPLORATION @ 74.5'

SAMPLES:
D = SPLIT SPOON
C = 3" SHELBY TUBE
U = 3.5" SHELBY TUBE

SOIL CLASSIFIED BY:
[ ] DRILLER - VISUALLY
[X] SOIL TECH. - VISUALLY
[X] LABORATORY TEST

REMARKS:
STRATIFICATION LINES REPRESENT THE APPROXIMATE BOUNDARY BETWEEN SOIL TYPES AND THE TRANSITION MAY BE GRADUAL.

BORING NO.: **B-3**

S.W.COLE ENGINEERING, INC.

BORING LOG

BORING NO.: **B-4**
SHEET: 1 OF 1
PROJECT NO.: 09-0538

PROJECT: PROPOSED NNEPRA LAYOVER FACILITY
CLIENT : VHB, INC.
LOCATION: THOMPSON'S POINT/SEWALL ROAD, PORTLAND, MAINE
DRILLING FIRM: NORTHERN TEST BORING DRILLER: MIKE NADEAU

DATE START: 7/23/2010
DATE FINISH: 7/23/2010
ELEVATION:
SWC REP.: E. WALKER

	TYPE	SIZE I.D.	HAMMER WT.	HAMMER FALL
CASING:	HSA	2 1/4"		
SAMPLER:	SS	1 3/8"	140 LBS.	30"
CORE BARREL:				

WATER LEVEL INFORMATION
SOILS DAMP TO WET BELOW 3'
WATER MEASURED IN PIEZOMETER @ 3.6' 7/30/10

CASING BLOWS PER FOOT	SAMPLE NO.	PEN.	REC.	DEPTH @ BOT	SAMPLER BLOWS PER 6" 0-6	6-12	12-18	18-24	DEPTH	STRATA & TEST DATA
										GRASS AND DARK BROWN SILTY SAND (FILL)
	1D	24"	16"	2.0'	3	3	4	7	2.0'	~ LOOSE TO MEDIUM DENSE ~
	2D	24"	14"	4.0'	8	9	11	8		BROWN TO ORANGE-BROWN MEDIUM TO COARSE SAND (FILL)
										~ MEDIUM DENSE ~
									6.0'	
	3D	24"	16"	7.0'	7	5	3	2	6.7'	BLACK COAL AND ASH (FILL) ~ LOOSE ~
	4D	24"	14"	9.0'	1	2	3	3		GRAY SILTY CLAY WITH FREQUENT SAND SEAMS
	5D	24"	16"	12.0'	1	1	1	1		~ MEDIUM ~
										w = 41.3%
									15.0'	
	6D	24"	20"	17.0'	1	2	2	1		w = 141.4%, O=27.4%
										DARK BROWN PEAT WITH CLAYEY SILT AND SILTY CLAY LAYERS
										~ STRONG ORGANIC ODOR ~
										~ VERY LOOSE ~
	7D	24"	14"	22.0'	1	1	1	1	22.0'	
										BOTTOM OF EXPLORATION @ 22.0'
										PIEZOMETER INSTALLED:
										2" PVC SCREEN 15.0' - 5.0'
										2" PVC RISER 5.0' - GROUND SURFACE
										FILTER SAND 22.0' - 4.0'
										BENTONITE SEAL 4.0' - 3.0'
										DRILL CUTTINGS 3.0' - GROUND SURFACE
										ROADBOX CAP INSTALLED

SAMPLES:
D = SPLIT SPOON
C = 3" SHELBY TUBE
U = 3.5" SHELBY TUBE

SOIL CLASSIFIED BY:
[ ] DRILLER - VISUALLY
[X] SOIL TECH. - VISUALLY
[X] LABORATORY TEST

REMARKS:
STRATIFICATION LINES REPRESENT THE APPROXIMATE BOUNDARY BETWEEN SOIL TYPES AND THE TRANSITION MAY BE GRADUAL.

BORING NO.: **B-4**

S.W.COLE ENGINEERING, INC.

BORING LOG

BORING NO.: **B-5**
SHEET: 1 OF 2
PROJECT NO.: 09-0538

PROJECT: PROPOSED NNEPRA LAYOVER FACILITY
CLIENT : VHB, INC.
LOCATION: THOMPSON'S POINT/SEWALL ROAD, PORTLAND, MAINE
DRILLING FIRM: NORTHERN TEST BORING DRILLER: MIKE NADEAU

DATE START: 7/22/2010
DATE FINISH: 7/22/2010
ELEVATION:
SWC REP.: E. WALKER

	TYPE	SIZE I.D.	HAMMER WT.	HAMMER FALL
CASING:	HSA	2 1/4"		
SAMPLER:	SS	1 3/8"	140 LBS.	30"
CORE BARREL:				

WATER LEVEL INFORMATION
SOILS DAMP BELOW 3'
SOILS SATURATED BELOW 5'

CASING BLOWS PER FOOT	SAMPLE NO.	PEN.	REC.	DEPTH @ BOT	SAMPLER BLOWS PER 6" 0-6	6-12	12-18	18-24	DEPTH	STRATA & TEST DATA
									3"	BITUMINOUS ASPHALT PAVEMENT
									2.0'	BROWN SAND WITH SOME SILT (FILL) ~ MEDIUM DENSE ~
	1D	24"	16"	2.2'	8	9	11	8		BROWN SAND WITH SOME SILT AND SOME GRAVEL (FILL)
									4.0'	~ MEDIUM DENSE ~
	2D	24"	10"	4.2'	5	6	7	8		q_p=8 KSF
										~ ORGANICS @ 6-7' ~
	3D	24"	18"	7.0'	2	2	2	2		q_p=3 KSF
										GRAY-BROWN LAYERED CLAYEY SILT AND SANDY SILT
										~ LOOSE ~
	4D	24"	18"	18.0'	1	1	2	2	12.0'	q_p=0.5-1 KSF
										ROD PROBE 12.0' - 60.4'
										NO ROD PROBE ADVANCE BY WEIGHT OF MAN
										HYDRAULIC PUSH: 12.0' - 59.5'
										140 LB. HAMMER:
										59.0' - 59.5' - 38 BLOWS
										59.5' - 60.0' - 39 BLOWS
										60.0' - 60.4' - 100 BLOWS, HAMMER BOUNCING
										ROD PROBE REFUSAL @ 60.4'
										PROBABLE BEDROCK, POSSIBLE BOULDER

SAMPLES:
D = SPLIT SPOON
C = 3" SHELBY TUBE
U = 3.5" SHELBY TUBE

SOIL CLASSIFIED BY:
[ ] DRILLER - VISUALLY
[X] SOIL TECH. - VISUALLY
[ ] LABORATORY TEST

REMARKS: CONTINUED…

STRATIFICATION LINES REPRESENT THE APPROXIMATE BOUNDARY BETWEEN SOIL TYPES AND THE TRANSITION MAY BE GRADUAL.

BORING NO.: **B-5**

S.W.COLE ENGINEERING, INC.

ROCK CORE LOG

PROJECT: PROPOSED NNEPRA LAYOVER FACILITY / PORTLAND, ME

BORING NO.: B-3

CLIENT: VHB, INC.

PROJECT NO.: 09-0538

LOGGED BY P. Otto DATE: 8/3/2010 SHEET 1 OF 1

CHECKED BY E. Walker DATE: 8/3/2010 CORE SIZE NQ

DEPTH BELOW SURFACE (FT)	CORE RUN	CORE INTERVAL (FT)	CORE RECOVERY (FT)	RQD (%)	ROCK QUALITY	GRAPHIC LOG	ROCK DESCRIPTION AND IDENTIFICATION
70.5		69.5					
71.5	R1	5.0	3.3	57	FAIR		Eliot Formation - Dark gray Phyllite, trace pyrite and/or muscovite mica; moderately hard; fine grained; fresh to very slightly weathered. Contains quartz veins up to 2½ inches thick and thin calcite veins. Low to moderate fracture angles between 0-45 degrees from horizontal. Foliation at 30-40 degrees from horizontal.
72.5							
73.5							Probable zone of core loss, rock fragment left in borehole.
74.5		74.5					BOTTOM OF EXPLORATION @ 74.5'

S.W.COLE ENGINEERING, INC. • Geotechnical Engineering • Field & Lab Testing • Scientific & Environmental Consulting

KEY TO THE NOTES & SYMBOLS
Test Boring and Test Pit Explorations

All stratification lines represent the approximate boundary between soil types and the transition may be gradual.

Key to Symbols Used:

w	-	water content, percent (dry weight basis)
q_u	-	unconfined compressive strength, kips/sq. ft. - laboratory test
S_v	-	field vane shear strength, kips/sq. ft.
L_v	-	lab vane shear strength, kips/sq. ft.
q_p	-	unconfined compressive strength, kips/sq. ft. – pocket penetrometer test
O	-	organic content, percent (dry weight basis)
W_L	-	liquid limit - Atterberg test
W_P	-	plastic limit - Atterberg test
WOH	-	advance by weight of hammer
WOM	-	advance by weight of man
WOR	-	advance by weight of rods
HYD	-	advance by force of hydraulic piston on drill
RQD	-	Rock Quality Designator - an index of the quality of a rock mass.
γ_T	-	total soil weight
γ_B	-	buoyant soil weight

Description of Proportions:

Trace:	0 to 5%
Some:	5 to 12%
"Y"	12 to 35%
And	35+%

Description of Stratified Soils

Parting:	0 to 1/16" thickness
Seam:	1/16" to ½" thickness
Layer:	½" to 12" thickness
Varved:	Alternating seams or layers
Occasional:	one or less per foot of thickness
Frequent:	more than one per foot of thickness

REFUSAL: **Test Boring Explorations** - Refusal depth indicates that depth at which, in the drill foreman's opinion, sufficient resistance to the advance of the casing, auger, probe rod or sampler was encountered to render further advance impossible or impracticable by the procedures and equipment being used.

REFUSAL: **Test Pit Explorations** - Refusal depth indicates that depth at which sufficient resistance to the advance of the backhoe bucket was encountered to render further advance impossible or impracticable by the procedures and equipment being used.

Although refusal may indicate the encountering of the bedrock surface, it may indicate the striking of large cobbles, boulders, very dense or cemented soil, or other buried natural or man-made objects or it may indicate the encountering of a harder zone after penetrating a considerable depth through a weathered or disintegrated zone of the bedrock.

APPENDIX D

Laboratory Test Results

S.W.COLE ENGINEERING, INC.

Consolidation Test

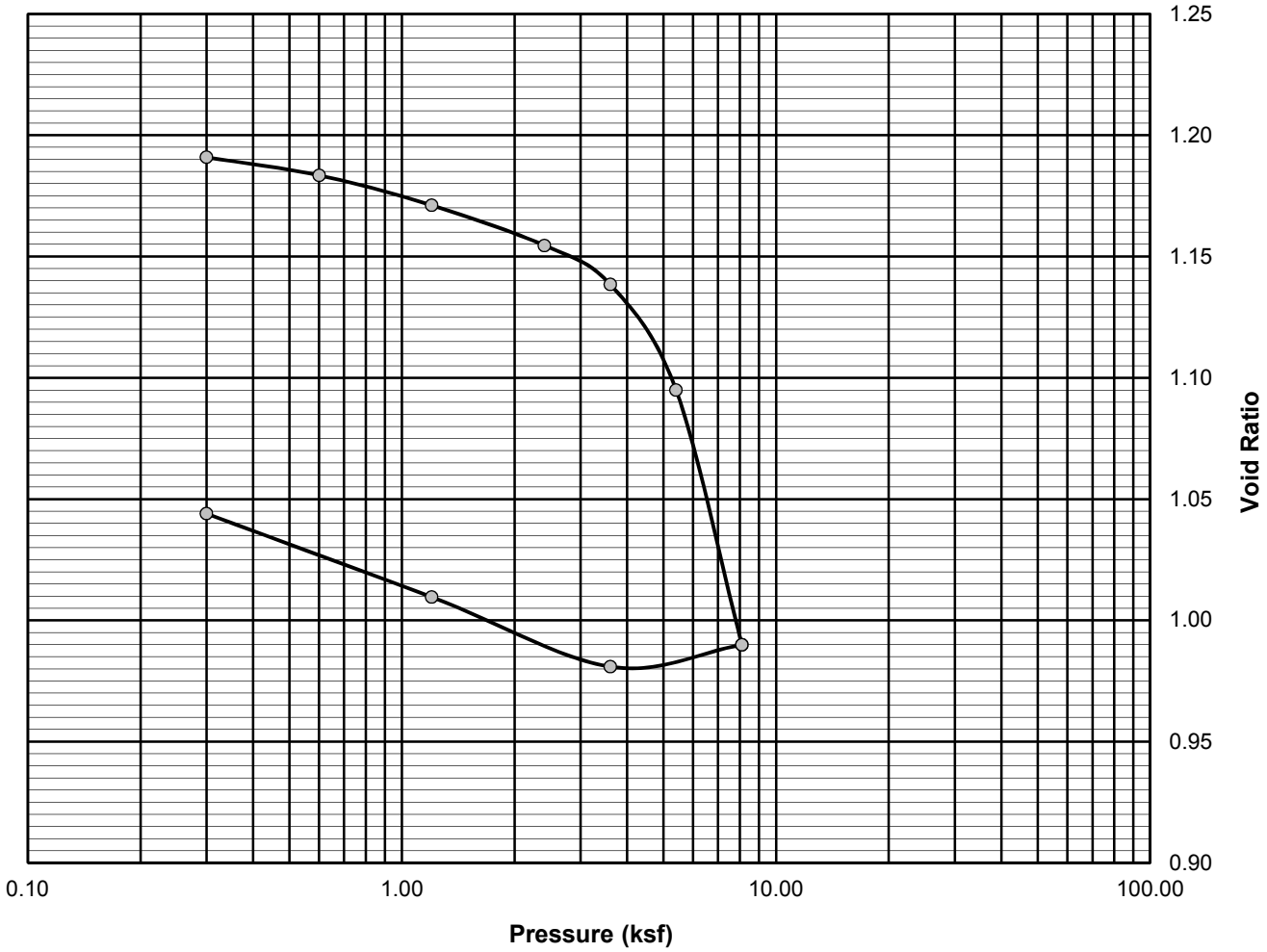
ASTM D-4767

Project Name: Proposed Amtrak-Concord Coach Parking Lot Expansion
Client: Sebago Technics, Inc.

Project Number: 17-0938
Lab ID: 21062B
Date: 10/11/2017

Boring: B-102
Sample: 1U
Depth: 30-32'

P_C =	4.8 KSF +/-
C_C =	0.6
C_R =	0.05
w =	44.5%
W_L =	43
W_P =	23



Comments:

EMW
Reviewed By

S.W.COLE ENGINEERING, INC.

Consolidation Test

ASTM D-4767

Project Name: Proposed Amtrak-Concord Coach Parking Lot Expansion
Client: Sebago Technics, Inc.

Project Number: 17-0938
Lab ID: 21063B
Date: 10/11/2017

Boring: B-102
Sample: 2U
Depth: 40-42'

P_C =	6.8 KSF +/-
C_C =	0.56
C_R =	0.03
w =	36.2%
W_L =	34
W_P =	19

Comments:

EMW
Reviewed By

S.W.COLE ENGINEERING, INC.

Consolidation Test

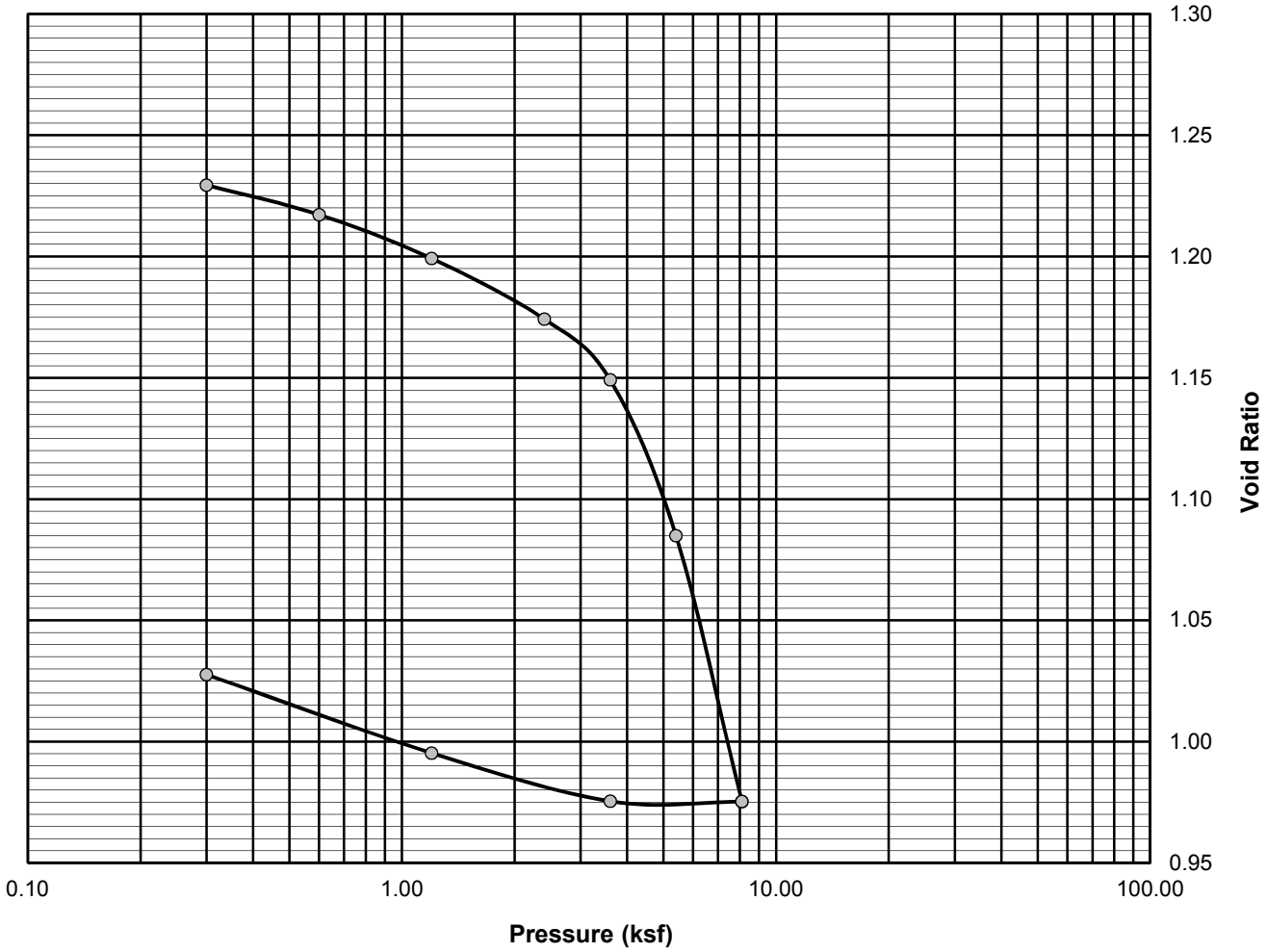
ASTM D-4767

Project Name: Proposed Amtrak-Concord Coach Parking Lot Expansion
Client: Sebago Technics, Inc.

Project Number: 17-0938
Lab ID: 21065B
Date: 10/11/2017

Boring: B-103
Sample: 2U
Depth: 40-42'

P_C =	4.3 KSF +/-
C_C =	0.62
C_R =	0.06
w =	46.4%
W_L =	45
W_P =	23



Comments:

EMW
Reviewed By

S.W.COLE ENGINEERING, INC.

Consolidation Test

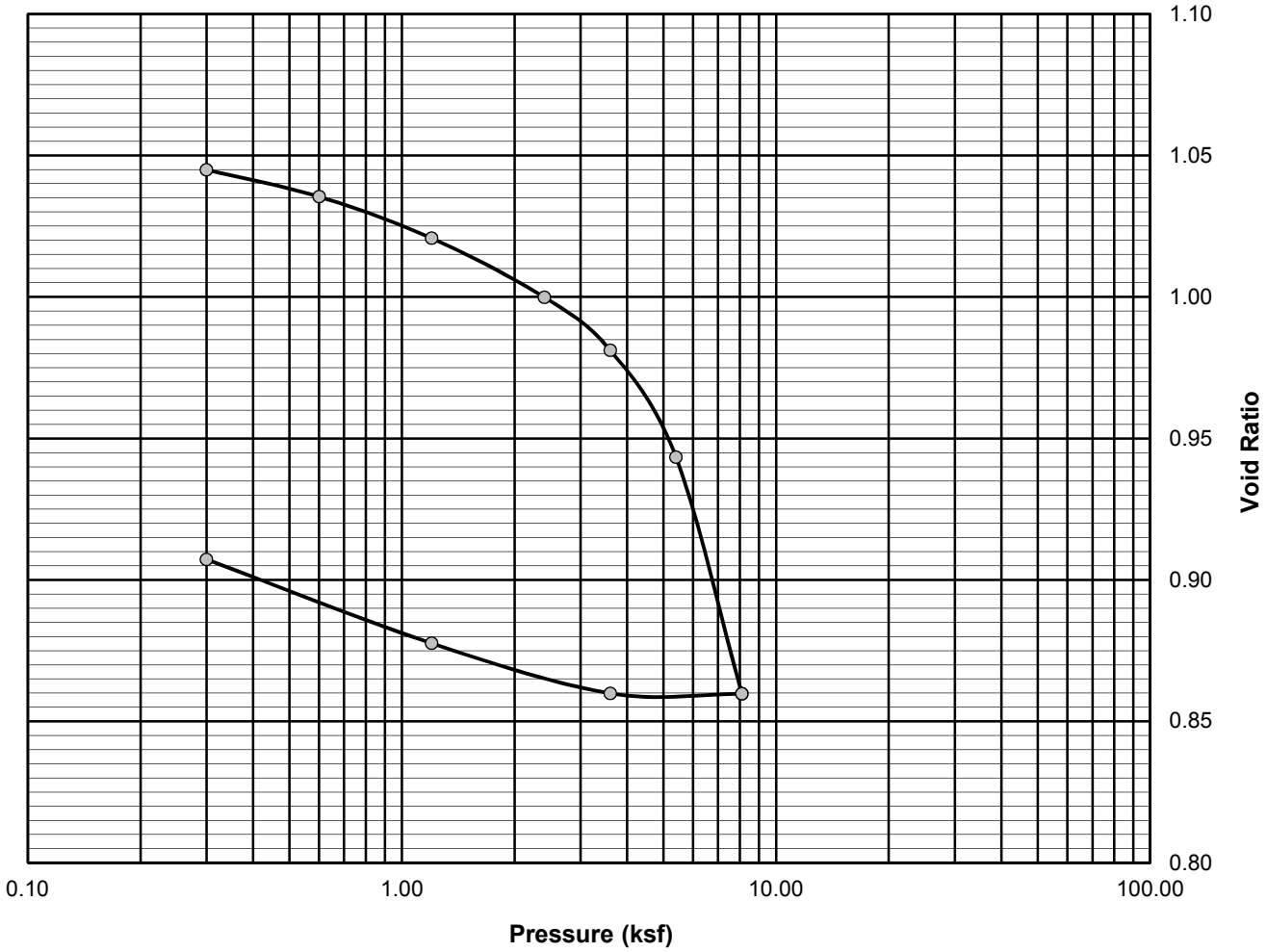
ASTM D-4767

Project Name: Proposed Amtrak-Concord Coach Parking Lot Expansion
Client: Sebago Technics, Inc.

Project Number: 17-0938
Lab ID: 21066B
Date: 10/11/2017

Boring: B-103
Sample: 3U
Depth: 50-52'

P_C =	4.8 KSF +/-
C_C =	0.48
C_R =	0.04
w =	40.4%
W_L =	37
W_P =	21

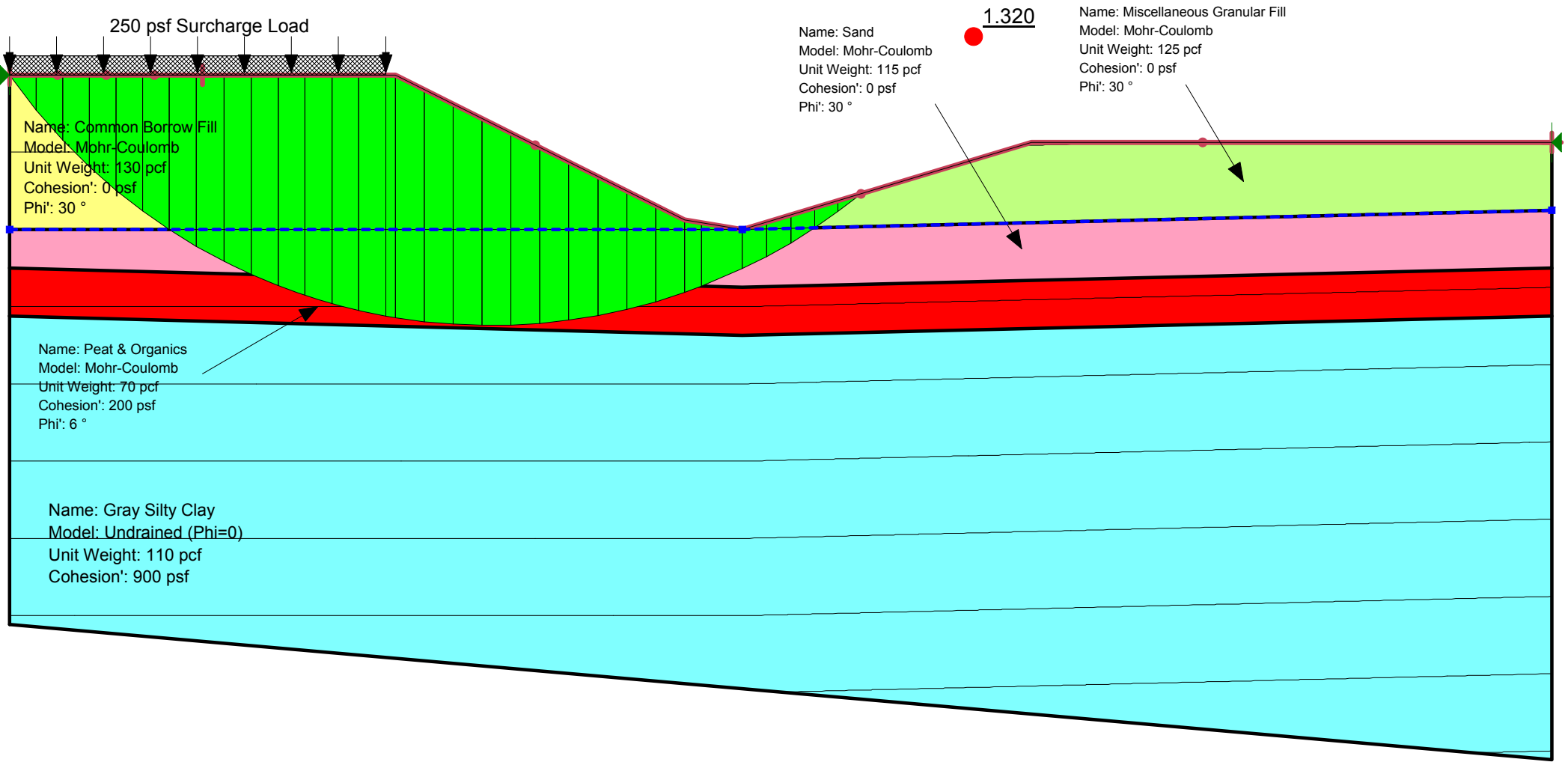


Comments:

EMW
Reviewed By

APPENDIX E

Computations


250 psf Surcharge Load
1.320
Name: Sand
Model: Mohr-Coulomb
Unit Weight: 115 pcf
Cohesion': 0 psf
Phi': 30 °
Name: Miscellaneous Granular Fill
Model: Mohr-Coulomb
Unit Weight: 125 pcf
Cohesion': 0 psf
Phi': 30 °
Name: Common Borrow Fill
Model: Mohr-Coulomb
Unit Weight: 130 pcf
Cohesion': 0 psf
Phi': 30 °
Name: Peat & Organics
Model: Mohr-Coulomb
Unit Weight: 70 pcf
Cohesion': 200 psf
Phi': 6 °
Name: Gray Silty Clay
Model: Undrained (Phi=0)
Unit Weight: 110 pcf
Cohesion': 900 psf

NORMANDEAU ASSOCIATES
Environmental Consultants

Resource Report:
Wetlands and Streams
Portland Transportation Center

Presented To:
Sebago Technics, Inc.
75 John Roberts Road
Suite 1A
South Portland, Maine 04106

Submitted On:
February 2, 2018

Submitted By:
Normandeau Associates, Inc.
550 Forest Ave
Suite 201
Portland, ME 04101

www.normandeau.com

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APPENDIX B: FUNCTIONAL ASSESSMENT FORMS/WETLAND DATA PLOTS

APPENDIX C: REPRESENTATIVE SITE PHOTOGRAPHS

Introduction

This report provides a summary of wetlands and streams identified during the natural resource field review conducted on September 17, 2017. The project is in support of the proposed expansion of the Portland Transportation Center's existing on-site parking area. Field reviews consisted of the undeveloped area between the I-295 on-ramp off of the Fore River Parkway, the Amtrak railroad, and the existing parking area for the Portland Transportation Center. This report will be amended with the results of a vernal pool survey, proposed for spring of 2018.

Site Description

The project area comprises a large wetland depression, fed by several culverts and rip-rap channels that also support wetland vegetation. Much of the area surrounding the wetland has been modified for the purpose of managing stormwater flows from the existing parking area as well as detention areas within the cloverleaf on/off ramps for Interstate 295 and additional parking areas upslope. Vegetation throughout the site is generally very dense and does not appear to be maintained on a regular basis. The project area is separated from a tidal wetland by the railroad tracks, and does not appear to be subject to frequent tidal flows.

Methodology

Normandeau wetland scientists reviewed the project area for wetlands and streams. Wetland boundaries were delineated according to the 2011 Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Northcentral and Northeast Region[1], which utilize the three parameter approach (i.e., evaluating the site for the presence of hydric soils, hydrophytic vegetation and wetland hydrology) for identifying wetlands and determining their jurisdictional limits. The Northeast Regional Supplement describes the methodology that is required for jurisdictional wetland determinations.

The wetland boundaries are flagged with pink "Wetland Delineation" flagging and the streams are flagged with blue flagging. The flags for the wetlands and streams are sequentially numbered and remain at the site for future reference. U.S. Army Corps of Engineers (USACE) data plots were sampled in pairs to document representative wetland boundary information. Wetland delineations were conducted within the growing season as defined by the Corps Manual and Regional Supplement. In general, most features were well defined by topographical breaks, hydrological indicators and changes in plant community and structure. Wetland boundaries were surveyed at a later date by Sebago Technics using GPS technology capable of sub-meter accuracy. These GPS points were translated into a map (see Attachment 1) depicting jurisdictional boundaries using Normandeau's geographic information system (GIS) software.

Vernal pool surveys were not performed in 2017. According to Maine Department of Inland Fisheries and Wildlife (IF&W) guidelines, potential pools are visited a minimum of two times during

[1] U.S. Army Corps of Engineers. 2011. Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Northcentral and Northeast Region (Version 2.0), ed. J.S. Wakeley, R.W. Lichvar, C.V. Noble, and J.F. Berkowirz. ERDC/EL TR-12-1 Vicksburg, MS: U.S. Army Corps of Engineer Research and Development Center.

the vernal pool survey window, which occurs from approximately mid-April to early May. The project begun after this survey window had passed, but will be performed during the appropriate time of 2018 and included as an addendum to this survey report.

Data sheets were completed for all resources identified, including documentation of physical stream characteristics as well as a general functions and values assessment for all wetlands. The wetlands were also classified by covertype according to the classification system developed by Cowardin et al.[2]

Survey Results

One natural wetland and one intermittent stream were identified during the field surveys. In addition, four engineered stormwater control features exhibiting wetland characteristics and two stormwater drainages (ditches) were identified.

A site map depicting the locations of the above resources can be found as Appendix A. Appendix B contains a completed U.S. Army Corps data form for wetland W1. Appendix C is a brief photolog showing representative locations within each feature. The following is a brief description of the features identified on site.

Wetlands

Wetland W01: This 2.03 acre emergent wetland is the dominant feature on site, and consists largely of a broad-leaved cattail (*Typha latifolia*), and common reed (*Phragmites australis*) dominated marsh, with some wetland tree species such as ash-leaved maple (*Acer negundo* var. *negundo*) and gray birch (*Betula populifolia*) along the perimeter. Hybrid cattail (*Typha x glauca*) was also likely observed in the interior of the wetland, although its identification is not certain due to the variable nature of this hybrid. The wetland is bordered by uplands consisting of fill material and associated with Interstate 295 on/off ramps, the existing parking area for the transportation center, and the railroad embankment. All three drainages on the site flow into this wetland. The outlet is a 36-inch culvert under the railroad tracks draining to the Fore River.

The principal function of this wetland is that of sediment and toxicant retention, due to its confined basin, dense vegetation, proximity to developed areas and receiving of stormwater from the culverts. Floodflow alteration and wildlife habitat are also suitable functions due to the overall size of the wetland, its vegetation structure and urban setting. Groundwater recharge is also likely although proximity to tidal waters limits the potential ability of this wetland to contribute significantly to groundwater resources. The lack of vegetation diversity within the wetland limits its value as wildlife habitat, however its presence as a habitat island within an urbanized landscape allows for avian use and provides nesting habitat. This area is also within 250 feet of a tidal wetland and composed of greater than 20,000 square feet of emergent vegetation, rendering it a Wetland of Special Significance (WOSS) and subject to greater legal protection under the Maine Natural

[2] Cowardin, L.M., V. Carter, F.C. Golet, E.T. LaRoe. 1979. Classification of Wetlands and Deepwater Habitats of the United States. FWS/OBS-79/31. U.S. Fish and Wildlife Service: Washington, D.C.

Resources Protection Act (NRPA). This wetland discharges through a 36-inch culvert under the railroad tracks into a tidal wetland area between I-295 and Thompson's Point. It supports an assemblage of disturbance tolerant species as well as freshwater species such as spotted touch-me-not (*Impatiens capensis*) near this outlet, and does not appear to be subject to frequent salt or brackish water. The culvert invert appears high enough to prohibit regular tidal flows, but it is likely that occasional storm surges flow into Wetland 01 via in the culvert.

Streams

Stream S01: Stream S01 is an intermittent stream that begins as a channelized ditch in wetland W02 and flows south before dissipating through the greater wetland W1 area. Its banks consist of rip-rap until it flows into W01, where it becomes naturalized and possesses a silty bed composition with vegetated banks. It ranges from approximately 4 to 9 feet in width, and up to 1 foot in depth at the time of survey.

Engineered Stormwater Control Features (ESF)

Features that appear to support wetland characteristics, but have been created entirely for, and are periodically maintained for, the purposes of stormwater management are included in this section.

ESF01: This is an area supporting wetland vegetation, constructed around a culvert outlet and becomes channelized into stream S01. It is a narrow stormwater feature and contains a large amount of rip-rap around the margins. Dominant wetland vegetation includes common reed, broad-leaved cattail, spotted touch-me-not, and long-beaked willow (*Salix bebbiana*). This area appears to have been entirely constructed as a stormwater conveyance from the adjacent road/parking area.

ESF02: Stormwater feature ESF02 is of similar character to ESF01, consisting of a swale constructed for the purpose of stormwater conveyance from the adjacent I-295 interchange, through a series of culverts under the adjacent railroad tracks, and discharging into an area connected to the tidal wetland between I-295 and Thompson's point. Dominant vegetation includes common reed, spotted touch-me-not, purple loosestrife (*Lythrum salicaria*), gray birch, and silky dogwood (*Cornus amomum*). This area is hydrologically connected to wetland W01 through a large berm of rip-rap that separates the wetlands but allows water to pass.

ESF03: This is a circular detention basin constructed adjacent to wetland W01 entirely for the purpose of stormwater management. It is dominated by broad-leaved cattail with some purple loosestrife, and possessed a small area of open water at the time of survey. It is surrounded by an upland berm that is entirely fill material, and also contains a drainage structure that appears to flow into wetland W01, although it is buried and not clearly evident.

ESF04: This is a very small area along stormwater drainage D02 dominated by broad-leaved cattail and spotted touch-me-not. It is appears to have been created by disturbance associated with the perimeter fence.

Channelized Stormwater Drainages

This group of features consists of channelized flow that appears to have been constructed for stormwater flow and do not support criteria specified under NRPA as meeting the definition of a river, stream or brook.

Drainage D01: This small ephemeral channel flows from a corrugated plastic pipe adjacent to the railroad tracks, southeast into wetland W01. It ranges from 1 to 3-feet in width and is composed of a sandy loam substrate. This feature is a ditch constructed to transport stormwater flows from a culvert draining the existing parking area.

Drainage D02: This channel originates at the outlet of a culvert from the existing parking lot and flows through ESF04 and into wetland W01, and appears to transport only stormwater flows. It ranges from 1 to 4 feet in width, with a sandy loam substrate.

Appendix A: Resource Map

Portland Transportation Center
Wetland and Stream Survey

Portland, Maine

0 50 100 200 300 400 Feet

N

NORMANDEAU ASSOCIATES
ENVIRONMENTAL CONSULTANTS

Appendix B: Functional Assessment Forms/Wetland Data Plots

Wetland Function-Value Evaluation Form

Total area of wetland: 2.03ac	Human made? No	Is wetland part of a wildlife corridor: No	Or a habitat island? Yes	Wetland I.D.: W1	
Adjacent land use: Parking, roads, rail, tidal area		Distance to nearest roadway or other development: 15ft		Lat/Long: 43.391025, -70.172249	
Dominant wetland system present: PEM1/5		Contiguous undeveloped buffer zone present: No		Prepared by: EBL	Date: 9/17/17
Is the wetland a separate hydraulic system? No		If not, where does the wetland lie in the drainage basin? Bottom		Wetland Impact: Fill	Area:
How many tributaries contribute to the wetland? 2, plus one stormwater ditch along railroad tracks.		Wildlife and vegetation diversity /abundance? Low diversity, high abundance		Evaluation based on:	
				Field _X____ Office _X___	
				Corp manual delineation completed Y_x_ N__	

Function/Value	Suitability Y	Suitability N	Rationale (Reference #)*	Principle Functions/ Values	Comments
Groundwater Recharge/Discharge	√		7,9,15		Some recharge likely due to lack of defined outlet
Floodflow Alteration	√		3,4,6,7,8,9,10,13,15,16,18		Detains floodwater, but discharges eventually into Fore River, limiting its value for floodwater storage (i.e. not protecting downstream resources/property)
Fish and Shellfish Habitat		√	2,14		Stream not defined in wetland, no connection to other habitat
Sediment/Toxicant Retention	√		1,2,3,4,5,10,11,12,13,14,16	√	Principal due to size, retention, and availability of toxicants
Nutrient Removal		√	3,5,6,7,8,11,12,13,14		Low opportunity/availability of nutrients
Production Export		√	2,7		Little indication of export
Sediment/Shoreline Stabilization		√	12,15		Wetland edges mostly fill material, stable
Wildlife Habitat	√		6,7,11,13,20		Low diversity wetland, little use observed, possible avian habitat
Recreation		√	10		Little recreational value
Educational/Scientific Value		√	8,9		Unsafe, low recreational value
Uniqueness/Heritage		√	1,2,9,13,17		Dominated by cattails and invasives – not unique
Visual Quality/Aesthetics		√	2,6,9		Low aesthetic value
Endangered Species Habitat		√			None
Other:					

Summary: This large wetland is the dominant feature on site. It receives flow from a large culvert under the main access to the transportation center. This culvert becomes naturalized within the wetland as stream S1. Drainage ditch D02 flows into the wetland from a culvert under the existing parking area and becomes naturalized prior to entering wetland W1. Drainage D01 is a small ditch that flows into the western corner of the wetland adjacent to the train tracks. The wetland is dominated by common reed and broad-leaved cattail throughout. It is listed on NWI maps as a tidal wetland, however no evidence of current tidal influence is evident.

Corresponding Photo: 1

Wildlife Observations: None

Dominant Vegetation:

Trees			**Herbs**		
	Ashleaf maple	*Acer negundo*		Common reed	*Phragmites australis*
				Broad-leaved cattail	*Typha latifolia*
				Spotted touch-me-not	*Impatiens capensis*
Shrubs					
	Honeysuckles	*Lonicera* Spp.			

WETLAND DETERMINATION DATA FORM - Northcentral and Northeast Region

Project/Site: Portland Transportation Center City/County: Portland/Cumberlar Sampling Date: 09/08/17
Applicant/Owner: Concord Coach Lines, Inc. State: ME Sampling Point: W1-Wetland
Investigator(s): E. Lema Section, Township, Range:
Landform (hillslope, terrace, etc.): Depression Local relief (concave, convex, none): Concave
Slope (%): 5 Lat.: 43.391142 Long.: -70.172251 Datum: NAD83
Soil Map Unit Name W (water) NWI Classification: PEM1R
Are climatic/hydrologic conditions of the site typical for this time of the year? Y (If no, explain in remarks)
Are vegetation ____, soil ____, or hydrology X significantly disturbed? Are "normal
Are vegetation ____, soil ____, or hydrology ____ naturally problematic? circumstances" present? Yes
(If needed, explain any answers in remarks)

SUMMARY OF FINDINGS

Hydrophytic vegetation present?	Y	**Is the sampled area within a wetland?**	Y
Hydric soil present?	Y		
Indicators of wetland hydrology present?	Y	If yes, optional wetland site ID:	

Remarks: (Explain alternative procedures here or in a separate report.)

Hydrology considered disturbed because this area used to be tidal. Does not currently show signs of tidal fluctuation.

HYDROLOGY

Primary Indicators (minimum of one is required; check all that apply)

- ___ Surface Water (A1)
- X High Water Table (A2)
- X Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Sparsely Vegetated Concave Surface (B8)
- X Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ Marl Deposits (B15)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Drainage Patterns (B10)
- ___ Moss Trim Lines (B16)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Stunted or Stressed Plants (D1)
- ___ Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- ___ FAC-Neutral Test (D5)
- ___ Microtopographic Relief (D4)

Field Observations:

Surface water present?	Yes		No	X	Depth (inches):	
Water table present?	Yes	X	No		Depth (inches):	10
Saturation present? (includes capillary fringe)	Yes	X	No		Depth (inches):	3

Indicators of wetland hydrology present? Y

Describe recorded data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

VEGETATION - Use scientific names of plants

Sampling Point: W1-Wetland

Tree Stratum	Plot Size (30)	Absolute % Cover	Dominant Species	Indicator Status
1	*Acer negundo*	5	Y	FAC
2				
3				
4				
5				
6				
7				
8				
9				
10				
		5	= Total Cover	

Sapling/Shrub Stratum	Plot Size (15)	Absolute % Cover	Dominant Species	Indicator Status
1				
2				
3				
4				
5				
6				
7				
8				
9				
10				
		0	= Total Cover	

Herb Stratum	Plot Size (5)	Absolute % Cover	Dominant Species	Indicator Status
1	*Phragmites australis*	100	Y	FACW
2				
3				
4				
5				
6				
7				
8				
9				
10				
11				
12				
13				
14				
15				
		100	= Total Cover	

Woody Vine Stratum	Plot Size (15)	Absolute % Cover	Dominant Species	Indicator Status
1				
2				
3				
4				
5				
		0	= Total Cover	

50/20 Thresholds

	20%	50%
Tree Stratum	1	3
Sapling/Shrub Stratum	0	0
Herb Stratum	20	50
Woody Vine Stratum	0	0

Dominance Test Worksheet

Number of Dominant Species that are OBL, FACW, or FAC: 2 (A)

Total Number of Dominant Species Across all Strata: 2 (B)

Percent of Dominant Species that are OBL, FACW, or FAC: 100.00% (A/B)

Prevalence Index Worksheet

Total % Cover of:

OBL species	0	x 1 =	0
FACW species	100	x 2 =	200
FAC species	5	x 3 =	15
FACU species	0	x 4 =	0
UPL species	0	x 5 =	0
Column totals	105 (A)		215 (B)

Prevalence Index = B/A = 2.05

Hydrophytic Vegetation Indicators:

- ___ Rapid test for hydrophytic vegetation
- X Dominance test is >50%
- X Prevalence index is ≤3.0*
- ___ Morphogical adaptations* (provide supporting data in Remarks or on a separate sheet)
- ___ Problematic hydrophytic vegetation* (explain)

*Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic

Definitions of Vegetation Strata:

Tree - Woody plants 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

Sapling/shrub - Woody plants less than 3 in. DBH and greater than 3.28 ft (1 m) tall.

Herb - All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

Woody vines - All woody vines greater than 3.28 ft in height.

Hydrophytic vegetation present? Y

Remarks: (Include photo numbers here or on a separate sheet)

Monotypic stand of common reed.

SOIL **Sampling Point:** W1-Wetland

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (Inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type*	Loc**	Texture	Remarks
0-9	2.5Y5/2	40	7.5YR5/4	20	C	M	sandy loam	
	10YR3/1	40						
9-18	2.5Y5/1	90	10YR6/1	10	D	M	silt loam	

*Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains
**Location: PL=Pore Lining, M=Matrix

Hydric Soil Indicators:

- ___ Histisol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ___ Depleted Below Dark Suface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Dark Surface (S7) (**LRR R, MLRA 149B**)
- ___ Polyvalue Below Surface (S8) (**LRR R, MLRA 149B**)
- ___ Thin Dark Surface (S9) (**LRR R, MLRA 149B**
- ___ Loamy Mucky Mineral (F1) (**LRR K, L**)
- ___ Loamy Gleyed Matrix (F2)
- X Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)

Indicators for Problematic Hydric Soils:

- ___ 2 cm Muck (A10) (**LRR K, L, MLRA 149B**
- ___ Coast Prairie Redox (A16) (**LRR K, L, R**)
- ___ 5 cm Mucky Peat or Peat (S3) (**LRR K, L, R**)
- ___ Dark Surface (S7) (**LRR K, L**
- ___ Polyvalue Below Surface (S8) (**LRR K, L**)
- ___ Thin Dark Surface (S9) (**LRR K, L**)
- ___ Iron-Manganese Masses (F12) (**LRR K, L, R**)
- ___ Piedmont Floodplain Soils (F19) (**MLRA 149B**)
- ___ Mesic Spodic (TA6) (**MLRA 144A, 145, 149B**)
- ___ Red Parent Material (F21)
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (Explain in Remarks)

*Indicators of hydrophytic vegetation and weltand hydrology must be present, unless disturbed or problematic

Restrictive Layer (if observed):
Type: _____
Depth (inches): _____

Hydric soil present? Y

Remarks:

WETLAND DETERMINATION DATA FORM - Northcentral and Northeast Region

Project/Site: Portland Transportation Center City/County: Portland/Cumberlar Sampling Date: 09/08/17
Applicant/Owner: Concord Coach Lines, Inc. State: ME Sampling Point: W1-Upland
Investigator(s): E. Lema Section, Township, Range:
Landform (hillslope, terrace, etc.): Top of slope Local relief (concave, convex, none): Concave
Slope (%): 5 Lat.: 43.391185 Long.: -70.172224 Datum: NAD83
Soil Map Unit Name W (water) NWI Classification: None
Are climatic/hydrologic conditions of the site typical for this time of the year? Y (If no, explain in remarks)
Are vegetation ____, soil X, or hydrology X significantly disturbed? Are "normal
Are vegetation ____, soil ____, or hydrology ____ naturally problematic? circumstances" present? Yes
(If needed, explain any answers in remarks)

SUMMARY OF FINDINGS

Hydrophytic vegetation present?	N	**Is the sampled area within a wetland?**	N
Hydric soil present?	N		
Indicators of wetland hydrology present?	N	If yes, optional wetland site ID:	

Remarks: (Explain alternative procedures here or in a separate report.)

Site extremely disturbed. Upland area appears to be the result of fill due to surrounding construction associated with roads, parking lot, and railroad.

HYDROLOGY

Primary Indicators (minimum of one is required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ Marl Deposits (B15)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Drainage Patterns (B10)
- ___ Moss Trim Lines (B16)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Stunted or Stressed Plants (D1)
- ___ Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- ___ FAC-Neutral Test (D5)
- ___ Microtopographic Relief (D4)

Field Observations:

Surface water present?	Yes	____	No	X	Depth (inches): ____
Water table present?	Yes	____	No	X	Depth (inches): ____
Saturation present? (includes capillary fringe)	Yes	____	No	X	Depth (inches): ____

Indicators of wetland hydrology present? N

Describe recorded data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

Plot location exhibits no sign of wetland hydrology.

VEGETATION - Use scientific names of plants

Sampling Point: W1-Upland

Tree Stratum	Plot Size (30)	Absolute % Cover	Dominant Species	Indicator Status
1				
2				
3				
4				
5				
6				
7				
8				
9				
10				
		0	= Total Cover	

Sapling/Shrub Stratum	Plot Size (15)	Absolute % Cover	Dominant Species	Indicator Status
1	*Lonicera morrowii*	5	Y	FACU
2				
3				
4				
5				
6				
7				
8				
9				
10				
		5	= Total Cover	

Herb Stratum	Plot Size (5)	Absolute % Cover	Dominant Species	Indicator Status
1	*Solidago canadensis*	60	Y	FACU
2	*Poa pratensis*	60	Y	FACU
3	*Cirsium arvense*	5	N	FACU
4				
5				
6				
7				
8				
9				
10				
11				
12				
13				
14				
15				
		125	= Total Cover	

Woody Vine Stratum	Plot Size (15)	Absolute % Cover	Dominant Species	Indicator Status
1				
2				
3				
4				
5				
		0	= Total Cover	

50/20 Thresholds

	20%	50%
Tree Stratum	0	0
Sapling/Shrub Stratum	1	3
Herb Stratum	25	63
Woody Vine Stratum	0	0

Dominance Test Worksheet

Number of Dominant Species that are OBL, FACW, or FAC: 0 (A)

Total Number of Dominant Species Across all Strata: 3 (B)

Percent of Dominant Species that are OBL, FACW, or FAC: 0.00% (A/B)

Prevalence Index Worksheet

Total % Cover of:

OBL species	0	x 1 =	0
FACW species	0	x 2 =	0
FAC species	0	x 3 =	0
FACU species	130	x 4 =	520
UPL species	0	x 5 =	0
Column totals	130 (A)		520 (B)

Prevalence Index = B/A = 4.00

Hydrophytic Vegetation Indicators:

___ Rapid test for hydrophytic vegetation

___ Dominance test is >50%

___ Prevalence index is ≤3.0*

___ Morphogical adaptations* (provide supporting data in Remarks or on a separate sheet)

___ Problematic hydrophytic vegetation* (explain)

*Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic

Definitions of Vegetation Strata:

Tree - Woody plants 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

Sapling/shrub - Woody plants less than 3 in. DBH and greater than 3.28 ft (1 m) tall.

Herb - All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

Woody vines - All woody vines greater than 3.28 ft in height.

Hydrophytic vegetation present? N

Remarks: (Include photo numbers here or on a separate sheet)

Upland field vegetation

SOIL **Sampling Point:** W1-Upland

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (Inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type*	Loc**	Texture	Remarks
0-7	10YR3/3	100					sandy loam	Fill material

*Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains
**Location: PL=Pore Lining, M=Matrix

Hydric Soil Indicators:

___ Histisol (A1)
___ Histic Epipedon (A2)
___ Black Histic (A3)
___ Hydrogen Sulfide (A4)
___ Stratified Layers (A5)
___ Depleted Below Dark Suface (A11)
___ Thick Dark Surface (A12)
___ Sandy Mucky Mineral (S1)
___ Sandy Gleyed Matrix (S4)
___ Sandy Redox (S5)
___ Stripped Matrix (S6)
___ Dark Surface (S7) (**LRR R, MLRA 149B**)
___ Polyvalue Below Surface (S8) (**LRR R, MLRA 149B**)
___ Thin Dark Surface (S9) (**LRR R, MLRA 149B**
___ Loamy Mucky Mineral (F1) (**LRR K, L**)
___ Loamy Gleyed Matrix (F2)
___ Depleted Matrix (F3)
___ Redox Dark Surface (F6)
___ Depleted Dark Surface (F7)
___ Redox Depressions (F8)

Indicators for Problematic Hydric Soils:

___ 2 cm Muck (A10) (**LRR K, L, MLRA 149B**
___ Coast Prairie Redox (A16) (**LRR K, L, R**)
___ 5 cm Mucky Peat or Peat (S3) (**LRR K, L, R**)
___ Dark Surface (S7) (**LRR K, L**
___ Polyvalue Below Surface (S8) (**LRR K, L**)
___ Thin Dark Surface (S9) (**LRR K, L**)
___ Iron-Manganese Masses (F12) (**LRR K, L, R**)
___ Piedmont Floodplain Soils (F19) (**MLRA 149B**)
___ Mesic Spodic (TA6) (**MLRA 144A, 145, 149B**)
___ Red Parent Material (F21)
___ Very Shallow Dark Surface (TF12)
___ Other (Explain in Remarks)

*Indicators of hydrophytic vegetation and weltand hydrology must be present, unless disturbed or problematic

Restrictive Layer (if observed):
Type: _____
Depth (inches): _____

Hydric soil present? N

Remarks:
Auger refusal at 7 inches. Potentially fill conglomerate under soil.

Appendix C: Representative Site Photographs

Photo #: 1

Wetland W1 facing south

Photo #: 2

Engineered Stormwater Feature (ESF) 01 in a narrow drainage from road.

Photo #: 3

ESF02, showing rip-rap embankment separating wetland W1 and ESF02.

Photo #: 4

ESF03 depicting the open water area in the center

Photo #: 5

ESF04.

Photo #: 6

Stream S1 facing downstream from ESF01

Photo #: 7

Drainage D01 (ditch) downstream from culvert outlet.

Photo #: 8

Drainage D02 (ditch) facing downstream. Drainage is poorly channelized at this point, near wetland W01.

United States Department of Agriculture

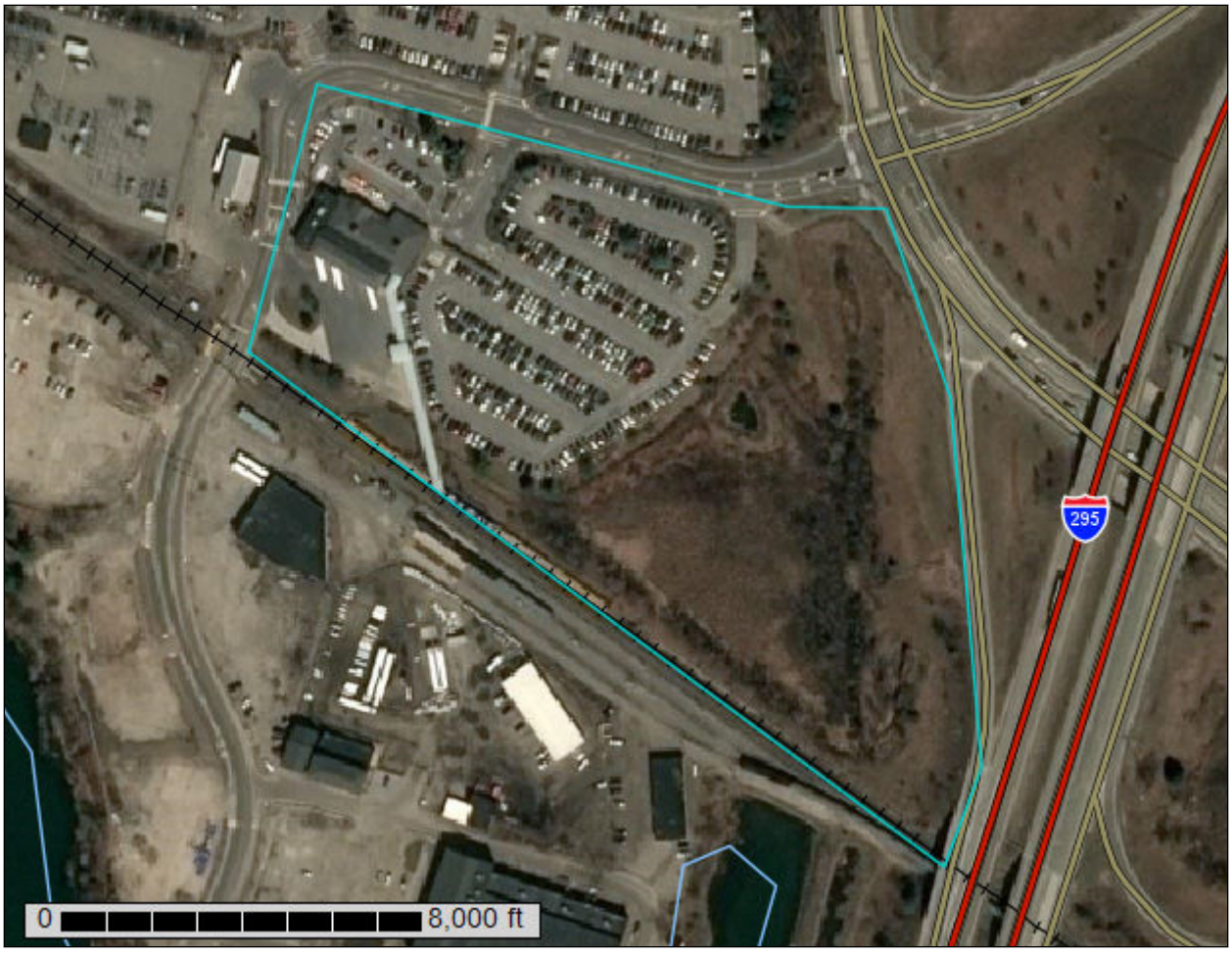
NRCS

Natural Resources Conservation Service

A product of the National Cooperative Soil Survey, a joint effort of the United States Department of Agriculture and other Federal agencies, State agencies including the Agricultural Experiment Stations, and local participants

Custom Soil Resource Report for Cumberland County and Part of Oxford County, Maine

Portland Transportantion Center



February 15, 2018

Preface

Soil surveys contain information that affects land use planning in survey areas. They highlight soil limitations that affect various land uses and provide information about the properties of the soils in the survey areas. Soil surveys are designed for many different users, including farmers, ranchers, foresters, agronomists, urban planners, community officials, engineers, developers, builders, and home buyers. Also, conservationists, teachers, students, and specialists in recreation, waste disposal, and pollution control can use the surveys to help them understand, protect, or enhance the environment.

Various land use regulations of Federal, State, and local governments may impose special restrictions on land use or land treatment. Soil surveys identify soil properties that are used in making various land use or land treatment decisions. The information is intended to help the land users identify and reduce the effects of soil limitations on various land uses. The landowner or user is responsible for identifying and complying with existing laws and regulations.

Although soil survey information can be used for general farm, local, and wider area planning, onsite investigation is needed to supplement this information in some cases. Examples include soil quality assessments (http://www.nrcs.usda.gov/wps/portal/nrcs/main/soils/health/) and certain conservation and engineering applications. For more detailed information, contact your local USDA Service Center (https://offices.sc.egov.usda.gov/locator/app?agency=nrcs) or your NRCS State Soil Scientist (http://www.nrcs.usda.gov/wps/portal/nrcs/detail/soils/contactus/?cid=nrcs142p2_053951).

Great differences in soil properties can occur within short distances. Some soils are seasonally wet or subject to flooding. Some are too unstable to be used as a foundation for buildings or roads. Clayey or wet soils are poorly suited to use as septic tank absorption fields. A high water table makes a soil poorly suited to basements or underground installations.

The National Cooperative Soil Survey is a joint effort of the United States Department of Agriculture and other Federal agencies, State agencies including the Agricultural Experiment Stations, and local agencies. The Natural Resources Conservation Service (NRCS) has leadership for the Federal part of the National Cooperative Soil Survey.

Information about soils is updated periodically. Updated information is available through the NRCS Web Soil Survey, the site for official soil survey information.

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How Soil Surveys Are Made

Soil surveys are made to provide information about the soils and miscellaneous areas in a specific area. They include a description of the soils and miscellaneous areas and their location on the landscape and tables that show soil properties and limitations affecting various uses. Soil scientists observed the steepness, length, and shape of the slopes; the general pattern of drainage; the kinds of crops and native plants; and the kinds of bedrock. They observed and described many soil profiles. A soil profile is the sequence of natural layers, or horizons, in a soil. The profile extends from the surface down into the unconsolidated material in which the soil formed or from the surface down to bedrock. The unconsolidated material is devoid of roots and other living organisms and has not been changed by other biological activity.

Currently, soils are mapped according to the boundaries of major land resource areas (MLRAs). MLRAs are geographically associated land resource units that share common characteristics related to physiography, geology, climate, water resources, soils, biological resources, and land uses (USDA, 2006). Soil survey areas typically consist of parts of one or more MLRA.

The soils and miscellaneous areas in a survey area occur in an orderly pattern that is related to the geology, landforms, relief, climate, and natural vegetation of the area. Each kind of soil and miscellaneous area is associated with a particular kind of landform or with a segment of the landform. By observing the soils and miscellaneous areas in the survey area and relating their position to specific segments of the landform, a soil scientist develops a concept, or model, of how they were formed. Thus, during mapping, this model enables the soil scientist to predict with a considerable degree of accuracy the kind of soil or miscellaneous area at a specific location on the landscape.

Commonly, individual soils on the landscape merge into one another as their characteristics gradually change. To construct an accurate soil map, however, soil scientists must determine the boundaries between the soils. They can observe only a limited number of soil profiles. Nevertheless, these observations, supplemented by an understanding of the soil-vegetation-landscape relationship, are sufficient to verify predictions of the kinds of soil in an area and to determine the boundaries.

Soil scientists recorded the characteristics of the soil profiles that they studied. They noted soil color, texture, size and shape of soil aggregates, kind and amount of rock fragments, distribution of plant roots, reaction, and other features that enable them to identify soils. After describing the soils in the survey area and determining their properties, the soil scientists assigned the soils to taxonomic classes (units). Taxonomic classes are concepts. Each taxonomic class has a set of soil characteristics with precisely defined limits. The classes are used as a basis for comparison to classify soils systematically. Soil taxonomy, the system of taxonomic classification used in the United States, is based mainly on the kind and character of soil properties and the arrangement of horizons within the profile. After the soil

scientists classified and named the soils in the survey area, they compared the individual soils with similar soils in the same taxonomic class in other areas so that they could confirm data and assemble additional data based on experience and research.

The objective of soil mapping is not to delineate pure map unit components; the objective is to separate the landscape into landforms or landform segments that have similar use and management requirements. Each map unit is defined by a unique combination of soil components and/or miscellaneous areas in predictable proportions. Some components may be highly contrasting to the other components of the map unit. The presence of minor components in a map unit in no way diminishes the usefulness or accuracy of the data. The delineation of such landforms and landform segments on the map provides sufficient information for the development of resource plans. If intensive use of small areas is planned, onsite investigation is needed to define and locate the soils and miscellaneous areas.

Soil scientists make many field observations in the process of producing a soil map. The frequency of observation is dependent upon several factors, including scale of mapping, intensity of mapping, design of map units, complexity of the landscape, and experience of the soil scientist. Observations are made to test and refine the soil-landscape model and predictions and to verify the classification of the soils at specific locations. Once the soil-landscape model is refined, a significantly smaller number of measurements of individual soil properties are made and recorded. These measurements may include field measurements, such as those for color, depth to bedrock, and texture, and laboratory measurements, such as those for content of sand, silt, clay, salt, and other components. Properties of each soil typically vary from one point to another across the landscape.

Observations for map unit components are aggregated to develop ranges of characteristics for the components. The aggregated values are presented. Direct measurements do not exist for every property presented for every map unit component. Values for some properties are estimated from combinations of other properties.

While a soil survey is in progress, samples of some of the soils in the area generally are collected for laboratory analyses and for engineering tests. Soil scientists interpret the data from these analyses and tests as well as the field-observed characteristics and the soil properties to determine the expected behavior of the soils under different uses. Interpretations for all of the soils are field tested through observation of the soils in different uses and under different levels of management. Some interpretations are modified to fit local conditions, and some new interpretations are developed to meet local needs. Data are assembled from other sources, such as research information, production records, and field experience of specialists. For example, data on crop yields under defined levels of management are assembled from farm records and from field or plot experiments on the same kinds of soil.

Predictions about soil behavior are based not only on soil properties but also on such variables as climate and biological activity. Soil conditions are predictable over long periods of time, but they are not predictable from year to year. For example, soil scientists can predict with a fairly high degree of accuracy that a given soil will have a high water table within certain depths in most years, but they cannot predict that a high water table will always be at a specific level in the soil on a specific date.

After soil scientists located and identified the significant natural bodies of soil in the survey area, they drew the boundaries of these bodies on aerial photographs and

identified each as a specific map unit. Aerial photographs show trees, buildings, fields, roads, and rivers, all of which help in locating boundaries accurately.

Soil Map

The soil map section includes the soil map for the defined area of interest, a list of soil map units on the map and extent of each map unit, and cartographic symbols displayed on the map. Also presented are various metadata about data used to produce the map, and a description of each soil map unit.

Custom Soil Resource Report
Soil Map

Map Scale: 1:2,170 if printed on A portrait (8.5" x 11") sheet.

N

Meters
0 30 60 120 180

Feet
0 100 200 400 600

Map projection: Web Mercator Corner coordinates: WGS84 Edge tics: UTM Zone 19N WGS84

MAP LEGEND

Area of Interest (AOI)
- Area of Interest (AOI)

Soils
- Soil Map Unit Polygons
- Soil Map Unit Lines
- Soil Map Unit Points

Special Point Features
- Blowout
- Borrow Pit
- Clay Spot
- Closed Depression
- Gravel Pit
- Gravelly Spot
- Landfill
- Lava Flow
- Marsh or swamp
- Mine or Quarry
- Miscellaneous Water
- Perennial Water
- Rock Outcrop
- Saline Spot
- Sandy Spot
- Severely Eroded Spot
- Sinkhole
- Slide or Slip
- Sodic Spot
- Spoil Area
- Stony Spot
- Very Stony Spot
- Wet Spot
- Other
- Special Line Features

Water Features
- Streams and Canals

Transportation
- Rails
- Interstate Highways
- US Routes
- Major Roads
- Local Roads

Background
- Aerial Photography

MAP INFORMATION

The soil surveys that comprise your AOI were mapped at 1:24,000.

Warning: Soil Map may not be valid at this scale.

Enlargement of maps beyond the scale of mapping can cause misunderstanding of the detail of mapping and accuracy of soil line placement. The maps do not show the small areas of contrasting soils that could have been shown at a more detailed scale.

Please rely on the bar scale on each map sheet for map measurements.

Source of Map: Natural Resources Conservation Service
Web Soil Survey URL:
Coordinate System: Web Mercator (EPSG:3857)

Maps from the Web Soil Survey are based on the Web Mercator projection, which preserves direction and shape but distorts distance and area. A projection that preserves area, such as the Albers equal-area conic projection, should be used if more accurate calculations of distance or area are required.

This product is generated from the USDA-NRCS certified data as of the version date(s) listed below.

Soil Survey Area: Cumberland County and Part of Oxford County, Maine
Survey Area Data: Version 13, Sep 11, 2017

Soil map units are labeled (as space allows) for map scales 1:50,000 or larger.

Date(s) aerial images were photographed: Data not available.

The orthophoto or other base map on which the soil lines were compiled and digitized probably differs from the background imagery displayed on these maps. As a result, some minor shifting of map unit boundaries may be evident.

Map Unit Legend

Map Unit Symbol	Map Unit Name	Acres in AOI	Percent of AOI
BgB	Belgrade very fine sandy loam, 0 to 8 percent slopes	1.5	13.5%
BgC2	Belgrade very fine sandy loam, 8 to 15 percent slopes, eroded	4.9	43.5%
Cu	Cut and fill land	0.2	1.4%
Tm	Tidal marsh	0.5	4.2%
W	Water	4.2	37.4%
Totals for Area of Interest		**11.3**	**100.0%**

Map Unit Descriptions

The map units delineated on the detailed soil maps in a soil survey represent the soils or miscellaneous areas in the survey area. The map unit descriptions, along with the maps, can be used to determine the composition and properties of a unit.

A map unit delineation on a soil map represents an area dominated by one or more major kinds of soil or miscellaneous areas. A map unit is identified and named according to the taxonomic classification of the dominant soils. Within a taxonomic class there are precisely defined limits for the properties of the soils. On the landscape, however, the soils are natural phenomena, and they have the characteristic variability of all natural phenomena. Thus, the range of some observed properties may extend beyond the limits defined for a taxonomic class. Areas of soils of a single taxonomic class rarely, if ever, can be mapped without including areas of other taxonomic classes. Consequently, every map unit is made up of the soils or miscellaneous areas for which it is named and some minor components that belong to taxonomic classes other than those of the major soils.

Most minor soils have properties similar to those of the dominant soil or soils in the map unit, and thus they do not affect use and management. These are called noncontrasting, or similar, components. They may or may not be mentioned in a particular map unit description. Other minor components, however, have properties and behavioral characteristics divergent enough to affect use or to require different management. These are called contrasting, or dissimilar, components. They generally are in small areas and could not be mapped separately because of the scale used. Some small areas of strongly contrasting soils or miscellaneous areas are identified by a special symbol on the maps. If included in the database for a given area, the contrasting minor components are identified in the map unit descriptions along with some characteristics of each. A few areas of minor components may not have been observed, and consequently they are not mentioned in the descriptions, especially where the pattern was so complex that it was impractical to make enough observations to identify all the soils and miscellaneous areas on the landscape.

The presence of minor components in a map unit in no way diminishes the usefulness or accuracy of the data. The objective of mapping is not to delineate pure taxonomic classes but rather to separate the landscape into landforms or landform segments that have similar use and management requirements. The delineation of such segments on the map provides sufficient information for the development of resource plans. If intensive use of small areas is planned, however, onsite investigation is needed to define and locate the soils and miscellaneous areas.

An identifying symbol precedes the map unit name in the map unit descriptions. Each description includes general facts about the unit and gives important soil properties and qualities.

Soils that have profiles that are almost alike make up a *soil series*. Except for differences in texture of the surface layer, all the soils of a series have major horizons that are similar in composition, thickness, and arrangement.

Soils of one series can differ in texture of the surface layer, slope, stoniness, salinity, degree of erosion, and other characteristics that affect their use. On the basis of such differences, a soil series is divided into *soil phases*. Most of the areas shown on the detailed soil maps are phases of soil series. The name of a soil phase commonly indicates a feature that affects use or management. For example, Alpha silt loam, 0 to 2 percent slopes, is a phase of the Alpha series.

Some map units are made up of two or more major soils or miscellaneous areas. These map units are complexes, associations, or undifferentiated groups.

A *complex* consists of two or more soils or miscellaneous areas in such an intricate pattern or in such small areas that they cannot be shown separately on the maps. The pattern and proportion of the soils or miscellaneous areas are somewhat similar in all areas. Alpha-Beta complex, 0 to 6 percent slopes, is an example.

An *association* is made up of two or more geographically associated soils or miscellaneous areas that are shown as one unit on the maps. Because of present or anticipated uses of the map units in the survey area, it was not considered practical or necessary to map the soils or miscellaneous areas separately. The pattern and relative proportion of the soils or miscellaneous areas are somewhat similar. Alpha-Beta association, 0 to 2 percent slopes, is an example.

An *undifferentiated group* is made up of two or more soils or miscellaneous areas that could be mapped individually but are mapped as one unit because similar interpretations can be made for use and management. The pattern and proportion of the soils or miscellaneous areas in a mapped area are not uniform. An area can be made up of only one of the major soils or miscellaneous areas, or it can be made up of all of them. Alpha and Beta soils, 0 to 2 percent slopes, is an example.

Some surveys include *miscellaneous areas*. Such areas have little or no soil material and support little or no vegetation. Rock outcrop is an example.

Cumberland County and Part of Oxford County, Maine

BgB—Belgrade very fine sandy loam, 0 to 8 percent slopes

Map Unit Composition

Belgrade and similar soils: 85 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Belgrade

Setting

Landform: Lakebeds
Landform position (two-dimensional): Toeslope
Landform position (three-dimensional): Tread
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Coarse-silty glaciolacustrine deposits

Typical profile

H1 - 0 to 9 inches: very fine sandy loam
H2 - 9 to 18 inches: very fine sandy loam
H3 - 18 to 28 inches: silt loam
H4 - 28 to 65 inches: silt loam

Properties and qualities

Slope: 0 to 8 percent
Depth to restrictive feature: More than 80 inches
Natural drainage class: Moderately well drained
Capacity of the most limiting layer to transmit water (Ksat): Moderately high to high (0.60 to 2.00 in/hr)
Depth to water table: About 18 to 30 inches
Frequency of flooding: None
Frequency of ponding: None
Available water storage in profile: High (about 9.9 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 2e
Hydrologic Soil Group: B
Hydric soil rating: No

BgC2—Belgrade very fine sandy loam, 8 to 15 percent slopes, eroded

Map Unit Composition

Belgrade and similar soils: 85 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Belgrade

Setting

Landform: Lakebeds
Landform position (two-dimensional): Backslope
Landform position (three-dimensional): Riser

Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Coarse-silty glaciolacustrine deposits

Typical profile

H1 - 0 to 9 inches: very fine sandy loam
H2 - 9 to 18 inches: very fine sandy loam
H3 - 18 to 28 inches: silt loam
H4 - 28 to 65 inches: silt loam

Properties and qualities

Slope: 8 to 15 percent
Depth to restrictive feature: More than 80 inches
Natural drainage class: Moderately well drained
Capacity of the most limiting layer to transmit water (Ksat): Moderately high to high (0.60 to 2.00 in/hr)
Depth to water table: About 18 to 30 inches
Frequency of flooding: None
Frequency of ponding: None
Available water storage in profile: High (about 9.9 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 3e
Hydrologic Soil Group: B
Hydric soil rating: No

Cu—Cut and fill land

Map Unit Composition

Cut and fill land: 90 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Cut And Fill Land

Typical profile

H1 - 0 to 65 inches: very gravelly sandy loam

Properties and qualities

Slope: 0 to 35 percent
Natural drainage class: Moderately well drained
Capacity of the most limiting layer to transmit water (Ksat): Moderately low to very high (0.06 to 20.00 in/hr)
Depth to water table: About 24 to 42 inches
Available water storage in profile: Moderate (about 6.6 inches)

Tm—Tidal marsh

Map Unit Composition

Tidal marsh: 85 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Tidal Marsh

Setting

Landform: Salt marshes
Landform position (two-dimensional): Toeslope
Landform position (three-dimensional): Talf
Down-slope shape: Linear
Across-slope shape: Linear

Typical profile

Oe - 0 to 24 inches: mucky peat
H2 - 24 to 60 inches: very fine sandy loam

Properties and qualities

Slope: 0 to 1 percent
Natural drainage class: Very poorly drained
Capacity of the most limiting layer to transmit water (Ksat): Moderately high to very high (0.60 to 14.17 in/hr)
Depth to water table: About 0 inches
Frequency of flooding: Frequent
Frequency of ponding: Frequent
Available water storage in profile: Very high (about 14.4 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 8w
Hydric soil rating: Yes

W—Water

Map Unit Composition

Water: 100 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Water

Setting

Landform: Lakes

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Section 12

Stormwater Management

Section 12

Stormwater Management

Please see this Section for a copy of the Stormwater Management Plan.

SEBAGO TECHNICS

CIVIL ENGINEERING ▪ SURVEYING ▪ LANDSCAPE ARCHITECTURE

Stormwater Management Report

To:

Maine Department of Environmental Protection

Portland Transportation Center

Thompson's Point Connector
Portland, Maine

Prepared for:
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Concord, NH 03301

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February 2018

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Attachment B – Pre-Development Stormwater Modeling
Attachment C – Post-Development Stormwater Modeling
Attachment D – Inspection, Maintenance, and Housekeeping Plan

Stormwater Management Narrative

A. General

This Stormwater Management Plan has been prepared to address the potential impacts associated with the proposed modification in stormwater runoff characteristics for the proposed development at Portland Transportation Center located at Thompson's Point Connector in Portland. The stormwater management controls that are outlined in this plan have been designed to best suit the proposed development and to comply with applicable regulatory requirements to evaluate the pre- and post-development conditions.

The existing development consist of approximately 8.74 acres of impervious areas and associated vegetated areas. Proposed improvements to the site include the construction of paved surfaces for parking and vehicular traffic with the remaining developed area comprised of vegetated side slopes and landscaped areas. The project will result in a net increase in impervious area of 2.86 acres, for a total impervious area of approximately 6.32 acres.

B. Existing Conditions

The site has been developed in the past dating back to 1996. The existing site includes a building totaling 15,600 square feet accessed by paved parking lot located off of Thompson's Point Connector. The remaining developed land consists of paved areas used for vehicular traffic and parking, landscaped areas and a stormwater detention basin.

Runoff from the existing site generally flows from the western side of the property, where the building is located, across the parking lot to the eastern side of the property where the detention pond. For stormwater calculating purposes, runoff was analyzed at two study points where the runoff exits the subject parcel. Study Point 1 (SP-1) is located at the southeastern corner of the property. Runoff at SP-1 leaving the property enters into the Fore River. Study Point 2 (SP-2) is located along Thompson's Point Connector along the north western sideline of the property. Runoff at this location enters into the existing closed storm drain system.

C. Proposed Site Improvements

Proposed improvements involve the construction of paved surfaces for parking and vehicular traffic. The proposed development will increase the total impervious surfaces by approximately 2.86 acres over the existing impervious areas that exist today. With the development of the site, stormwater BMPs will be constructed to treat runoff prior to entering into the existing drainage system. The proposed stormwater BMP, a proposed Subsurface Sand Filter, has been designed to treat stormwater runoff prior to leaving the site. The proposed stormwater BMP has been designed to conform the Maine Department of Environmental Protection's (MeDEP) Chapter 500 Stormwater Standards.

The stormwater management plan was designed so that existing drainage patterns are not significantly altered at the two study points SP-1, and SP-2.

D. Soils

Soil information for the site was obtained via the USDA United States Department of Agriculture and Natural Resources Conservation Service's Web Soil Survey. The Hydrologic Soil Group (HSG) of the site soils are classified by Technical Release TR-55 of the Soil Conservation Service as follows:

Soil Type	Symbol	HSG	Drainage Class
Belgrade	BgB	B	Moderately Well Drained
Belgrade	BgC2	B	Moderately Well Drained
Cut and Fill	Cu	-	Moderately Well Drained
Tidal Marsh	Tm	-	Very Poorly Drained
Water	W	-	

E. Methodology

The stormwater runoff analysis was developed using the "HydroCAD" computer modeling software, which incorporates the TR-55 and TR-20 methodologies as provided by the Soil Conservation Service of the U.S. Department of Agriculture.

The peak runoff rates were calculated using a 24-hour duration storm event with a Type III rainfall distribution. The rainfall amounts for Cumberland for the 2-year, 10-year and 25-year storm events are as follows:

Storm Frequency	24-hr Duration Rainfall (in.)
2-yr	3.10
10-yr	4.60
25-yr	5.80

F. Pre-Development Watershed Model

The pre-development watershed model consists of nine (9) subcatchments.

Subcatchments 1S through 6S, includes a majority of the subject parcel. The area is graded to discharge runoff easterly through a closed storm drain system located on the property to an existing wet pond. Stormwater flows generally from west to east, designated as Study Point 1 (SP-1).

Subcatchments 7S includes portions of the site east of the existing parking lot with runoff that drains to the existing wetland, designated as Study Point 1 (SP-1).

Subcatchments 8S includes a small portions of the site along the northern property line. This area flows to an existing closed drainage system located in Thompson's Point Connector, designated as Study Point 2 (SP-2).

Subcatchments 9S includes a portion of the site in the southwestern corner of the property. This area flows to an existing culvert that discharges directly into the existing wetland, designated as Study Point 1 (SP-1).

G. Post-Development Watershed Model

The post-development watershed model consists of seventeen (17) subcatchments. Modeling reflects on-site ground cover changes to include proposed landscaping and impervious areas associated with the parking lot and associated sidewalks. Existing drainage patterns will be generally maintained with the proposed stormwater design.

Subcatchments 1S through 7S and 9S through 15S includes the existing parking areas, portions of the existing building, the proposed parking areas and proposed landscape areas associated the expansion. The area is graded to discharge runoff through a closed storm drain system to the proposed Subsurface Sand Filter. Stormwater will then flow through proposed closed storm drain system to the existing culvert, designated as Study Point 1 (SP-1).

Subcatchments 8S includes a small portions of the site along the northern property line. This area flows to an existing closed drainage system located in Thompson's Point Connector, designated as Study Point 2 (SP-2).

Subcatchment 16S and 17S includes a portion of the site in the southwestern corner of the property and portions of the existing vegetated side slopes surrounding the property. This area flows to an existing culvert, designated as Study Point 1 (SP-1).

H. Stormwater Quality Management (General Standard)

Runoff from the existing development that was treated in the wet pond, along with the proposed development will be directed to a subsurface sand filter. The subsurface sand filter is designed in general conformance with Section 7.3 of the BMPs Technical Design Manual. An inlet control structure will distribute flow from a 1 inch rain storm evenly to four isolator rows within the system. Through the isolator rows, flow will disperse equally to exterior chambers so that a consistent water level is maintained throughout the entire system. An outlet control structure will be constructed with a weir installed so that storage is provided for at least the first 1 inch of runoff. Additional runoff from larger storm events will be diverted along the easterly side of the system so that additional flow does not impact conditions upstream. Runoff contained in the chambers will first pass through a media for treatment before discharging to the project's closed storm drainage system.

The new impervious surface combined with the existing impervious areas currently being treated in the wet pond would require a total impervious treatment of 246,946 square feet (SF). The new landscape areas combined with the existing landscape areas currently being treated would require a total landscape treatment of 30,974 square feet (SF). Therefore, the proposed development will treat stormwater to a much greater extent than what is actually required to be treated through a strict interpretation of the MeDEP Stormwater Law regulations.

Test pits were observed within the general area of the proposed development. Test pits indicate the presence of groundwater approximately two feet below existing ground level in the lower area adjacent to the proposed subsurface sand filter. Given the existing topography in the area of the proposed parking lot, the proposed subsurface sand filter will be constructed entirely in fill conditions. This will place the bottom of the proposed subsurface sand filter approximately four feet above groundwater table, which is above the elevation requiring an impermeable liner.

Stormwater management design calculations for the Subsurface Sand Filter, and for General Standard compliance, are enclosed as part of **Attachment A**.

I. Stormwater Quantity Management (Flooding Standard)

The following table summarizes the results of stormwater calculations for the design storm events for the project area. Calculations and computer modeling data sheets are provided with this report.

The HydroCAD model predicts increases in estimated peak flow rates during the 10- and 25-year storm events at SP-1. At SP-2 the model predicts that peaks flows remain constant during the 2- and 10-year storms and decreases slightly during the 25-year storm. Stormwater exiting the site will enter into Fore River.

As permitted under Chapter 500 §4.F(3)(a), the project is eligible for a waiver from the Flooding Standard since it is within the direct watershed of a coastal wetland with adequate capacity and the stormwater is conveyed through a piped system directly to Fore River. Fore River, which separates South Portland and Portland, is a direct tributary to Casco Bay. Due to the proximity to Casco Bay and ultimately the Atlantic Ocean, Fore River is subject to tidal influence, as such, there are no anticipated detrimental impacts to downstream receiving structures, drainage channels, or properties. A waiver from the flooding standards has been requested. Please refer to Attachment B and Attachment C for pre- and post-development stormwater modeling.

Stormwater Peak Discharge Summary Table									
Study Point	**2-Year Storm**			**10-Year Storm**			**25-Year Storm**		
	Pre (cfs)	**Post (cfs)**	**Diff. (cfs)**	**Pre (cfs)**	**Post (cfs)**	**Diff. (cfs)**	**Pre (cfs)**	**Post (cfs)**	**Diff. (cfs)**
SP-1	13.03	10.55	-2.48	19.42	39.32	19.90	26.94	59.99	33.05
SP-2	0.17	0.17	0.00	0.39	0.39	0.00	0.59	0.58	-0.01

J. Inspection & Maintenance

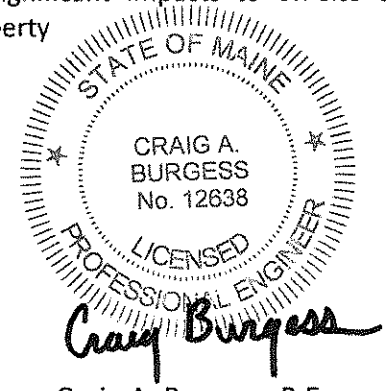
Provisions for periodic inspection and maintenance of the subsurface sand filter are included in the Inspection, Maintenance, and Housekeeping Plan included in this section of the application.

K. Summary

An Erosion and Sedimentation Control Plan has been developed using the Maine Department of Environmental Protection's 2015 Erosion and Sediment Control Field Guide for Contractors for the project site placing emphasis on the installation of sedimentation barriers and revegetation to minimize erosion potential from development activities during and after construction. The Erosion Control Plan is incorporated into the design plans and includes the locations of the erosion control provisions (i.e., silt fence, construction entrance) along with a narrative and construction details for reference by the contractor during construction.

The proposed development will include the construction of a Subsurface Sand Filter to which a majority of runoff from impervious and developed areas will be directed. The construction of the Subsurface Sand Filter will provide water quality treatment of stormwater runoff from the site so that the General Standards are satisfied. Increases in post-development peak flow rates during the 10-year, and 25-year storm events are anticipated to have negligible impact on flow characteristics of Fore River, immediately downstream of the site and further downstream.

With incorporation of these measures, no significant impacts to off-site drainage are anticipated due to the development of the property



Prepared by

SEBAGO TECHNICS, INC.

Brandon Blake
Project Engineer

Craig A. Burgess, P.E.
Senior Project Engineer

CAB/BJB

Attachment A

Water Quality Calculations

Table 1: MDEP GENERAL STANDARD CALCULATIONS: Portland Transportation Center, Portland, Maine

AREA ID	WATERSHED SIZE (S.F.)	EXISTING IMPERVIOUS AREA (S.F.)	NEW IMPERVIOUS AREA (S.F.)	EXISTING LANDSCAPED AREA (S.F.)	NEW LANDSCAPED AREA (S.F.)	DEVELOPED AREA (S.F.)	UNDEVELOPED AREAS (S.F.)	TREATMENT PROVIDED?	IMPERVIOUS AREA TREATED* (S.F.)	LANDSCAPED AREA TREATED* (S.F.)	DEVELOPED AREA TREATED* (S.F.)	TREATMENT BMP
1S	28,835	23,704	0	2,853	2,278	28,835	0	YES	23,704	5,131	28,835	SSF-1
2S	27,182	17,707	6,306	1,336	1,833	27,182	0	YES	24,013	3,169	27,182	SSF-1
3S	15,213	12,202	0	1,350	1,661	15,213	0	YES	12,202	3,011	15,213	SSF-1
4S	28,840	27,938	0	902	0	28,840	0	YES	27,938	902	28,840	SSF-1
5S	49,425	40,584	66	8,446	329	49,425	0	YES	40,650	3,693	44,343	SSF-1
6S	15,879	0	12,186	0	3,693	15,879	0	YES	12,186	3,693	15,879	SSF-1
7S	7,643	0	7,066	0	577	7,643	0	YES	7,066	577	7,643	SSF-1
8S	7,438	2,242	122	0	5,074	7,438	0	NO	0	0	0	None
9S	12,873	0	12,563	0	310	12,873	0	YES	12,563	310	12,873	SSF-1
10S	16,424	0	15,649	0	775	16,424	0	YES	15,649	775	16,424	SSF-1
11S	14,521	0	13,900	0	621	14,521	0	YES	13,900	621	14,521	SSF-1
12S	9,667	0	9,667	0	0	9,667	0	YES	9,667	0	9,667	SSF-1
13S	12,123	0	10,776	0	1,347	12,123	0	YES	10,776	1,347	12,123	SSF-1
14S	8,897	0	8,240	0	657	8,897	0	YES	8,240	657	8,897	SSF-1
15S	30,398	0	28,392	0	2,006	30,398	0	YES	28,392	2,006	30,398	SSF-1
16S	91,275	892	0	0	0	892	90,383	NO	0	0	0	None
17S**	34,419	25,344	0	9,075	0	34,419	0	NO	0	0	0	None
SUM	**411,052**	**150,613**	**124,933**	**23,962**	**21,161**	**320,669**	**90,383**	-	**246,946**	**25,892**	**272,838**	-

Designations: SSF= Subsurface Sand Filter

***TOTAL IMPERVIOUS AREA (Ac.)**	**250,202**	***TOTAL DEVELOPED AREA (Ac.)**	**286,250**
TOTAL IMPERVIOUS AREA RECEIVING TREATMENT (Ac.)	**246,946**	**TOTAL DEV. AREA RECEIVING TREATMENT (Ac.)**	**272,838**
% OF IMPERVIOUS AREA RECEIVING TREATMENT	**98.7%**	**% OF DEV. AREA RECEIVING TREATMENT**	**95.3%**

*INCLUDES EXISTING IMPERVIOUS AND DEVELOPED AREAS THAT ARE CURRENTLY RECEIVING TREATEMENT

**INCLUDES EXISTING IMPERVIOUS AND DEVELOPED AREAS THAT ARE NOT CURRENTLY RECEIVING TREATEMENT AND WILL NOT RECEIVE TREATMENT IN POST DEVELOPMENT

SEBAGO TECHNICS, INC.
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South Portland, Maine 04106
Tel. (207) 200-2100

JOB			
SHEET NO.	1	OF	1
CALCULATED BY		DATE	1/15/2018
FILE NAME	99607-WQC.xls	PRNT DATE	2/1/2018

UNDERDRAINED SUBSURFACE SAND FILTER-1

Task: Calculate water quality volume per MDEP chapter 500 regulations

References

1. Maine DEP Chapter 500, Section 4.C.(3)(b)
   "must detain a runoff volume equal to 1.0 inch times the subcatchment's impervious area plus 0.4 inch times the subcatchment's landscaped area"
2. Maine DEP Best Management Practices Stormwater Manual, Section 7.3.2
   a. "detain runoff volume equal to 1.0 inch times the subcatchment's impervious area plus 0.4 inch times the subcatchment's landscaped area"
   b. "surface area of the sand filter bed and chamber system must be at least equal to 5% of the impervious area draining to it and 2% of the landscaped area."
   c. "treatment flow rate for the Stormtech Isolator Row is the projected one year peak flow rate for the drainage area feeding the Isolator Row"

Flow rates:

SC-310	0.10	fs/chamber
SC-740	0.20	fs/chamber
DC-780	0.20	fs/chamber
MC-3500	0.30	fs/chamber
Cultech 150XLHD	0.185	fs/chamber
Cultech 330XLHD	0.227	fs/chamber

Tributary to Subsurface Sand Filter

Landscaped Area	30,974	SF	
Impervious Area	246,946	SF	

Minimum Surface Area for sand filter and chamber system

Required (2% X Landscaped + 5%" X Impervious)

Total Landscaped Area	30,974	SF	Area	619.5	SF	
Total Impervious Area	246,946	SF	Area	12,347.3	SF	
Required Minimum Surface Area				12,966.8	SF	
Provided Surface Area				16,932.0	SF	

Treatment Volume

Required (0.4" X Landscaped + 1.0" X Impervious)

Landscaped Area	30,974	SF	Volume	1,032.5				
Impervious Area	246,946	SF	Volume	20,578.8				
Treatment Volume Required				21,611.3	CF	0.496	AF	
Provided Treatment Volume				24,354.0	CF	Elev.= 13.00		

Sediment Pre-Treatment

Per Reference 2.c above

One year flow rate out put from Hydrocad:		14.28	cfs
ISO Row sizing for:	**SC-740**	**0.2**	cfs
Total number of Isolator Row Chambers required:		72	

SEBAGO TECHNICS, INC.
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JOB	99607		
SHEET NO.	1	OF	1
CALCULATED BY		DATE	1/29/2018
FILE NAME	99607-WQC.xls	PRNT DATE	2/1/2018

ORIFICE SIZING CALCULATION

SUBSURFACE SAND FILTER #1

Orifice Equation $Q = CA\sqrt{(2gh)}$

Q = Rate of Discharge (cfs)
A = Orifice Area (sf)
G = Gravitational Constant (32.2 ft/s^2)
h = Depth of water above the flow line (center) of the orifice (ft)
C = Orifice coefficient (usually assumed = 0.6)

Average discharge rate required to drawdown the treatment volume in a desired amount of time is:

$$Q = \frac{TV}{tCF}$$

T = Treatment Volume (cf)
t = Recovery Time (hrs)
CF = Conversion Factor = 3600 sec/hr

TV = 24,354 cf
t = 24 hr

$$Q = \frac{TV}{tCF} = 0.28 \text{ cfs}$$

surface area of filter = 16,932 SF

h = 1.44 ft

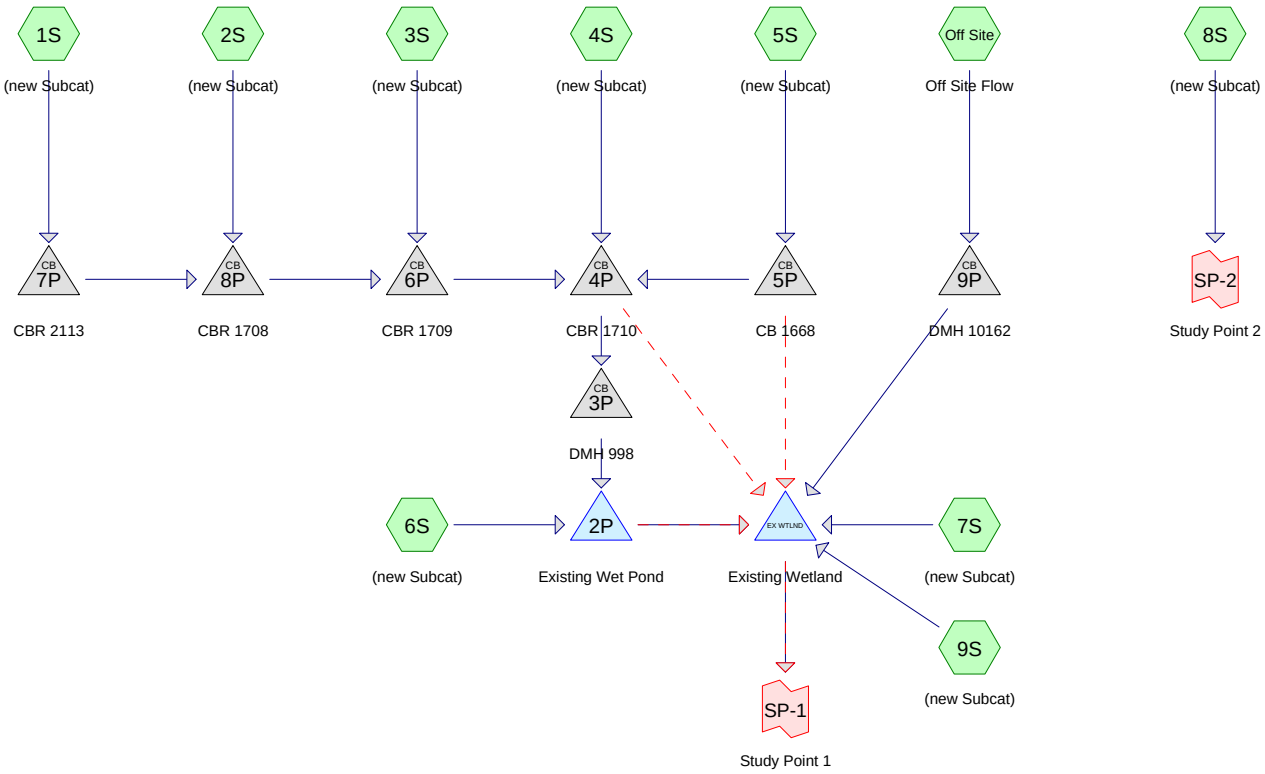
$$A = \frac{Q}{C\sqrt{(2gh)}}$$

A = 0.049 sf = 7.03 sq. in.

Diam = 2.99 in

Attachment B

Pre-Development Stormwater Modeling



Subcat Reach Pond Link

Routing Diagram for 99607 Pre
Prepared by Sebago Techincs, Printed 2/1/2018
HydroCAD® 10.00-18 s/n 01856 © 2016 HydroCAD Software Solutions LLC

Area Listing (all nodes)

Area (sq-ft)	CN	Description (subcatchment-numbers)
492,802	61	>75% Grass cover, Good, HSG B (1S, 2S, 3S, 4S, 5S, 6S, 7S, 8S, 9S, Off Site)
80,663	80	>75% Grass cover, Good, HSG D (6S, 7S)
261,673	98	Paved parking, HSG B (1S, 2S, 3S, 4S, 5S, 8S, 9S, Off Site)
14,924	98	Roofs, HSG B (1S, 2S, 3S, 7S, 9S)
7,169	98	Water Surface, HSG B (7S)
84,579	98	Water Surface, HSG D (6S, 7S)
941,810	**77**	**TOTAL AREA**

Soil Listing (all nodes)

Area (sq-ft)	Soil Group	Subcatchment Numbers
0	HSG A	
776,568	HSG B	1S, 2S, 3S, 4S, 5S, 6S, 7S, 8S, 9S, Off Site
0	HSG C	
165,242	HSG D	6S, 7S
0	Other	
941,810		**TOTAL AREA**

Time span=0.00-48.00 hrs, dt=0.01 hrs, 4801 points x 2
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Dyn-Stor-Ind method - Pond routing by Dyn-Stor-Ind method

Subcatchment 1S: (new Subcat) Runoff Area=28,467 sf 89.98% Impervious Runoff Depth=2.45"
Flow Length=126' Slope=0.0100 '/' Tc=6.0 min CN=94 Runoff=1.80 cfs 5,805 cf

Subcatchment 2S: (new Subcat) Runoff Area=19,045 sf 92.99% Impervious Runoff Depth=2.55"
Flow Length=173' Slope=0.0150 '/' Tc=6.0 min CN=95 Runoff=1.24 cfs 4,042 cf

Subcatchment 3S: (new Subcat) Runoff Area=21,460 sf 93.71% Impervious Runoff Depth=2.65"
Flow Length=190' Slope=0.0150 '/' Tc=6.0 min CN=96 Runoff=1.43 cfs 4,740 cf

Subcatchment 4S: (new Subcat) Runoff Area=29,131 sf 96.64% Impervious Runoff Depth=2.76"
Flow Length=223' Slope=0.0150 '/' Tc=6.0 min CN=97 Runoff=1.98 cfs 6,694 cf

Subcatchment 5S: (new Subcat) Runoff Area=49,032 sf 82.77% Impervious Runoff Depth=2.26"
Flow Length=281' Slope=0.0150 '/' Tc=6.0 min CN=92 Runoff=2.91 cfs 9,217 cf

Subcatchment 6S: (new Subcat) Runoff Area=8,204 sf 38.65% Impervious Runoff Depth=1.33"
Flow Length=48' Slope=0.2500 '/' Tc=6.0 min CN=80 Runoff=0.29 cfs 906 cf

Subcatchment 7S: (new Subcat) Runoff Area=213,488 sf 41.94% Impervious Runoff Depth=1.60"
Flow Length=306' Tc=6.3 min CN=84 Runoff=9.09 cfs 28,446 cf

Subcatchment 8S: (new Subcat) Runoff Area=7,806 sf 28.72% Impervious Runoff Depth=0.87"
Flow Length=49' Slope=0.0800 '/' Tc=6.0 min CN=72 Runoff=0.17 cfs 565 cf

Subcatchment 9S: (new Subcat) Runoff Area=34,419 sf 73.63% Impervious Runoff Depth=1.91"
Flow Length=144' Slope=0.0200 '/' Tc=6.0 min CN=88 Runoff=1.76 cfs 5,471 cf

Subcatchment Off Site: Off Site Flow Runoff Area=530,758 sf 21.83% Impervious Runoff Depth=0.72"
Flow Length=722' Slope=0.0200 '/' Tc=12.2 min CN=69 Runoff=7.21 cfs 32,021 cf

Pond 2P: Existing Wet Pond Peak Elev=14.61' Storage=8,947 cf Inflow=8.75 cfs 30,609 cf
Primary=5.59 cfs 26,082 cf Secondary=0.48 cfs 176 cf Outflow=6.07 cfs 26,257 cf

Pond 3P: DMH 998 Peak Elev=15.55' Inflow=8.47 cfs 29,703 cf
18.0" Round Culvert n=0.013 L=76.0' S=0.0120 '/' Outflow=8.47 cfs 29,703 cf

Pond 4P: CBR 1710 Peak Elev=16.65' Inflow=8.47 cfs 29,703 cf
Primary=8.47 cfs 29,703 cf Secondary=0.01 cfs 0 cf Outflow=8.47 cfs 29,703 cf

Pond 5P: CB 1668 Peak Elev=21.03' Inflow=2.91 cfs 9,217 cf
Primary=2.03 cfs 8,422 cf Secondary=0.88 cfs 795 cf Outflow=2.91 cfs 9,217 cf

Pond 6P: CBR 1709 Peak Elev=17.13' Inflow=4.46 cfs 14,587 cf
18.0" Round Culvert n=0.013 L=48.0' S=0.0029 '/' Outflow=4.46 cfs 14,587 cf

Pond 7P: CBR 2113 Peak Elev=23.84' Inflow=1.80 cfs 5,805 cf
12.0" Round Culvert n=0.013 L=144.0' S=0.0119 '/' Outflow=1.80 cfs 5,805 cf

Pond 8P: CBR 1708 Peak Elev=17.57' Inflow=3.04 cfs 9,847 cf
18.0" Round Culvert n=0.013 L=93.0' S=0.0100 '/' Outflow=3.04 cfs 9,847 cf

Pond 9P: DMH 10162 Peak Elev=10.14' Inflow=7.21 cfs 32,021 cf
42.0" Round Culvert n=0.011 L=115.0' S=0.0090 '/' Outflow=7.21 cfs 32,021 cf

Pond EX WTLND: Existing Wetland Peak Elev=6.50' Storage=9,817 cf Inflow=22.58 cfs 92,990 cf
Primary=13.03 cfs 93,032 cf Secondary=0.00 cfs 0 cf Outflow=13.03 cfs 93,032 cf

Link SP-1: Study Point 1 Inflow=13.03 cfs 93,032 cf
Primary=13.03 cfs 93,032 cf

Link SP-2: Study Point 2 Inflow=0.17 cfs 565 cf
Primary=0.17 cfs 565 cf

Total Runoff Area = 941,810 sf Runoff Volume = 97,907 cf Average Runoff Depth = 1.25"
60.89% Pervious = 573,465 sf 39.11% Impervious = 368,345 sf

Time span=0.00-48.00 hrs, dt=0.01 hrs, 4801 points x 2
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Dyn-Stor-Ind method - Pond routing by Dyn-Stor-Ind method

Subcatchment 1S: (new Subcat) Runoff Area=28,467 sf 89.98% Impervious Runoff Depth=3.91"
Flow Length=126' Slope=0.0100 '/' Tc=6.0 min CN=94 Runoff=2.80 cfs 9,284 cf

Subcatchment 2S: (new Subcat) Runoff Area=19,045 sf 92.99% Impervious Runoff Depth=4.02"
Flow Length=173' Slope=0.0150 '/' Tc=6.0 min CN=95 Runoff=1.90 cfs 6,386 cf

Subcatchment 3S: (new Subcat) Runoff Area=21,460 sf 93.71% Impervious Runoff Depth=4.14"
Flow Length=190' Slope=0.0150 '/' Tc=6.0 min CN=96 Runoff=2.17 cfs 7,395 cf

Subcatchment 4S: (new Subcat) Runoff Area=29,131 sf 96.64% Impervious Runoff Depth=4.25"
Flow Length=223' Slope=0.0150 '/' Tc=6.0 min CN=97 Runoff=2.98 cfs 10,314 cf

Subcatchment 5S: (new Subcat) Runoff Area=49,032 sf 82.77% Impervious Runoff Depth=3.70"
Flow Length=281' Slope=0.0150 '/' Tc=6.0 min CN=92 Runoff=4.66 cfs 15,115 cf

Subcatchment 6S: (new Subcat) Runoff Area=8,204 sf 38.65% Impervious Runoff Depth=2.55"
Flow Length=48' Slope=0.2500 '/' Tc=6.0 min CN=80 Runoff=0.56 cfs 1,741 cf

Subcatchment 7S: (new Subcat) Runoff Area=213,488 sf 41.94% Impervious Runoff Depth=2.91"
Flow Length=306' Tc=6.3 min CN=84 Runoff=16.47 cfs 51,713 cf

Subcatchment 8S: (new Subcat) Runoff Area=7,806 sf 28.72% Impervious Runoff Depth=1.89"
Flow Length=49' Slope=0.0800 '/' Tc=6.0 min CN=72 Runoff=0.39 cfs 1,232 cf

Subcatchment 9S: (new Subcat) Runoff Area=34,419 sf 73.63% Impervious Runoff Depth=3.29"
Flow Length=144' Slope=0.0200 '/' Tc=6.0 min CN=88 Runoff=2.99 cfs 9,438 cf

Subcatchment Off Site: Off Site Flow Runoff Area=530,758 sf 21.83% Impervious Runoff Depth=1.67"
Flow Length=722' Slope=0.0200 '/' Tc=12.2 min CN=69 Runoff=18.76 cfs 73,952 cf

Pond 2P: Existing Wet Pond Peak Elev=14.86' Storage=9,875 cf Inflow=10.63 cfs 47,480 cf
Primary=6.46 cfs 40,990 cf Secondary=2.77 cfs 2,137 cf Outflow=9.23 cfs 43,128 cf

Pond 3P: DMH 998 Peak Elev=16.23' Inflow=10.07 cfs 45,739 cf
18.0" Round Culvert n=0.013 L=76.0' S=0.0120 '/' Outflow=10.07 cfs 45,739 cf

Pond 4P: CBR 1710 Peak Elev=17.59' Inflow=12.83 cfs 46,700 cf
Primary=10.07 cfs 45,739 cf Secondary=2.76 cfs 961 cf Outflow=12.83 cfs 46,700 cf

Pond 5P: CB 1668 Peak Elev=21.19' Inflow=4.66 cfs 15,115 cf
Primary=2.96 cfs 13,320 cf Secondary=1.70 cfs 1,795 cf Outflow=4.66 cfs 15,115 cf

Pond 6P: CBR 1709 Peak Elev=18.25' Inflow=6.88 cfs 23,065 cf
18.0" Round Culvert n=0.013 L=48.0' S=0.0029 '/' Outflow=6.88 cfs 23,065 cf

Pond 7P: CBR 2113 Peak Elev=24.16' Inflow=2.80 cfs 9,284 cf
12.0" Round Culvert n=0.013 L=144.0' S=0.0119 '/' Outflow=2.80 cfs 9,284 cf

Pond 8P: CBR 1708 Peak Elev=18.59' Inflow=4.71 cfs 15,670 cf
18.0" Round Culvert n=0.013 L=93.0' S=0.0100 '/' Outflow=4.71 cfs 15,670 cf

Pond 9P: DMH 10162 Peak Elev=10.79' Inflow=18.76 cfs 73,952 cf
42.0" Round Culvert n=0.011 L=115.0' S=0.0090 '/' Outflow=18.76 cfs 73,952 cf

Pond EX WTLND: Existing Wetland Peak Elev=6.93' Storage=33,508 cf Inflow=47.28 cfs 180,987 cf
Primary=19.42 cfs 181,011 cf Secondary=0.00 cfs 0 cf Outflow=19.42 cfs 181,011 cf

Link SP-1: Study Point 1 Inflow=19.42 cfs 181,011 cf
Primary=19.42 cfs 181,011 cf

Link SP-2: Study Point 2 Inflow=0.39 cfs 1,232 cf
Primary=0.39 cfs 1,232 cf

Total Runoff Area = 941,810 sf Runoff Volume = 186,571 cf Average Runoff Depth = 2.38"
60.89% Pervious = 573,465 sf 39.11% Impervious = 368,345 sf

Time span=0.00-48.00 hrs, dt=0.01 hrs, 4801 points x 2
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Dyn-Stor-Ind method - Pond routing by Dyn-Stor-Ind method

Subcatchment 1S: (new Subcat) Runoff Area=28,467 sf 89.98% Impervious Runoff Depth=5.10"
Flow Length=126' Slope=0.0100 '/' Tc=6.0 min CN=94 Runoff=3.60 cfs 12,095 cf

Subcatchment 2S: (new Subcat) Runoff Area=19,045 sf 92.99% Impervious Runoff Depth=5.21"
Flow Length=173' Slope=0.0150 '/' Tc=6.0 min CN=95 Runoff=2.43 cfs 8,273 cf

Subcatchment 3S: (new Subcat) Runoff Area=21,460 sf 93.71% Impervious Runoff Depth=5.33"
Flow Length=190' Slope=0.0150 '/' Tc=6.0 min CN=96 Runoff=2.76 cfs 9,529 cf

Subcatchment 4S: (new Subcat) Runoff Area=29,131 sf 96.64% Impervious Runoff Depth=5.44"
Flow Length=223' Slope=0.0150 '/' Tc=6.0 min CN=97 Runoff=3.78 cfs 13,217 cf

Subcatchment 5S: (new Subcat) Runoff Area=49,032 sf 82.77% Impervious Runoff Depth=4.87"
Flow Length=281' Slope=0.0150 '/' Tc=6.0 min CN=92 Runoff=6.04 cfs 19,911 cf

Subcatchment 6S: (new Subcat) Runoff Area=8,204 sf 38.65% Impervious Runoff Depth=3.60"
Flow Length=48' Slope=0.2500 '/' Tc=6.0 min CN=80 Runoff=0.79 cfs 2,462 cf

Subcatchment 7S: (new Subcat) Runoff Area=213,488 sf 41.94% Impervious Runoff Depth=4.01"
Flow Length=306' Tc=6.3 min CN=84 Runoff=22.50 cfs 71,335 cf

Subcatchment 8S: (new Subcat) Runoff Area=7,806 sf 28.72% Impervious Runoff Depth=2.83"
Flow Length=49' Slope=0.0800 '/' Tc=6.0 min CN=72 Runoff=0.59 cfs 1,841 cf

Subcatchment 9S: (new Subcat) Runoff Area=34,419 sf 73.63% Impervious Runoff Depth=4.43"
Flow Length=144' Slope=0.0200 '/' Tc=6.0 min CN=88 Runoff=3.98 cfs 12,716 cf

Subcatchment Off Site: Off Site Flow Runoff Area=530,758 sf 21.83% Impervious Runoff Depth=2.56"
Flow Length=722' Slope=0.0200 '/' Tc=12.2 min CN=69 Runoff=29.44 cfs 113,111 cf

Pond 2P: Existing Wet Pond Peak Elev=14.95' Storage=10,235 cf Inflow=11.98 cfs 60,344 cf
Primary=6.78 cfs 51,984 cf Secondary=3.95 cfs 4,008 cf Outflow=10.73 cfs 55,992 cf

Pond 3P: DMH 998 Peak Elev=16.70' Inflow=11.19 cfs 57,882 cf
18.0" Round Culvert n=0.013 L=76.0' S=0.0120 '/' Outflow=11.19 cfs 57,882 cf

Pond 4P: CBR 1710 Peak Elev=18.41' Inflow=16.24 cfs 60,292 cf
Primary=11.19 cfs 57,882 cf Secondary=5.05 cfs 2,410 cf Outflow=16.24 cfs 60,292 cf

Pond 5P: CB 1668 Peak Elev=21.29' Inflow=6.04 cfs 19,911 cf
Primary=3.66 cfs 17,177 cf Secondary=2.38 cfs 2,733 cf Outflow=6.04 cfs 19,911 cf

Pond 6P: CBR 1709 Peak Elev=19.46' Inflow=8.79 cfs 29,897 cf
18.0" Round Culvert n=0.013 L=48.0' S=0.0029 '/' Outflow=8.79 cfs 29,897 cf

Pond 7P: CBR 2113 Peak Elev=24.51' Inflow=3.60 cfs 12,095 cf
12.0" Round Culvert n=0.013 L=144.0' S=0.0119 '/' Outflow=3.60 cfs 12,095 cf

Pond 8P: CBR 1708 Peak Elev=20.04' Inflow=6.03 cfs 20,369 cf
18.0" Round Culvert n=0.013 L=93.0' S=0.0100 '/' Outflow=6.03 cfs 20,369 cf

Pond 9P: DMH 10162 Peak Elev=11.28' Inflow=29.44 cfs 113,111 cf
42.0" Round Culvert n=0.011 L=115.0' S=0.0090 '/' Outflow=29.44 cfs 113,111 cf

Pond EX WTLND: Existing Wetland Peak Elev=7.21' Storage=55,362 cf Inflow=68.25 cfs 258,297 cf
Primary=23.88 cfs 253,608 cf Secondary=3.06 cfs 4,695 cf Outflow=26.94 cfs 258,303 cf

Link SP-1: Study Point 1 Inflow=26.94 cfs 258,303 cf
Primary=26.94 cfs 258,303 cf

Link SP-2: Study Point 2 Inflow=0.59 cfs 1,841 cf
Primary=0.59 cfs 1,841 cf

Total Runoff Area = 941,810 sf Runoff Volume = 264,491 cf Average Runoff Depth = 3.37"
60.89% Pervious = 573,465 sf 39.11% Impervious = 368,345 sf

Summary for Subcatchment 1S: (new Subcat)

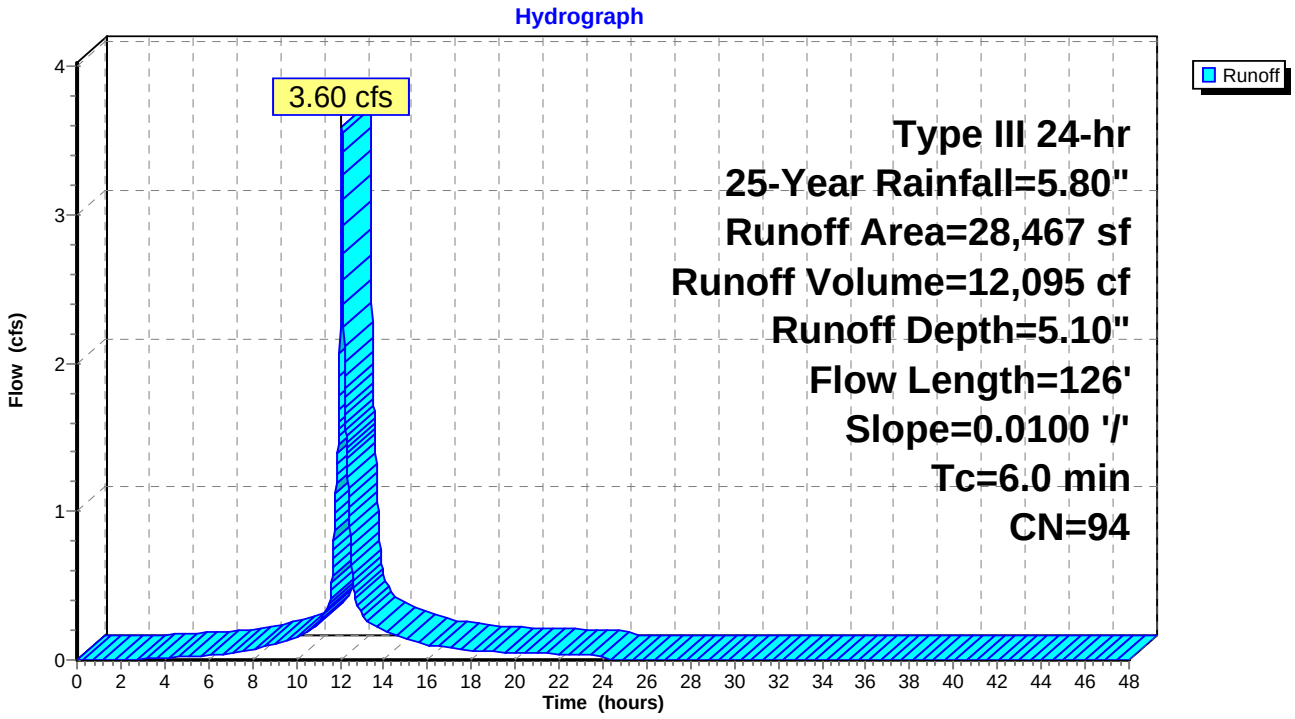
Runoff = 3.60 cfs @ 12.08 hrs, Volume= 12,095 cf, Depth= 5.10"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Type III 24-hr 25-Year Rainfall=5.80"

Area (sf)	CN	Description
4,290	98	Roofs, HSG B
21,324	98	Paved parking, HSG B
2,853	61	>75% Grass cover, Good, HSG B
28,467	94	Weighted Average
2,853		10.02% Pervious Area
25,614		89.98% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.6	100	0.0100	1.03		**Sheet Flow,** Smooth surfaces n= 0.011 P2= 3.10"
0.2	26	0.0100	2.03		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
4.2					**Direct Entry,**
6.0	126	Total			

Subcatchment 1S: (new Subcat)



Summary for Subcatchment 2S: (new Subcat)

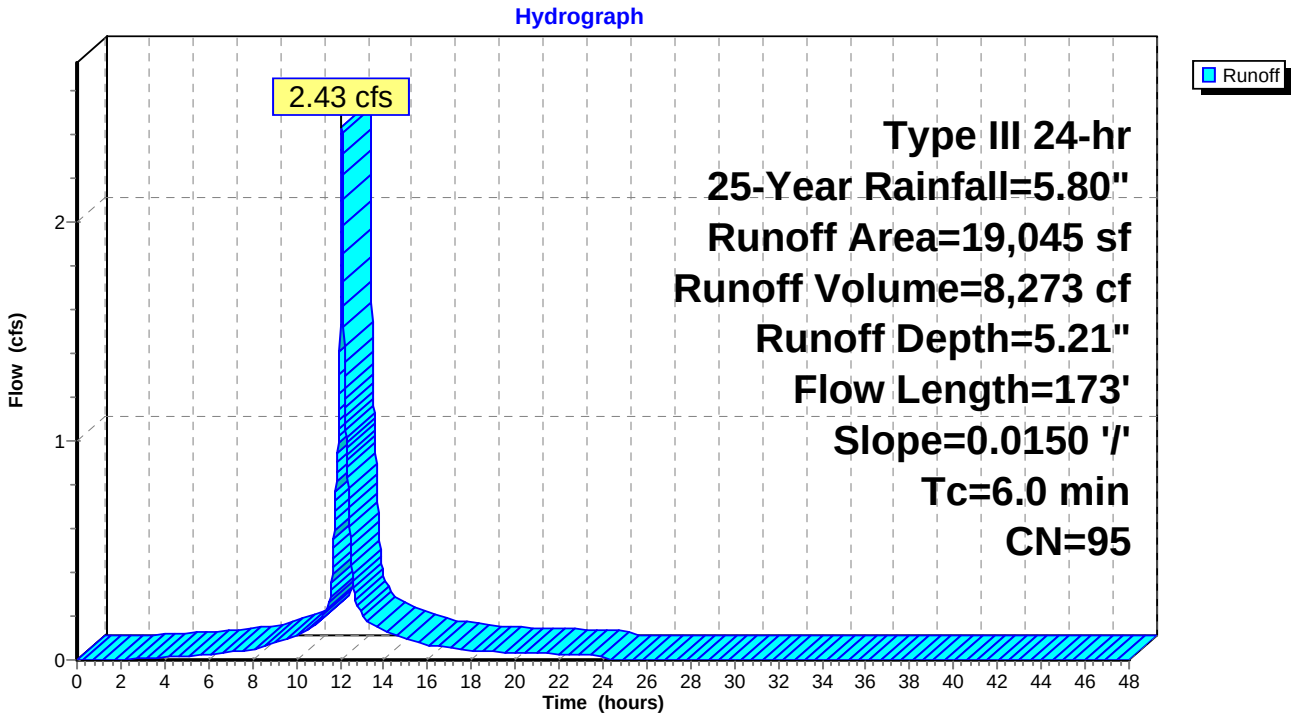
Runoff = 2.43 cfs @ 12.08 hrs, Volume= 8,273 cf, Depth= 5.21"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Type III 24-hr 25-Year Rainfall=5.80"

Area (sf)	CN	Description
1,615	98	Roofs, HSG B
16,094	98	Paved parking, HSG B
1,336	61	>75% Grass cover, Good, HSG B
19,045	95	Weighted Average
1,336		7.01% Pervious Area
17,709		92.99% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.4	100	0.0150	1.21		**Sheet Flow,** Smooth surfaces n= 0.011 P2= 3.10"
0.5	73	0.0150	2.49		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
4.1					**Direct Entry,**
6.0	173	Total			

Subcatchment 2S: (new Subcat)



Summary for Subcatchment 3S: (new Subcat)

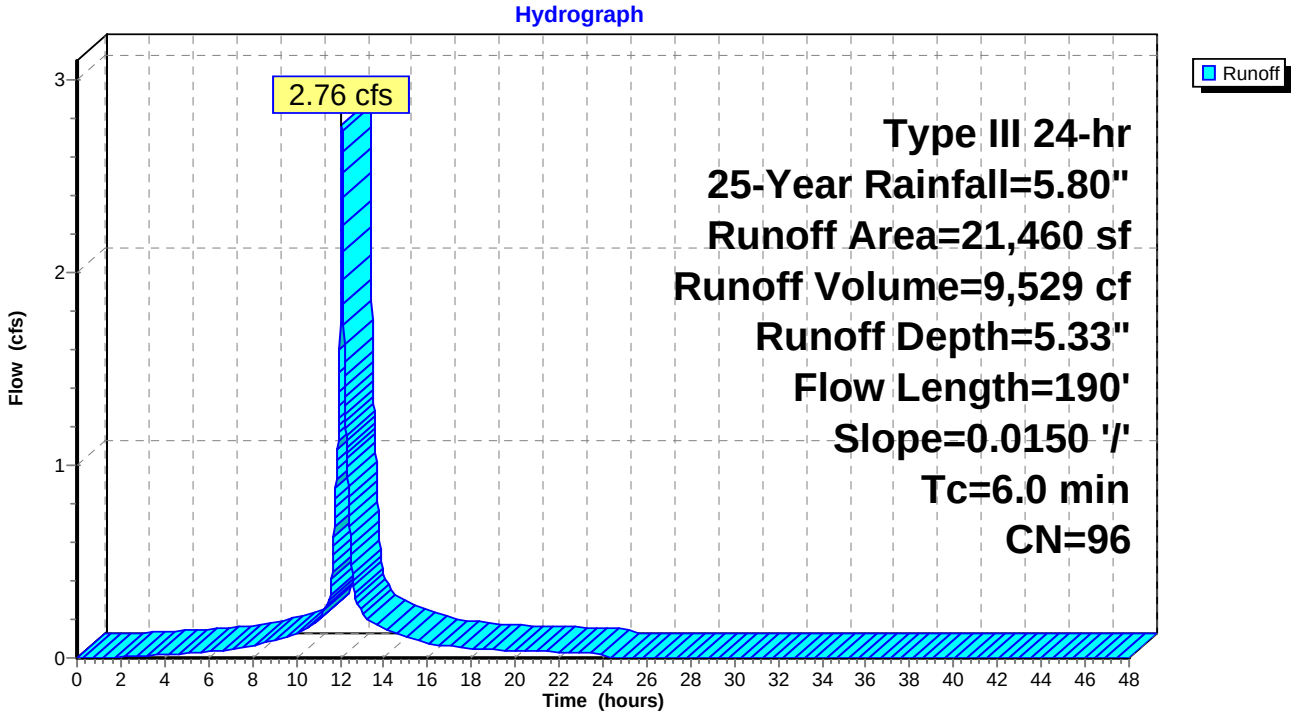
Runoff = 2.76 cfs @ 12.08 hrs, Volume= 9,529 cf, Depth= 5.33"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Type III 24-hr 25-Year Rainfall=5.80"

Area (sf)	CN	Description
259	98	Roofs, HSG B
19,851	98	Paved parking, HSG B
1,350	61	>75% Grass cover, Good, HSG B
21,460	96	Weighted Average
1,350		6.29% Pervious Area
20,110		93.71% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.4	100	0.0150	1.21		**Sheet Flow,** Smooth surfaces n= 0.011 P2= 3.10"
0.6	90	0.0150	2.49		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
4.0					**Direct Entry,**
6.0	190	Total			

Subcatchment 3S: (new Subcat)



Summary for Subcatchment 4S: (new Subcat)

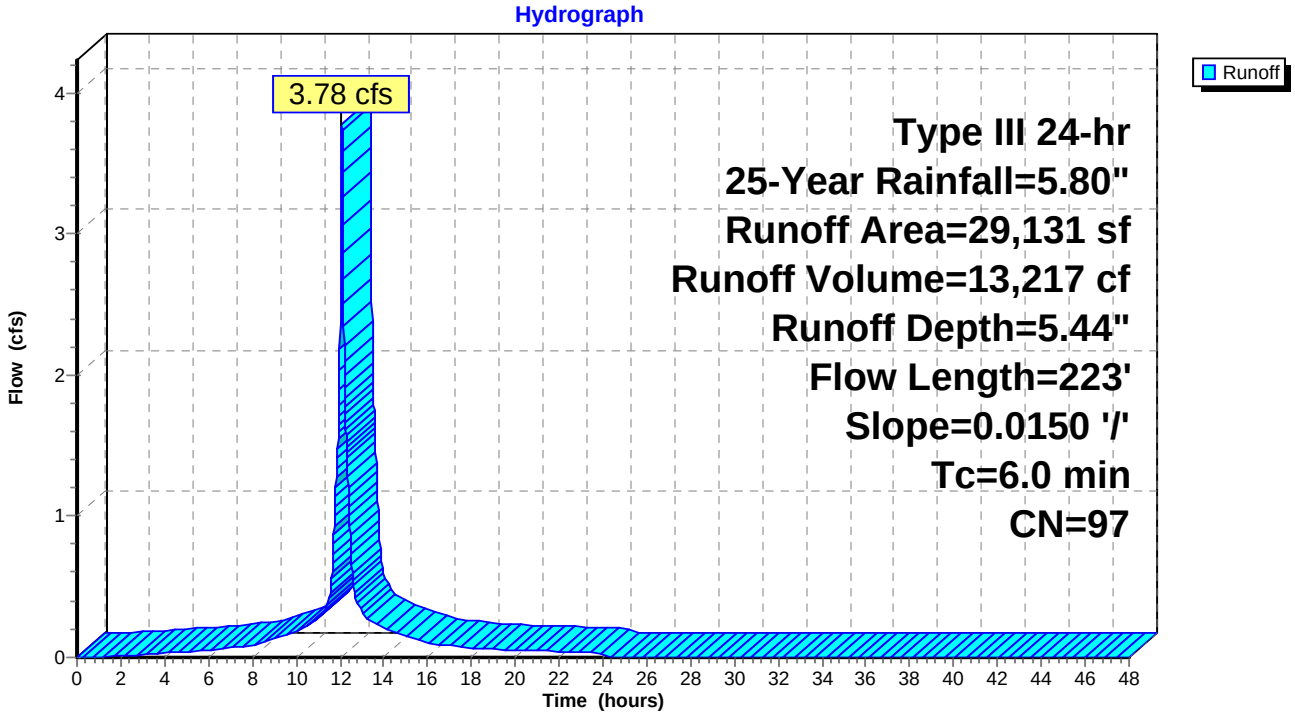
Runoff = 3.78 cfs @ 12.08 hrs, Volume= 13,217 cf, Depth= 5.44"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Type III 24-hr 25-Year Rainfall=5.80"

Area (sf)	CN	Description
28,151	98	Paved parking, HSG B
980	61	>75% Grass cover, Good, HSG B
29,131	97	Weighted Average
980		3.36% Pervious Area
28,151		96.64% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.4	100	0.0150	1.21		**Sheet Flow,** Smooth surfaces n= 0.011 P2= 3.10"
0.8	123	0.0150	2.49		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
3.8					**Direct Entry,**
6.0	223	Total			

Subcatchment 4S: (new Subcat)



Summary for Subcatchment 5S: (new Subcat)

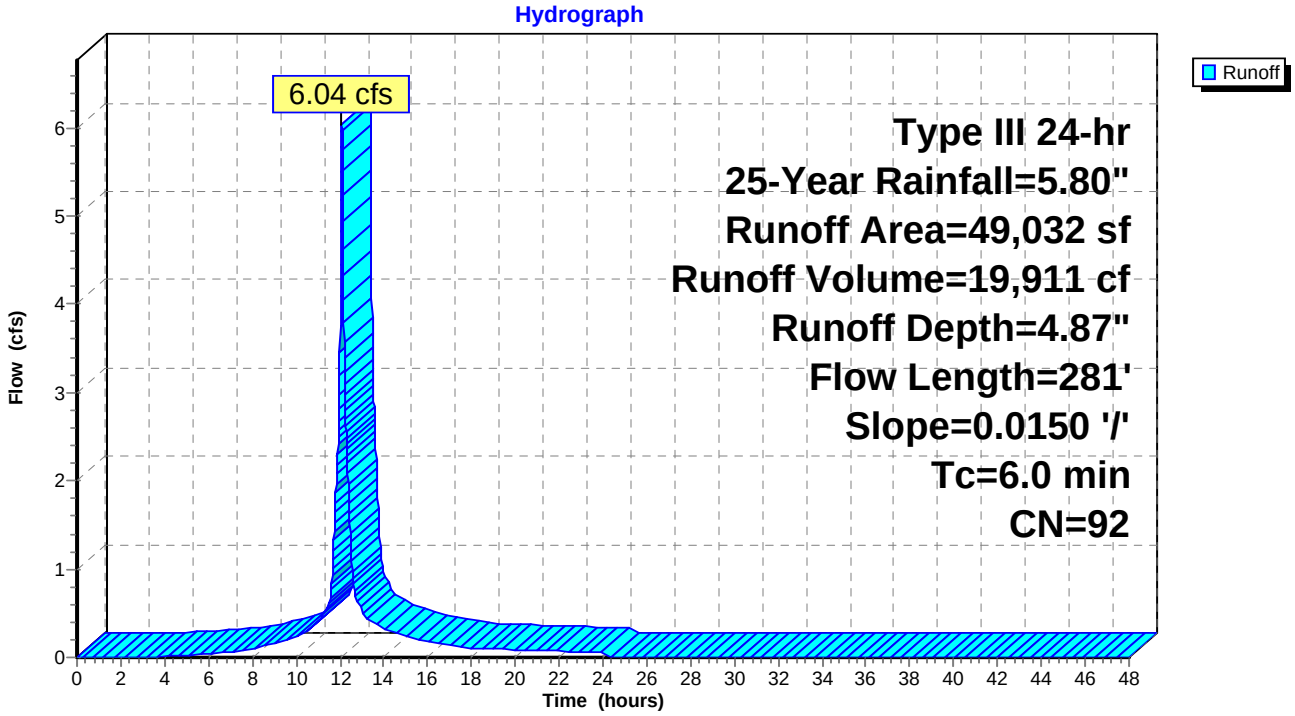
Runoff = 6.04 cfs @ 12.08 hrs, Volume= 19,911 cf, Depth= 4.87"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Type III 24-hr 25-Year Rainfall=5.80"

Area (sf)	CN	Description
40,586	98	Paved parking, HSG B
8,446	61	>75% Grass cover, Good, HSG B
49,032	92	Weighted Average
8,446		17.23% Pervious Area
40,586		82.77% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.4	100	0.0150	1.21		**Sheet Flow,** Smooth surfaces n= 0.011 P2= 3.10"
1.2	181	0.0150	2.49		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
3.4					**Direct Entry,**
6.0	281	Total			

Subcatchment 5S: (new Subcat)



Summary for Subcatchment 6S: (new Subcat)

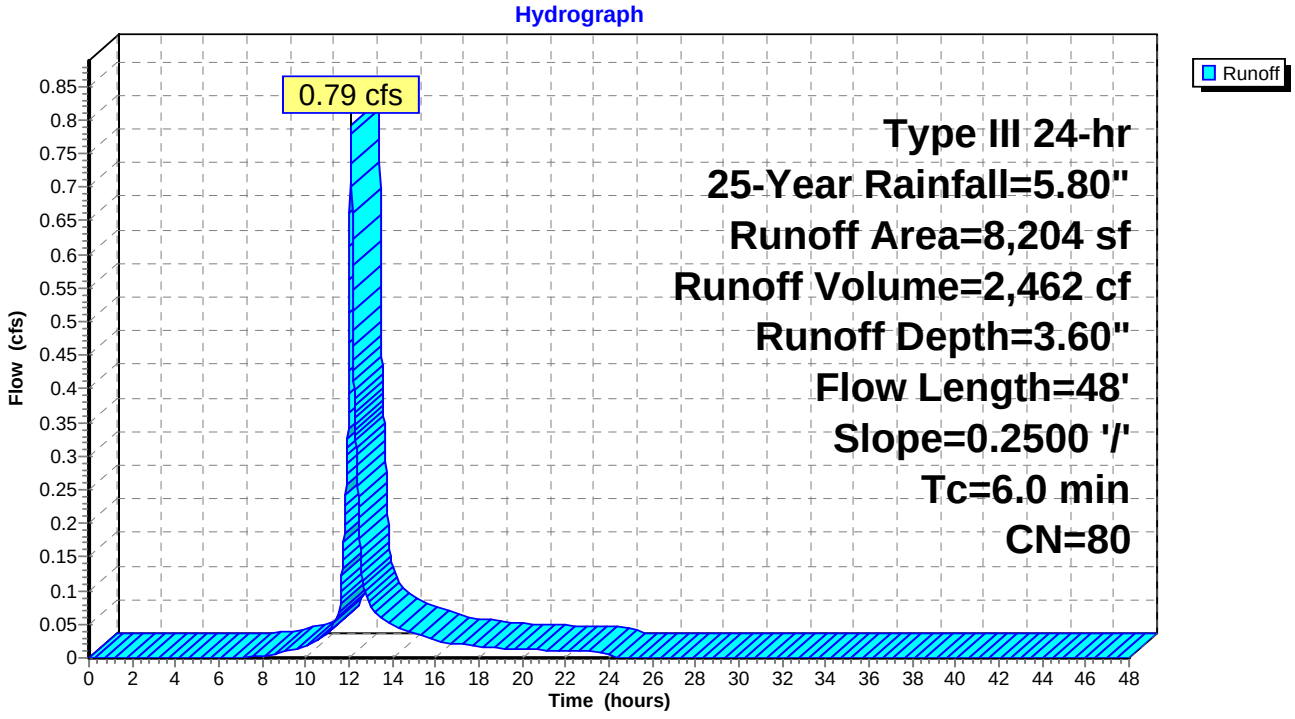
Runoff = 0.79 cfs @ 12.09 hrs, Volume= 2,462 cf, Depth= 3.60"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Type III 24-hr 25-Year Rainfall=5.80"

Area (sf)	CN	Description
3,041	61	>75% Grass cover, Good, HSG B
1,992	80	>75% Grass cover, Good, HSG D
3,171	98	Water Surface, HSG D
8,204	80	Weighted Average
5,033		61.35% Pervious Area
3,171		38.65% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
2.0	48	0.2500	0.40		**Sheet Flow,** Grass: Short n= 0.150 P2= 3.10"
4.0					**Direct Entry,**
6.0	48	Total			

Subcatchment 6S: (new Subcat)



Summary for Subcatchment 7S: (new Subcat)

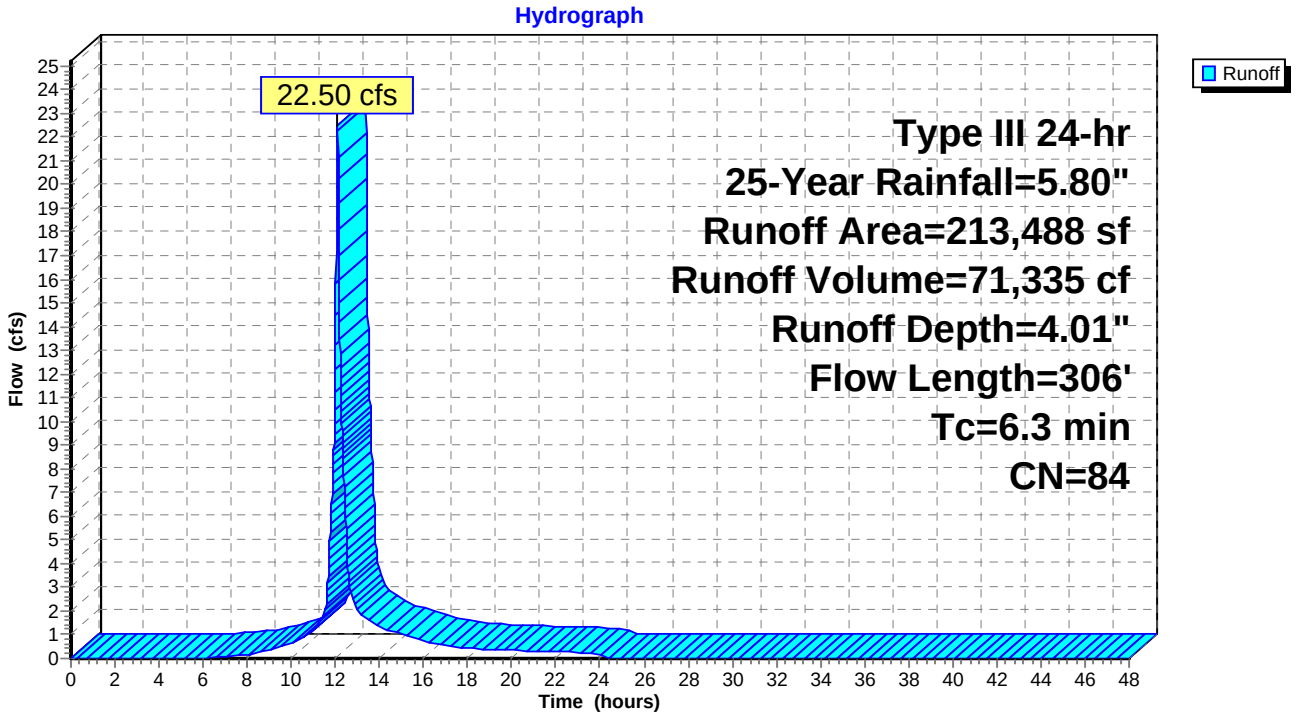
Runoff = 22.50 cfs @ 12.09 hrs, Volume= 71,335 cf, Depth= 4.01"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Type III 24-hr 25-Year Rainfall=5.80"

Area (sf)	CN	Description
45,283	61	>75% Grass cover, Good, HSG B
78,671	80	>75% Grass cover, Good, HSG D
7,169	98	Water Surface, HSG B
81,408	98	Water Surface, HSG D
957	98	Roofs, HSG B
213,488	84	Weighted Average
123,954		58.06% Pervious Area
89,534		41.94% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.3	71	0.0490	0.22		**Sheet Flow,** Grass: Short n= 0.150 P2= 3.10"
0.2	44	0.4300	4.59		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
0.8	191	0.0100	4.15	45.69	**Trap/Vee/Rect Channel Flow,** Bot.W=8.00' D=1.00' Z= 3.0 '/' Top.W=14.00' n= 0.030 Earth, grassed & winding
6.3	306	Total			

Subcatchment 7S: (new Subcat)



Summary for Subcatchment 8S: (new Subcat)

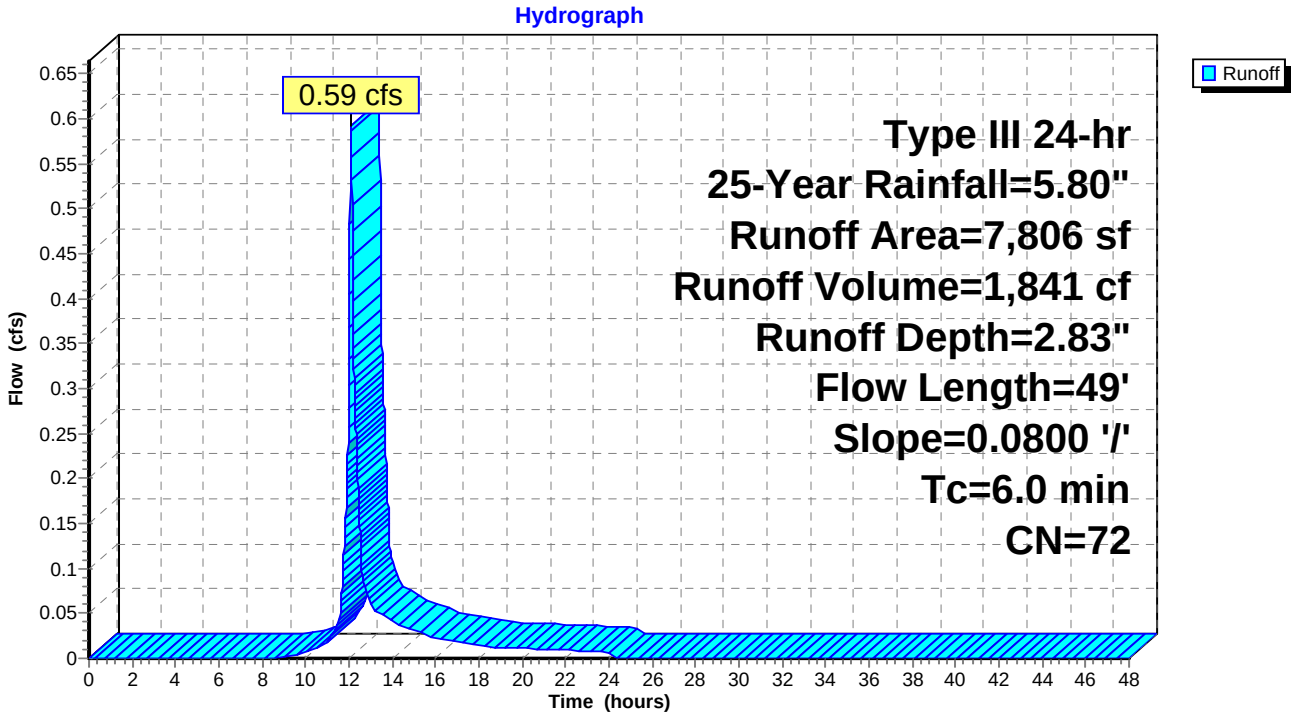
Runoff = 0.59 cfs @ 12.09 hrs, Volume= 1,841 cf, Depth= 2.83"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Type III 24-hr 25-Year Rainfall=5.80"

Area (sf)	CN	Description
2,242	98	Paved parking, HSG B
5,564	61	>75% Grass cover, Good, HSG B
7,806	72	Weighted Average
5,564		71.28% Pervious Area
2,242		28.72% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
3.2	49	0.0800	0.25		**Sheet Flow,** Grass: Short n= 0.150 P2= 3.10"
2.8					**Direct Entry,**
6.0	49	Total			

Subcatchment 8S: (new Subcat)



Summary for Subcatchment 9S: (new Subcat)

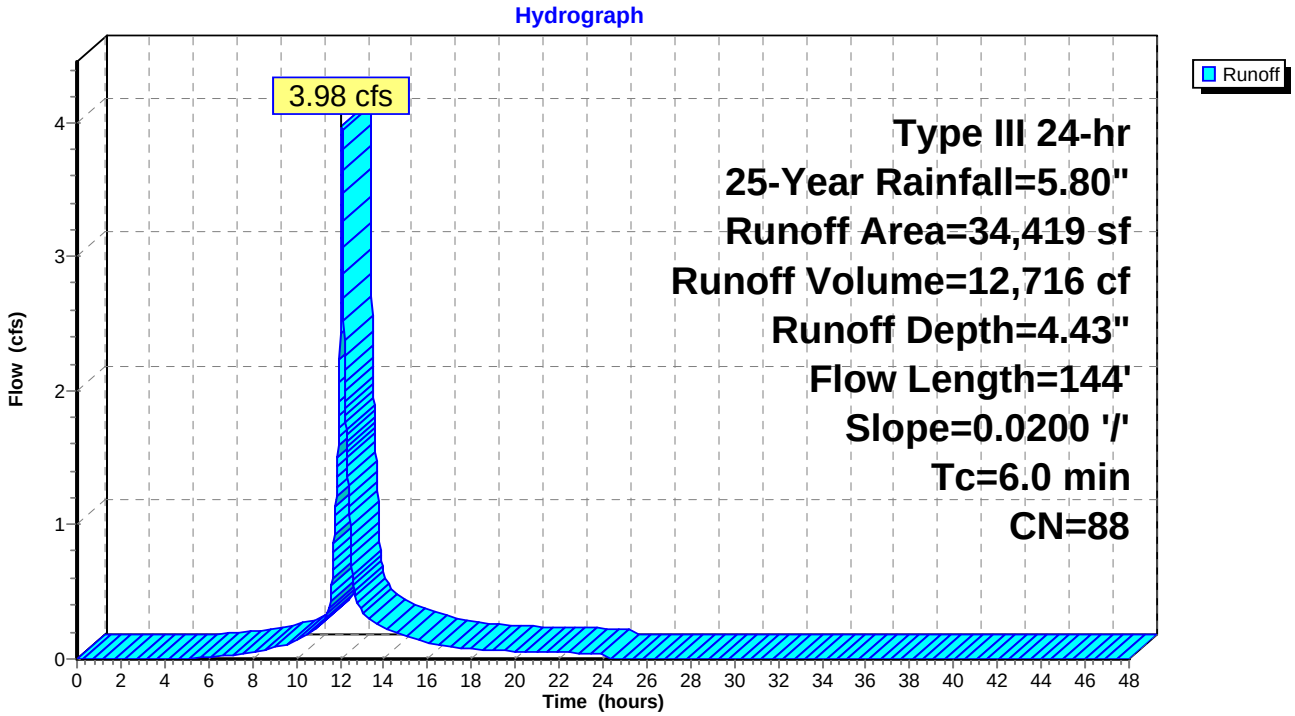
Runoff = 3.98 cfs @ 12.09 hrs, Volume= 12,716 cf, Depth= 4.43"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Type III 24-hr 25-Year Rainfall=5.80"

Area (sf)	CN	Description
17,541	98	Paved parking, HSG B
7,803	98	Roofs, HSG B
9,075	61	>75% Grass cover, Good, HSG B
34,419	88	Weighted Average
9,075		26.37% Pervious Area
25,344		73.63% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.2	100	0.0200	1.35		**Sheet Flow,** Smooth surfaces n= 0.011 P2= 3.10"
0.1	20	0.0200	2.87		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
0.4	24	0.0200	0.99		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
4.3					**Direct Entry,**
6.0	144	Total			

Subcatchment 9S: (new Subcat)



Summary for Subcatchment Off Site: Off Site Flow

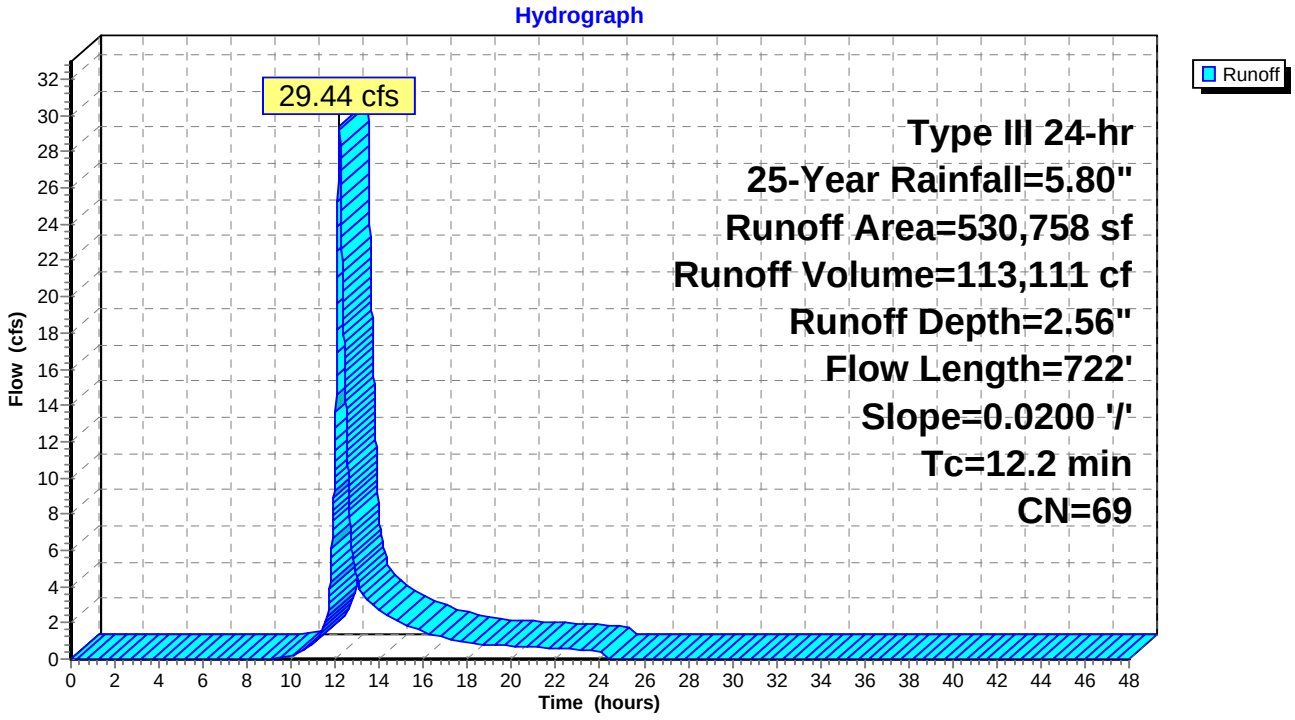
Runoff = 29.44 cfs @ 12.17 hrs, Volume= 113,111 cf, Depth= 2.56"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Type III 24-hr 25-Year Rainfall=5.80"

Area (sf)	CN	Description
414,874	61	>75% Grass cover, Good, HSG B
115,884	98	Paved parking, HSG B
530,758	69	Weighted Average
414,874		78.17% Pervious Area
115,884		21.83% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
12.2	722	0.0200	0.99		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps

Subcatchment Off Site: Off Site Flow



Summary for Pond 2P: Existing Wet Pond

Inflow Area = 155,339 sf, 87.13% Impervious, Inflow Depth = 4.66" for 25-Year event
Inflow = 11.98 cfs @ 12.08 hrs, Volume= 60,344 cf
Outflow = 10.73 cfs @ 12.14 hrs, Volume= 55,992 cf, Atten= 10%, Lag= 3.4 min
Primary = 6.78 cfs @ 12.14 hrs, Volume= 51,984 cf
Secondary = 3.95 cfs @ 12.14 hrs, Volume= 4,008 cf

Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs / 2
Peak Elev= 14.95' @ 12.14 hrs Surf.Area= 3,953 sf Storage= 10,235 cf
Flood Elev= 16.00' Surf.Area= 4,707 sf Storage= 14,792 cf

Plug-Flow detention time= 89.8 min calculated for 55,980 cf (93% of inflow)
Center-of-Mass det. time= 50.8 min (822.8 - 771.9)

Volume	Invert	Avail.Storage	Storage Description
#1	9.00'	14,792 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

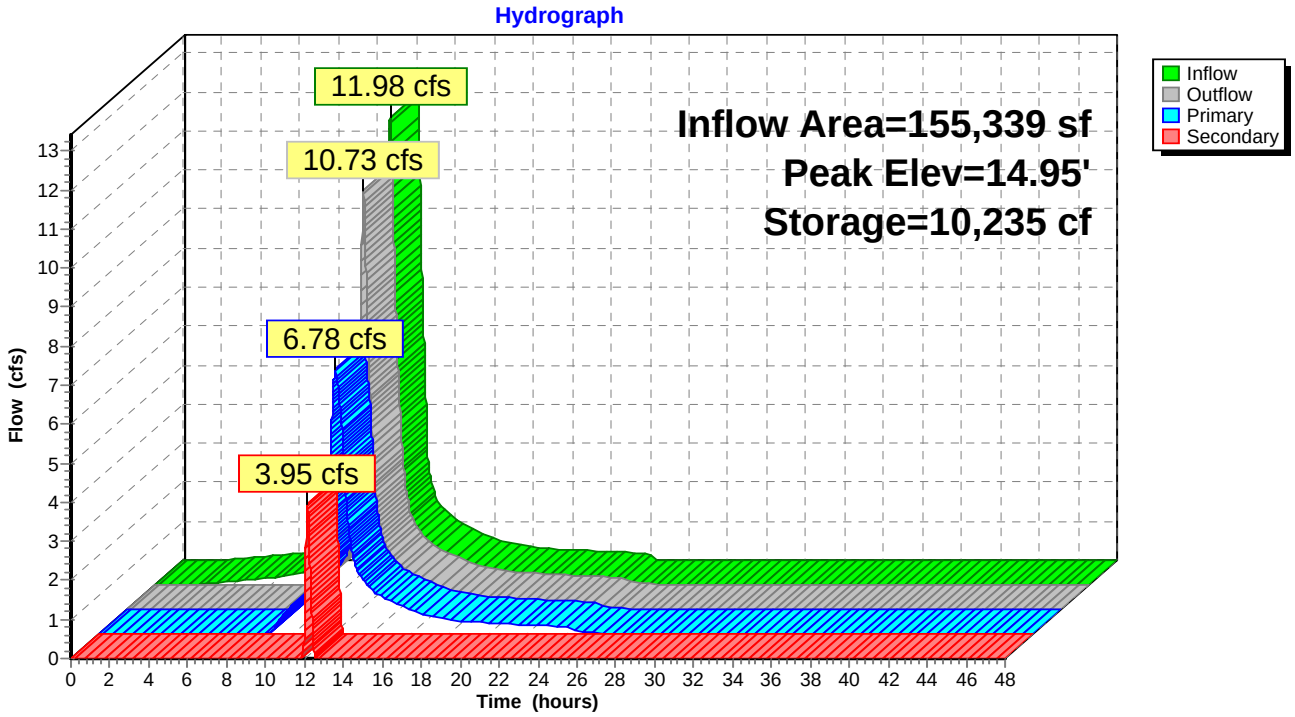
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
9.00	38	0	0
10.00	287	163	163
11.00	765	526	689
12.00	1,474	1,120	1,808
13.00	2,613	2,044	3,852
14.00	3,290	2,952	6,803
15.00	3,990	3,640	10,443
16.00	4,707	4,349	14,792

Device	Routing	Invert	Outlet Devices
#1	Primary	8.16'	**24.0" Round Culvert** L= 19.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 8.16' / 7.78' S= 0.0200 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 3.14 sf
#2	Device 1	13.18'	**18.0" Round Culvert** L= 11.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 13.18' / 12.96' S= 0.0200 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.77 sf
#3	Secondary	14.50'	**5.0' long x 12.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.57 2.62 2.70 2.67 2.66 2.67 2.66 2.64

Primary OutFlow Max=6.78 cfs @ 12.14 hrs HW=14.95' TW=6.91' (Dynamic Tailwater)
↑└**1=Culvert** (Passes 6.78 cfs of 28.73 cfs potential flow)
↑└**2=Culvert** (Inlet Controls 6.78 cfs @ 3.83 fps)

Secondary OutFlow Max=3.95 cfs @ 12.14 hrs HW=14.95' TW=6.91' (Dynamic Tailwater)
↑└**3=Broad-Crested Rectangular Weir** (Weir Controls 3.95 cfs @ 1.77 fps)

Pond 2P: Existing Wet Pond



Summary for Pond 3P: DMH 998

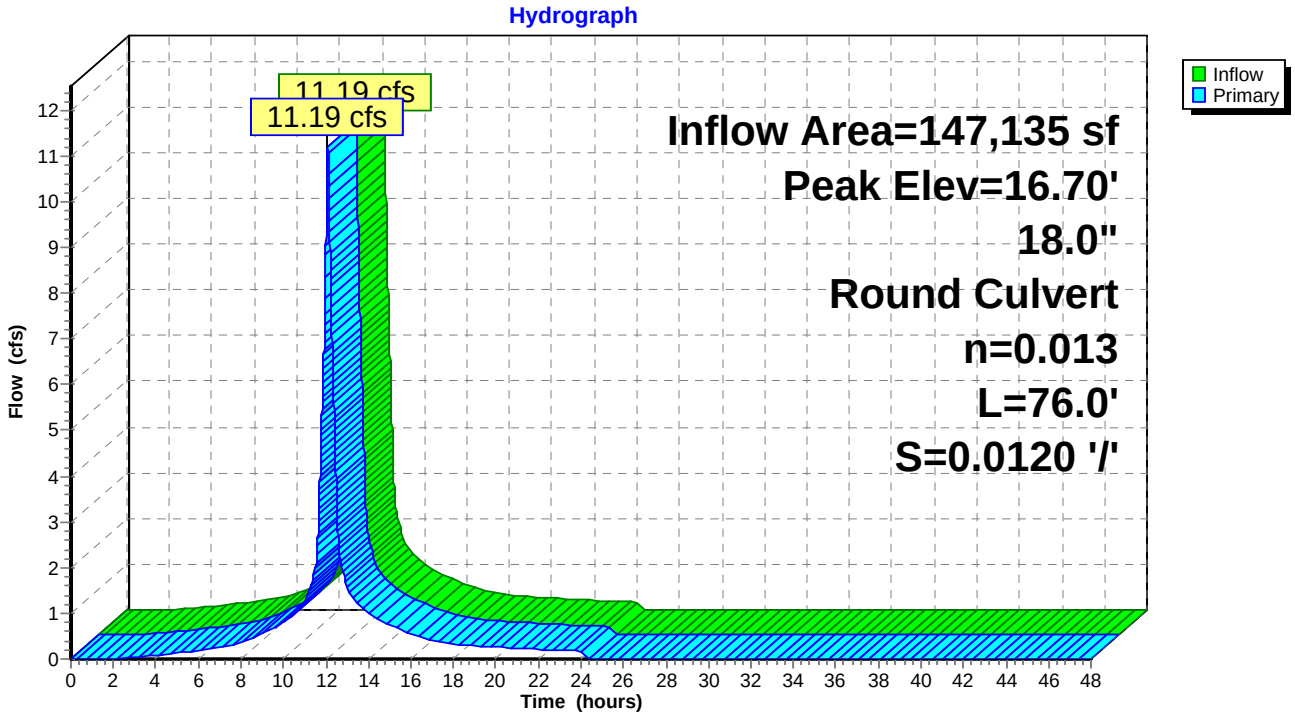
Inflow Area = 147,135 sf, 89.83% Impervious, Inflow Depth = 4.72" for 25-Year event
Inflow = 11.19 cfs @ 12.08 hrs, Volume= 57,882 cf
Outflow = 11.19 cfs @ 12.08 hrs, Volume= 57,882 cf, Atten= 0%, Lag= 0.0 min
Primary = 11.19 cfs @ 12.08 hrs, Volume= 57,882 cf

Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs / 2
Peak Elev= 16.70' @ 12.09 hrs
Flood Elev= 21.94'

Device	Routing	Invert	Outlet Devices
#1	Primary	13.81'	**18.0" Round Culvert** L= 76.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 13.81' / 12.90' S= 0.0120 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.77 sf

Primary OutFlow Max=11.18 cfs @ 12.08 hrs HW=16.69' TW=14.89' (Dynamic Tailwater)
1=Culvert (Outlet Controls 11.18 cfs @ 6.32 fps)

Pond 3P: DMH 998



Summary for Pond 4P: CBR 1710

Inflow Area = 147,135 sf, 89.83% Impervious, Inflow Depth = 4.92" for 25-Year event
Inflow = 16.24 cfs @ 12.08 hrs, Volume= 60,292 cf
Outflow = 16.24 cfs @ 12.08 hrs, Volume= 60,292 cf, Atten= 0%, Lag= 0.0 min
Primary = 11.19 cfs @ 12.08 hrs, Volume= 57,882 cf
Secondary = 5.05 cfs @ 12.08 hrs, Volume= 2,410 cf

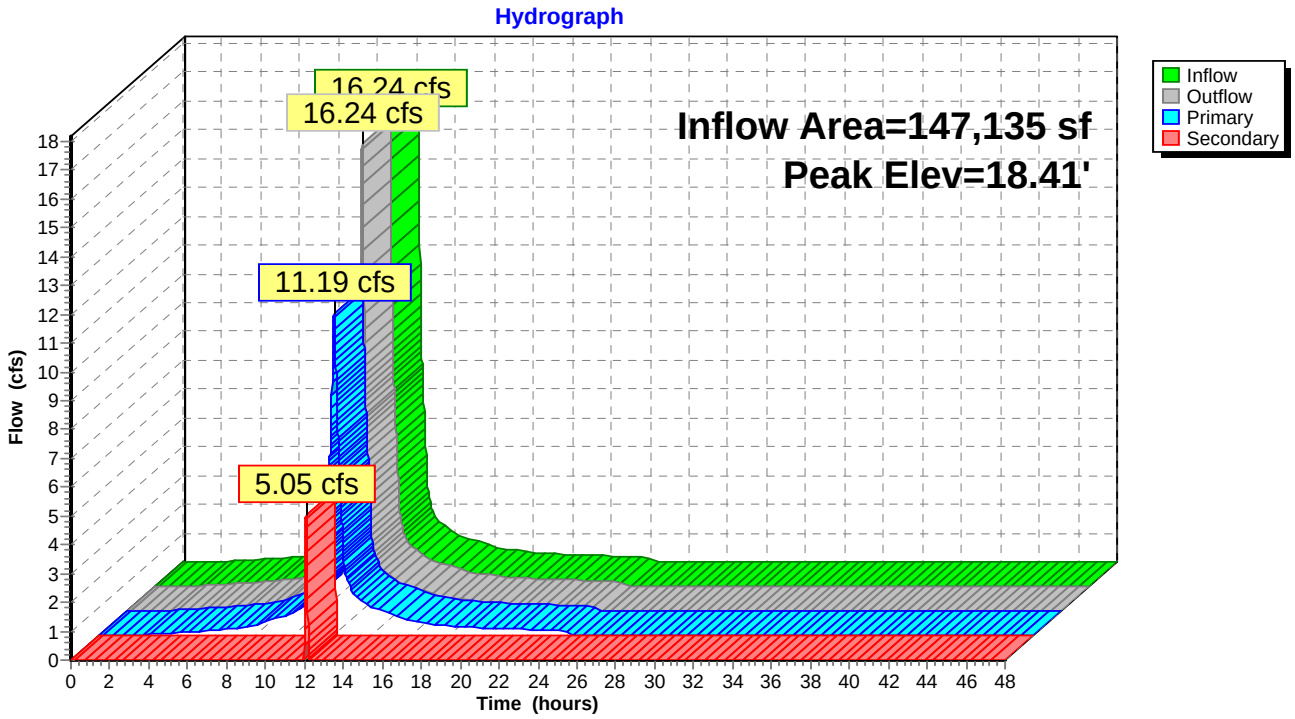
Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs / 2
Peak Elev= 18.41' @ 12.08 hrs
Flood Elev= 25.22'

Device	Routing	Invert	Outlet Devices
#1	Primary	14.91'	**18.0" Round Culvert** L= 50.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 14.91' / 13.91' S= 0.0200 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.77 sf
#2	Secondary	16.61'	**15.0" Round Culvert** L= 85.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 16.61' / 10.60' S= 0.0707 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.23 sf

Primary OutFlow Max=11.14 cfs @ 12.08 hrs HW=18.40' TW=16.69' (Dynamic Tailwater)
└**1=Culvert** (Inlet Controls 11.14 cfs @ 6.30 fps)

Secondary OutFlow Max=5.03 cfs @ 12.08 hrs HW=18.40' TW=6.76' (Dynamic Tailwater)
└**2=Culvert** (Inlet Controls 5.03 cfs @ 4.10 fps)

Pond 4P: CBR 1710



Summary for Pond 5P: CB 1668

Inflow Area = 49,032 sf, 82.77% Impervious, Inflow Depth = 4.87" for 25-Year event
Inflow = 6.04 cfs @ 12.08 hrs, Volume= 19,911 cf
Outflow = 6.04 cfs @ 12.08 hrs, Volume= 19,911 cf, Atten= 0%, Lag= 0.0 min
Primary = 3.66 cfs @ 12.08 hrs, Volume= 17,177 cf
Secondary = 2.38 cfs @ 12.08 hrs, Volume= 2,733 cf

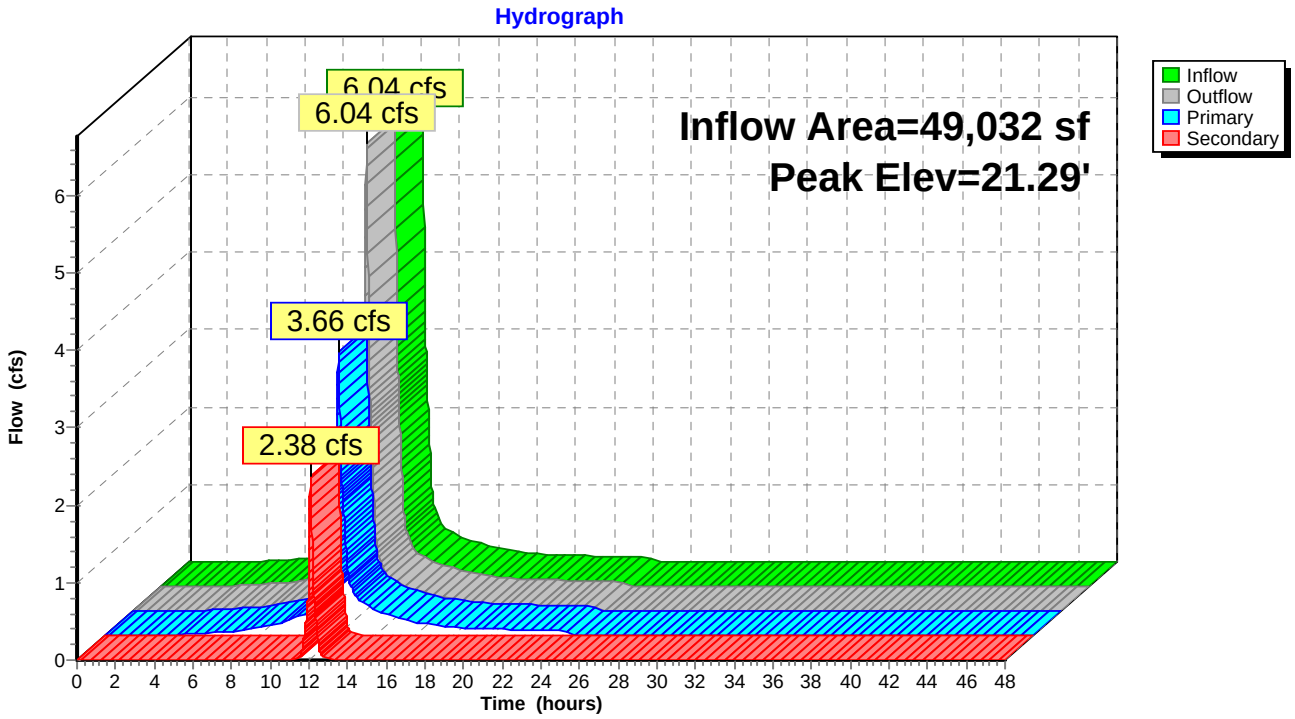
Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs / 2
Peak Elev= 21.29' @ 12.08 hrs
Flood Elev= 25.58'

Device	Routing	Invert	Outlet Devices
#1	Primary	20.38'	**18.0" Round Culvert** L= 155.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 20.38' / 18.30' S= 0.0134 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.77 sf
#2	Secondary	20.65'	**24.0" Round Culvert** L= 70.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 20.65' / 13.39' S= 0.1037 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 3.14 sf

Primary OutFlow Max=3.66 cfs @ 12.08 hrs HW=21.29' TW=18.40' (Dynamic Tailwater)
└**1=Culvert** (Inlet Controls 3.66 cfs @ 3.25 fps)

Secondary OutFlow Max=2.37 cfs @ 12.08 hrs HW=21.29' TW=6.76' (Dynamic Tailwater)
└**2=Culvert** (Inlet Controls 2.37 cfs @ 2.73 fps)

Pond 5P: CB 1668



Summary for Pond 6P: CBR 1709

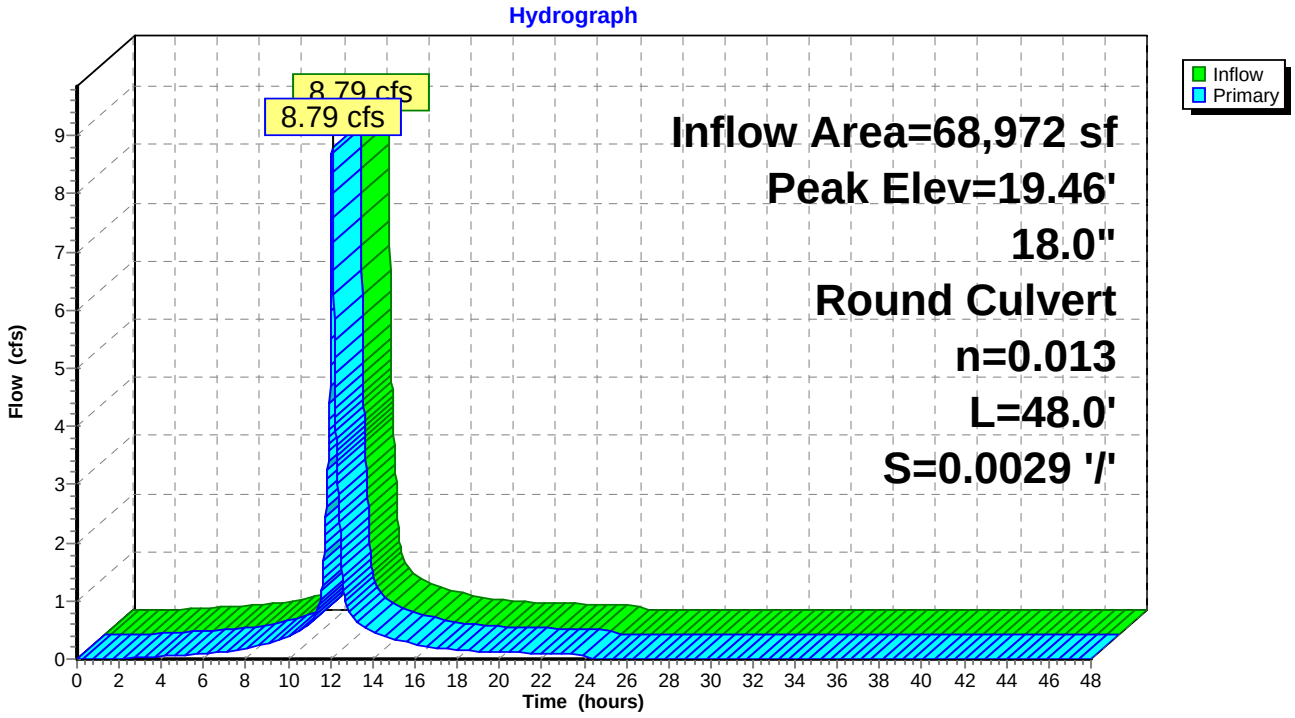
Inflow Area = 68,972 sf, 91.97% Impervious, Inflow Depth = 5.20" for 25-Year event
Inflow = 8.79 cfs @ 12.08 hrs, Volume= 29,897 cf
Outflow = 8.79 cfs @ 12.08 hrs, Volume= 29,897 cf, Atten= 0%, Lag= 0.0 min
Primary = 8.79 cfs @ 12.08 hrs, Volume= 29,897 cf

Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs / 2
Peak Elev= 19.46' @ 12.09 hrs
Flood Elev= 25.90'

Device	Routing	Invert	Outlet Devices
#1	Primary	15.83'	**18.0" Round Culvert** L= 48.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 15.83' / 15.69' S= 0.0029 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.77 sf

Primary OutFlow Max=8.71 cfs @ 12.08 hrs HW=19.45' TW=18.40' (Dynamic Tailwater)
1=Culvert (Inlet Controls 8.71 cfs @ 4.93 fps)

Pond 6P: CBR 1709



Summary for Pond 7P: CBR 2113

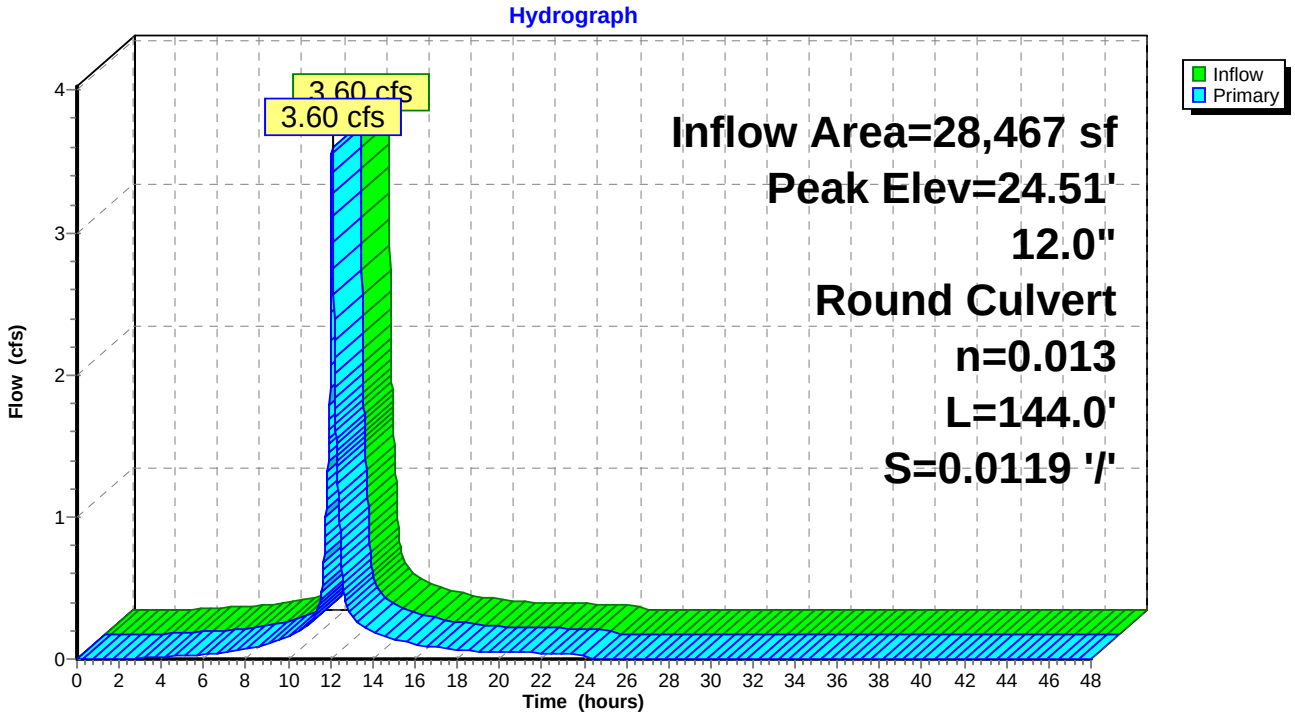
Inflow Area = 28,467 sf, 89.98% Impervious, Inflow Depth = 5.10" for 25-Year event
Inflow = 3.60 cfs @ 12.08 hrs, Volume= 12,095 cf
Outflow = 3.60 cfs @ 12.08 hrs, Volume= 12,095 cf, Atten= 0%, Lag= 0.0 min
Primary = 3.60 cfs @ 12.08 hrs, Volume= 12,095 cf

Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs / 2
Peak Elev= 24.51' @ 12.08 hrs
Flood Elev= 29.47'

Device	Routing	Invert	Outlet Devices
#1	Primary	23.11'	**12.0" Round Culvert** L= 144.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 23.11' / 21.40' S= 0.0119 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.79 sf

Primary OutFlow Max=3.59 cfs @ 12.08 hrs HW=24.51' TW=20.01' (Dynamic Tailwater)
1=Culvert (Inlet Controls 3.59 cfs @ 4.57 fps)

Pond 7P: CBR 2113



Summary for Pond 8P: CBR 1708

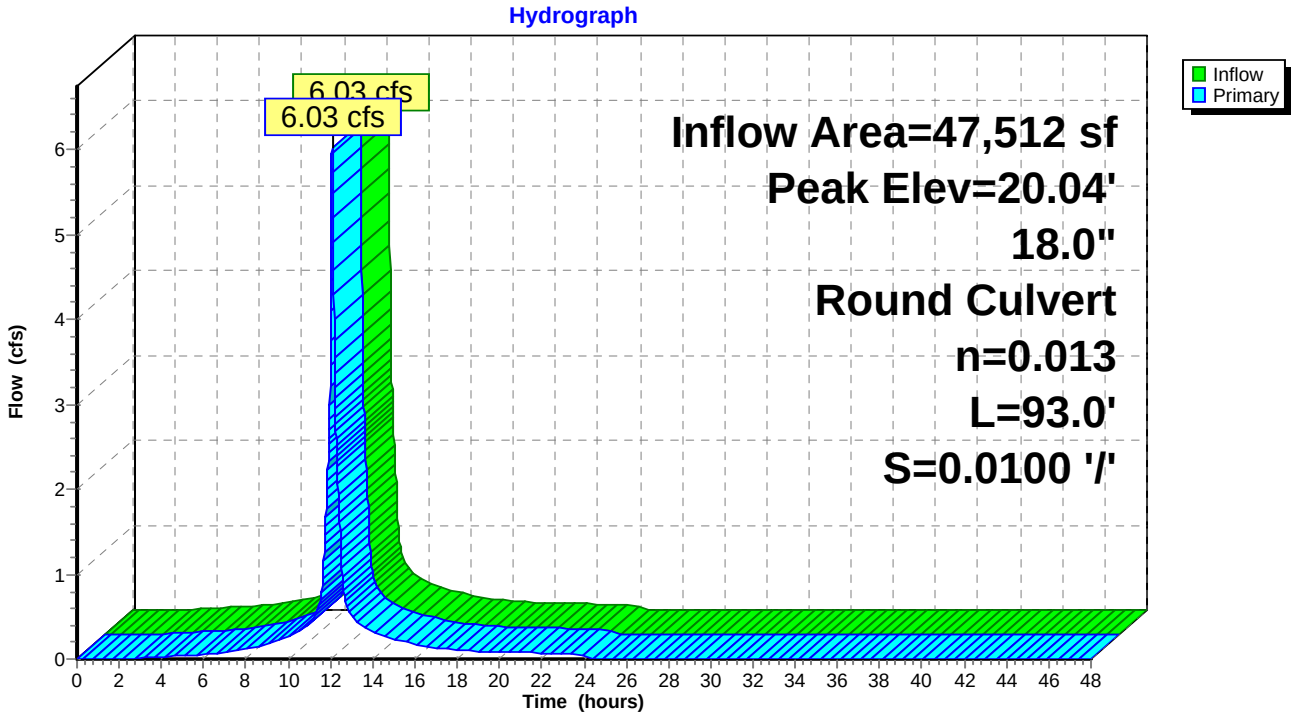
Inflow Area = 47,512 sf, 91.18% Impervious, Inflow Depth = 5.14" for 25-Year event
Inflow = 6.03 cfs @ 12.08 hrs, Volume= 20,369 cf
Outflow = 6.03 cfs @ 12.08 hrs, Volume= 20,369 cf, Atten= 0%, Lag= 0.0 min
Primary = 6.03 cfs @ 12.08 hrs, Volume= 20,369 cf

Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs / 2
Peak Elev= 20.04' @ 12.09 hrs
Flood Elev= 27.09'

Device	Routing	Invert	Outlet Devices
#1	Primary	16.46'	**18.0" Round Culvert** L= 93.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 16.46' / 15.53' S= 0.0100 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.77 sf

Primary OutFlow Max=5.94 cfs @ 12.08 hrs HW=20.01' TW=19.45' (Dynamic Tailwater)
1=Culvert (Outlet Controls 5.94 cfs @ 3.36 fps)

Pond 8P: CBR 1708



Summary for Pond 9P: DMH 10162

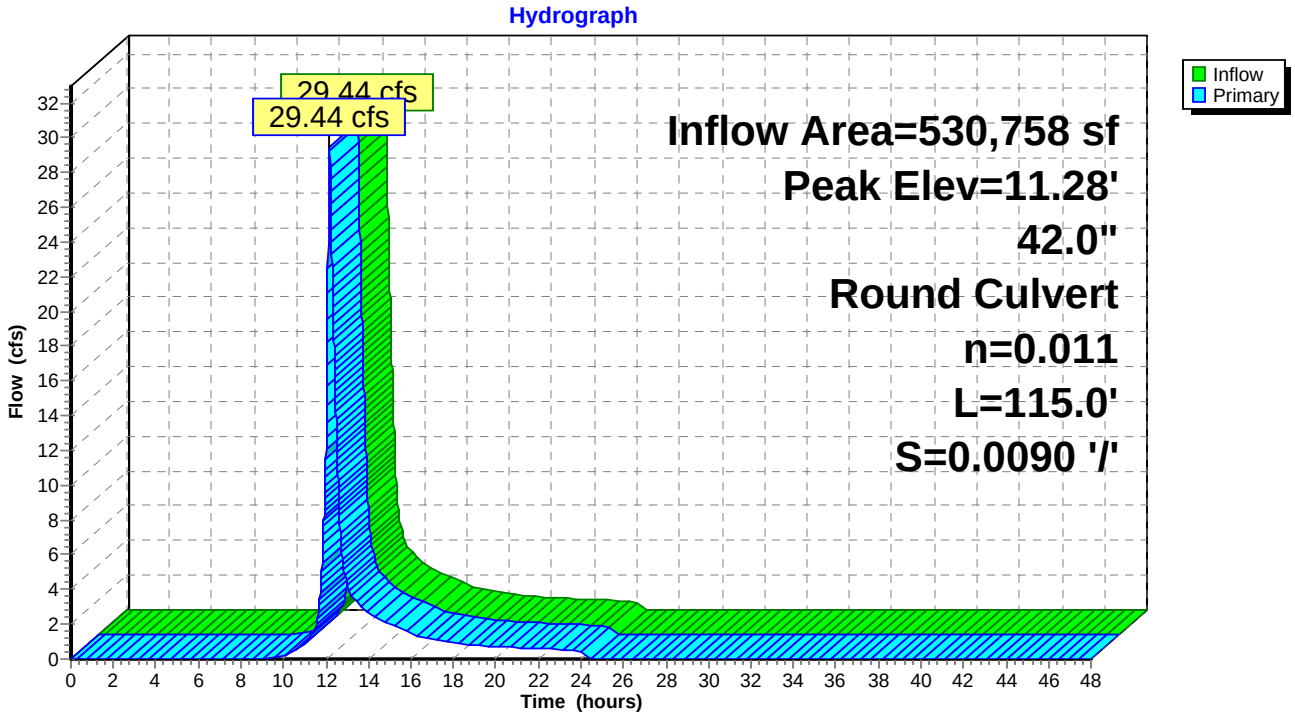
Inflow Area = 530,758 sf, 21.83% Impervious, Inflow Depth = 2.56" for 25-Year event
Inflow = 29.44 cfs @ 12.17 hrs, Volume= 113,111 cf
Outflow = 29.44 cfs @ 12.17 hrs, Volume= 113,111 cf, Atten= 0%, Lag= 0.0 min
Primary = 29.44 cfs @ 12.17 hrs, Volume= 113,111 cf

Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs / 2
Peak Elev= 11.28' @ 12.17 hrs
Flood Elev= 28.14'

Device	Routing	Invert	Outlet Devices
#1	Primary	9.18'	**42.0" Round Culvert** L= 115.0' RCP, sq.cut end projecting, Ke= 0.500 Inlet / Outlet Invert= 9.18' / 8.15' S= 0.0090 '/' Cc= 0.900 n= 0.011 Concrete pipe, straight & clean, Flow Area= 9.62 sf

Primary OutFlow Max=29.42 cfs @ 12.17 hrs HW=11.28' TW=6.98' (Dynamic Tailwater)
1=Culvert (Barrel Controls 29.42 cfs @ 7.01 fps)

Pond 9P: DMH 10162



Summary for Pond EX WTLND: Existing Wetland

Inflow Area = 934,004 sf, 39.20% Impervious, Inflow Depth = 3.32" for 25-Year event
Inflow = 68.25 cfs @ 12.11 hrs, Volume= 258,297 cf
Outflow = 26.94 cfs @ 12.47 hrs, Volume= 258,303 cf, Atten= 61%, Lag= 21.4 min
Primary = 23.88 cfs @ 12.47 hrs, Volume= 253,608 cf
Secondary = 3.06 cfs @ 12.47 hrs, Volume= 4,695 cf

Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs / 2
Peak Elev= 7.21' @ 12.47 hrs Surf.Area= 79,019 sf Storage= 55,362 cf
Flood Elev= 9.00' Surf.Area= 86,688 sf Storage= 120,546 cf

Plug-Flow detention time= (not calculated: outflow precedes inflow)
Center-of-Mass det. time= 15.2 min (840.8 - 825.5)

Volume	Invert	Avail.Storage	Storage Description
#1	6.00'	120,546 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

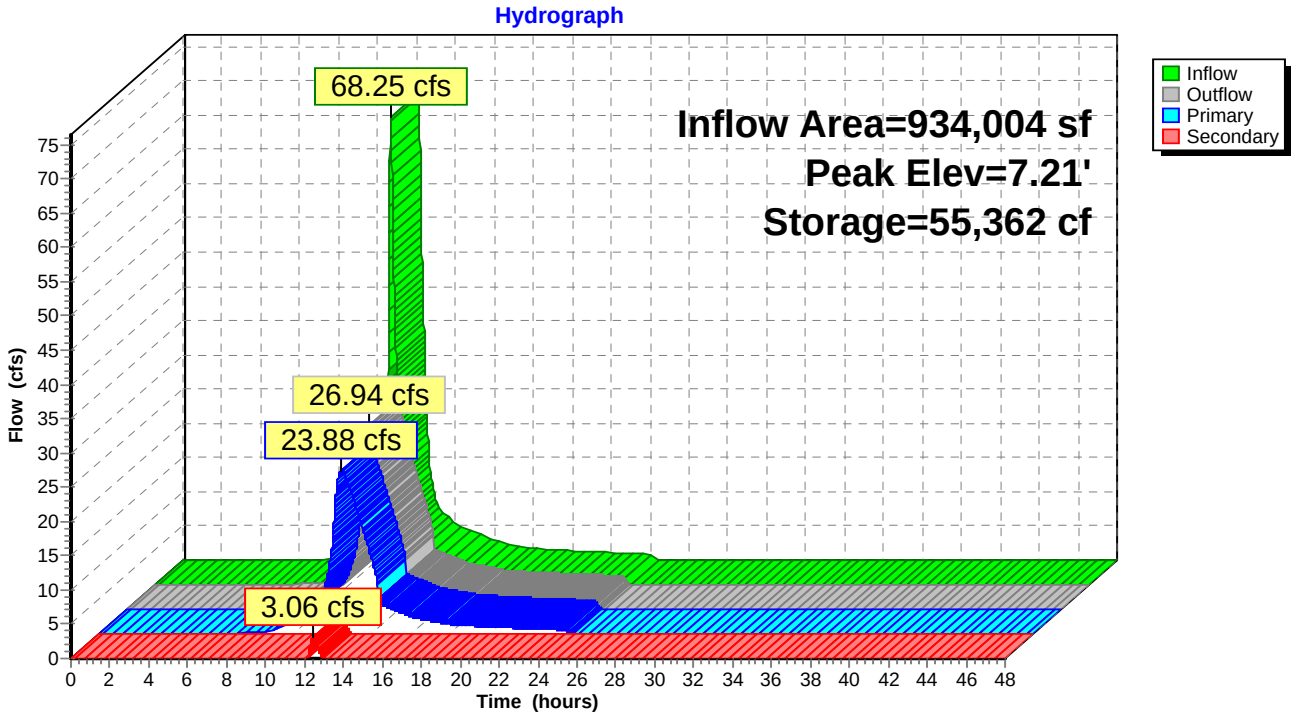
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
6.00	523	0	0
7.00	76,940	38,732	38,732
8.00	86,688	81,814	120,546

Device	Routing	Invert	Outlet Devices
#1	Primary	4.89'	**36.0" Round Culvert** L= 80.0' CMP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 4.89' / 3.61' S= 0.0160 '/' Cc= 0.900 n= 0.025 Corrugated metal, Flow Area= 7.07 sf
#2	Secondary	7.00'	**13.0' long x 4.0' breadth Overflow** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 3.50 4.00 4.50 5.00 5.50 Coef. (English) 2.38 2.54 2.69 2.68 2.67 2.67 2.65 2.66 2.66 2.68 2.72 2.73 2.76 2.79 2.88 3.07 3.32

Primary OutFlow Max=23.88 cfs @ 12.47 hrs HW=7.21' TW=0.00' (Dynamic Tailwater)
└**1=Culvert** (Barrel Controls 23.88 cfs @ 5.61 fps)

Secondary OutFlow Max=3.06 cfs @ 12.47 hrs HW=7.21' TW=0.00' (Dynamic Tailwater)
└**2=Overflow** (Weir Controls 3.06 cfs @ 1.10 fps)

Pond EX WTLND: Existing Wetland

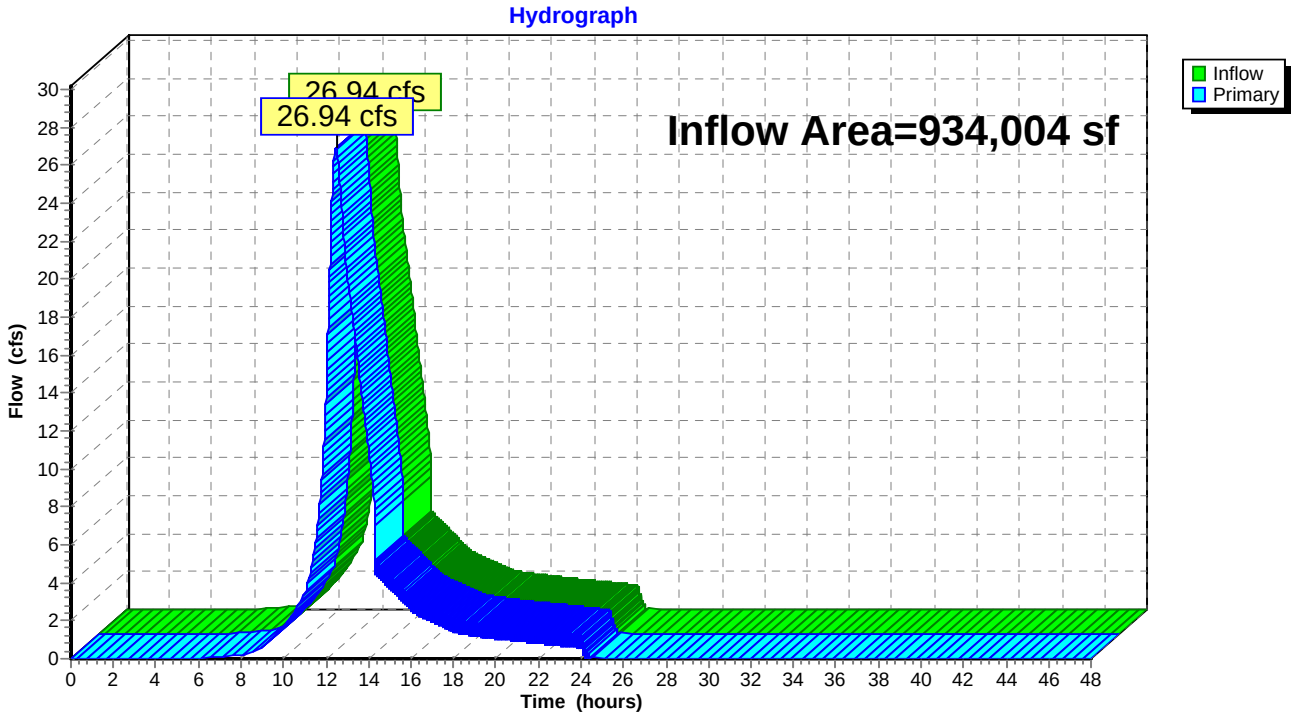


Summary for Link SP-1: Study Point 1

Inflow Area = 934,004 sf, 39.20% Impervious, Inflow Depth = 3.32" for 25-Year event
Inflow = 26.94 cfs @ 12.47 hrs, Volume= 258,303 cf
Primary = 26.94 cfs @ 12.47 hrs, Volume= 258,303 cf, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs

Link SP-1: Study Point 1

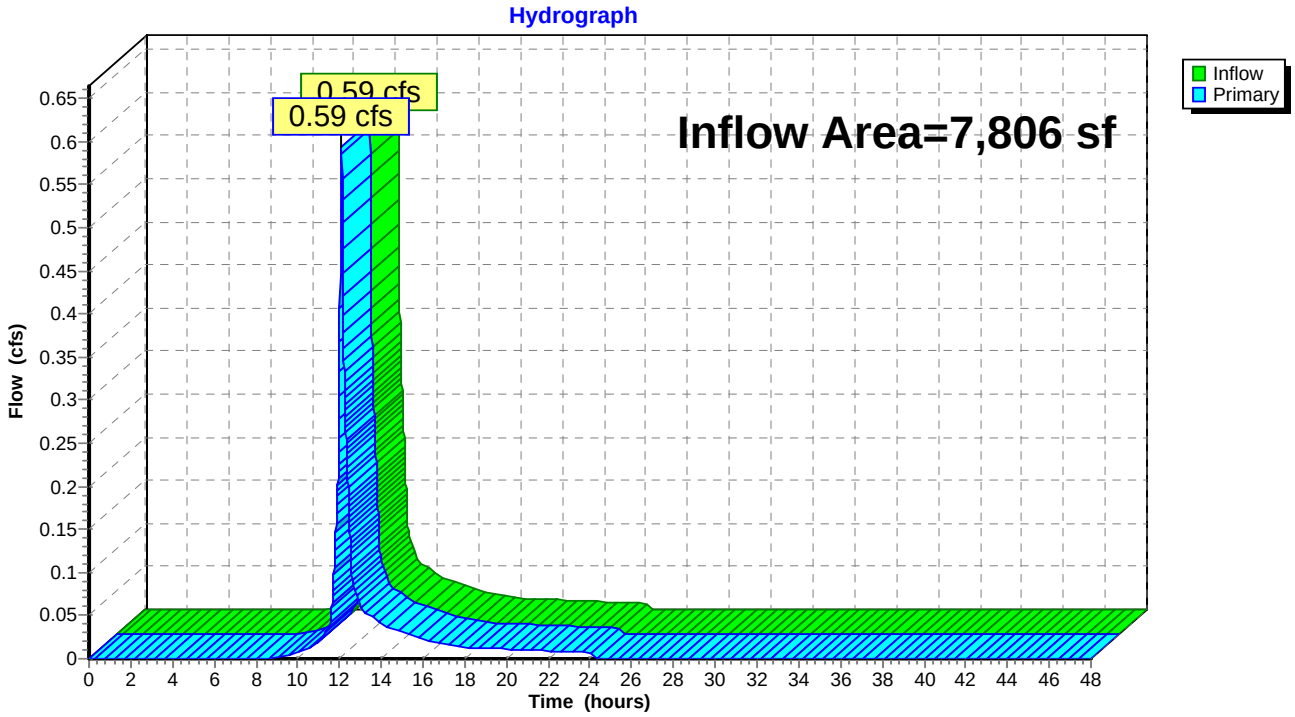


Summary for Link SP-2: Study Point 2

Inflow Area = 7,806 sf, 28.72% Impervious, Inflow Depth = 2.83" for 25-Year event
Inflow = 0.59 cfs @ 12.09 hrs, Volume= 1,841 cf
Primary = 0.59 cfs @ 12.09 hrs, Volume= 1,841 cf, Atten= 0%, Lag= 0.0 min

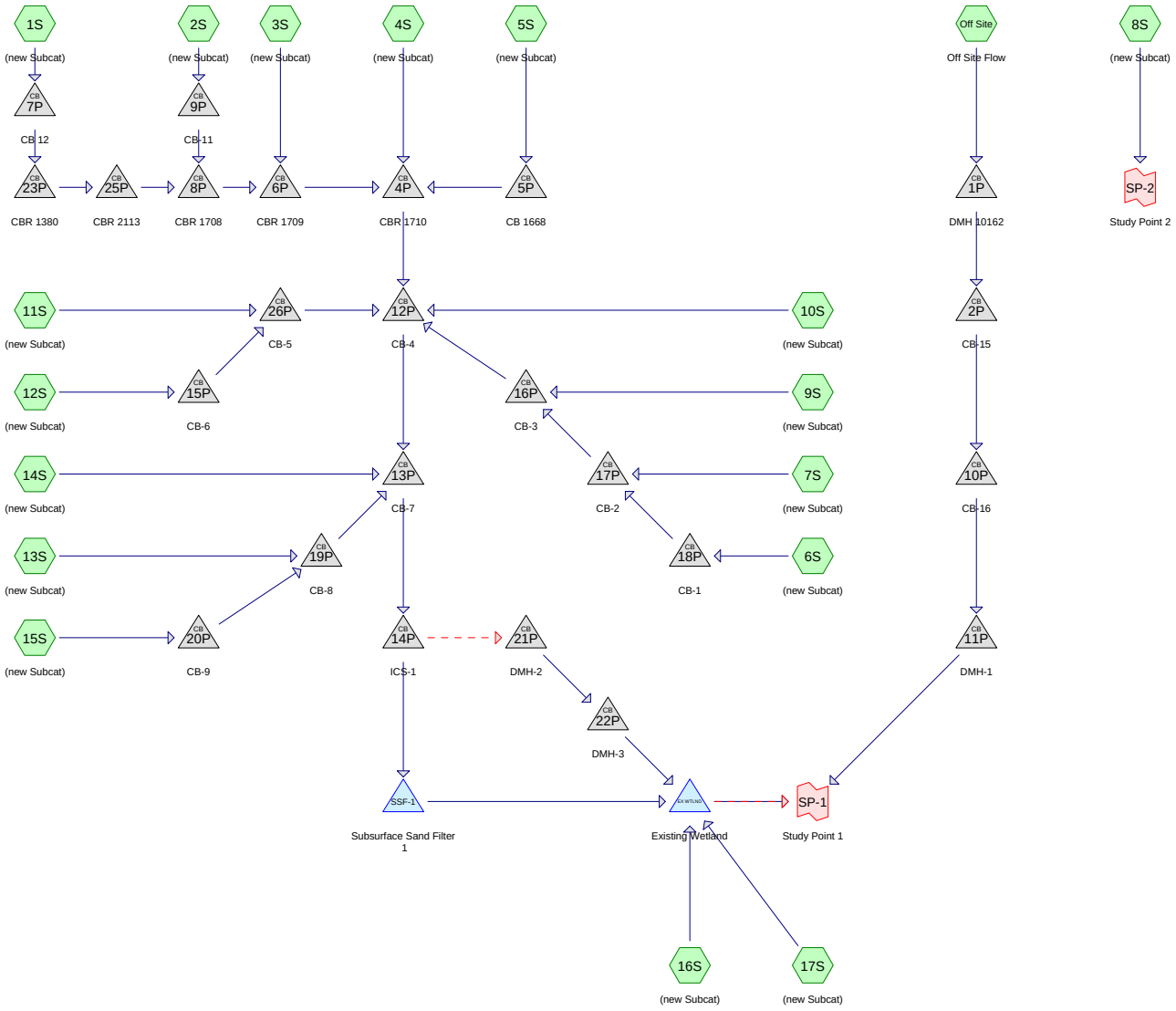
Primary outflow = Inflow, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs

Link SP-2: Study Point 2



Attachment C

Post-Development Stormwater Modeling



Subcat Reach Pond Link

Routing Diagram for 99607 Post
Prepared by Sebago Techincs, Printed 2/1/2018
HydroCAD® 10.00-18 s/n 01856 © 2016 HydroCAD Software Solutions LLC

Area Listing (all nodes)

Area (sq-ft)	CN	Description (subcatchment-numbers)
483,724	61	>75% Grass cover, Good, HSG B (1S, 2S, 3S, 4S, 5S, 6S, 7S, 8S, 9S, 10S, 16S, 17S, Off Site)
66,656	80	>75% Grass cover, Good, HSG D (6S, 7S, 10S, 11S, 13S, 14S, 15S, 16S)
277,920	98	Paved parking, HSG B (1S, 2S, 3S, 4S, 5S, 6S, 7S, 8S, 9S, 10S, 11S, 12S, 15S, 17S, Off Site)
98,586	98	Paved parking, HSG D (6S, 7S, 9S, 10S, 11S, 12S, 13S, 14S, 15S)
14,924	98	Roofs, HSG B (1S, 2S, 16S, 17S)
941,810	**78**	**TOTAL AREA**

Soil Listing (all nodes)

Area (sq-ft)	Soil Group	Subcatchment Numbers
0	HSG A	
776,568	HSG B	1S, 2S, 3S, 4S, 5S, 6S, 7S, 8S, 9S, 10S, 11S, 12S, 15S, 16S, 17S, Off Site
0	HSG C	
165,242	HSG D	6S, 7S, 9S, 10S, 11S, 12S, 13S, 14S, 15S, 16S
0	Other	
941,810		**TOTAL AREA**

Time span=0.00-48.00 hrs, dt=0.01 hrs, 4801 points x 2
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Dyn-Stor-Ind method - Pond routing by Dyn-Stor-Ind method

Subcatchment1S: (new Subcat) Runoff Area=28,835 sf 82.21% Impervious Runoff Depth=2.16"
Flow Length=132' Slope=0.0100 '/' Tc=6.0 min CN=91 Runoff=1.66 cfs 5,201 cf

Subcatchment2S: (new Subcat) Runoff Area=27,182 sf 88.34% Impervious Runoff Depth=2.45"
Flow Length=164' Slope=0.0180 '/' Tc=6.0 min CN=94 Runoff=1.72 cfs 5,543 cf

Subcatchment3S: (new Subcat) Runoff Area=15,213 sf 80.21% Impervious Runoff Depth=2.16"
Flow Length=161' Slope=0.0150 '/' Tc=6.0 min CN=91 Runoff=0.87 cfs 2,744 cf

Subcatchment4S: (new Subcat) Runoff Area=28,840 sf 96.87% Impervious Runoff Depth=2.76"
Flow Length=178' Slope=0.0160 '/' Tc=6.0 min CN=97 Runoff=1.96 cfs 6,627 cf

Subcatchment5S: (new Subcat) Runoff Area=49,425 sf 82.25% Impervious Runoff Depth=2.16"
Flow Length=281' Slope=0.0100 '/' Tc=6.0 min CN=91 Runoff=2.84 cfs 8,915 cf

Subcatchment6S: (new Subcat) Runoff Area=15,879 sf 76.74% Impervious Runoff Depth=2.08"
Flow Length=231' Tc=6.1 min CN=90 Runoff=0.88 cfs 2,747 cf

Subcatchment7S: (new Subcat) Runoff Area=7,643 sf 92.45% Impervious Runoff Depth=2.65"
Flow Length=180' Slope=0.0250 '/' Tc=6.0 min CN=96 Runoff=0.51 cfs 1,688 cf

Subcatchment8S: (new Subcat) Runoff Area=7,438 sf 31.78% Impervious Runoff Depth=0.92"
Flow Length=45' Slope=0.0800 '/' Tc=6.0 min CN=73 Runoff=0.17 cfs 570 cf

Subcatchment9S: (new Subcat) Runoff Area=12,873 sf 97.59% Impervious Runoff Depth=2.76"
Flow Length=215' Slope=0.0220 '/' Tc=6.0 min CN=97 Runoff=0.87 cfs 2,958 cf

Subcatchment10S: (new Subcat) Runoff Area=16,424 sf 95.28% Impervious Runoff Depth=2.76"
Flow Length=195' Tc=6.0 min CN=97 Runoff=1.12 cfs 3,774 cf

Subcatchment11S: (new Subcat) Runoff Area=14,521 sf 95.72% Impervious Runoff Depth=2.76"
Flow Length=230' Slope=0.0250 '/' Tc=6.0 min CN=97 Runoff=0.99 cfs 3,337 cf

Subcatchment12S: (new Subcat) Runoff Area=9,667 sf 100.00% Impervious Runoff Depth=2.87"
Flow Length=257' Slope=0.0240 '/' Tc=6.0 min CN=98 Runoff=0.67 cfs 2,310 cf

Subcatchment13S: (new Subcat) Runoff Area=12,123 sf 88.89% Impervious Runoff Depth=2.65"
Flow Length=274' Slope=0.0210 '/' Tc=6.0 min CN=96 Runoff=0.81 cfs 2,678 cf

Subcatchment14S: (new Subcat) Runoff Area=8,897 sf 92.62% Impervious Runoff Depth=2.76"
Flow Length=188' Slope=0.0250 '/' Tc=6.0 min CN=97 Runoff=0.60 cfs 2,044 cf

Subcatchment15S: (new Subcat) Runoff Area=30,398 sf 93.40% Impervious Runoff Depth=2.76"
Flow Length=331' Tc=6.0 min CN=97 Runoff=2.06 cfs 6,985 cf

Subcatchment16S: (new Subcat) Runoff Area=91,275 sf 0.98% Impervious Runoff Depth=0.97"
Flow Length=109' Tc=6.0 min CN=74 Runoff=2.25 cfs 7,395 cf

Subcatchment 17S: (new Subcat) Runoff Area=34,419 sf 73.63% Impervious Runoff Depth=1.91"
Flow Length=144' Slope=0.0200 '/' Tc=6.0 min CN=88 Runoff=1.76 cfs 5,471 cf

Subcatchment Off Site: Off Site Flow Runoff Area=530,758 sf 21.83% Impervious Runoff Depth=0.72"
Flow Length=722' Slope=0.0200 '/' Tc=12.2 min CN=69 Runoff=7.21 cfs 32,021 cf

Pond 1P: DMH 10162 Peak Elev=10.33' Inflow=7.21 cfs 32,021 cf
42.0" Round Culvert n=0.011 L=147.0' S=0.0044 '/' Outflow=7.21 cfs 32,021 cf

Pond 2P: CB-15 Peak Elev=9.66' Inflow=7.21 cfs 32,021 cf
36.0" Round Culvert n=0.013 L=147.0' S=0.0050 '/' Outflow=7.21 cfs 32,021 cf

Pond 4P: CBR 1710 Peak Elev=17.27' Inflow=9.04 cfs 29,030 cf
24.0" Round Culvert n=0.013 L=234.8' S=0.0052 '/' Outflow=9.04 cfs 29,030 cf

Pond 5P: CB 1668 Peak Elev=21.17' Inflow=2.84 cfs 8,915 cf
18.0" Round Culvert n=0.013 L=155.0' S=0.0134 '/' Outflow=2.84 cfs 8,915 cf

Pond 6P: CBR 1709 Peak Elev=17.52' Inflow=4.25 cfs 13,488 cf
18.0" Round Culvert n=0.013 L=48.0' S=0.0029 '/' Outflow=4.25 cfs 13,488 cf

Pond 7P: CB 12 Peak Elev=25.48' Inflow=1.66 cfs 5,201 cf
12.0" Round Culvert n=0.013 L=10.4' S=0.0106 '/' Outflow=1.66 cfs 5,201 cf

Pond 8P: CBR 1708 Peak Elev=17.82' Inflow=3.37 cfs 10,744 cf
18.0" Round Culvert n=0.013 L=93.0' S=0.0100 '/' Outflow=3.37 cfs 10,744 cf

Pond 9P: CB-11 Peak Elev=22.40' Inflow=1.72 cfs 5,543 cf
12.0" Round Culvert n=0.013 L=13.8' S=0.0051 '/' Outflow=1.72 cfs 5,543 cf

Pond 10P: CB-16 Peak Elev=8.77' Inflow=7.21 cfs 32,021 cf
36.0" Round Culvert n=0.013 L=296.0' S=0.0050 '/' Outflow=7.21 cfs 32,021 cf

Pond 11P: DMH-1 Peak Elev=7.19' Inflow=7.21 cfs 32,021 cf
36.0" Round Culvert n=0.013 L=199.0' S=0.0050 '/' Outflow=7.21 cfs 32,021 cf

Pond 12P: CB-4 Peak Elev=16.12' Inflow=14.07 cfs 45,845 cf
30.0" Round Culvert n=0.013 L=105.3' S=0.0239 '/' Outflow=14.07 cfs 45,845 cf

Pond 13P: CB-7 Peak Elev=13.87' Inflow=17.54 cfs 57,552 cf
36.0" Round Culvert n=0.013 L=1.3' S=0.0154 '/' Outflow=17.54 cfs 57,552 cf

Pond 14P: ICS-1 Peak Elev=13.18' Inflow=17.54 cfs 57,552 cf
Primary=17.54 cfs 52,420 cf Secondary=1.44 cfs 5,132 cf Outflow=17.54 cfs 57,552 cf

Pond 15P: CB-6 Peak Elev=16.47' Inflow=0.67 cfs 2,310 cf
12.0" Round Culvert n=0.013 L=59.5' S=0.0050 '/' Outflow=0.67 cfs 2,310 cf

Pond 16P: CB-3 Peak Elev=16.38' Inflow=2.26 cfs 7,394 cf
15.0" Round Culvert n=0.013 L=75.5' S=0.0101 '/' Outflow=2.26 cfs 7,394 cf

Pond 17P: CB-2 Peak Elev=16.97' Inflow=1.38 cfs 4,435 cf
12.0" Round Culvert n=0.013 L=77.3' S=0.0127 '/' Outflow=1.38 cfs 4,435 cf

Pond 18P: CB-1 Peak Elev=17.51' Inflow=0.88 cfs 2,747 cf
12.0" Round Culvert n=0.013 L=63.5' S=0.0101 '/' Outflow=0.88 cfs 2,747 cf

Pond 19P: CB-8 Peak Elev=13.93' Inflow=2.87 cfs 9,663 cf
24.0" Round Culvert n=0.013 L=66.0' S=0.0050 '/' Outflow=2.87 cfs 9,663 cf

Pond 20P: CB-9 Peak Elev=14.18' Inflow=2.06 cfs 6,985 cf
18.0" Round Culvert n=0.013 L=159.0' S=0.0051 '/' Outflow=2.06 cfs 6,985 cf

Pond 21P: DMH-2 Peak Elev=11.51' Inflow=1.44 cfs 5,132 cf
18.0" Round Culvert n=0.013 L=133.0' S=0.0200 '/' Outflow=1.44 cfs 5,132 cf

Pond 22P: DMH-3 Peak Elev=8.56' Inflow=1.44 cfs 5,132 cf
18.0" Round Culvert n=0.013 L=30.1' S=0.0316 '/' Outflow=1.44 cfs 5,132 cf

Pond 23P: CBR 1380 Peak Elev=24.46' Inflow=1.66 cfs 5,201 cf
12.0" Round Culvert n=0.013 L=87.8' S=0.0066 '/' Outflow=1.66 cfs 5,201 cf

Pond 25P: CBR 2113 Peak Elev=23.52' Inflow=1.66 cfs 5,201 cf
15.0" Round Culvert n=0.013 L=148.6' S=0.0090 '/' Outflow=1.66 cfs 5,201 cf

Pond 26P: CB-5 Peak Elev=16.42' Inflow=1.65 cfs 5,647 cf
12.0" Round Culvert n=0.013 L=42.0' S=0.0052 '/' Outflow=1.65 cfs 5,647 cf

Pond EX WTLND: Existing Wetland Peak Elev=6.00' Storage=0 cf Inflow=4.48 cfs 70,425 cf
Primary=4.48 cfs 70,425 cf Secondary=0.00 cfs 0 cf Outflow=4.48 cfs 70,425 cf

Pond SSF-1: Subsurface Sand Filter 1 Peak Elev=13.17' Storage=26,498 cf Inflow=17.54 cfs 52,420 cf
Outflow=1.93 cfs 52,427 cf

Link SP-1: Study Point 1 Inflow=10.55 cfs 102,446 cf
Primary=10.55 cfs 102,446 cf

Link SP-2: Study Point 2 Inflow=0.17 cfs 570 cf
Primary=0.17 cfs 570 cf

Total Runoff Area = 941,810 sf Runoff Volume = 103,009 cf Average Runoff Depth = 1.31"
58.44% Pervious = 550,380 sf 41.56% Impervious = 391,430 sf

Time span=0.00-48.00 hrs, dt=0.01 hrs, 4801 points x 2
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Dyn-Stor-Ind method - Pond routing by Dyn-Stor-Ind method

Subcatchment1S: (new Subcat) Runoff Area=28,835 sf 82.21% Impervious Runoff Depth=3.59"
Flow Length=132' Slope=0.0100 '/' Tc=6.0 min CN=91 Runoff=2.69 cfs 8,638 cf

Subcatchment2S: (new Subcat) Runoff Area=27,182 sf 88.34% Impervious Runoff Depth=3.91"
Flow Length=164' Slope=0.0180 '/' Tc=6.0 min CN=94 Runoff=2.68 cfs 8,865 cf

Subcatchment3S: (new Subcat) Runoff Area=15,213 sf 80.21% Impervious Runoff Depth=3.59"
Flow Length=161' Slope=0.0150 '/' Tc=6.0 min CN=91 Runoff=1.42 cfs 4,557 cf

Subcatchment4S: (new Subcat) Runoff Area=28,840 sf 96.87% Impervious Runoff Depth=4.25"
Flow Length=178' Slope=0.0160 '/' Tc=6.0 min CN=97 Runoff=2.95 cfs 10,211 cf

Subcatchment5S: (new Subcat) Runoff Area=49,425 sf 82.25% Impervious Runoff Depth=3.59"
Flow Length=281' Slope=0.0100 '/' Tc=6.0 min CN=91 Runoff=4.60 cfs 14,805 cf

Subcatchment6S: (new Subcat) Runoff Area=15,879 sf 76.74% Impervious Runoff Depth=3.49"
Flow Length=231' Tc=6.1 min CN=90 Runoff=1.44 cfs 4,620 cf

Subcatchment7S: (new Subcat) Runoff Area=7,643 sf 92.45% Impervious Runoff Depth=4.14"
Flow Length=180' Slope=0.0250 '/' Tc=6.0 min CN=96 Runoff=0.77 cfs 2,634 cf

Subcatchment8S: (new Subcat) Runoff Area=7,438 sf 31.78% Impervious Runoff Depth=1.97"
Flow Length=45' Slope=0.0800 '/' Tc=6.0 min CN=73 Runoff=0.39 cfs 1,222 cf

Subcatchment9S: (new Subcat) Runoff Area=12,873 sf 97.59% Impervious Runoff Depth=4.25"
Flow Length=215' Slope=0.0220 '/' Tc=6.0 min CN=97 Runoff=1.32 cfs 4,558 cf

Subcatchment10S: (new Subcat) Runoff Area=16,424 sf 95.28% Impervious Runoff Depth=4.25"
Flow Length=195' Tc=6.0 min CN=97 Runoff=1.68 cfs 5,815 cf

Subcatchment11S: (new Subcat) Runoff Area=14,521 sf 95.72% Impervious Runoff Depth=4.25"
Flow Length=230' Slope=0.0250 '/' Tc=6.0 min CN=97 Runoff=1.49 cfs 5,141 cf

Subcatchment12S: (new Subcat) Runoff Area=9,667 sf 100.00% Impervious Runoff Depth=4.36"
Flow Length=257' Slope=0.0240 '/' Tc=6.0 min CN=98 Runoff=1.00 cfs 3,515 cf

Subcatchment13S: (new Subcat) Runoff Area=12,123 sf 88.89% Impervious Runoff Depth=4.14"
Flow Length=274' Slope=0.0210 '/' Tc=6.0 min CN=96 Runoff=1.23 cfs 4,178 cf

Subcatchment14S: (new Subcat) Runoff Area=8,897 sf 92.62% Impervious Runoff Depth=4.25"
Flow Length=188' Slope=0.0250 '/' Tc=6.0 min CN=97 Runoff=0.91 cfs 3,150 cf

Subcatchment15S: (new Subcat) Runoff Area=30,398 sf 93.40% Impervious Runoff Depth=4.25"
Flow Length=331' Tc=6.0 min CN=97 Runoff=3.11 cfs 10,762 cf

Subcatchment16S: (new Subcat) Runoff Area=91,275 sf 0.98% Impervious Runoff Depth=2.05"
Flow Length=109' Tc=6.0 min CN=74 Runoff=4.99 cfs 15,589 cf

Subcatchment 17S: (new Subcat) Runoff Area=34,419 sf 73.63% Impervious Runoff Depth=3.29"
Flow Length=144' Slope=0.0200 '/' Tc=6.0 min CN=88 Runoff=2.99 cfs 9,438 cf

Subcatchment Off Site: Off Site Flow Runoff Area=530,758 sf 21.83% Impervious Runoff Depth=1.67"
Flow Length=722' Slope=0.0200 '/' Tc=12.2 min CN=69 Runoff=18.76 cfs 73,952 cf

Pond 1P: DMH 10162 Peak Elev=11.30' Inflow=18.76 cfs 73,952 cf
42.0" Round Culvert n=0.011 L=147.0' S=0.0044 '/' Outflow=18.76 cfs 73,952 cf

Pond 2P: CB-15 Peak Elev=10.65' Inflow=18.76 cfs 73,952 cf
36.0" Round Culvert n=0.013 L=147.0' S=0.0050 '/' Outflow=18.76 cfs 73,952 cf

Pond 4P: CBR 1710 Peak Elev=18.37' Inflow=14.33 cfs 47,076 cf
24.0" Round Culvert n=0.013 L=234.8' S=0.0052 '/' Outflow=14.33 cfs 47,076 cf

Pond 5P: CB 1668 Peak Elev=21.43' Inflow=4.60 cfs 14,805 cf
18.0" Round Culvert n=0.013 L=155.0' S=0.0134 '/' Outflow=4.60 cfs 14,805 cf

Pond 6P: CBR 1709 Peak Elev=18.98' Inflow=6.78 cfs 22,060 cf
18.0" Round Culvert n=0.013 L=48.0' S=0.0029 '/' Outflow=6.78 cfs 22,060 cf

Pond 7P: CB 12 Peak Elev=25.81' Inflow=2.69 cfs 8,638 cf
12.0" Round Culvert n=0.013 L=10.4' S=0.0106 '/' Outflow=2.69 cfs 8,638 cf

Pond 8P: CBR 1708 Peak Elev=19.45' Inflow=5.36 cfs 17,503 cf
18.0" Round Culvert n=0.013 L=93.0' S=0.0100 '/' Outflow=5.36 cfs 17,503 cf

Pond 9P: CB-11 Peak Elev=22.82' Inflow=2.68 cfs 8,865 cf
12.0" Round Culvert n=0.013 L=13.8' S=0.0051 '/' Outflow=2.68 cfs 8,865 cf

Pond 10P: CB-16 Peak Elev=9.66' Inflow=18.76 cfs 73,952 cf
36.0" Round Culvert n=0.013 L=296.0' S=0.0050 '/' Outflow=18.76 cfs 73,952 cf

Pond 11P: DMH-1 Peak Elev=8.03' Inflow=18.76 cfs 73,952 cf
36.0" Round Culvert n=0.013 L=199.0' S=0.0050 '/' Outflow=18.76 cfs 73,952 cf

Pond 12P: CB-4 Peak Elev=16.92' Inflow=22.03 cfs 73,359 cf
30.0" Round Culvert n=0.013 L=105.3' S=0.0239 '/' Outflow=22.03 cfs 73,359 cf

Pond 13P: CB-7 Peak Elev=14.54' Inflow=27.28 cfs 91,449 cf
36.0" Round Culvert n=0.013 L=1.3' S=0.0154 '/' Outflow=27.28 cfs 91,449 cf

Pond 14P: ICS-1 Peak Elev=13.62' Inflow=27.28 cfs 91,449 cf
Primary=21.66 cfs 72,013 cf Secondary=7.24 cfs 19,436 cf Outflow=27.28 cfs 91,449 cf

Pond 15P: CB-6 Peak Elev=17.72' Inflow=1.00 cfs 3,515 cf
12.0" Round Culvert n=0.013 L=59.5' S=0.0050 '/' Outflow=1.00 cfs 3,515 cf

Pond 16P: CB-3 Peak Elev=17.50' Inflow=3.53 cfs 11,812 cf
15.0" Round Culvert n=0.013 L=75.5' S=0.0101 '/' Outflow=3.53 cfs 11,812 cf

Pond 17P: CB-2 Peak Elev=18.04' Inflow=2.22 cfs 7,254 cf
12.0" Round Culvert n=0.013 L=77.3' S=0.0127 '/' Outflow=2.22 cfs 7,254 cf

Pond 18P: CB-1 Peak Elev=18.28' Inflow=1.44 cfs 4,620 cf
12.0" Round Culvert n=0.013 L=63.5' S=0.0101 '/' Outflow=1.44 cfs 4,620 cf

Pond 19P: CB-8 Peak Elev=14.68' Inflow=4.34 cfs 14,940 cf
24.0" Round Culvert n=0.013 L=66.0' S=0.0050 '/' Outflow=4.34 cfs 14,940 cf

Pond 20P: CB-9 Peak Elev=14.89' Inflow=3.11 cfs 10,762 cf
18.0" Round Culvert n=0.013 L=159.0' S=0.0051 '/' Outflow=3.11 cfs 10,762 cf

Pond 21P: DMH-2 Peak Elev=12.81' Inflow=7.24 cfs 19,436 cf
18.0" Round Culvert n=0.013 L=133.0' S=0.0200 '/' Outflow=7.24 cfs 19,436 cf

Pond 22P: DMH-3 Peak Elev=9.86' Inflow=7.24 cfs 19,436 cf
18.0" Round Culvert n=0.013 L=30.1' S=0.0316 '/' Outflow=7.24 cfs 19,436 cf

Pond 23P: CBR 1380 Peak Elev=24.78' Inflow=2.69 cfs 8,638 cf
12.0" Round Culvert n=0.013 L=87.8' S=0.0066 '/' Outflow=2.69 cfs 8,638 cf

Pond 25P: CBR 2113 Peak Elev=23.77' Inflow=2.69 cfs 8,638 cf
15.0" Round Culvert n=0.013 L=148.6' S=0.0090 '/' Outflow=2.69 cfs 8,638 cf

Pond 26P: CB-5 Peak Elev=17.62' Inflow=2.48 cfs 8,657 cf
12.0" Round Culvert n=0.013 L=42.0' S=0.0052 '/' Outflow=2.48 cfs 8,657 cf

Pond EX WTLND: Existing Wetland Peak Elev=7.01' Storage=1,675 cf Inflow=21.63 cfs 116,480 cf
Primary=20.67 cfs 116,479 cf Secondary=0.03 cfs 3 cf Outflow=20.70 cfs 116,481 cf

Pond SSF-1: Subsurface Sand Filter 1 Peak Elev=13.57' Storage=31,015 cf Inflow=21.66 cfs 72,013 cf
Outflow=8.78 cfs 72,017 cf

Link SP-1: Study Point 1 Inflow=39.32 cfs 190,434 cf
Primary=39.32 cfs 190,434 cf

Link SP-2: Study Point 2 Inflow=0.39 cfs 1,222 cf
Primary=0.39 cfs 1,222 cf

Total Runoff Area = 941,810 sf Runoff Volume = 191,651 cf Average Runoff Depth = 2.44"
58.44% Pervious = 550,380 sf 41.56% Impervious = 391,430 sf

Time span=0.00-48.00 hrs, dt=0.01 hrs, 4801 points x 2
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Dyn-Stor-Ind method - Pond routing by Dyn-Stor-Ind method

Subcatchment1S: (new Subcat) Runoff Area=28,835 sf 82.21% Impervious Runoff Depth=4.76"
Flow Length=132' Slope=0.0100 '/' Tc=6.0 min CN=91 Runoff=3.50 cfs 11,442 cf

Subcatchment2S: (new Subcat) Runoff Area=27,182 sf 88.34% Impervious Runoff Depth=5.10"
Flow Length=164' Slope=0.0180 '/' Tc=6.0 min CN=94 Runoff=3.43 cfs 11,549 cf

Subcatchment3S: (new Subcat) Runoff Area=15,213 sf 80.21% Impervious Runoff Depth=4.76"
Flow Length=161' Slope=0.0150 '/' Tc=6.0 min CN=91 Runoff=1.85 cfs 6,037 cf

Subcatchment4S: (new Subcat) Runoff Area=28,840 sf 96.87% Impervious Runoff Depth=5.44"
Flow Length=178' Slope=0.0160 '/' Tc=6.0 min CN=97 Runoff=3.74 cfs 13,085 cf

Subcatchment5S: (new Subcat) Runoff Area=49,425 sf 82.25% Impervious Runoff Depth=4.76"
Flow Length=281' Slope=0.0100 '/' Tc=6.0 min CN=91 Runoff=6.00 cfs 19,612 cf

Subcatchment6S: (new Subcat) Runoff Area=15,879 sf 76.74% Impervious Runoff Depth=4.65"
Flow Length=231' Tc=6.1 min CN=90 Runoff=1.89 cfs 6,155 cf

Subcatchment7S: (new Subcat) Runoff Area=7,643 sf 92.45% Impervious Runoff Depth=5.33"
Flow Length=180' Slope=0.0250 '/' Tc=6.0 min CN=96 Runoff=0.98 cfs 3,394 cf

Subcatchment8S: (new Subcat) Runoff Area=7,438 sf 31.78% Impervious Runoff Depth=2.92"
Flow Length=45' Slope=0.0800 '/' Tc=6.0 min CN=73 Runoff=0.58 cfs 1,812 cf

Subcatchment9S: (new Subcat) Runoff Area=12,873 sf 97.59% Impervious Runoff Depth=5.44"
Flow Length=215' Slope=0.0220 '/' Tc=6.0 min CN=97 Runoff=1.67 cfs 5,841 cf

Subcatchment10S: (new Subcat) Runoff Area=16,424 sf 95.28% Impervious Runoff Depth=5.44"
Flow Length=195' Tc=6.0 min CN=97 Runoff=2.13 cfs 7,452 cf

Subcatchment11S: (new Subcat) Runoff Area=14,521 sf 95.72% Impervious Runoff Depth=5.44"
Flow Length=230' Slope=0.0250 '/' Tc=6.0 min CN=97 Runoff=1.88 cfs 6,589 cf

Subcatchment12S: (new Subcat) Runoff Area=9,667 sf 100.00% Impervious Runoff Depth=5.56"
Flow Length=257' Slope=0.0240 '/' Tc=6.0 min CN=98 Runoff=1.26 cfs 4,481 cf

Subcatchment13S: (new Subcat) Runoff Area=12,123 sf 88.89% Impervious Runoff Depth=5.33"
Flow Length=274' Slope=0.0210 '/' Tc=6.0 min CN=96 Runoff=1.56 cfs 5,383 cf

Subcatchment14S: (new Subcat) Runoff Area=8,897 sf 92.62% Impervious Runoff Depth=5.44"
Flow Length=188' Slope=0.0250 '/' Tc=6.0 min CN=97 Runoff=1.15 cfs 4,037 cf

Subcatchment15S: (new Subcat) Runoff Area=30,398 sf 93.40% Impervious Runoff Depth=5.44"
Flow Length=331' Tc=6.0 min CN=97 Runoff=3.94 cfs 13,792 cf

Subcatchment16S: (new Subcat) Runoff Area=91,275 sf 0.98% Impervious Runoff Depth=3.02"
Flow Length=109' Tc=6.0 min CN=74 Runoff=7.41 cfs 22,951 cf

Subcatchment 17S: (new Subcat) Runoff Area=34,419 sf 73.63% Impervious Runoff Depth=4.43"
Flow Length=144' Slope=0.0200 '/' Tc=6.0 min CN=88 Runoff=3.98 cfs 12,716 cf

Subcatchment Off Site: Off Site Flow Runoff Area=530,758 sf 21.83% Impervious Runoff Depth=2.56"
Flow Length=722' Slope=0.0200 '/' Tc=12.2 min CN=69 Runoff=29.44 cfs 113,111 cf

Pond 1P: DMH 10162 Peak Elev=12.24' Inflow=29.44 cfs 113,111 cf
42.0" Round Culvert n=0.011 L=147.0' S=0.0044 '/' Outflow=29.44 cfs 113,111 cf

Pond 2P: CB-15 Peak Elev=11.63' Inflow=29.44 cfs 113,111 cf
36.0" Round Culvert n=0.013 L=147.0' S=0.0050 '/' Outflow=29.44 cfs 113,111 cf

Pond 4P: CBR 1710 Peak Elev=20.42' Inflow=18.53 cfs 61,725 cf
24.0" Round Culvert n=0.013 L=234.8' S=0.0052 '/' Outflow=18.53 cfs 61,725 cf

Pond 5P: CB 1668 Peak Elev=21.73' Inflow=6.00 cfs 19,612 cf
18.0" Round Culvert n=0.013 L=155.0' S=0.0134 '/' Outflow=6.00 cfs 19,612 cf

Pond 6P: CBR 1709 Peak Elev=21.48' Inflow=8.79 cfs 29,027 cf
18.0" Round Culvert n=0.013 L=48.0' S=0.0029 '/' Outflow=8.79 cfs 29,027 cf

Pond 7P: CB 12 Peak Elev=26.28' Inflow=3.50 cfs 11,442 cf
12.0" Round Culvert n=0.013 L=10.4' S=0.0106 '/' Outflow=3.50 cfs 11,442 cf

Pond 8P: CBR 1708 Peak Elev=22.20' Inflow=6.94 cfs 22,991 cf
18.0" Round Culvert n=0.013 L=93.0' S=0.0100 '/' Outflow=6.94 cfs 22,991 cf

Pond 9P: CB-11 Peak Elev=23.49' Inflow=3.43 cfs 11,549 cf
12.0" Round Culvert n=0.013 L=13.8' S=0.0051 '/' Outflow=3.43 cfs 11,549 cf

Pond 10P: CB-16 Peak Elev=10.43' Inflow=29.44 cfs 113,111 cf
36.0" Round Culvert n=0.013 L=296.0' S=0.0050 '/' Outflow=29.44 cfs 113,111 cf

Pond 11P: DMH-1 Peak Elev=8.73' Inflow=29.44 cfs 113,111 cf
36.0" Round Culvert n=0.013 L=199.0' S=0.0050 '/' Outflow=29.44 cfs 113,111 cf

Pond 12P: CB-4 Peak Elev=18.09' Inflow=28.35 cfs 95,635 cf
30.0" Round Culvert n=0.013 L=105.3' S=0.0239 '/' Outflow=28.35 cfs 95,635 cf

Pond 13P: CB-7 Peak Elev=15.81' Inflow=35.01 cfs 118,847 cf
36.0" Round Culvert n=0.013 L=1.3' S=0.0154 '/' Outflow=35.01 cfs 118,847 cf

Pond 14P: ICS-1 Peak Elev=14.29' Inflow=35.01 cfs 118,847 cf
Primary=27.29 cfs 90,438 cf Secondary=8.33 cfs 28,409 cf Outflow=35.01 cfs 118,847 cf

Pond 15P: CB-6 Peak Elev=19.34' Inflow=1.26 cfs 4,481 cf
12.0" Round Culvert n=0.013 L=59.5' S=0.0050 '/' Outflow=1.26 cfs 4,481 cf

Pond 16P: CB-3 Peak Elev=18.99' Inflow=4.55 cfs 15,389 cf
15.0" Round Culvert n=0.013 L=75.5' S=0.0101 '/' Outflow=4.55 cfs 15,389 cf

Pond 17P: CB-2 Peak Elev=19.93' Inflow=2.88 cfs 9,548 cf
12.0" Round Culvert n=0.013 L=77.3' S=0.0127 '/' Outflow=2.88 cfs 9,548 cf

Pond 18P: CB-1 Peak Elev=20.28' Inflow=1.89 cfs 6,155 cf
12.0" Round Culvert n=0.013 L=63.5' S=0.0101 '/' Outflow=1.89 cfs 6,155 cf

Pond 19P: CB-8 Peak Elev=16.01' Inflow=5.51 cfs 19,175 cf
24.0" Round Culvert n=0.013 L=66.0' S=0.0050 '/' Outflow=5.51 cfs 19,175 cf

Pond 20P: CB-9 Peak Elev=16.37' Inflow=3.94 cfs 13,792 cf
18.0" Round Culvert n=0.013 L=159.0' S=0.0051 '/' Outflow=3.94 cfs 13,792 cf

Pond 21P: DMH-2 Peak Elev=13.19' Inflow=8.33 cfs 28,409 cf
18.0" Round Culvert n=0.013 L=133.0' S=0.0200 '/' Outflow=8.33 cfs 28,409 cf

Pond 22P: DMH-3 Peak Elev=10.24' Inflow=8.33 cfs 28,409 cf
18.0" Round Culvert n=0.013 L=30.1' S=0.0316 '/' Outflow=8.33 cfs 28,409 cf

Pond 23P: CBR 1380 Peak Elev=25.42' Inflow=3.50 cfs 11,442 cf
12.0" Round Culvert n=0.013 L=87.8' S=0.0066 '/' Outflow=3.50 cfs 11,442 cf

Pond 25P: CBR 2113 Peak Elev=23.98' Inflow=3.50 cfs 11,442 cf
15.0" Round Culvert n=0.013 L=148.6' S=0.0090 '/' Outflow=3.50 cfs 11,442 cf

Pond 26P: CB-5 Peak Elev=19.15' Inflow=3.15 cfs 11,069 cf
12.0" Round Culvert n=0.013 L=42.0' S=0.0052 '/' Outflow=3.15 cfs 11,069 cf

Pond EX WTLND: Existing Wetland Peak Elev=7.31' Storage=2,487 cf Inflow=31.43 cfs 154,517 cf
Primary=25.46 cfs 150,582 cf Secondary=5.60 cfs 3,935 cf Outflow=31.05 cfs 154,517 cf

Pond SSF-1: Subsurface Sand Filter 1 Peak Elev=14.17' Storage=36,291 cf Inflow=27.29 cfs 90,438 cf
Outflow=13.47 cfs 90,441 cf

Link SP-1: Study Point 1 Inflow=59.99 cfs 267,628 cf
Primary=59.99 cfs 267,628 cf

Link SP-2: Study Point 2 Inflow=0.58 cfs 1,812 cf
Primary=0.58 cfs 1,812 cf

Total Runoff Area = 941,810 sf Runoff Volume = 269,438 cf Average Runoff Depth = 3.43"
58.44% Pervious = 550,380 sf 41.56% Impervious = 391,430 sf

Summary for Subcatchment 1S: (new Subcat)

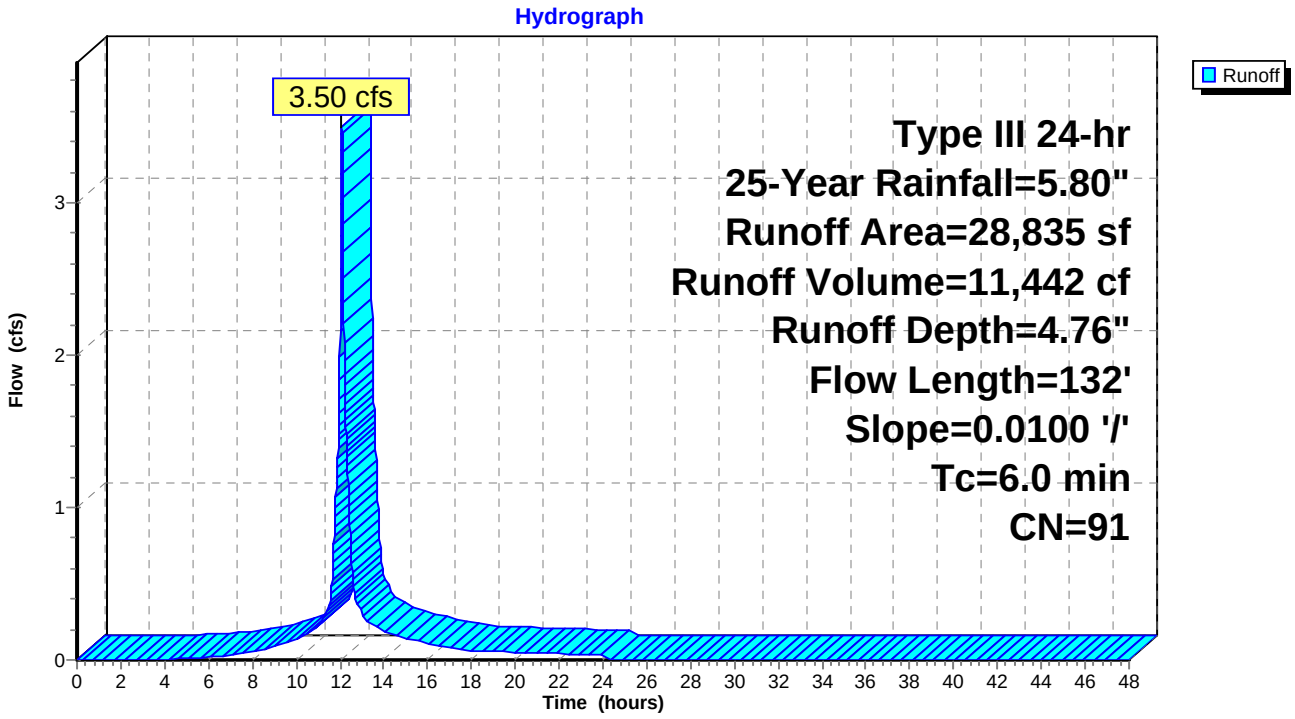
Runoff = 3.50 cfs @ 12.08 hrs, Volume= 11,442 cf, Depth= 4.76"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Type III 24-hr 25-Year Rainfall=5.80"

Area (sf)	CN	Description
4,290	98	Roofs, HSG B
19,414	98	Paved parking, HSG B
5,131	61	>75% Grass cover, Good, HSG B
28,835	91	Weighted Average
5,131		17.79% Pervious Area
23,704		82.21% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.1	58	0.0100	0.92		**Sheet Flow,** Smooth surfaces n= 0.011 P2= 3.10"
0.6	74	0.0100	2.03		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
4.3					**Direct Entry,**
6.0	132	Total			

Subcatchment 1S: (new Subcat)



Summary for Subcatchment 2S: (new Subcat)

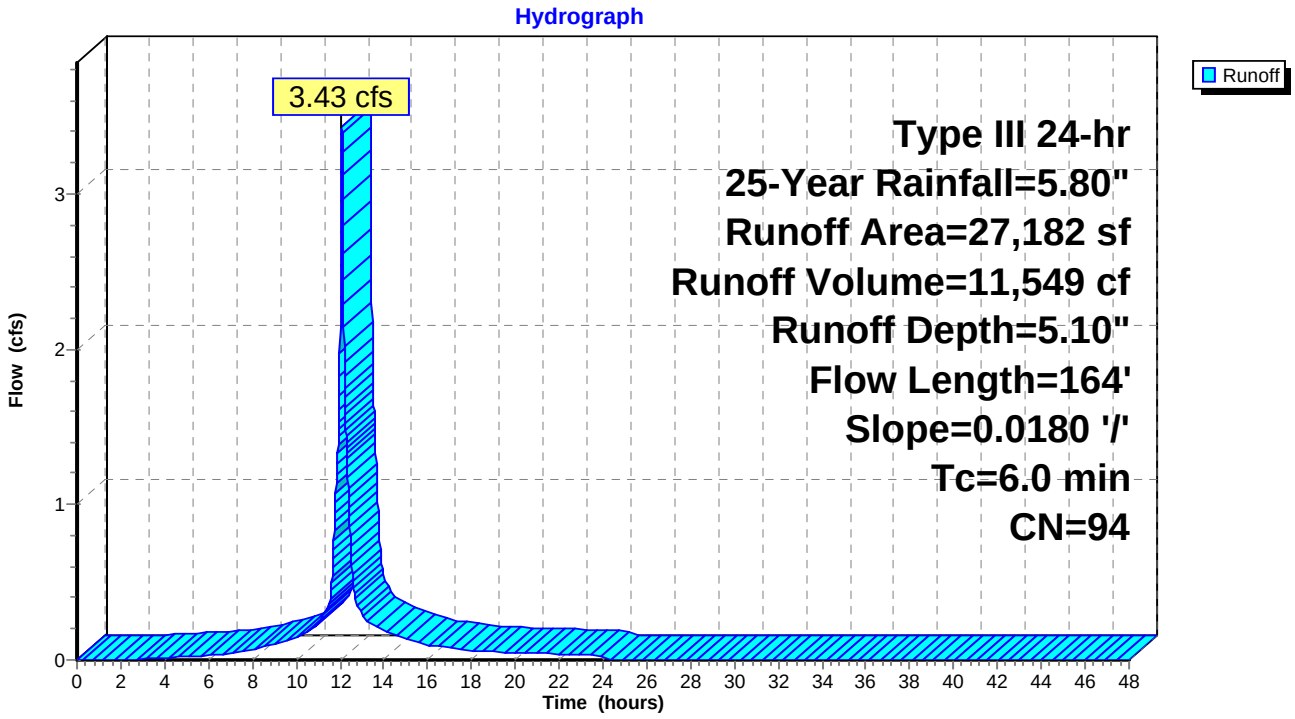
Runoff = 3.43 cfs @ 12.08 hrs, Volume= 11,549 cf, Depth= 5.10"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Type III 24-hr 25-Year Rainfall=5.80"

Area (sf)	CN	Description
1,939	98	Roofs, HSG B
22,074	98	Paved parking, HSG B
3,169	61	>75% Grass cover, Good, HSG B
27,182	94	Weighted Average
3,169		11.66% Pervious Area
24,013		88.34% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.3	100	0.0180	1.30		**Sheet Flow,** Smooth surfaces n= 0.011 P2= 3.10"
0.4	64	0.0180	2.72		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
4.3					**Direct Entry,**
6.0	164	Total			

Subcatchment 2S: (new Subcat)



Summary for Subcatchment 3S: (new Subcat)

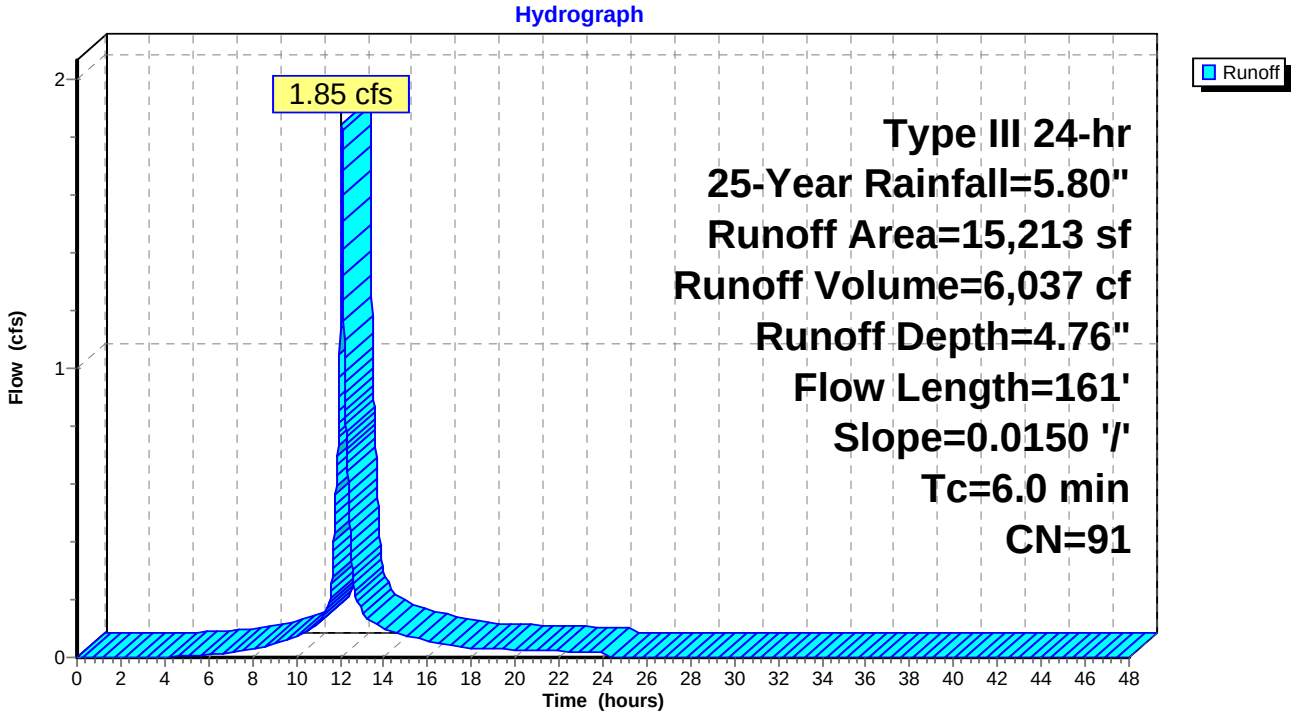
Runoff = 1.85 cfs @ 12.08 hrs, Volume= 6,037 cf, Depth= 4.76"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Type III 24-hr 25-Year Rainfall=5.80"

Area (sf)	CN	Description
12,202	98	Paved parking, HSG B
3,011	61	>75% Grass cover, Good, HSG B
15,213	91	Weighted Average
3,011		19.79% Pervious Area
12,202		80.21% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
4.6	33	0.0150	0.12		**Sheet Flow,** Grass: Short n= 0.150 P2= 3.10"
0.9	128	0.0150	2.49		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
0.5					**Direct Entry,**
6.0	161	Total			

Subcatchment 3S: (new Subcat)



Summary for Subcatchment 4S: (new Subcat)

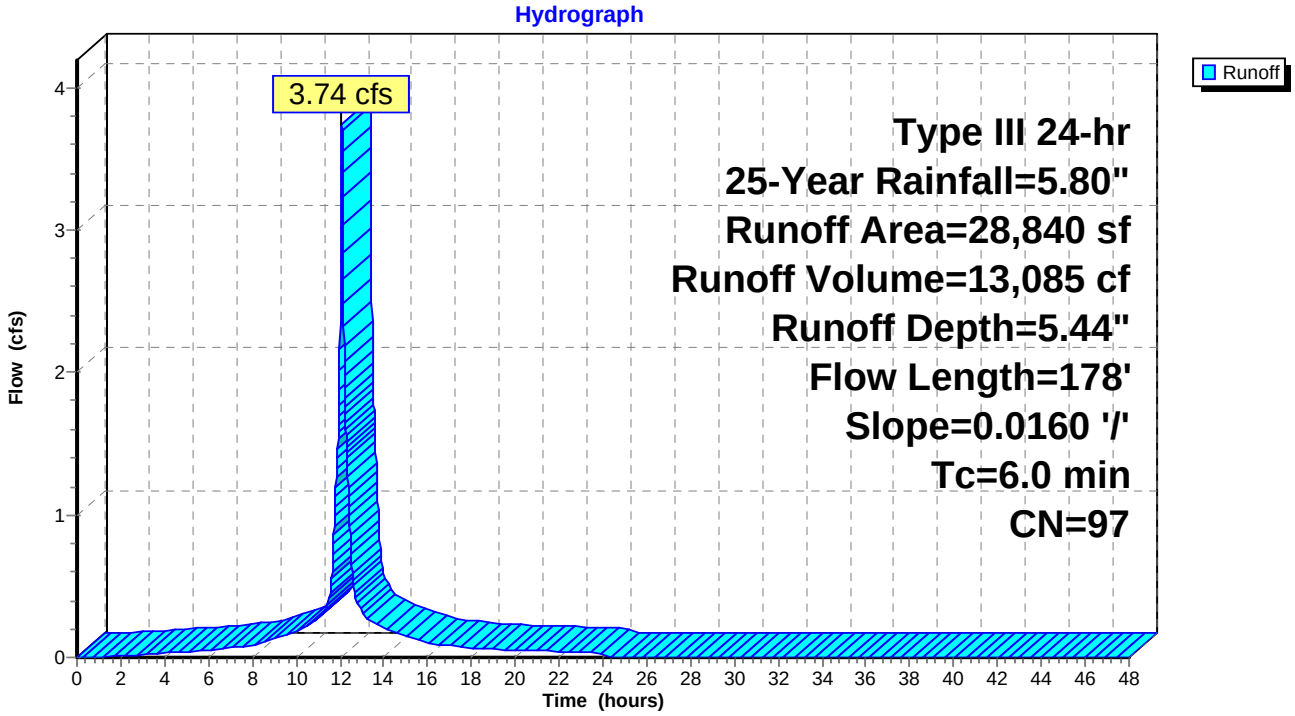
Runoff = 3.74 cfs @ 12.08 hrs, Volume= 13,085 cf, Depth= 5.44"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Type III 24-hr 25-Year Rainfall=5.80"

Area (sf)	CN	Description
27,938	98	Paved parking, HSG B
902	61	>75% Grass cover, Good, HSG B
28,840	97	Weighted Average
902		3.13% Pervious Area
27,938		96.87% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.3	100	0.0160	1.24		**Sheet Flow,** Smooth surfaces n= 0.011 P2= 3.10"
0.5	78	0.0160	2.57		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
4.2					**Direct Entry,**
6.0	178	Total			

Subcatchment 4S: (new Subcat)



Summary for Subcatchment 5S: (new Subcat)

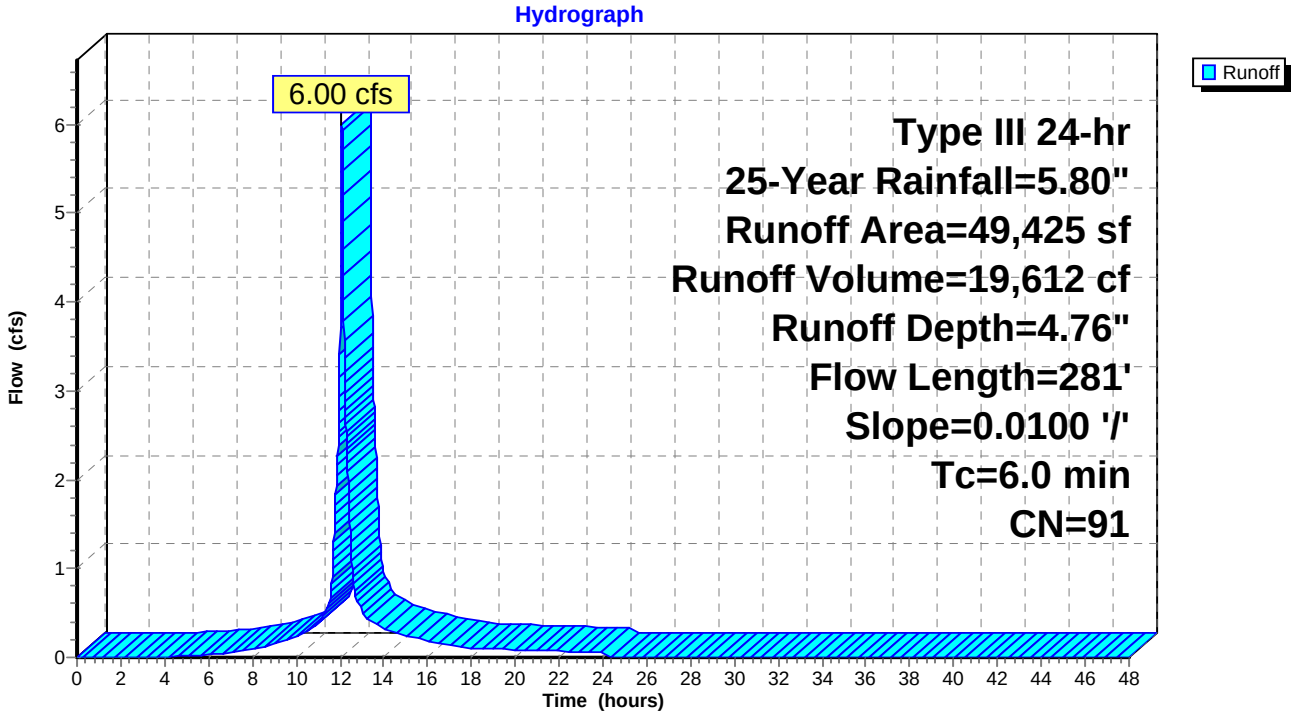
Runoff = 6.00 cfs @ 12.08 hrs, Volume= 19,612 cf, Depth= 4.76"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Type III 24-hr 25-Year Rainfall=5.80"

Area (sf)	CN	Description
40,650	98	Paved parking, HSG B
8,775	61	>75% Grass cover, Good, HSG B
49,425	91	Weighted Average
8,775		17.75% Pervious Area
40,650		82.25% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.6	100	0.0100	1.03		**Sheet Flow,** Smooth surfaces n= 0.011 P2= 3.10"
1.5	181	0.0100	2.03		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
2.9					**Direct Entry,**
6.0	281	Total			

Subcatchment 5S: (new Subcat)



Summary for Subcatchment 6S: (new Subcat)

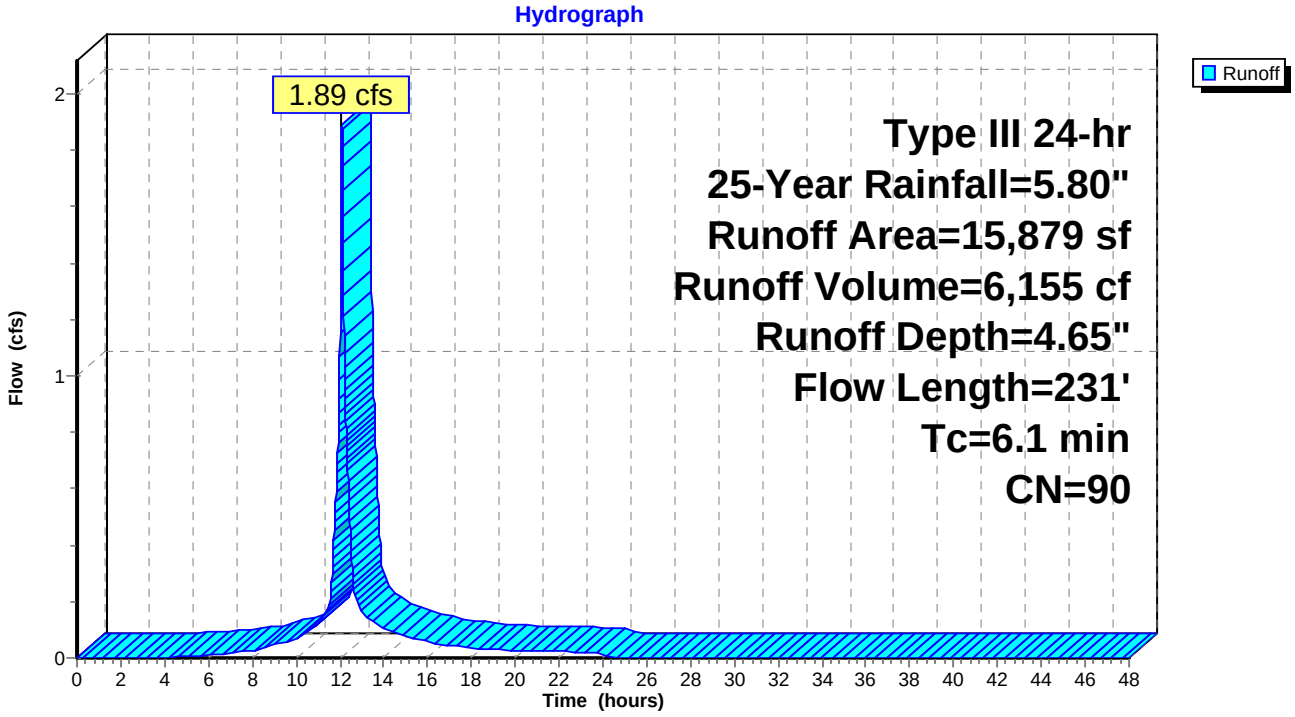
Runoff = 1.89 cfs @ 12.09 hrs, Volume= 6,155 cf, Depth= 4.65"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Type III 24-hr 25-Year Rainfall=5.80"

Area (sf)	CN	Description
8,219	98	Paved parking, HSG B
3,967	98	Paved parking, HSG D
3,328	61	>75% Grass cover, Good, HSG B
365	80	>75% Grass cover, Good, HSG D
15,879	90	Weighted Average
3,693		23.26% Pervious Area
12,186		76.74% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.2	66	0.0450	0.21		**Sheet Flow,** Grass: Short n= 0.150 P2= 3.10"
0.9	165	0.0250	3.21		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
6.1	231	Total			

Subcatchment 6S: (new Subcat)



Summary for Subcatchment 7S: (new Subcat)

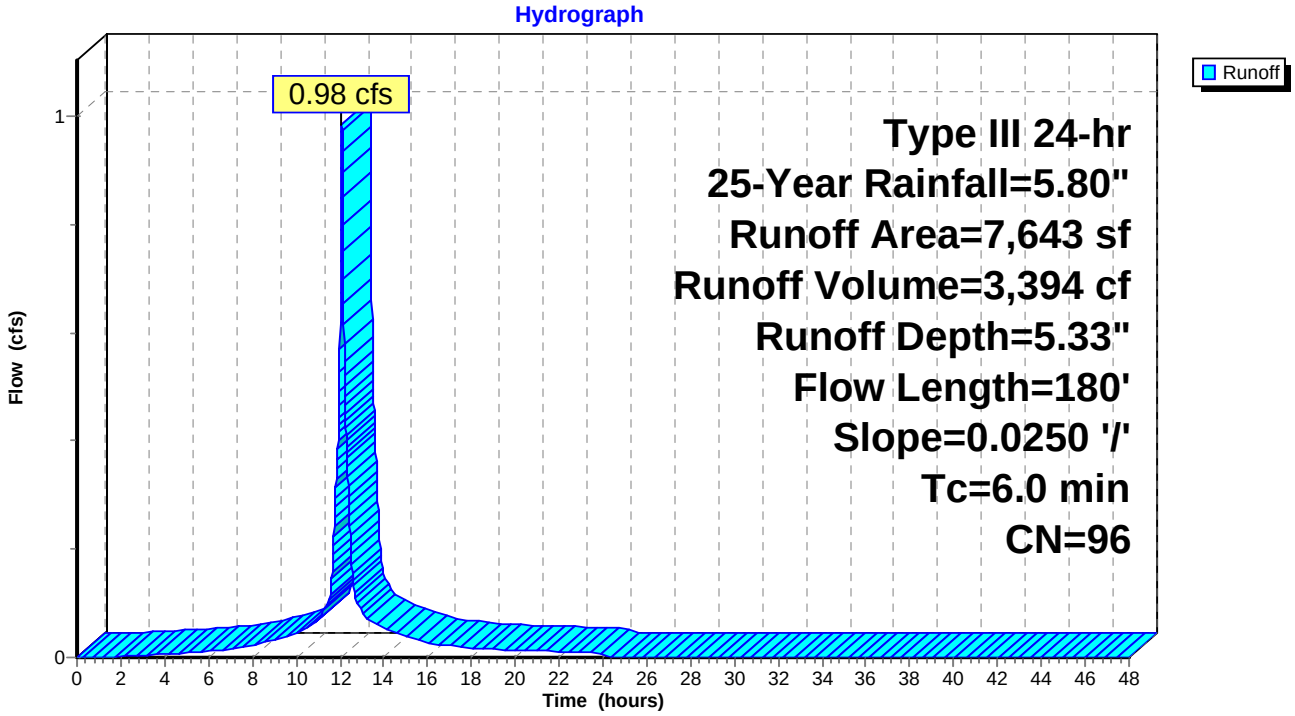
Runoff = 0.98 cfs @ 12.08 hrs, Volume= 3,394 cf, Depth= 5.33"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Type III 24-hr 25-Year Rainfall=5.80"

Area (sf)	CN	Description
2,645	98	Paved parking, HSG B
4,421	98	Paved parking, HSG D
183	61	>75% Grass cover, Good, HSG B
394	80	>75% Grass cover, Good, HSG D
7,643	96	Weighted Average
577		7.55% Pervious Area
7,066		92.45% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.1	100	0.0250	1.48		**Sheet Flow,** Smooth surfaces n= 0.011 P2= 3.10"
0.4	80	0.0250	3.21		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
4.5					**Direct Entry,**
6.0	180	Total			

Subcatchment 7S: (new Subcat)



Summary for Subcatchment 8S: (new Subcat)

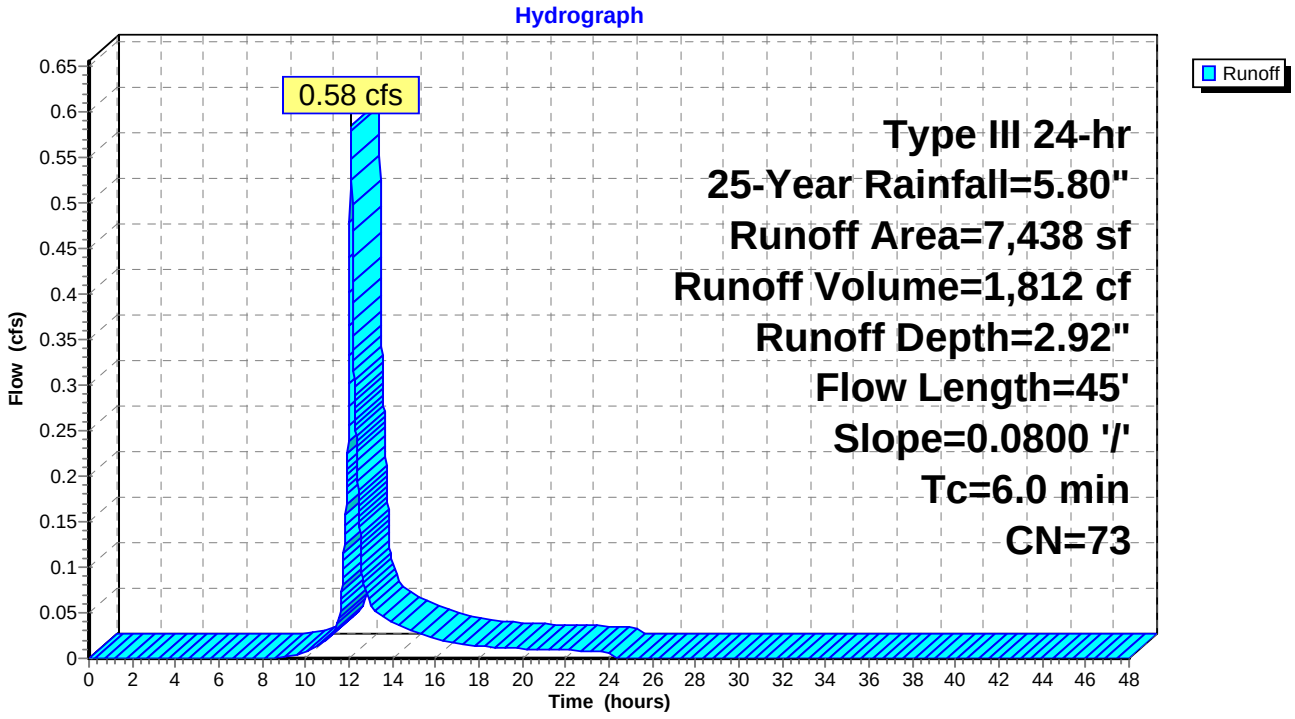
Runoff = 0.58 cfs @ 12.09 hrs, Volume= 1,812 cf, Depth= 2.92"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Type III 24-hr 25-Year Rainfall=5.80"

Area (sf)	CN	Description
2,364	98	Paved parking, HSG B
5,074	61	>75% Grass cover, Good, HSG B
7,438	73	Weighted Average
5,074		68.22% Pervious Area
2,364		31.78% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
3.0	45	0.0800	0.25		**Sheet Flow,** Grass: Short n= 0.150 P2= 3.10"
3.0					**Direct Entry,**
6.0	45	Total			

Subcatchment 8S: (new Subcat)



Summary for Subcatchment 9S: (new Subcat)

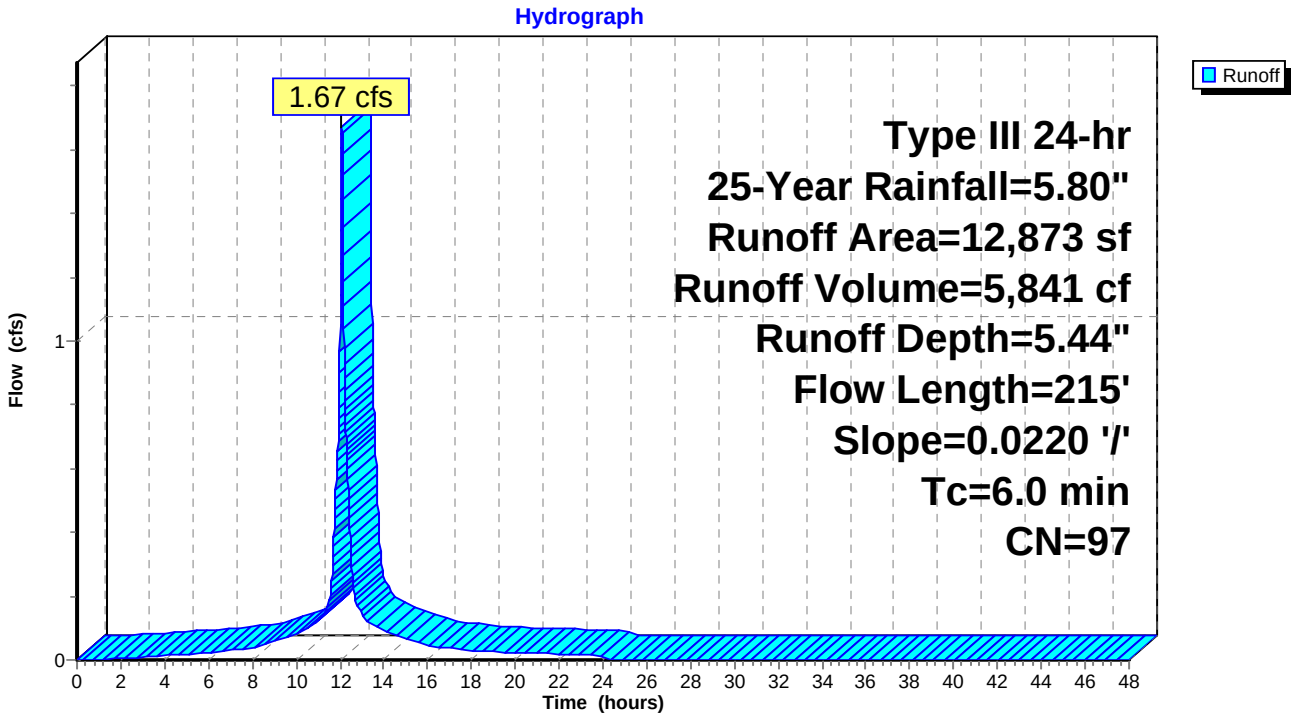
Runoff = 1.67 cfs @ 12.08 hrs, Volume= 5,841 cf, Depth= 5.44"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Type III 24-hr 25-Year Rainfall=5.80"

Area (sf)	CN	Description
2,193	98	Paved parking, HSG B
10,370	98	Paved parking, HSG D
310	61	>75% Grass cover, Good, HSG B
12,873	97	Weighted Average
310		2.41% Pervious Area
12,563		97.59% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.2	100	0.0220	1.41		**Sheet Flow,** Smooth surfaces n= 0.011 P2= 3.10"
0.6	115	0.0220	3.01		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
4.2					**Direct Entry,**
6.0	215	Total			

Subcatchment 9S: (new Subcat)



Summary for Subcatchment 10S: (new Subcat)

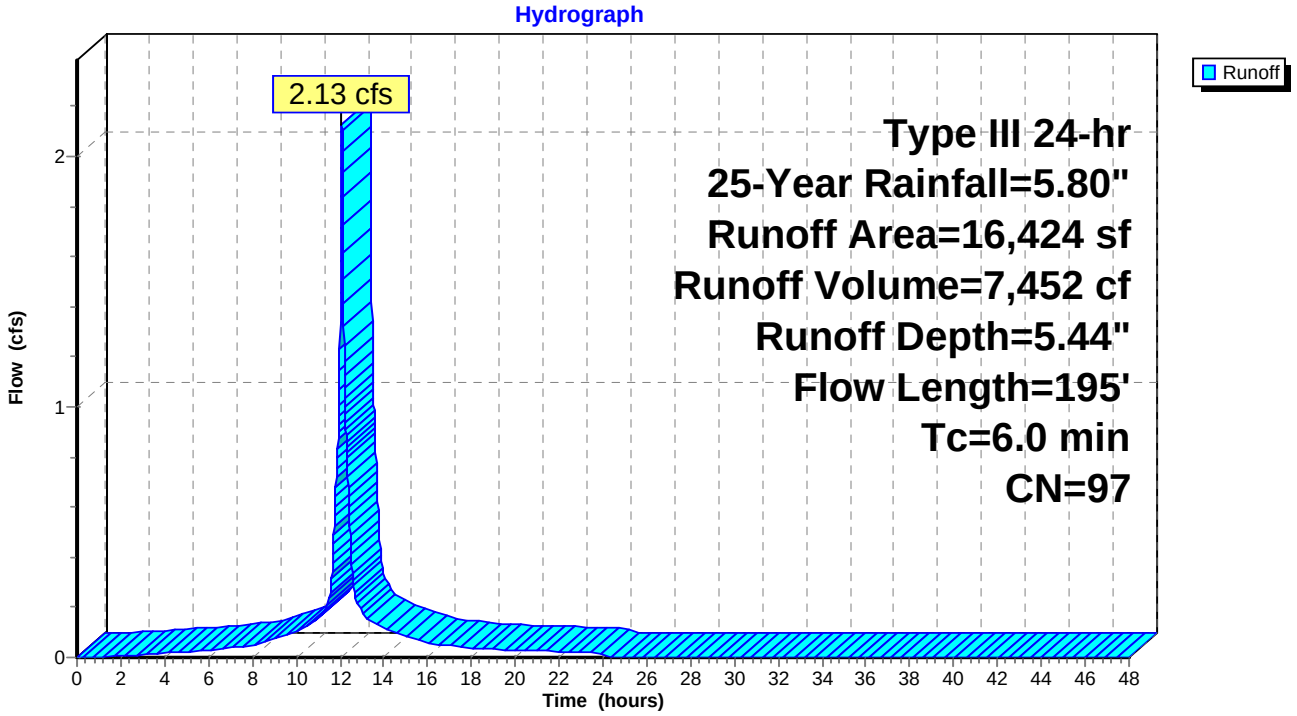
Runoff = 2.13 cfs @ 12.08 hrs, Volume= 7,452 cf, Depth= 5.44"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Type III 24-hr 25-Year Rainfall=5.80"

Area (sf)	CN	Description
1,869	98	Paved parking, HSG B
13,780	98	Paved parking, HSG D
465	61	>75% Grass cover, Good, HSG B
310	80	>75% Grass cover, Good, HSG D
16,424	97	Weighted Average
775		4.72% Pervious Area
15,649		95.28% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.2	100	0.0226	1.42		**Sheet Flow,** Smooth surfaces n= 0.011 P2= 3.10"
0.5	95	0.0260	3.27		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
4.3					**Direct Entry,**
6.0	195	Total			

Subcatchment 10S: (new Subcat)



Summary for Subcatchment 11S: (new Subcat)

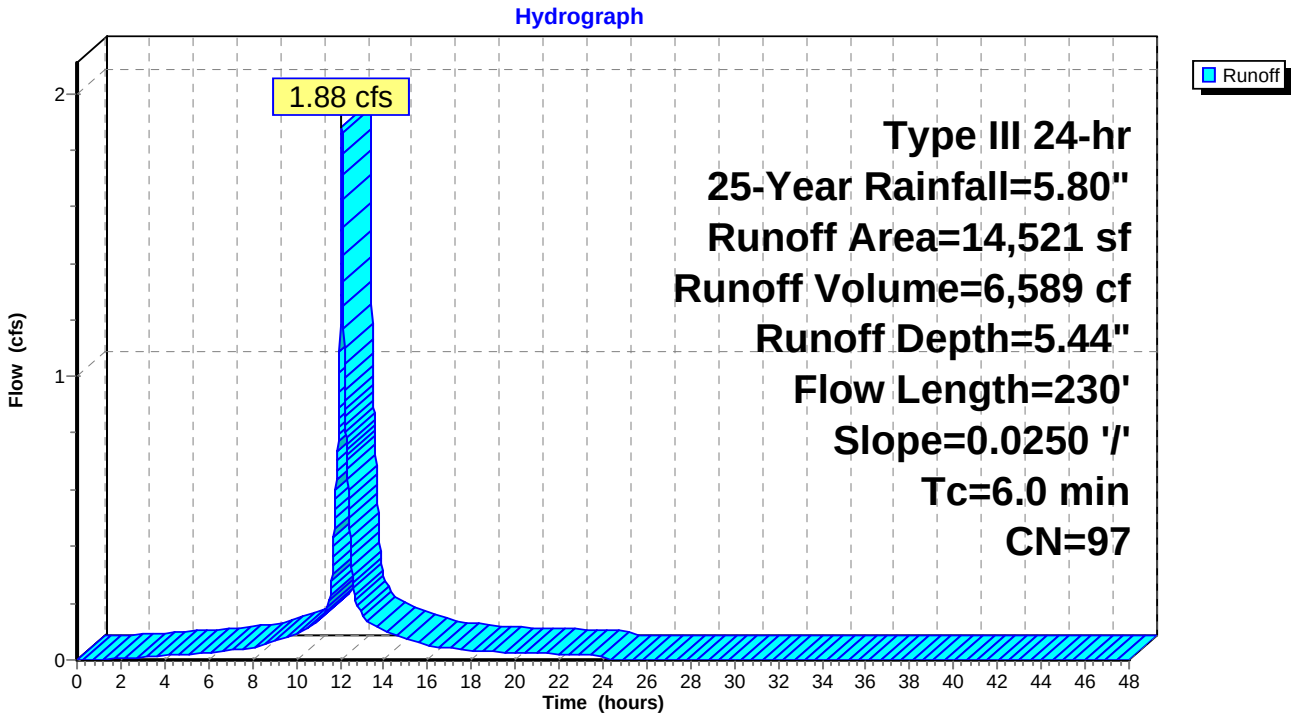
Runoff = 1.88 cfs @ 12.08 hrs, Volume= 6,589 cf, Depth= 5.44"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Type III 24-hr 25-Year Rainfall=5.80"

Area (sf)	CN	Description
1,962	98	Paved parking, HSG B
11,938	98	Paved parking, HSG D
621	80	>75% Grass cover, Good, HSG D
14,521	97	Weighted Average
621		4.28% Pervious Area
13,900		95.72% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.1	100	0.0250	1.48		**Sheet Flow,** Smooth surfaces n= 0.011 P2= 3.10"
0.7	130	0.0250	3.21		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
4.2					**Direct Entry,**
6.0	230	Total			

Subcatchment 11S: (new Subcat)



Summary for Subcatchment 12S: (new Subcat)

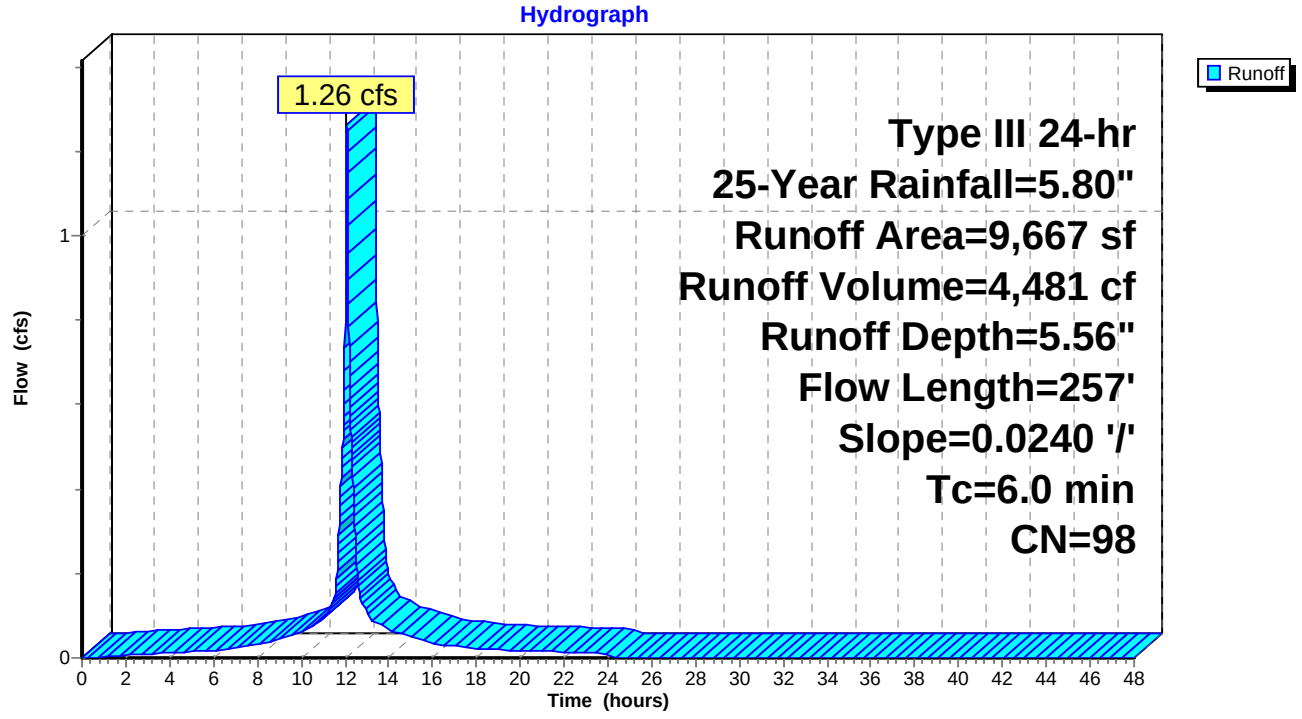
Runoff = 1.26 cfs @ 12.08 hrs, Volume= 4,481 cf, Depth= 5.56"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Type III 24-hr 25-Year Rainfall=5.80"

Area (sf)	CN	Description
2,861	98	Paved parking, HSG B
6,806	98	Paved parking, HSG D
9,667	98	Weighted Average
9,667		100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.1	100	0.0240	1.46		**Sheet Flow,** Smooth surfaces n= 0.011 P2= 3.10"
0.8	157	0.0240	3.14		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
4.1					**Direct Entry,**
6.0	257	Total			

Subcatchment 12S: (new Subcat)



Summary for Subcatchment 13S: (new Subcat)

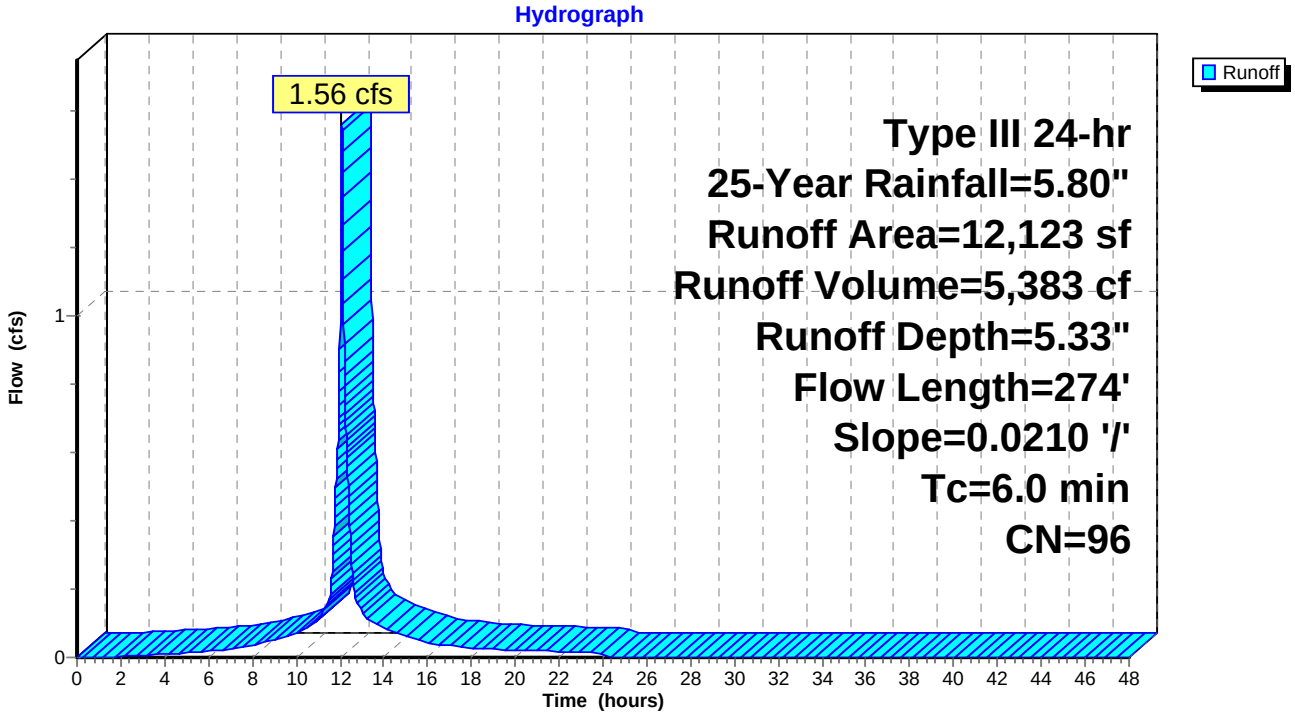
Runoff = 1.56 cfs @ 12.08 hrs, Volume= 5,383 cf, Depth= 5.33"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Type III 24-hr 25-Year Rainfall=5.80"

Area (sf)	CN	Description
10,776	98	Paved parking, HSG D
1,347	80	>75% Grass cover, Good, HSG D
12,123	96	Weighted Average
1,347		11.11% Pervious Area
10,776		88.89% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.2	100	0.0210	1.38		**Sheet Flow,** Smooth surfaces n= 0.011 P2= 3.10"
1.0	174	0.0210	2.94		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
3.8					**Direct Entry,**
6.0	274	Total			

Subcatchment 13S: (new Subcat)



Summary for Subcatchment 14S: (new Subcat)

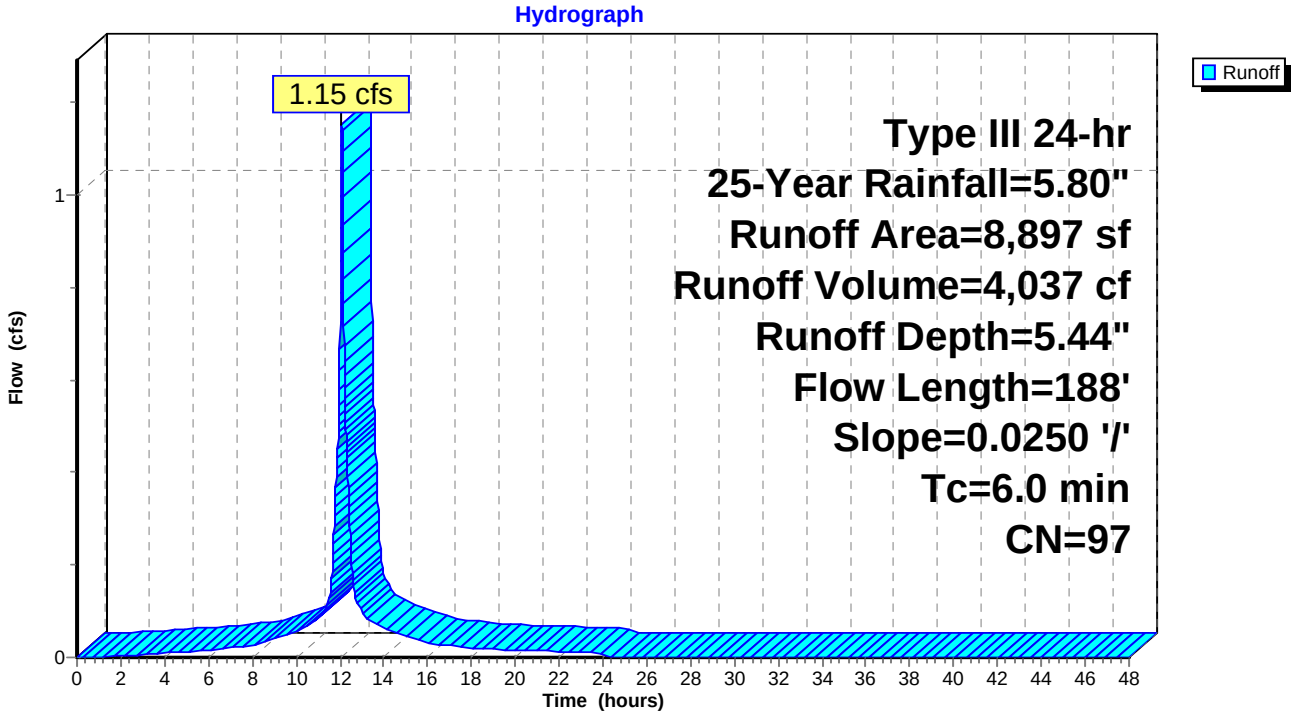
Runoff = 1.15 cfs @ 12.08 hrs, Volume= 4,037 cf, Depth= 5.44"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Type III 24-hr 25-Year Rainfall=5.80"

Area (sf)	CN	Description
8,240	98	Paved parking, HSG D
657	80	>75% Grass cover, Good, HSG D
8,897	97	Weighted Average
657		7.38% Pervious Area
8,240		92.62% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.1	100	0.0250	1.48		**Sheet Flow,** Smooth surfaces n= 0.011 P2= 3.10"
0.5	88	0.0250	3.21		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
4.4					**Direct Entry,**
6.0	188	Total			

Subcatchment 14S: (new Subcat)



Summary for Subcatchment 15S: (new Subcat)

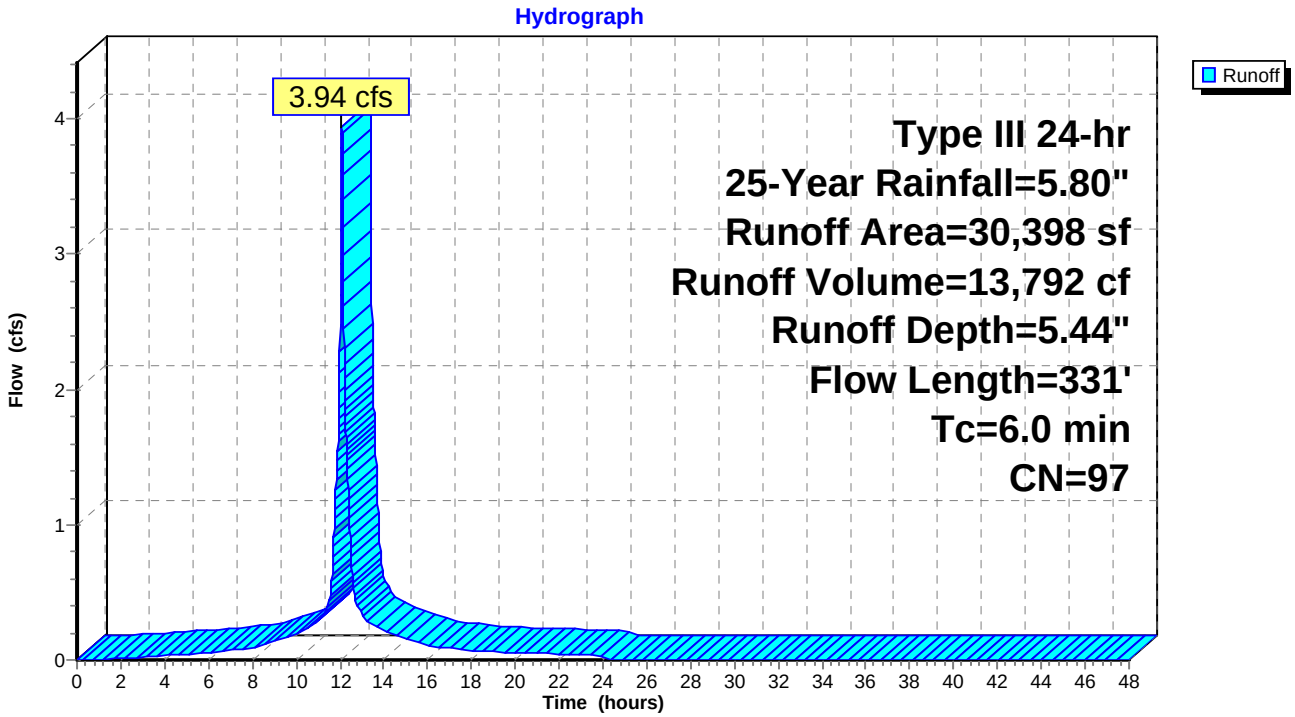
Runoff = 3.94 cfs @ 12.08 hrs, Volume= 13,792 cf, Depth= 5.44"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Type III 24-hr 25-Year Rainfall=5.80"

Area (sf)	CN	Description
104	98	Paved parking, HSG B
28,288	98	Paved parking, HSG D
2,006	80	>75% Grass cover, Good, HSG D
30,398	97	Weighted Average
2,006		6.60% Pervious Area
28,392		93.40% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.2	100	0.0225	1.42		**Sheet Flow,** Smooth surfaces n= 0.011 P2= 3.10"
1.7	231	0.0130	2.31		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
3.1					**Direct Entry,**
6.0	331	Total			

Subcatchment 15S: (new Subcat)



Summary for Subcatchment 16S: (new Subcat)

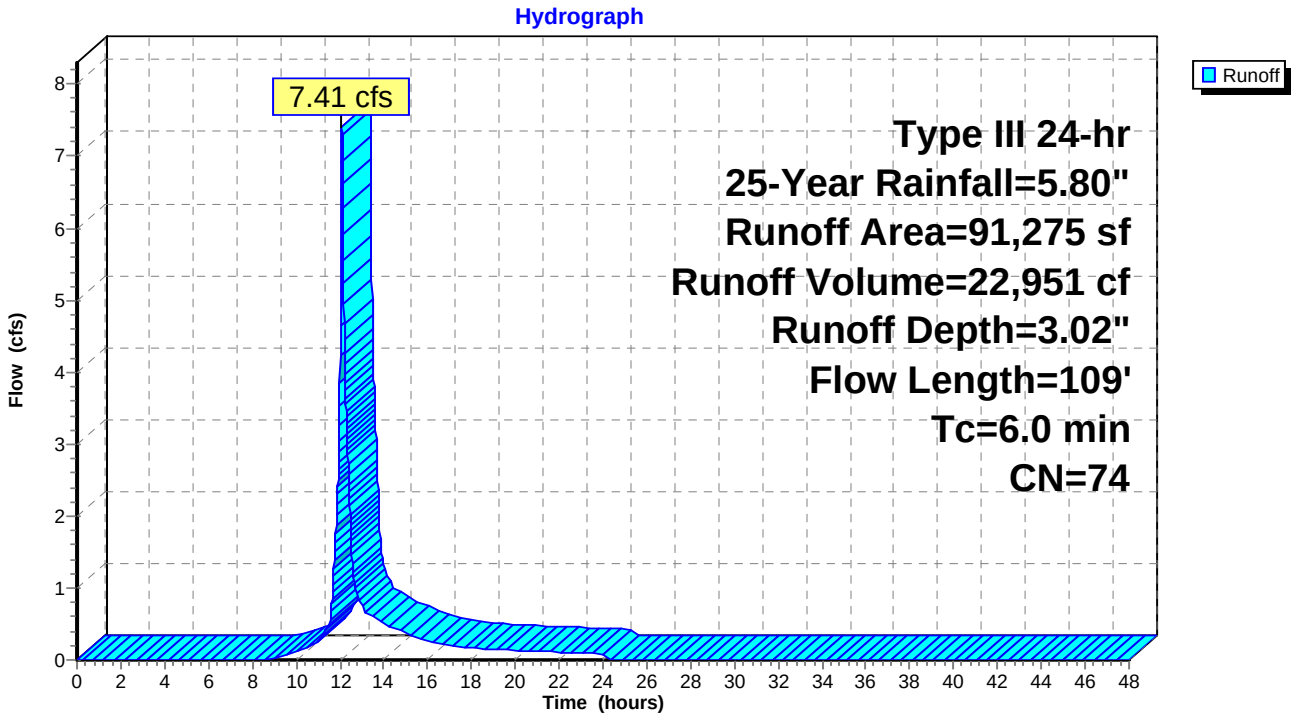
Runoff = 7.41 cfs @ 12.09 hrs, Volume= 22,951 cf, Depth= 3.02"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Type III 24-hr 25-Year Rainfall=5.80"

Area (sf)	CN	Description
892	98	Roofs, HSG B
29,427	61	>75% Grass cover, Good, HSG B
60,956	80	>75% Grass cover, Good, HSG D
91,275	74	Weighted Average
90,383		99.02% Pervious Area
892		0.98% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.3	71	0.0490	0.22		**Sheet Flow,** Grass: Short n= 0.150 P2= 3.10"
0.1	38	0.4300	4.59		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
0.6					**Direct Entry,**
6.0	109	Total			

Subcatchment 16S: (new Subcat)



Summary for Subcatchment 17S: (new Subcat)

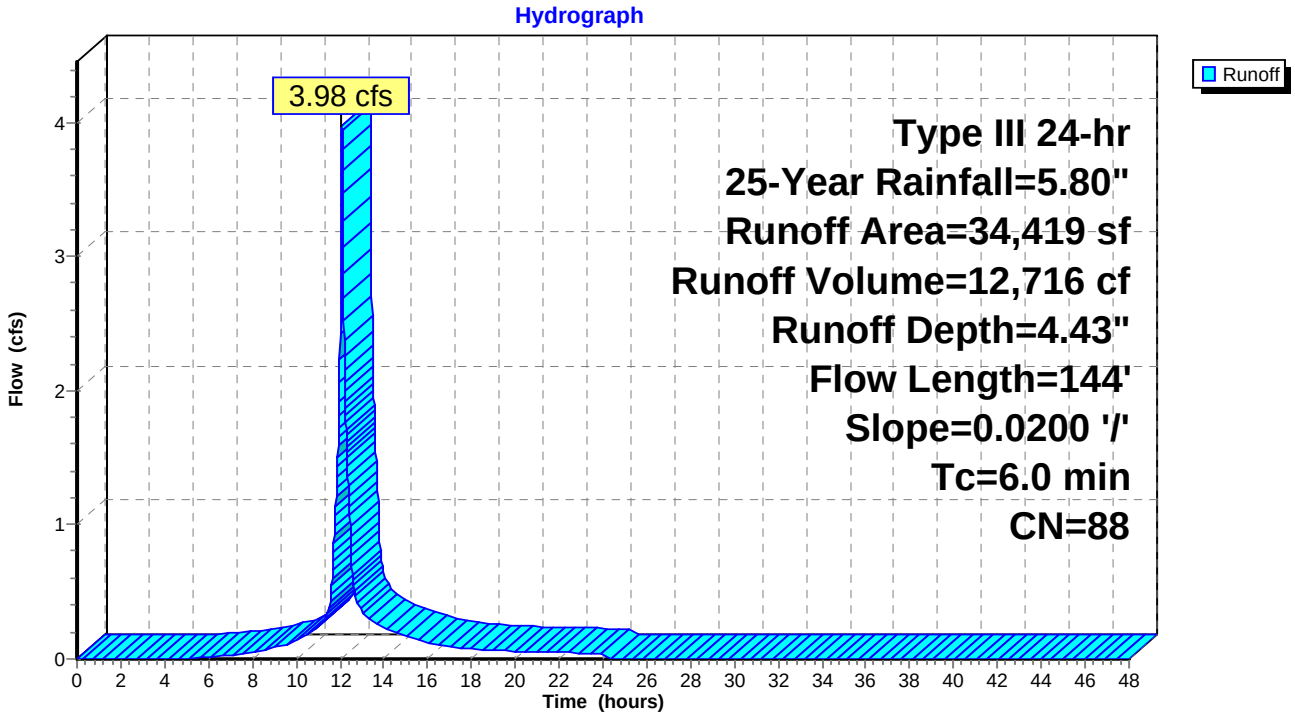
Runoff = 3.98 cfs @ 12.09 hrs, Volume= 12,716 cf, Depth= 4.43"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Type III 24-hr 25-Year Rainfall=5.80"

Area (sf)	CN	Description
17,541	98	Paved parking, HSG B
7,803	98	Roofs, HSG B
9,075	61	>75% Grass cover, Good, HSG B
34,419	88	Weighted Average
9,075		26.37% Pervious Area
25,344		73.63% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.2	100	0.0200	1.35		**Sheet Flow,** Smooth surfaces n= 0.011 P2= 3.10"
0.1	20	0.0200	2.87		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
0.4	24	0.0200	0.99		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
4.3					**Direct Entry,**
6.0	144	Total			

Subcatchment 17S: (new Subcat)



Summary for Subcatchment Off Site: Off Site Flow

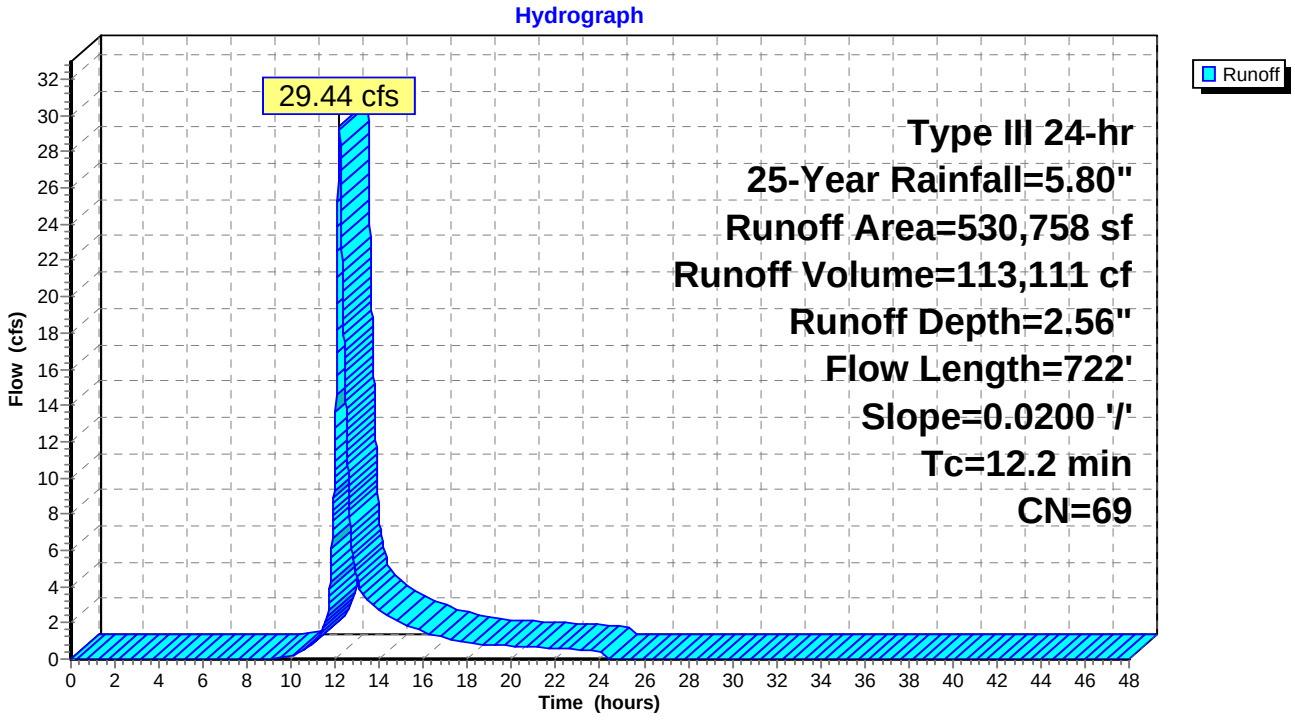
Runoff = 29.44 cfs @ 12.17 hrs, Volume= 113,111 cf, Depth= 2.56"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Type III 24-hr 25-Year Rainfall=5.80"

Area (sf)	CN	Description
414,874	61	>75% Grass cover, Good, HSG B
115,884	98	Paved parking, HSG B
530,758	69	Weighted Average
414,874		78.17% Pervious Area
115,884		21.83% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
12.2	722	0.0200	0.99		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps

Subcatchment Off Site: Off Site Flow



Summary for Pond 1P: DMH 10162

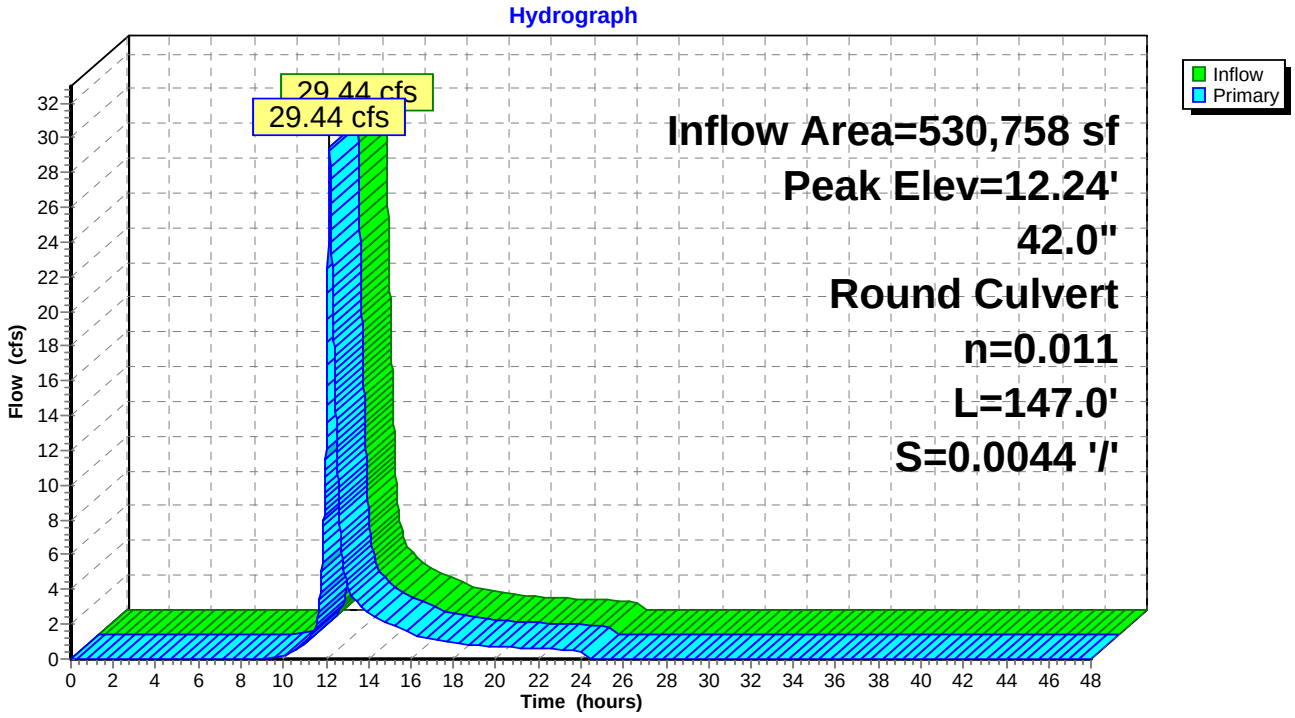
Inflow Area = 530,758 sf, 21.83% Impervious, Inflow Depth = 2.56" for 25-Year event
Inflow = 29.44 cfs @ 12.17 hrs, Volume= 113,111 cf
Outflow = 29.44 cfs @ 12.17 hrs, Volume= 113,111 cf, Atten= 0%, Lag= 0.0 min
Primary = 29.44 cfs @ 12.17 hrs, Volume= 113,111 cf

Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs / 2
Peak Elev= 12.24' @ 12.18 hrs
Flood Elev= 28.14'

Device	Routing	Invert	Outlet Devices
#1	Primary	9.18'	**42.0" Round Culvert** L= 147.0' RCP, sq.cut end projecting, Ke= 0.500 Inlet / Outlet Invert= 9.18' / 8.54' S= 0.0044 '/' Cc= 0.900 n= 0.011 Concrete pipe, straight & clean, Flow Area= 9.62 sf

Primary OutFlow Max=29.33 cfs @ 12.17 hrs HW=12.23' TW=11.63' (Dynamic Tailwater)
1=Culvert (Outlet Controls 29.33 cfs @ 4.40 fps)

Pond 1P: DMH 10162



Summary for Pond 2P: CB-15

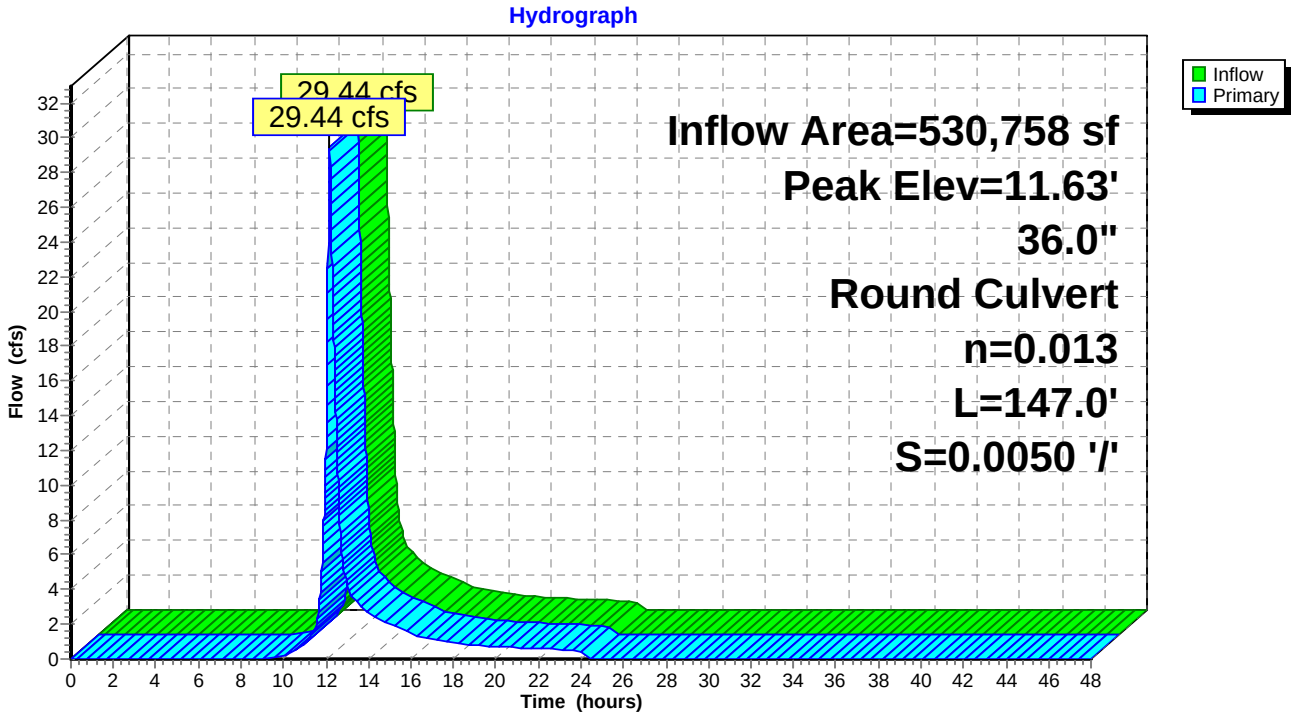
Inflow Area = 530,758 sf, 21.83% Impervious, Inflow Depth = 2.56" for 25-Year event
Inflow = 29.44 cfs @ 12.17 hrs, Volume= 113,111 cf
Outflow = 29.44 cfs @ 12.17 hrs, Volume= 113,111 cf, Atten= 0%, Lag= 0.0 min
Primary = 29.44 cfs @ 12.17 hrs, Volume= 113,111 cf

Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs / 2
Peak Elev= 11.63' @ 12.18 hrs
Flood Elev= 14.50'

Device	Routing	Invert	Outlet Devices
#1	Primary	8.44'	**36.0" Round Culvert** L= 147.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 8.44' / 7.71' S= 0.0050 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 7.07 sf

Primary OutFlow Max=29.39 cfs @ 12.17 hrs HW=11.63' TW=10.43' (Dynamic Tailwater)
1=Culvert (Inlet Controls 29.39 cfs @ 4.16 fps)

Pond 2P: CB-15



Summary for Pond 4P: CBR 1710

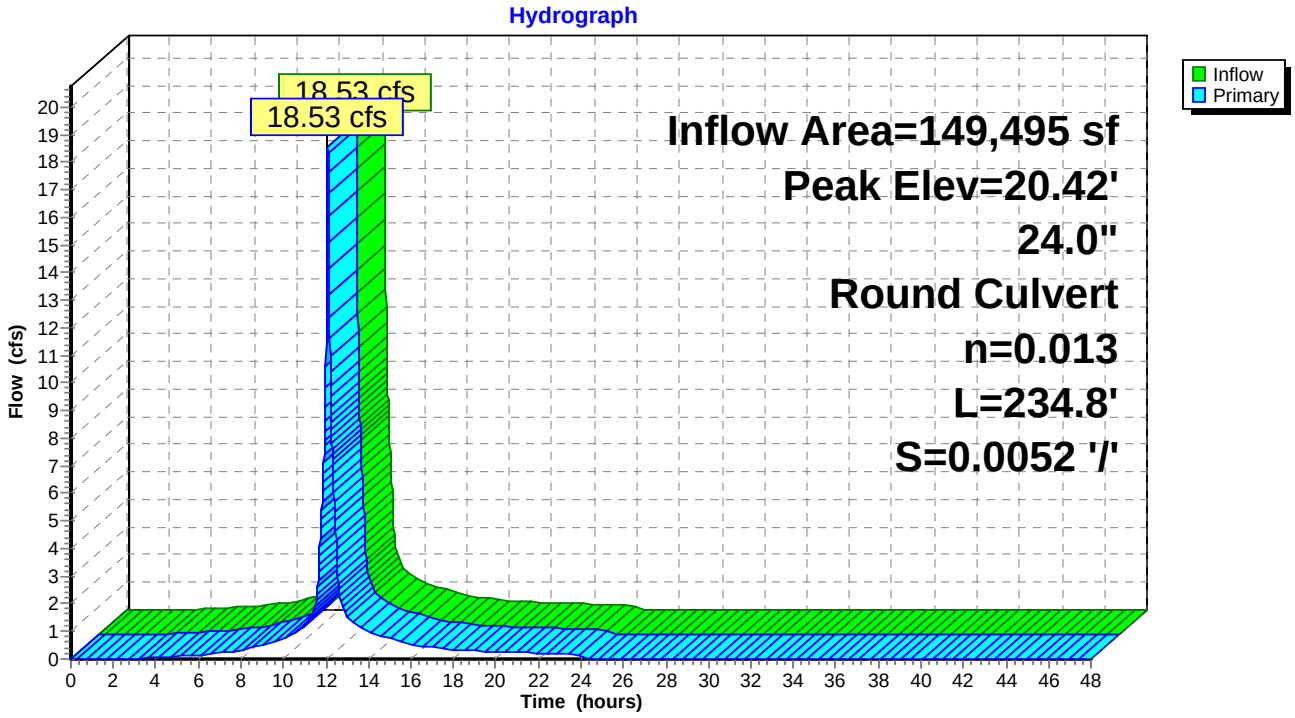
Inflow Area = 149,495 sf, 85.96% Impervious, Inflow Depth = 4.95" for 25-Year event
Inflow = 18.53 cfs @ 12.08 hrs, Volume= 61,725 cf
Outflow = 18.53 cfs @ 12.08 hrs, Volume= 61,725 cf, Atten= 0%, Lag= 0.0 min
Primary = 18.53 cfs @ 12.08 hrs, Volume= 61,725 cf

Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs / 2
Peak Elev= 20.42' @ 12.09 hrs
Flood Elev= 25.22'

Device	Routing	Invert	Outlet Devices
#1	Primary	15.59'	**24.0" Round Culvert** L= 234.8' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 15.59' / 14.38' S= 0.0052 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 3.14 sf

Primary OutFlow Max=18.20 cfs @ 12.08 hrs HW=20.37' TW=18.06' (Dynamic Tailwater)
└**1=Culvert** (Outlet Controls 18.20 cfs @ 5.79 fps)

Pond 4P: CBR 1710



Summary for Pond 5P: CB 1668

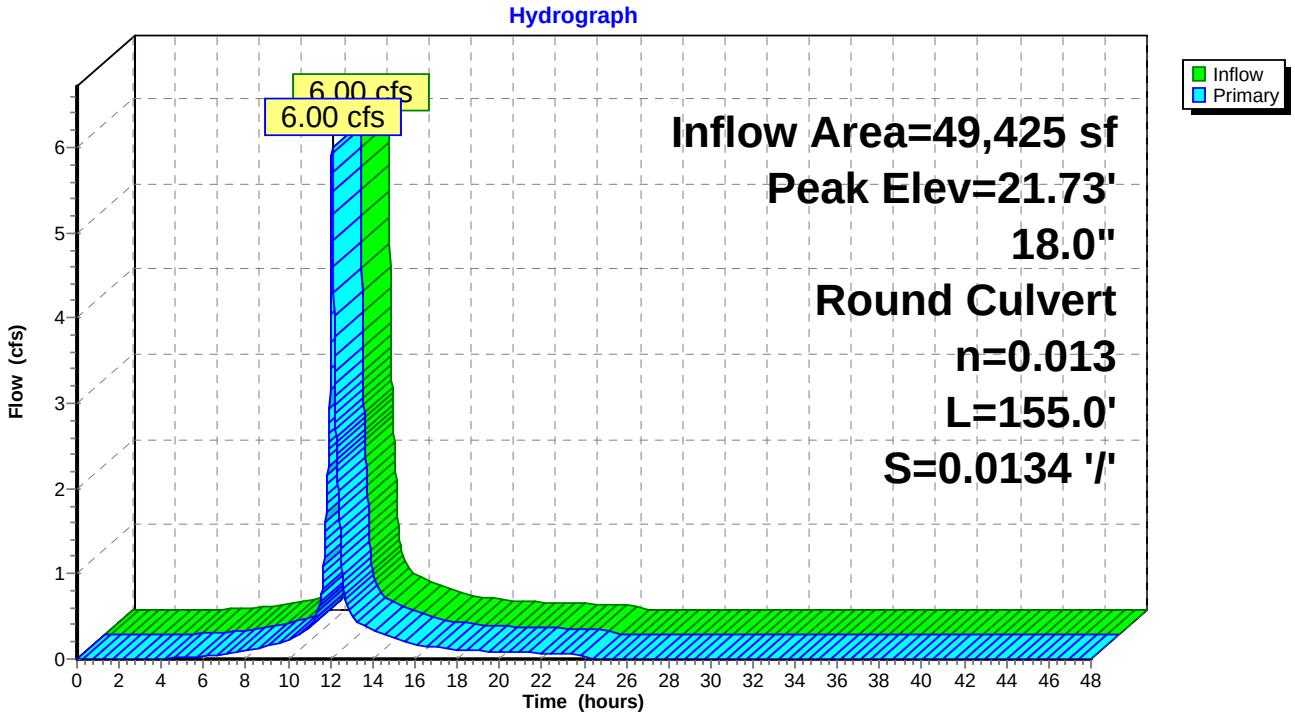
Inflow Area = 49,425 sf, 82.25% Impervious, Inflow Depth = 4.76" for 25-Year event
Inflow = 6.00 cfs @ 12.08 hrs, Volume= 19,612 cf
Outflow = 6.00 cfs @ 12.08 hrs, Volume= 19,612 cf, Atten= 0%, Lag= 0.0 min
Primary = 6.00 cfs @ 12.08 hrs, Volume= 19,612 cf

Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs / 2
Peak Elev= 21.73' @ 12.09 hrs
Flood Elev= 25.58'

Device	Routing	Invert	Outlet Devices
#1	Primary	20.38'	**18.0" Round Culvert** L= 155.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 20.38' / 18.30' S= 0.0134 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.77 sf

Primary OutFlow Max=5.88 cfs @ 12.08 hrs HW=21.70' TW=20.37' (Dynamic Tailwater)
└**1=Culvert** (Outlet Controls 5.88 cfs @ 4.74 fps)

Pond 5P: CB 1668



Summary for Pond 6P: CBR 1709

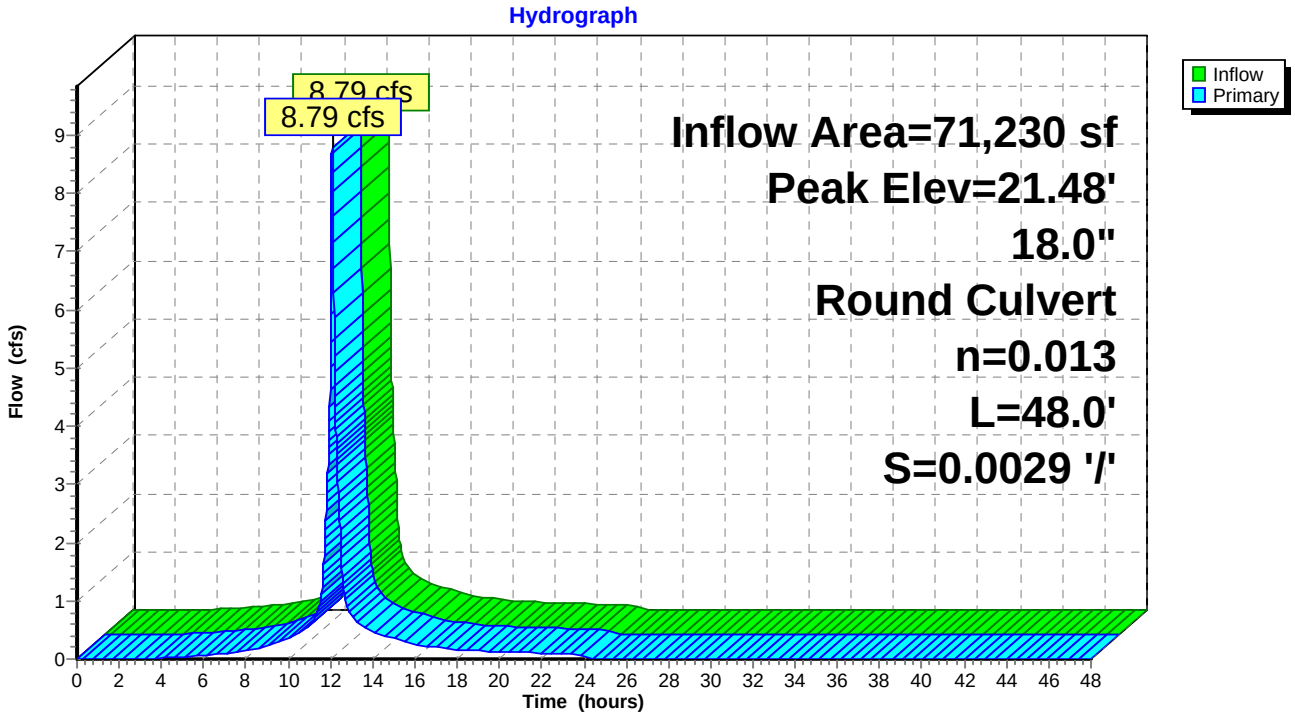
Inflow Area = 71,230 sf, 84.12% Impervious, Inflow Depth = 4.89" for 25-Year event
Inflow = 8.79 cfs @ 12.08 hrs, Volume= 29,027 cf
Outflow = 8.79 cfs @ 12.08 hrs, Volume= 29,027 cf, Atten= 0%, Lag= 0.0 min
Primary = 8.79 cfs @ 12.08 hrs, Volume= 29,027 cf

Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs / 2
Peak Elev= 21.48' @ 12.09 hrs
Flood Elev= 25.90'

Device	Routing	Invert	Outlet Devices
#1	Primary	15.83'	**18.0" Round Culvert** L= 48.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 15.83' / 15.69' S= 0.0029 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.77 sf

Primary OutFlow Max=8.53 cfs @ 12.08 hrs HW=21.37' TW=20.37' (Dynamic Tailwater)
↳**1=Culvert** (Inlet Controls 8.53 cfs @ 4.83 fps)

Pond 6P: CBR 1709



Summary for Pond 7P: CB 12

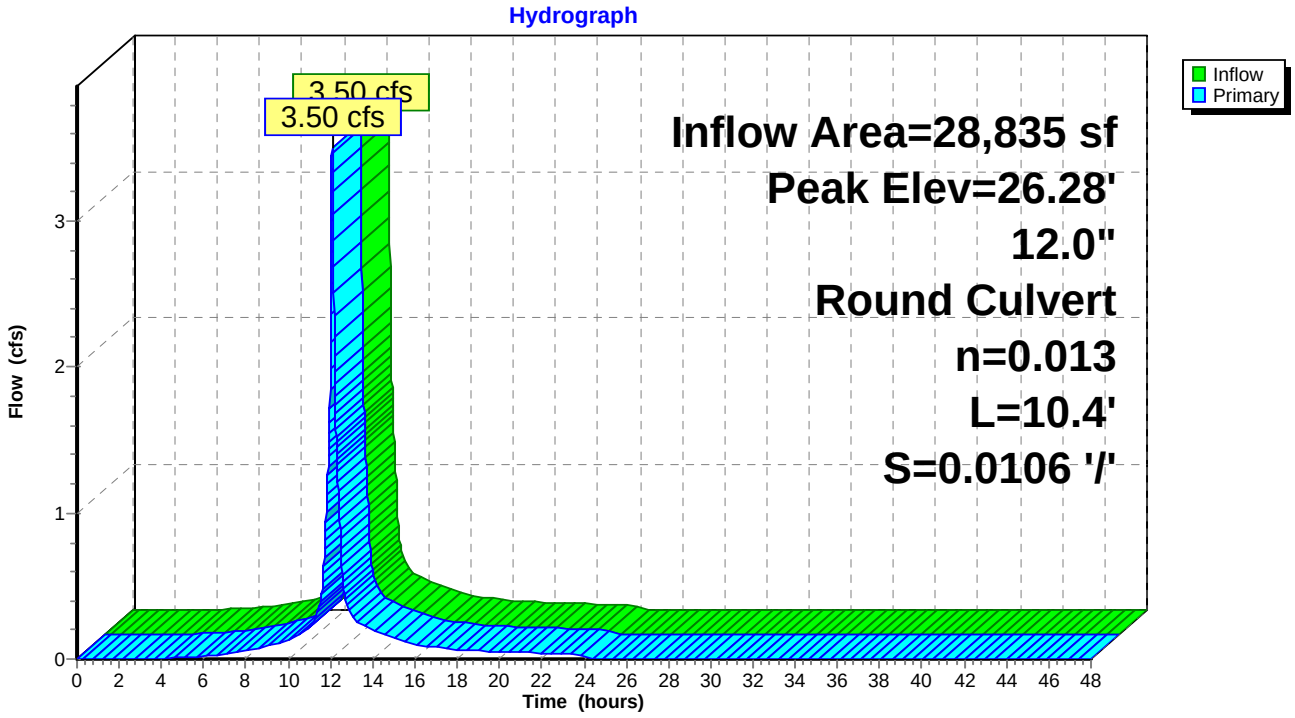
Inflow Area = 28,835 sf, 82.21% Impervious, Inflow Depth = 4.76" for 25-Year event
Inflow = 3.50 cfs @ 12.08 hrs, Volume= 11,442 cf
Outflow = 3.50 cfs @ 12.08 hrs, Volume= 11,442 cf, Atten= 0%, Lag= 0.0 min
Primary = 3.50 cfs @ 12.08 hrs, Volume= 11,442 cf

Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs / 2
Peak Elev= 26.28' @ 12.08 hrs
Flood Elev= 29.60'

Device	Routing	Invert	Outlet Devices
#1	Primary	24.68'	**12.0" Round Culvert** L= 10.4' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 24.68' / 24.57' S= 0.0106 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.79 sf

Primary OutFlow Max=3.50 cfs @ 12.08 hrs HW=26.27' TW=25.42' (Dynamic Tailwater)
1=Culvert (Inlet Controls 3.50 cfs @ 4.45 fps)

Pond 7P: CB 12



Summary for Pond 8P: CBR 1708

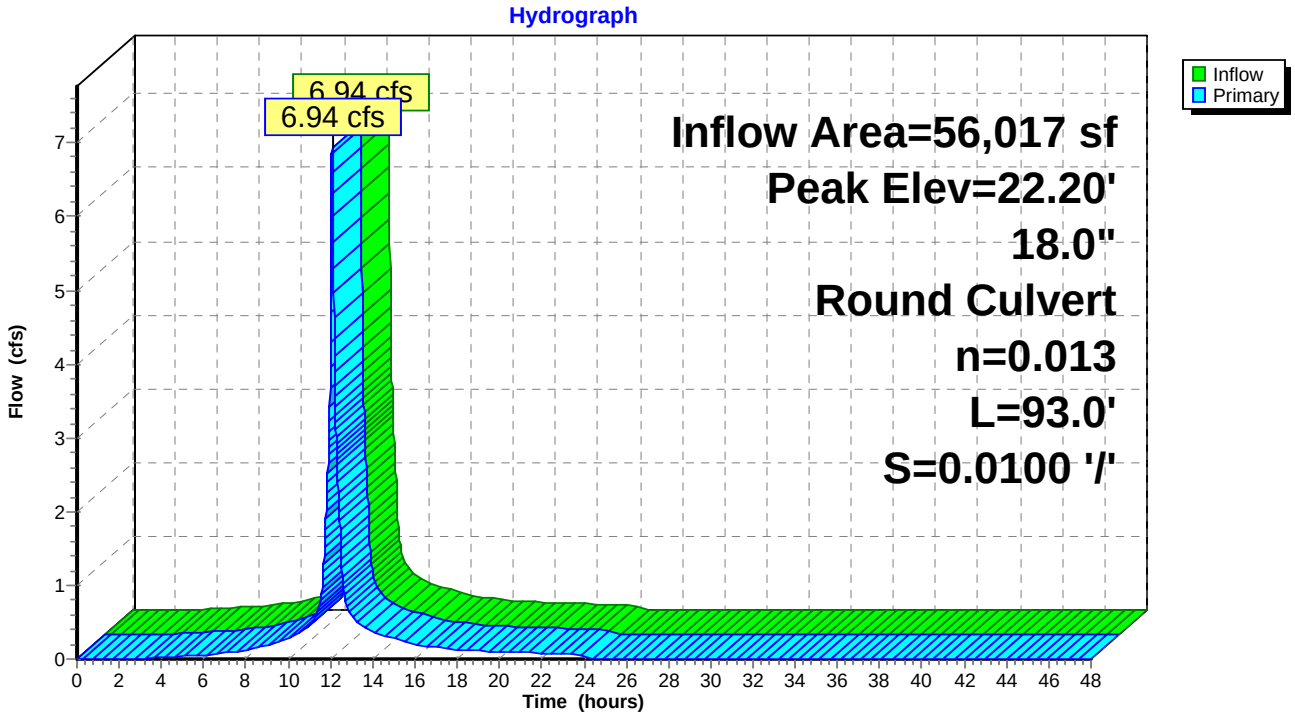
Inflow Area = 56,017 sf, 85.18% Impervious, Inflow Depth = 4.93" for 25-Year event
Inflow = 6.94 cfs @ 12.08 hrs, Volume= 22,991 cf
Outflow = 6.94 cfs @ 12.08 hrs, Volume= 22,991 cf, Atten= 0%, Lag= 0.0 min
Primary = 6.94 cfs @ 12.08 hrs, Volume= 22,991 cf

Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs / 2
Peak Elev= 22.20' @ 12.10 hrs
Flood Elev= 27.09'

Device	Routing	Invert	Outlet Devices
#1	Primary	16.46'	**18.0" Round Culvert** L= 93.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 16.46' / 15.53' S= 0.0100 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.77 sf

Primary OutFlow Max=6.36 cfs @ 12.08 hrs HW=22.01' TW=21.37' (Dynamic Tailwater)
1=Culvert (Outlet Controls 6.36 cfs @ 3.60 fps)

Pond 8P: CBR 1708



Summary for Pond 9P: CB-11

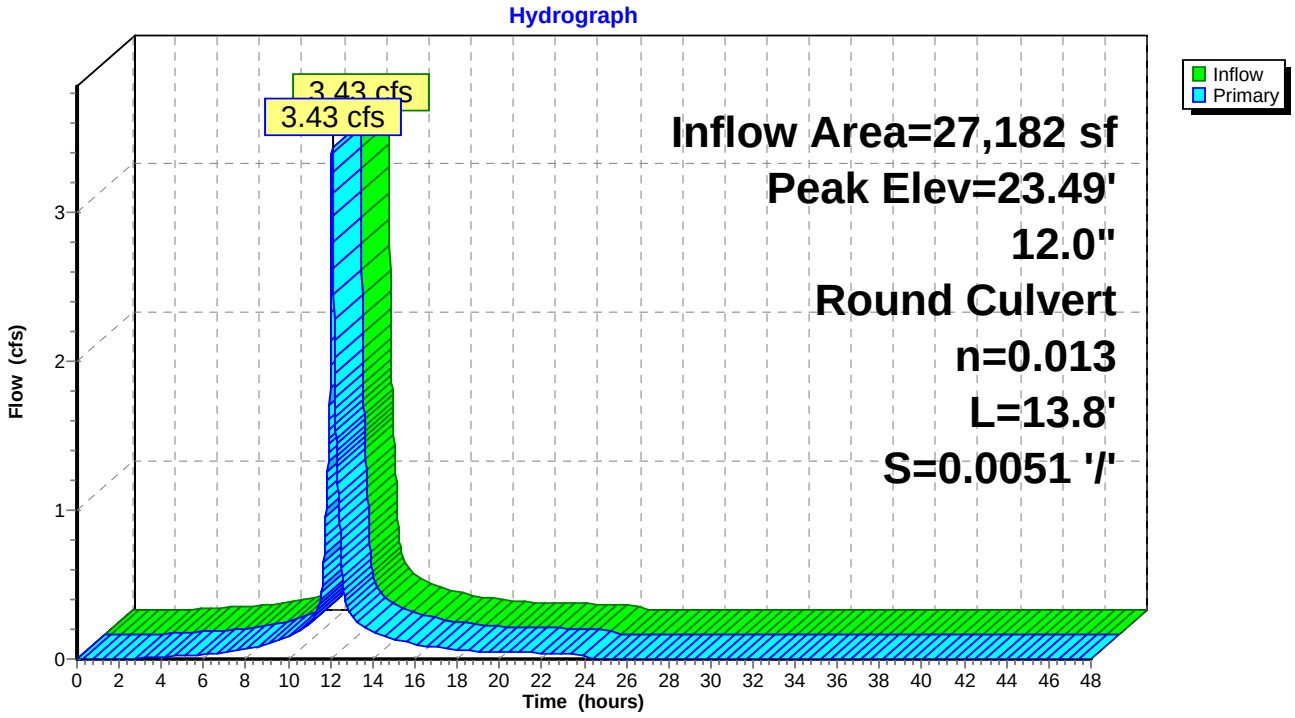
Inflow Area = 27,182 sf, 88.34% Impervious, Inflow Depth = 5.10" for 25-Year event
Inflow = 3.43 cfs @ 12.08 hrs, Volume= 11,549 cf
Outflow = 3.43 cfs @ 12.08 hrs, Volume= 11,549 cf, Atten= 0%, Lag= 0.0 min
Primary = 3.43 cfs @ 12.08 hrs, Volume= 11,549 cf

Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs / 2
Peak Elev= 23.49' @ 12.10 hrs
Flood Elev= 27.50'

Device	Routing	Invert	Outlet Devices
#1	Primary	21.47'	**12.0" Round Culvert** L= 13.8' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 21.47' / 21.40' S= 0.0051 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.79 sf

Primary OutFlow Max=3.42 cfs @ 12.08 hrs HW=23.32' TW=22.01' (Dynamic Tailwater)
1=Culvert (Inlet Controls 3.42 cfs @ 4.36 fps)

Pond 9P: CB-11



Summary for Pond 10P: CB-16

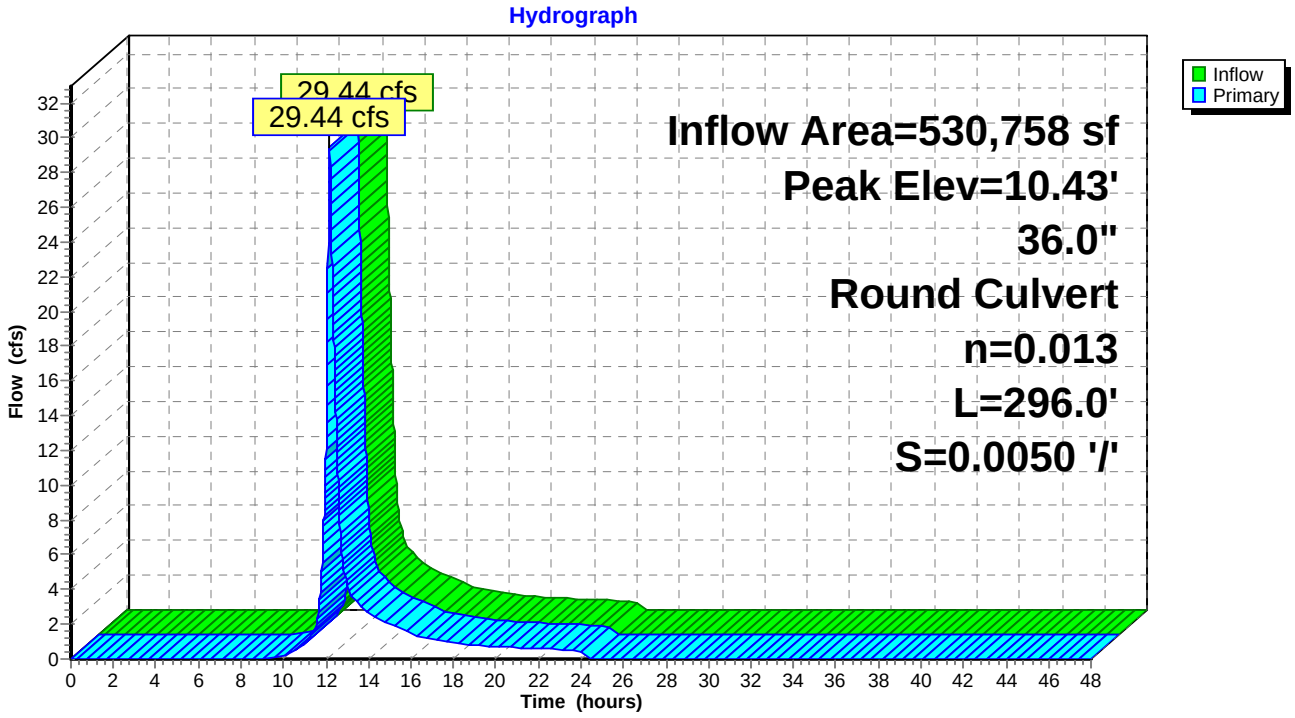
Inflow Area = 530,758 sf, 21.83% Impervious, Inflow Depth = 2.56" for 25-Year event
Inflow = 29.44 cfs @ 12.17 hrs, Volume= 113,111 cf
Outflow = 29.44 cfs @ 12.17 hrs, Volume= 113,111 cf, Atten= 0%, Lag= 0.0 min
Primary = 29.44 cfs @ 12.17 hrs, Volume= 113,111 cf

Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs / 2
Peak Elev= 10.43' @ 12.17 hrs
Flood Elev= 14.50'

Device	Routing	Invert	Outlet Devices
#1	Primary	7.61'	**36.0" Round Culvert** L= 296.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 7.61' / 6.14' S= 0.0050 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 7.07 sf

Primary OutFlow Max=29.42 cfs @ 12.17 hrs HW=10.43' TW=8.73' (Dynamic Tailwater)
1=Culvert (Outlet Controls 29.42 cfs @ 5.52 fps)

Pond 10P: CB-16



Summary for Pond 11P: DMH-1

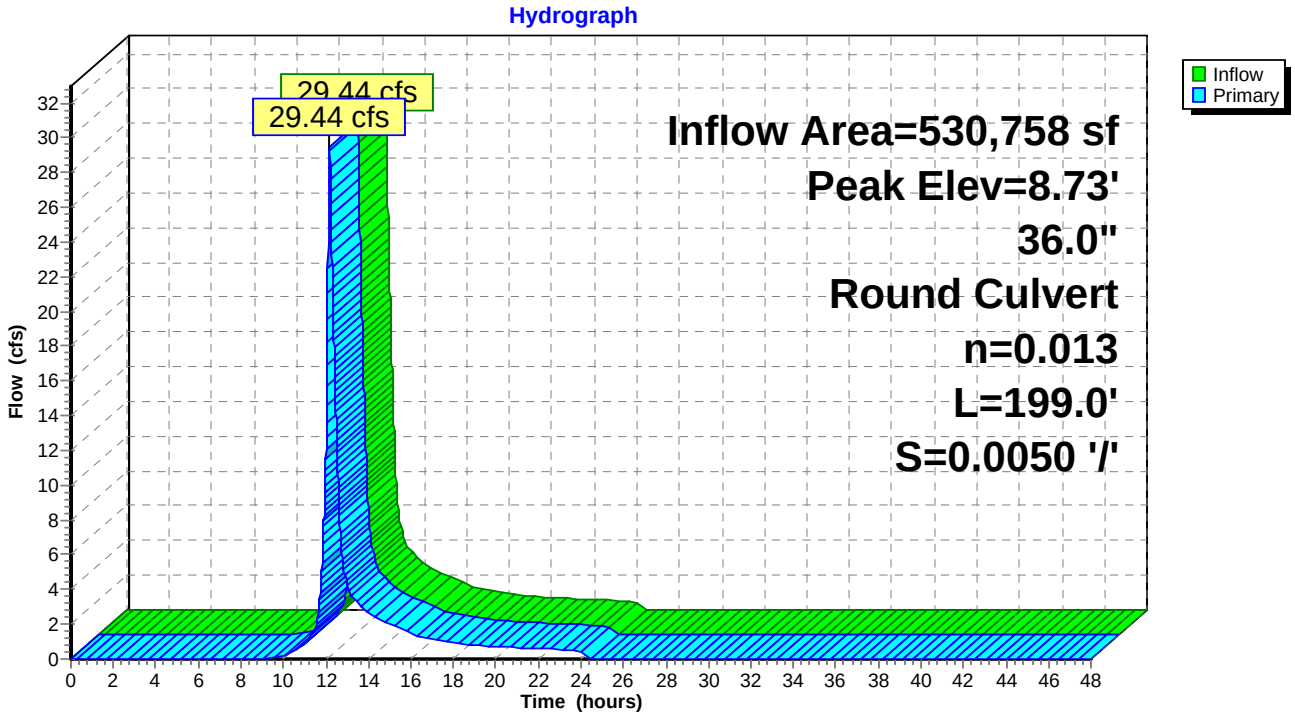
Inflow Area = 530,758 sf, 21.83% Impervious, Inflow Depth = 2.56" for 25-Year event
Inflow = 29.44 cfs @ 12.17 hrs, Volume= 113,111 cf
Outflow = 29.44 cfs @ 12.17 hrs, Volume= 113,111 cf, Atten= 0%, Lag= 0.0 min
Primary = 29.44 cfs @ 12.17 hrs, Volume= 113,111 cf

Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs / 2
Peak Elev= 8.73' @ 12.17 hrs
Flood Elev= 14.00'

Device	Routing	Invert	Outlet Devices
#1	Primary	6.04'	**36.0" Round Culvert** L= 199.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 6.04' / 5.05' S= 0.0050 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 7.07 sf

Primary OutFlow Max=29.42 cfs @ 12.17 hrs HW=8.73' TW=0.00' (Dynamic Tailwater)
1=Culvert (Inlet Controls 29.42 cfs @ 4.41 fps)

Pond 11P: DMH-1



Summary for Pond 12P: CB-4

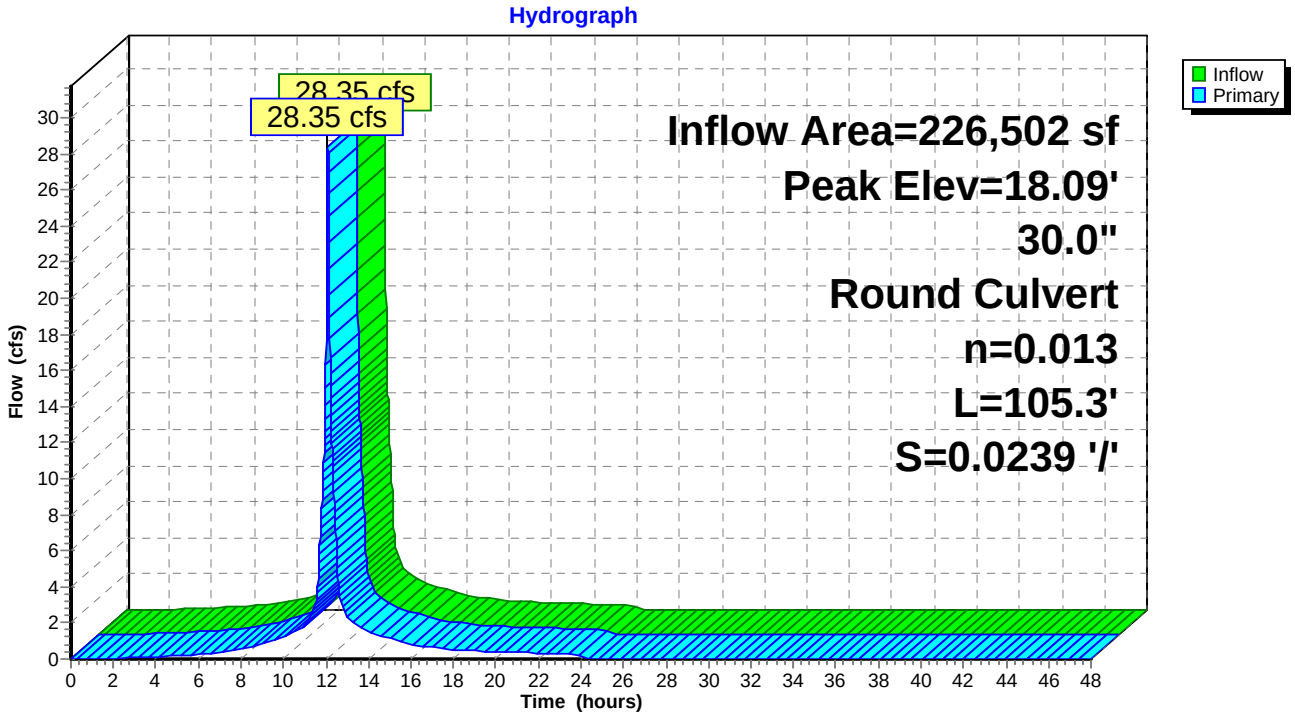
Inflow Area = 226,502 sf, 88.10% Impervious, Inflow Depth = 5.07" for 25-Year event
Inflow = 28.35 cfs @ 12.08 hrs, Volume= 95,635 cf
Outflow = 28.35 cfs @ 12.08 hrs, Volume= 95,635 cf, Atten= 0%, Lag= 0.0 min
Primary = 28.35 cfs @ 12.08 hrs, Volume= 95,635 cf

Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs / 2
Peak Elev= 18.09' @ 12.09 hrs
Flood Elev= 20.69'

Device	Routing	Invert	Outlet Devices
#1	Primary	14.28'	**30.0" Round Culvert** L= 105.3' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 14.28' / 11.76' S= 0.0239 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 4.91 sf

Primary OutFlow Max=28.21 cfs @ 12.08 hrs HW=18.06' TW=15.77' (Dynamic Tailwater)
1=Culvert (Inlet Controls 28.21 cfs @ 5.75 fps)

Pond 12P: CB-4



Summary for Pond 13P: CB-7

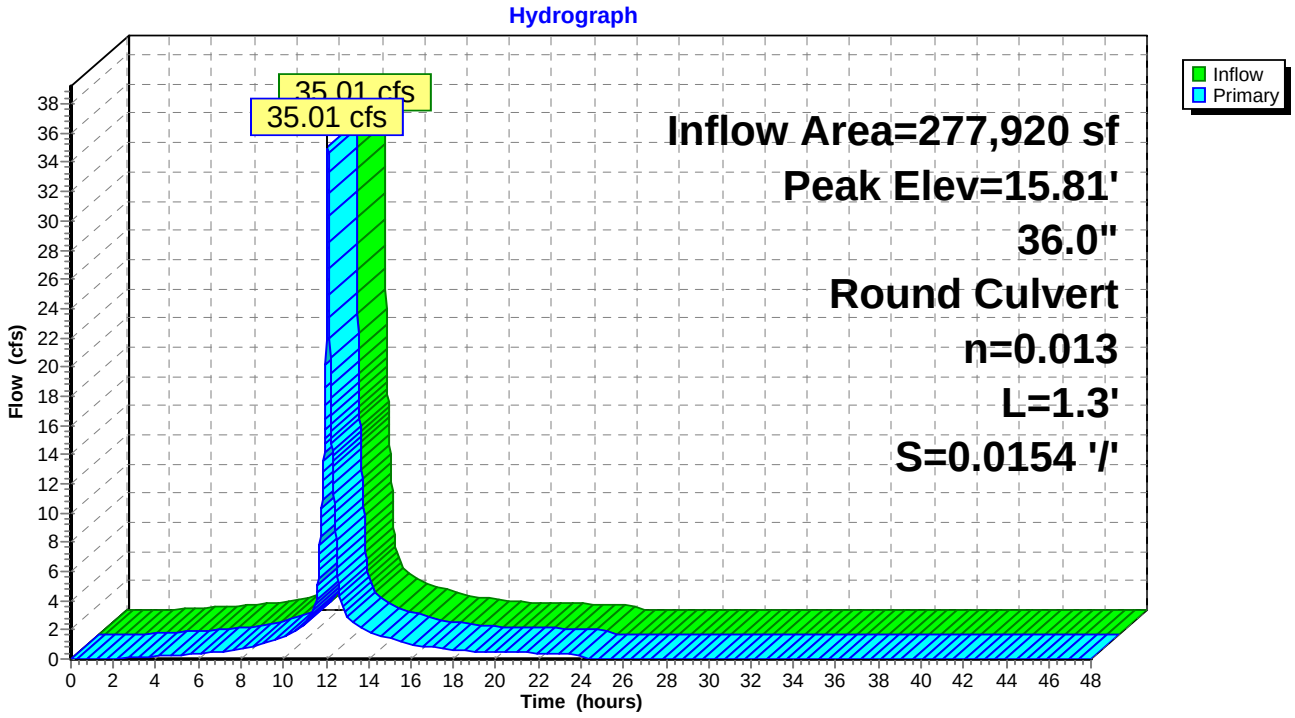
Inflow Area = 277,920 sf, 88.86% Impervious, Inflow Depth = 5.13" for 25-Year event
Inflow = 35.01 cfs @ 12.08 hrs, Volume= 118,847 cf
Outflow = 35.01 cfs @ 12.08 hrs, Volume= 118,847 cf, Atten= 0%, Lag= 0.0 min
Primary = 35.01 cfs @ 12.08 hrs, Volume= 118,847 cf

Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs / 2
Peak Elev= 15.81' @ 12.09 hrs
Flood Elev= 19.40'

Device	Routing	Invert	Outlet Devices
#1	Primary	11.66'	**36.0" Round Culvert** L= 1.3' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 11.66' / 11.64' S= 0.0154 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 7.07 sf

Primary OutFlow Max=34.41 cfs @ 12.08 hrs HW=15.77' TW=14.13' (Dynamic Tailwater)
↑**1=Culvert** (Inlet Controls 34.41 cfs @ 4.87 fps)

Pond 13P: CB-7



Summary for Pond 14P: ICS-1

Inflow Area = 277,920 sf, 88.86% Impervious, Inflow Depth = 5.13" for 25-Year event
Inflow = 35.01 cfs @ 12.08 hrs, Volume= 118,847 cf
Outflow = 35.01 cfs @ 12.08 hrs, Volume= 118,847 cf, Atten= 0%, Lag= 0.0 min
Primary = 27.29 cfs @ 12.08 hrs, Volume= 90,438 cf
Secondary = 8.33 cfs @ 12.16 hrs, Volume= 28,409 cf

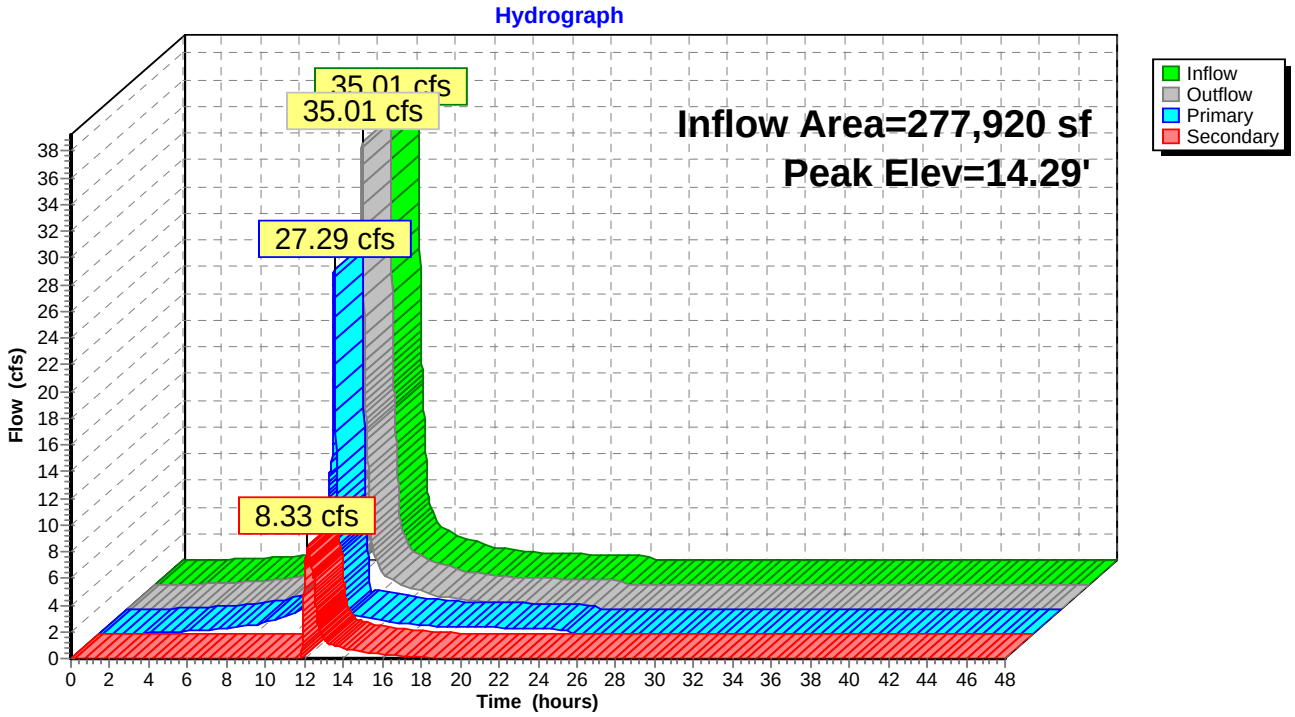
Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs / 2
Peak Elev= 14.29' @ 12.14 hrs
Flood Elev= 19.43'

Device	Routing	Invert	Outlet Devices
#1	Primary	11.54'	**24.0" Round Culvert X 4.00** L= 2.7' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 11.54' / 11.49' S= 0.0185 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 3.14 sf
#2	Secondary	11.54'	**18.0" Round Bypass Culvert** L= 27.5' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 11.54' / 11.00' S= 0.0196 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.77 sf
#3	Device 2	13.00'	**6.0' long Overflow Weir** 2 End Contraction(s)

Primary OutFlow Max=27.31 cfs @ 12.08 hrs HW=14.11' TW=13.79' (Dynamic Tailwater)
└**1=Culvert** (Inlet Controls 27.31 cfs @ 2.17 fps)

Secondary OutFlow Max=7.01 cfs @ 12.16 hrs HW=14.28' TW=13.19' (Dynamic Tailwater)
└**2=Bypass Culvert** (Inlet Controls 7.01 cfs @ 3.97 fps)
└**3=Overflow Weir** (Passes 7.01 cfs of 26.50 cfs potential flow)

Pond 14P: ICS-1



Summary for Pond 15P: CB-6

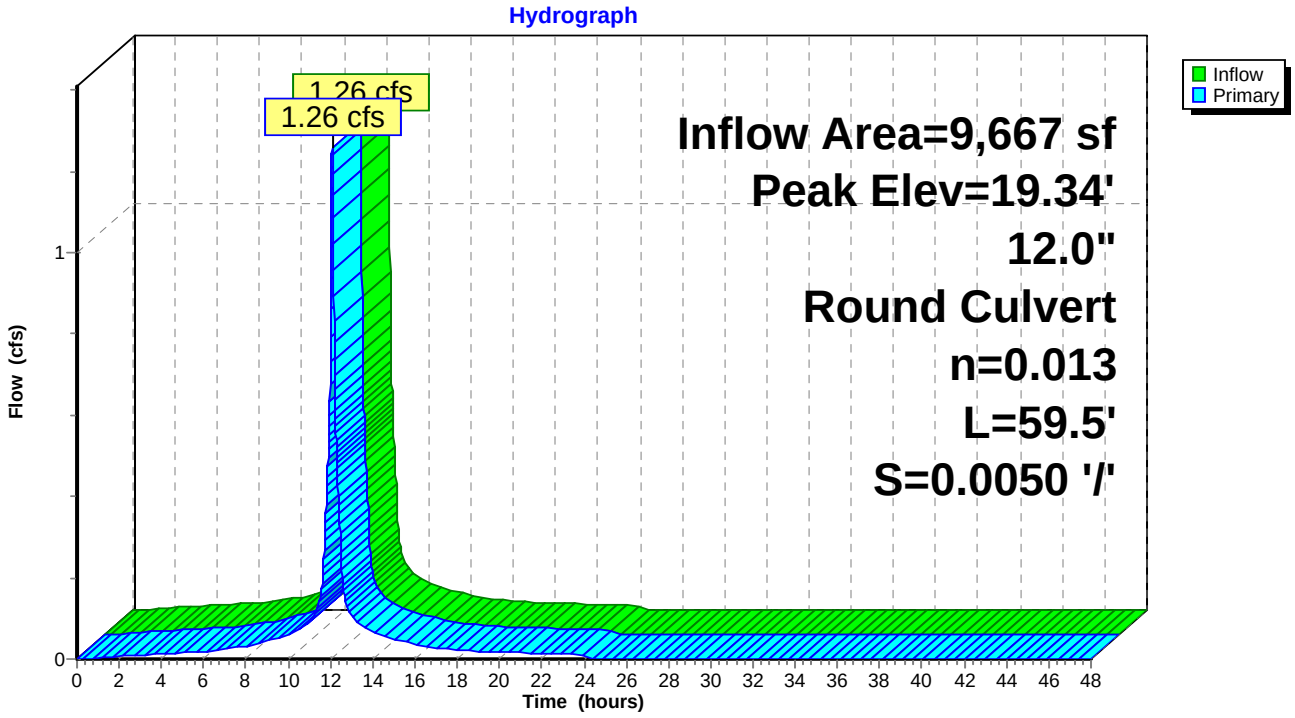
Inflow Area = 9,667 sf,100.00% Impervious, Inflow Depth = 5.56" for 25-Year event
Inflow = 1.26 cfs @ 12.08 hrs, Volume= 4,481 cf
Outflow = 1.26 cfs @ 12.08 hrs, Volume= 4,481 cf, Atten= 0%, Lag= 0.0 min
Primary = 1.26 cfs @ 12.08 hrs, Volume= 4,481 cf

Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs / 2
Peak Elev= 19.34' @ 12.10 hrs
Flood Elev= 20.47'

Device	Routing	Invert	Outlet Devices
#1	Primary	15.06'	**12.0" Round Culvert** L= 59.5' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 15.06' / 14.76' S= 0.0050 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.79 sf

Primary OutFlow Max=1.00 cfs @ 12.08 hrs HW=19.19' TW=19.08' (Dynamic Tailwater)
↳**1=Culvert** (Inlet Controls 1.00 cfs @ 1.28 fps)

Pond 15P: CB-6



Summary for Pond 16P: CB-3

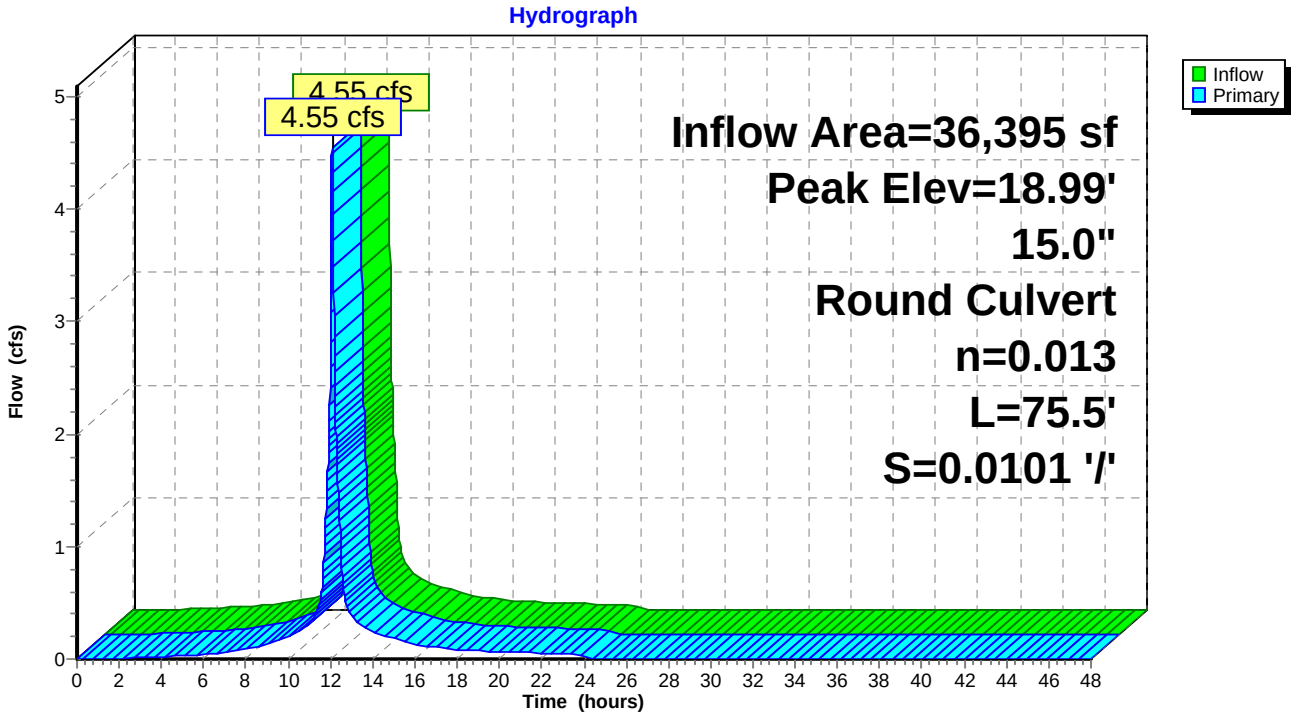
Inflow Area = 36,395 sf, 87.42% Impervious, Inflow Depth = 5.07" for 25-Year event
Inflow = 4.55 cfs @ 12.08 hrs, Volume= 15,389 cf
Outflow = 4.55 cfs @ 12.08 hrs, Volume= 15,389 cf, Atten= 0%, Lag= 0.0 min
Primary = 4.55 cfs @ 12.08 hrs, Volume= 15,389 cf

Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs / 2
Peak Elev= 18.99' @ 12.09 hrs
Flood Elev= 21.02'

Device	Routing	Invert	Outlet Devices
#1	Primary	15.14'	**15.0" Round Culvert** L= 75.5' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 15.14' / 14.38' S= 0.0101 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.23 sf

Primary OutFlow Max=4.36 cfs @ 12.08 hrs HW=18.93' TW=18.06' (Dynamic Tailwater)
1=Culvert (Inlet Controls 4.36 cfs @ 3.55 fps)

Pond 16P: CB-3



Summary for Pond 17P: CB-2

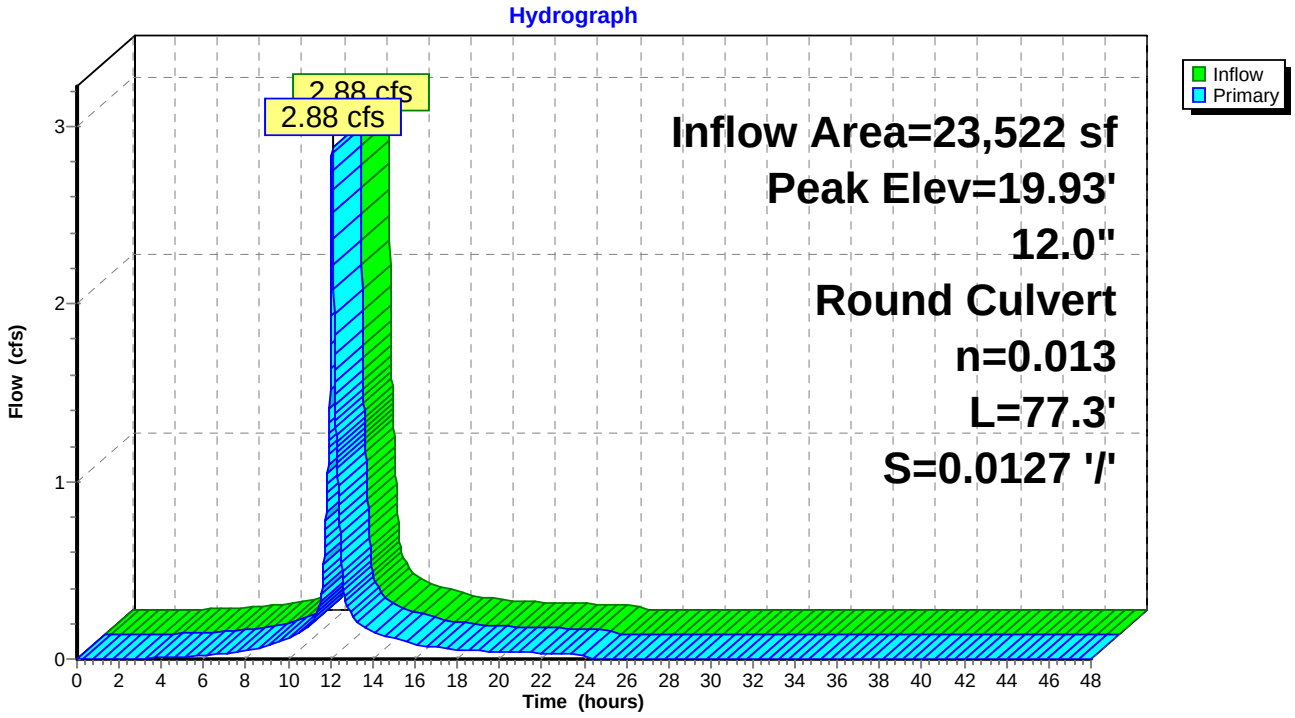
Inflow Area = 23,522 sf, 81.85% Impervious, Inflow Depth = 4.87" for 25-Year event
Inflow = 2.88 cfs @ 12.08 hrs, Volume= 9,548 cf
Outflow = 2.88 cfs @ 12.08 hrs, Volume= 9,548 cf, Atten= 0%, Lag= 0.0 min
Primary = 2.88 cfs @ 12.08 hrs, Volume= 9,548 cf

Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs / 2
Peak Elev= 19.93' @ 12.10 hrs
Flood Elev= 21.02'

Device	Routing	Invert	Outlet Devices
#1	Primary	16.22'	**12.0" Round Culvert** L= 77.3' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 16.22' / 15.24' S= 0.0127 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.79 sf

Primary OutFlow Max=2.79 cfs @ 12.08 hrs HW=19.81' TW=18.94' (Dynamic Tailwater)
1=Culvert (Inlet Controls 2.79 cfs @ 3.55 fps)

Pond 17P: CB-2



Summary for Pond 18P: CB-1

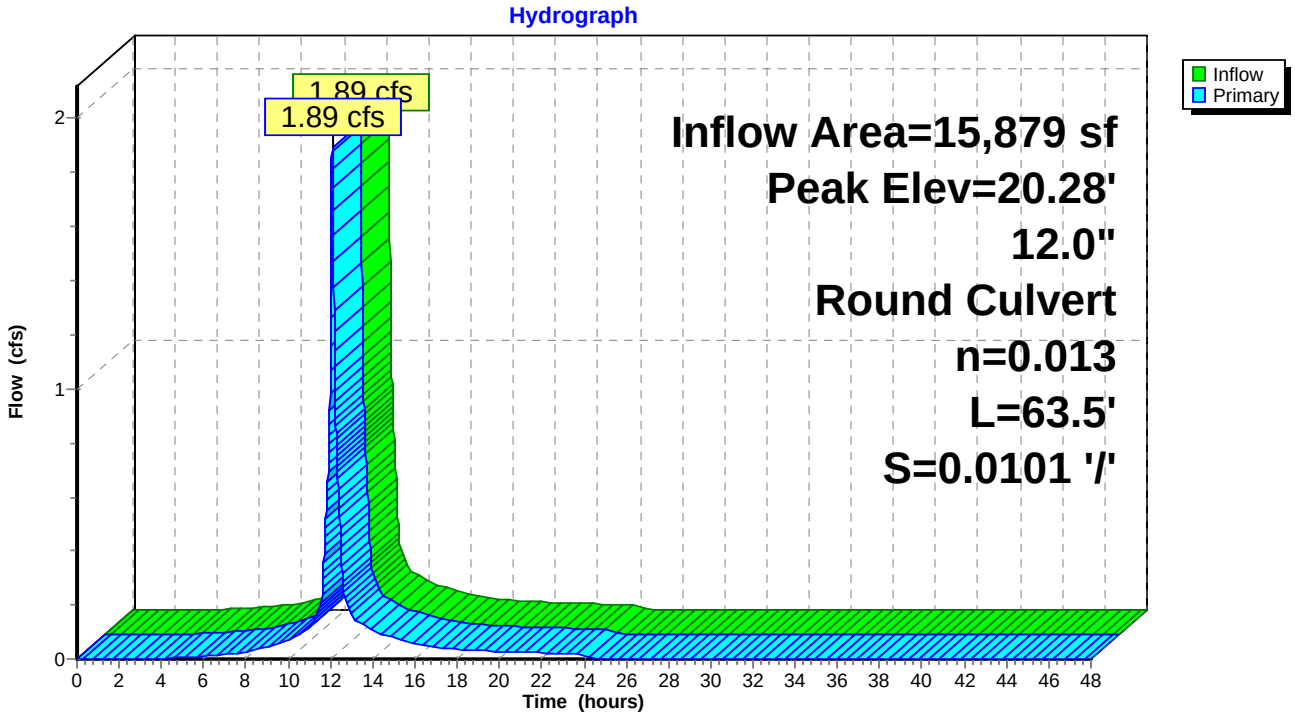
Inflow Area = 15,879 sf, 76.74% Impervious, Inflow Depth = 4.65" for 25-Year event
Inflow = 1.89 cfs @ 12.09 hrs, Volume= 6,155 cf
Outflow = 1.89 cfs @ 12.09 hrs, Volume= 6,155 cf, Atten= 0%, Lag= 0.0 min
Primary = 1.89 cfs @ 12.09 hrs, Volume= 6,155 cf

Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs / 2
Peak Elev= 20.28' @ 12.10 hrs
Flood Elev= 23.45'

Device	Routing	Invert	Outlet Devices
#1	Primary	16.96'	**12.0" Round Culvert** L= 63.5' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 16.96' / 16.32' S= 0.0101 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.79 sf

Primary OutFlow Max=1.64 cfs @ 12.09 hrs HW=20.13' TW=19.83' (Dynamic Tailwater)
└**1=Culvert** (Inlet Controls 1.64 cfs @ 2.09 fps)

Pond 18P: CB-1



Summary for Pond 19P: CB-8

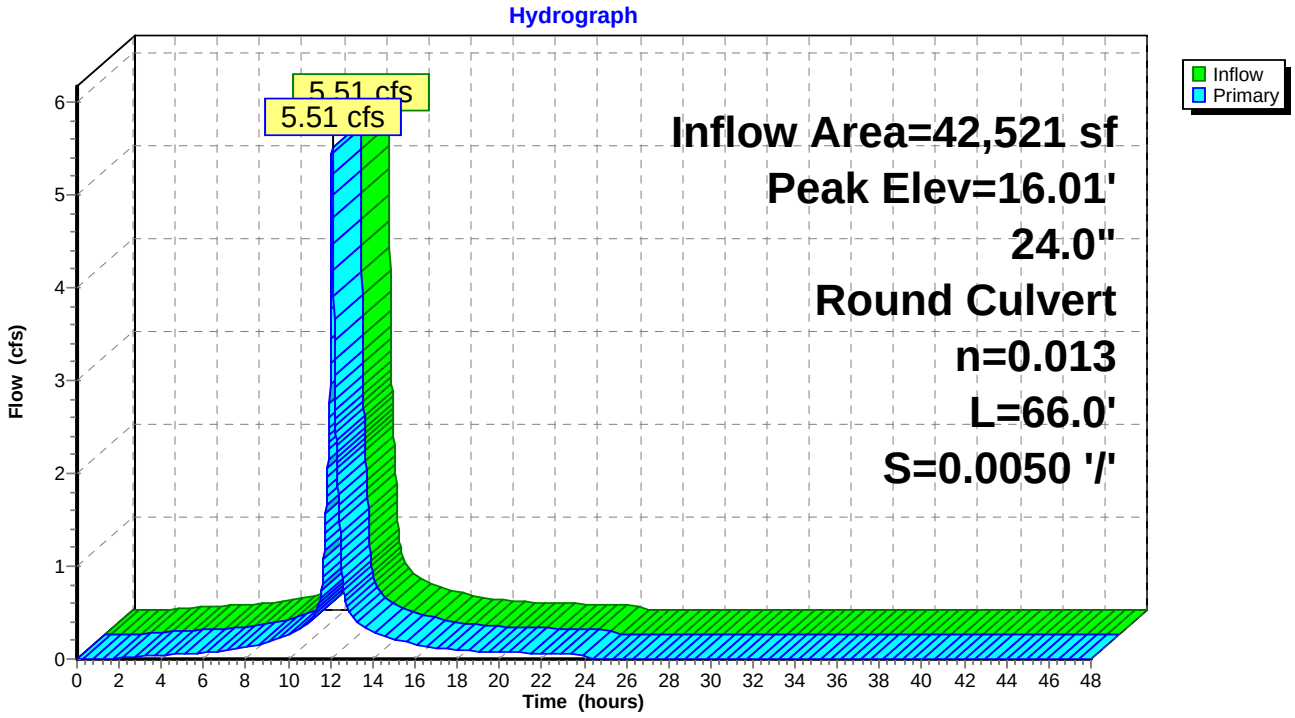
Inflow Area = 42,521 sf, 92.11% Impervious, Inflow Depth = 5.41" for 25-Year event
Inflow = 5.51 cfs @ 12.08 hrs, Volume= 19,175 cf
Outflow = 5.51 cfs @ 12.08 hrs, Volume= 19,175 cf, Atten= 0%, Lag= 0.0 min
Primary = 5.51 cfs @ 12.08 hrs, Volume= 19,175 cf

Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs / 2
Peak Elev= 16.01' @ 12.09 hrs
Flood Elev= 18.55'

Device	Routing	Invert	Outlet Devices
#1	Primary	12.09'	**24.0" Round Culvert** L= 66.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 12.09' / 11.76' S= 0.0050 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 3.14 sf

Primary OutFlow Max=5.29 cfs @ 12.08 hrs HW=15.96' TW=15.77' (Dynamic Tailwater)
1=Culvert (Inlet Controls 5.29 cfs @ 1.69 fps)

Pond 19P: CB-8



Summary for Pond 20P: CB-9

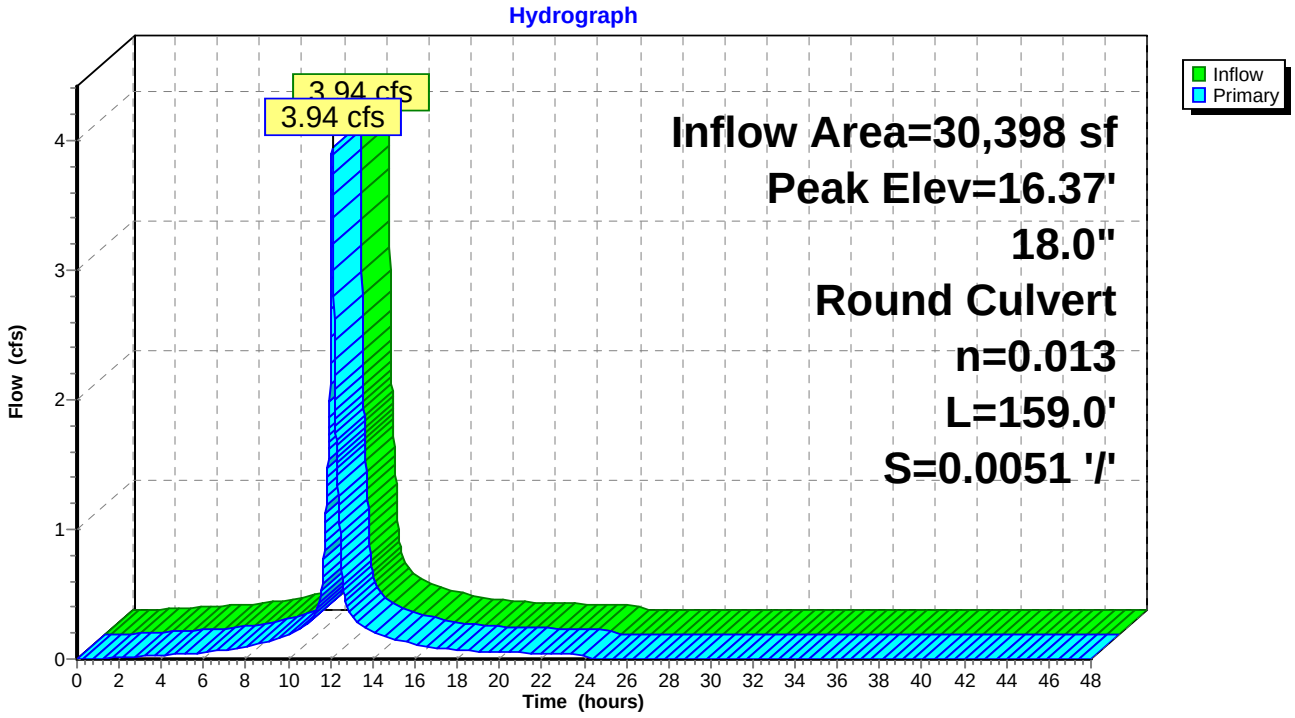
Inflow Area = 30,398 sf, 93.40% Impervious, Inflow Depth = 5.44" for 25-Year event
Inflow = 3.94 cfs @ 12.08 hrs, Volume= 13,792 cf
Outflow = 3.94 cfs @ 12.08 hrs, Volume= 13,792 cf, Atten= 0%, Lag= 0.0 min
Primary = 3.94 cfs @ 12.08 hrs, Volume= 13,792 cf

Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs / 2
Peak Elev= 16.37' @ 12.10 hrs
Flood Elev= 16.50'

Device	Routing	Invert	Outlet Devices
#1	Primary	13.00'	**18.0" Round Culvert** L= 159.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 13.00' / 12.19' S= 0.0051 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.77 sf

Primary OutFlow Max=3.50 cfs @ 12.08 hrs HW=16.26' TW=15.96' (Dynamic Tailwater)
1=Culvert (Outlet Controls 3.50 cfs @ 1.98 fps)

Pond 20P: CB-9



Summary for Pond 21P: DMH-2

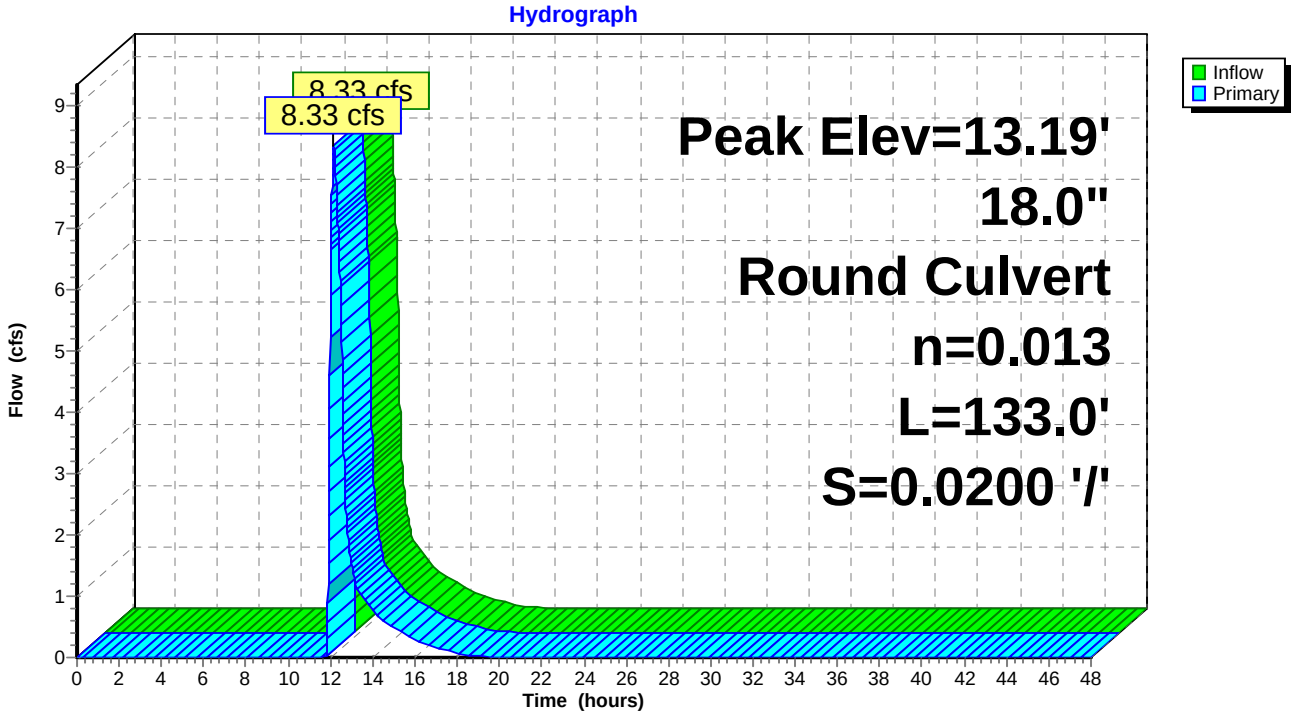
Inflow	=	8.33 cfs @	12.16 hrs, Volume=	28,409 cf
Outflow	=	8.33 cfs @	12.16 hrs, Volume=	28,409 cf, Atten= 0%, Lag= 0.0 min
Primary	=	8.33 cfs @	12.16 hrs, Volume=	28,409 cf

Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs / 2
Peak Elev= 13.19' @ 12.16 hrs
Flood Elev= 18.67'

Device	Routing	Invert	Outlet Devices
#1	Primary	10.90'	**18.0" Round Culvert** L= 133.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 10.90' / 8.24' S= 0.0200 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.77 sf

Primary OutFlow Max=8.33 cfs @ 12.16 hrs HW=13.19' TW=10.24' (Dynamic Tailwater)
└**1=Culvert** (Inlet Controls 8.33 cfs @ 4.71 fps)

Pond 21P: DMH-2



Summary for Pond 22P: DMH-3

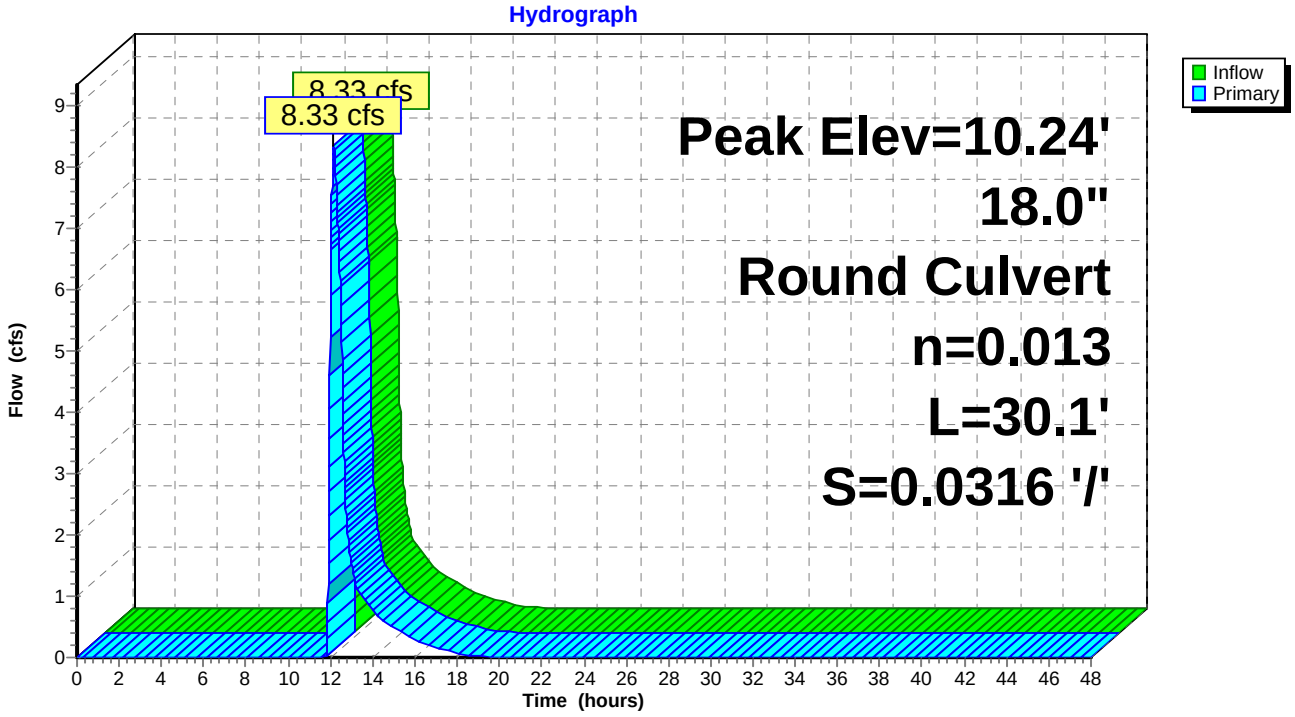
Inflow	=	8.33 cfs @	12.16 hrs, Volume=	28,409 cf
Outflow	=	8.33 cfs @	12.16 hrs, Volume=	28,409 cf, Atten= 0%, Lag= 0.0 min
Primary	=	8.33 cfs @	12.16 hrs, Volume=	28,409 cf

Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs / 2
Peak Elev= 10.24' @ 12.16 hrs
Flood Elev= 17.04'

Device	Routing	Invert	Outlet Devices
#1	Primary	7.95'	**18.0" Round Culvert** L= 30.1' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 7.95' / 7.00' S= 0.0316 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.77 sf

Primary OutFlow Max=8.33 cfs @ 12.16 hrs HW=10.24' TW=7.31' (Dynamic Tailwater)
└**1=Culvert** (Inlet Controls 8.33 cfs @ 4.71 fps)

Pond 22P: DMH-3



Summary for Pond 23P: CBR 1380

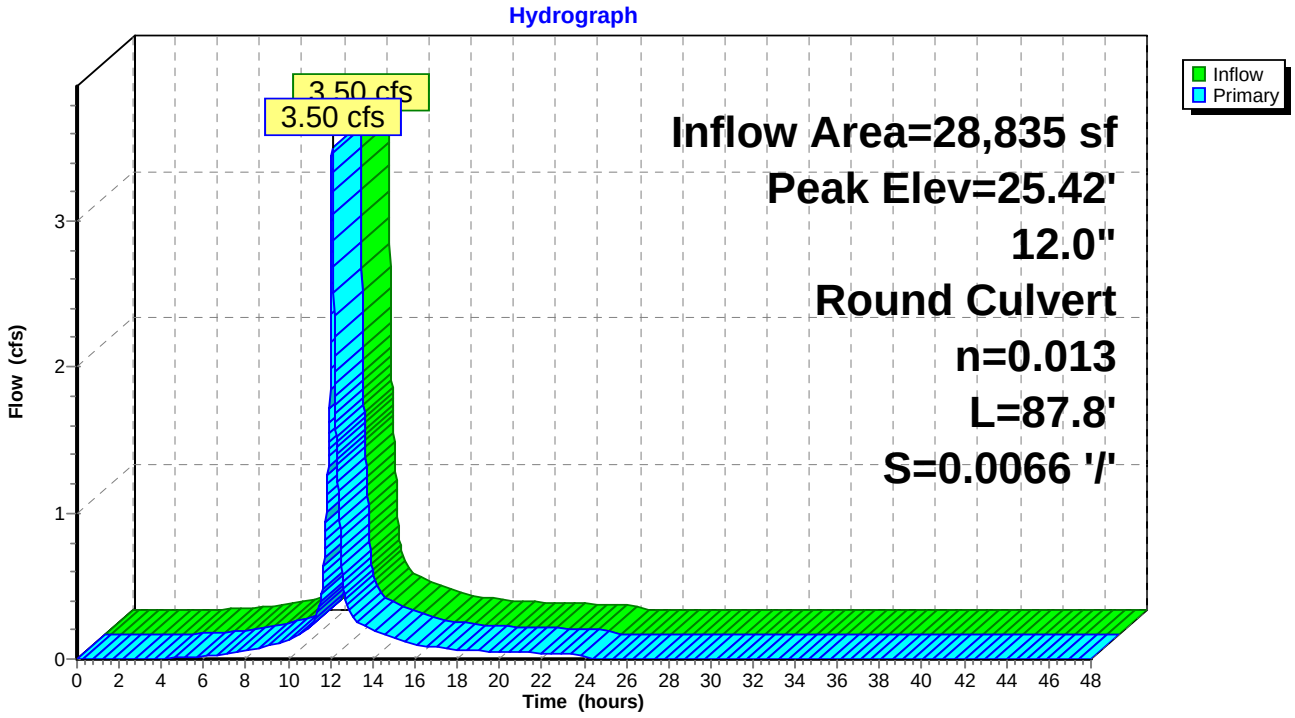
Inflow Area = 28,835 sf, 82.21% Impervious, Inflow Depth = 4.76" for 25-Year event
Inflow = 3.50 cfs @ 12.08 hrs, Volume= 11,442 cf
Outflow = 3.50 cfs @ 12.08 hrs, Volume= 11,442 cf, Atten= 0%, Lag= 0.0 min
Primary = 3.50 cfs @ 12.08 hrs, Volume= 11,442 cf

Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs / 2
Peak Elev= 25.42' @ 12.08 hrs
Flood Elev= 29.60'

Device	Routing	Invert	Outlet Devices
#1	Primary	23.69'	**12.0" Round Culvert** L= 87.8' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 23.69' / 23.11' S= 0.0066 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.79 sf

Primary OutFlow Max=3.50 cfs @ 12.08 hrs HW=25.42' TW=23.98' (Dynamic Tailwater)
1=Culvert (Barrel Controls 3.50 cfs @ 4.45 fps)

Pond 23P: CBR 1380



Summary for Pond 25P: CBR 2113

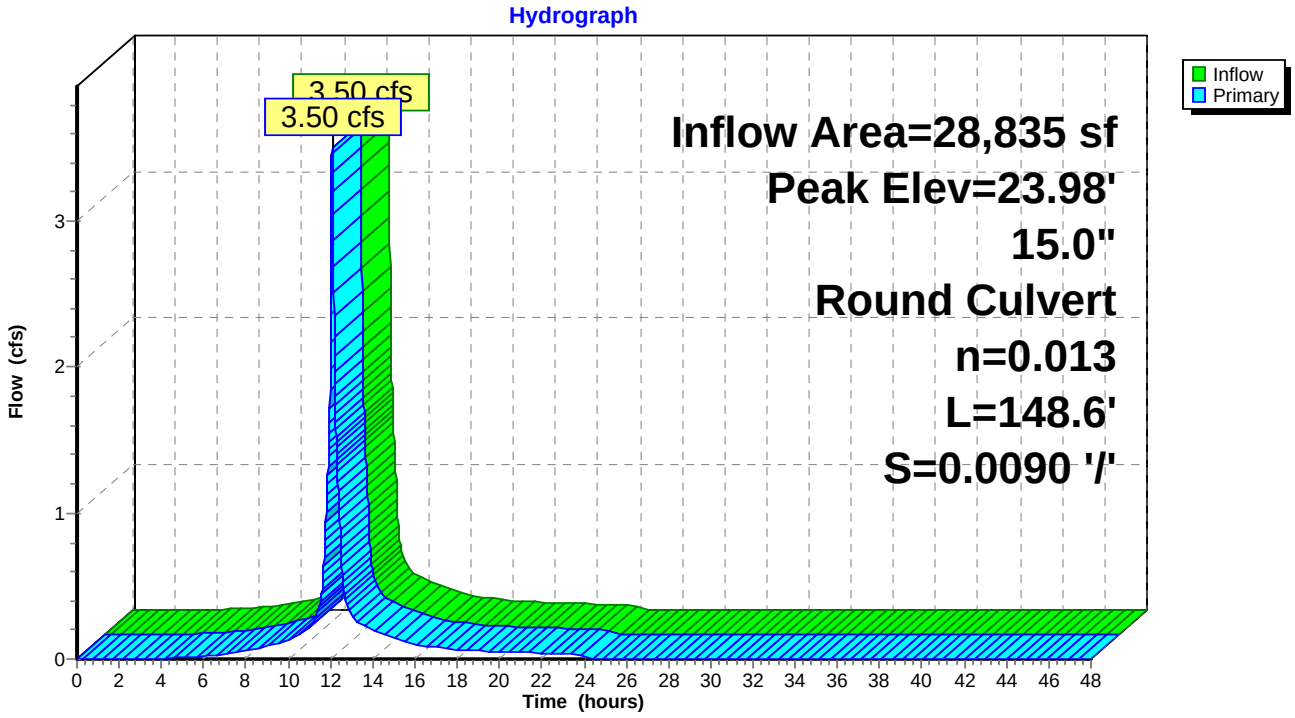
Inflow Area = 28,835 sf, 82.21% Impervious, Inflow Depth = 4.76" for 25-Year event
Inflow = 3.50 cfs @ 12.08 hrs, Volume= 11,442 cf
Outflow = 3.50 cfs @ 12.08 hrs, Volume= 11,442 cf, Atten= 0%, Lag= 0.0 min
Primary = 3.50 cfs @ 12.08 hrs, Volume= 11,442 cf

Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs / 2
Peak Elev= 23.98' @ 12.08 hrs
Flood Elev= 29.47'

Device	Routing	Invert	Outlet Devices
#1	Primary	22.80'	**15.0" Round Culvert** L= 148.6' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 22.80' / 21.47' S= 0.0090 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.23 sf

Primary OutFlow Max=3.50 cfs @ 12.08 hrs HW=23.98' TW=22.02' (Dynamic Tailwater)
1=Culvert (Inlet Controls 3.50 cfs @ 2.92 fps)

Pond 25P: CBR 2113



Summary for Pond 26P: CB-5

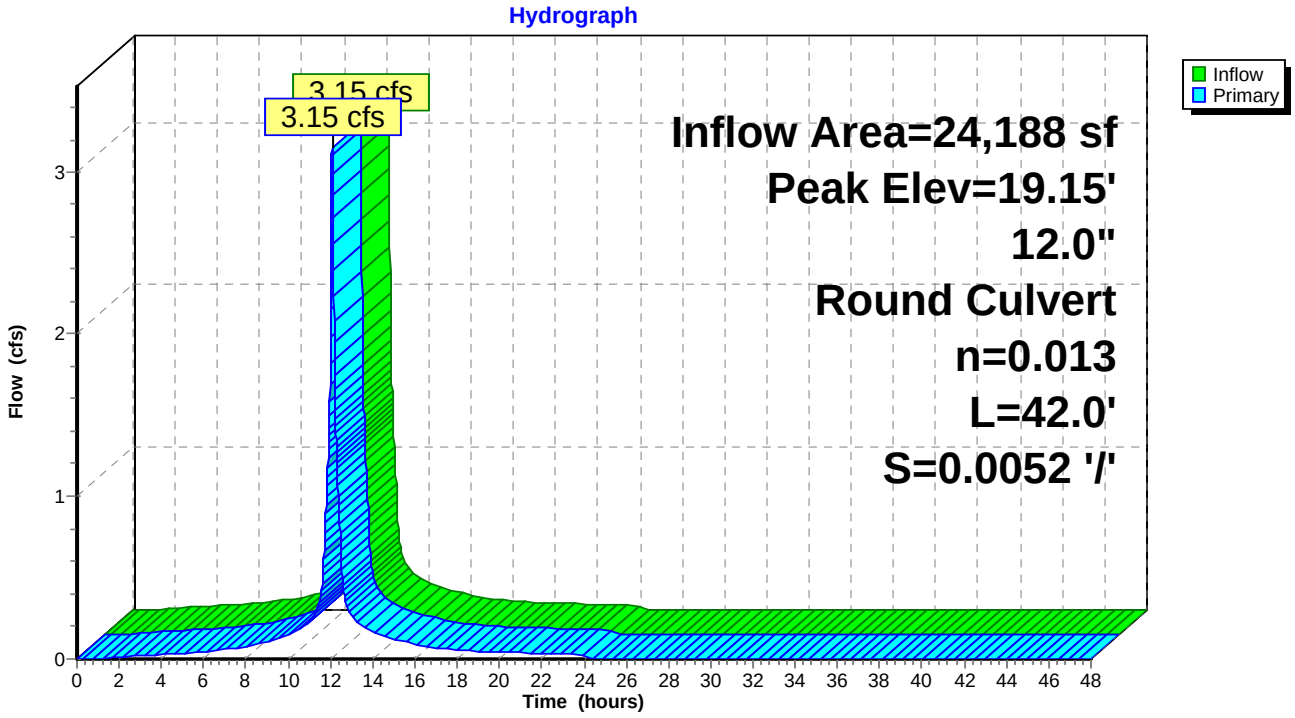
Inflow Area = 24,188 sf, 97.43% Impervious, Inflow Depth = 5.49" for 25-Year event
Inflow = 3.15 cfs @ 12.08 hrs, Volume= 11,069 cf
Outflow = 3.15 cfs @ 12.08 hrs, Volume= 11,069 cf, Atten= 0%, Lag= 0.0 min
Primary = 3.15 cfs @ 12.08 hrs, Volume= 11,069 cf

Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs / 2
Peak Elev= 19.15' @ 12.09 hrs
Flood Elev= 20.55'

Device	Routing	Invert	Outlet Devices
#1	Primary	14.66'	**12.0" Round Culvert** L= 42.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 14.66' / 14.44' S= 0.0052 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.79 sf

Primary OutFlow Max=3.03 cfs @ 12.08 hrs HW=19.08' TW=18.05' (Dynamic Tailwater)
1=Culvert (Inlet Controls 3.03 cfs @ 3.85 fps)

Pond 26P: CB-5



Summary for Pond EX WTLND: Existing Wetland

Inflow Area = 403,614 sf, 67.68% Impervious, Inflow Depth = 4.59" for 25-Year event
Inflow = 31.43 cfs @ 12.12 hrs, Volume= 154,517 cf
Outflow = 31.05 cfs @ 12.14 hrs, Volume= 154,517 cf, Atten= 1%, Lag= 1.3 min
Primary = 25.46 cfs @ 12.14 hrs, Volume= 150,582 cf
Secondary = 5.60 cfs @ 12.14 hrs, Volume= 3,935 cf

Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs / 2
Peak Elev= 7.31' @ 12.14 hrs Surf.Area= 2,875 sf Storage= 2,487 cf
Flood Elev= 9.00' Surf.Area= 3,742 sf Storage= 4,763 cf

Plug-Flow detention time= (not calculated: outflow precedes inflow)
Center-of-Mass det. time= 0.4 min (966.5 - 966.0)

Volume	Invert	Avail.Storage	Storage Description
#1	6.00'	4,763 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

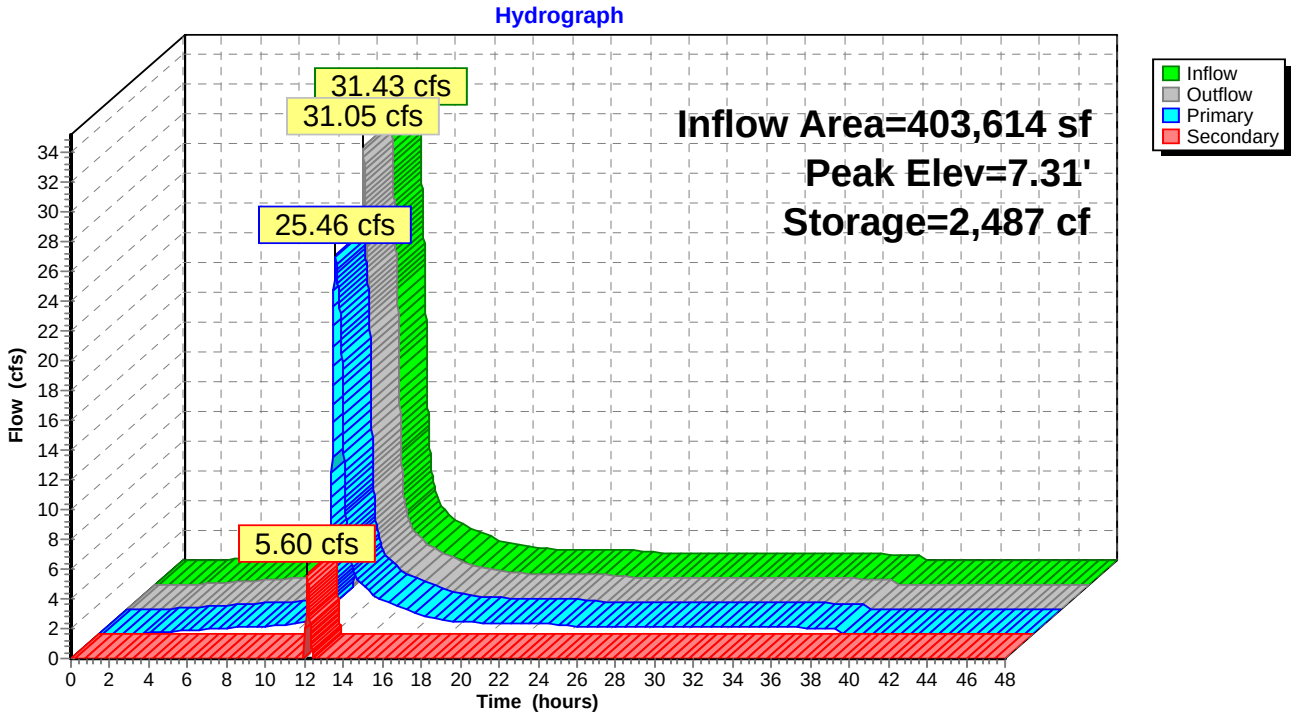
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
6.00	821	0	0
7.00	2,481	1,651	1,651
8.00	3,742	3,112	4,763

Device	Routing	Invert	Outlet Devices
#1	Primary	4.89'	**36.0" Round Culvert** L= 80.0' CMP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 4.89' / 3.61' S= 0.0160 '/' Cc= 0.900 n= 0.025 Corrugated metal, Flow Area= 7.07 sf
#2	Secondary	7.00'	**13.0' long x 4.0' breadth Overflow** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 3.50 4.00 4.50 5.00 5.50 Coef. (English) 2.38 2.54 2.69 2.68 2.67 2.67 2.65 2.66 2.66 2.68 2.72 2.73 2.76 2.79 2.88 3.07 3.32

Primary OutFlow Max=25.45 cfs @ 12.14 hrs HW=7.31' TW=0.00' (Dynamic Tailwater)
└**1=Culvert** (Barrel Controls 25.45 cfs @ 5.69 fps)

Secondary OutFlow Max=5.59 cfs @ 12.14 hrs HW=7.31' TW=0.00' (Dynamic Tailwater)
└**2=Overflow** (Weir Controls 5.59 cfs @ 1.38 fps)

Pond EX WTLND: Existing Wetland



Summary for Pond SSF-1: Subsurface Sand Filter 1

Inflow Area = 277,920 sf, 88.86% Impervious, Inflow Depth = 3.90" for 25-Year event
Inflow = 27.29 cfs @ 12.08 hrs, Volume= 90,438 cf
Outflow = 13.47 cfs @ 12.18 hrs, Volume= 90,441 cf, Atten= 51%, Lag= 6.0 min
Primary = 13.47 cfs @ 12.18 hrs, Volume= 90,441 cf

Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs / 2
Peak Elev= 14.17' @ 12.18 hrs Surf.Area= 20,084 sf Storage= 36,291 cf
Flood Elev= 19.43' Surf.Area= 20,269 sf Storage= 38,911 cf

Plug-Flow detention time= (not calculated: outflow precedes inflow)
Center-of-Mass det. time= 322.4 min (1,082.6 - 760.2)

Volume	Invert	Avail.Storage	Storage Description
#1A	10.99'	19,065 cf	**133.00'W x 137.78'L x 3.50'H Field A Z=1.0** 67,509 cf Overall - 19,846 cf Embedded = 47,663 cf x 40.0% Voids
#2A	11.49'	19,846 cf	**ADS_StormTech SC-740 +Cap** x 432 Inside #1 Effective Size= 44.6"W x 30.0"H => 6.45 sf x 7.12'L = 45.9 cf Overall Size= 51.0"W x 30.0"H x 7.56'L with 0.44' Overlap 24 Rows of 18 Chambers
		38,911 cf	Total Available Storage

Storage Group A created with Chamber Wizard

Device	Routing	Invert	Outlet Devices
#1	Primary	8.00'	**24.0" Round Culvert** L= 34.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 8.00' / 7.00' S= 0.0294 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 3.14 sf
#2	Device 1	8.15'	**3.0" Vert. UD Orifice** C= 0.600
#3	Device 2	8.15'	**6.0" Round Header Pipe** L= 3.3' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 8.15' / 8.10' S= 0.0152 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.20 sf
#4	Device 1	13.00'	**6.0' long Weir Wall** 2 End Contraction(s)
#5	Device 3	10.99'	**4.000 in/hr Filtration over Surface area**
#6	Device 4	11.49'	**24.0" Round Culvert** L= 3.3' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 11.49' / 11.44' S= 0.0152 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 3.14 sf

Primary OutFlow Max=13.46 cfs @ 12.18 hrs HW=14.16' TW=7.29' (Dynamic Tailwater)
- **1=Culvert** (Passes 13.46 cfs of 34.38 cfs potential flow)
  - **2=UD Orifice** (Orifice Controls 0.57 cfs @ 11.69 fps)
    - **3=Header Pipe** (Passes 0.57 cfs of 2.27 cfs potential flow)
      - **5=Filtration** (Passes 0.57 cfs of 1.86 cfs potential flow)
  - **4=Weir Wall** (Passes 12.89 cfs of 23.71 cfs potential flow)
    - **6=Culvert** (Inlet Controls 12.89 cfs @ 4.10 fps)

Pond SSF-1: Subsurface Sand Filter 1 - Chamber Wizard Field A

Chamber Model = ADS_StormTech SC-740 +Cap (ADS StormTech® SC-740 with cap length)
Effective Size= 44.6"W x 30.0"H => 6.45 sf x 7.12'L = 45.9 cf
Overall Size= 51.0"W x 30.0"H x 7.56'L with 0.44' Overlap

51.0" Wide + 12.0" Spacing = 63.0" C-C Row Spacing

18 Chambers/Row x 7.12' Long +0.81' Cap Length x 2 = 129.78' Row Length +48.0" End Stone x 2 = 137.78' Base Length
24 Rows x 51.0" Wide + 12.0" Spacing x 23 + 48.0" Side Stone x 2 = 133.00' Base Width
6.0" Base + 30.0" Chamber Height + 6.0" Cover = 3.50' Field Height

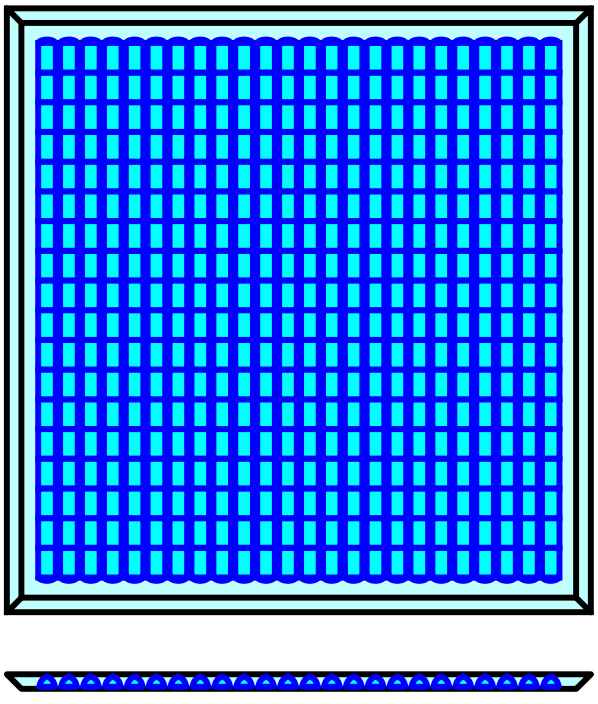
1.0 '/' Side-Z x Height = 42.0" Flare/Side
Base Length + Flare x 2 = 144.78' Top Length
Base Width + Flare x 2 = 140.00' Top Width

432 Chambers x 45.9 cf = 19,846.1 cf Chamber Storage

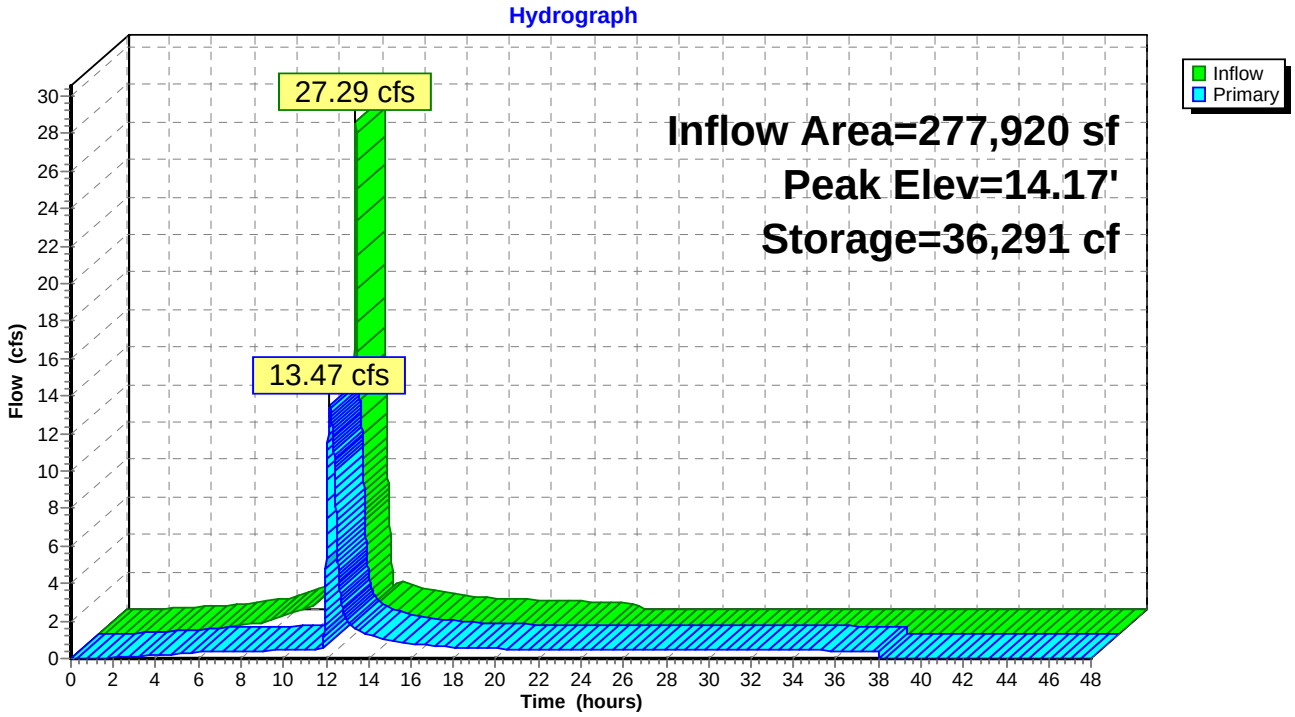
67,509.2 cf Field - 19,846.1 cf Chambers = 47,663.1 cf Stone x 40.0% Voids = 19,065.3 cf Stone Storage

Chamber Storage + Stone Storage = 38,911.3 cf = 0.893 af
Overall Storage Efficiency = 57.6%
Overall System Size = 137.78' x 133.00' x 3.50'

432 Chambers
2,500.3 cy Field
1,765.3 cy Stone



Pond SSF-1: Subsurface Sand Filter 1

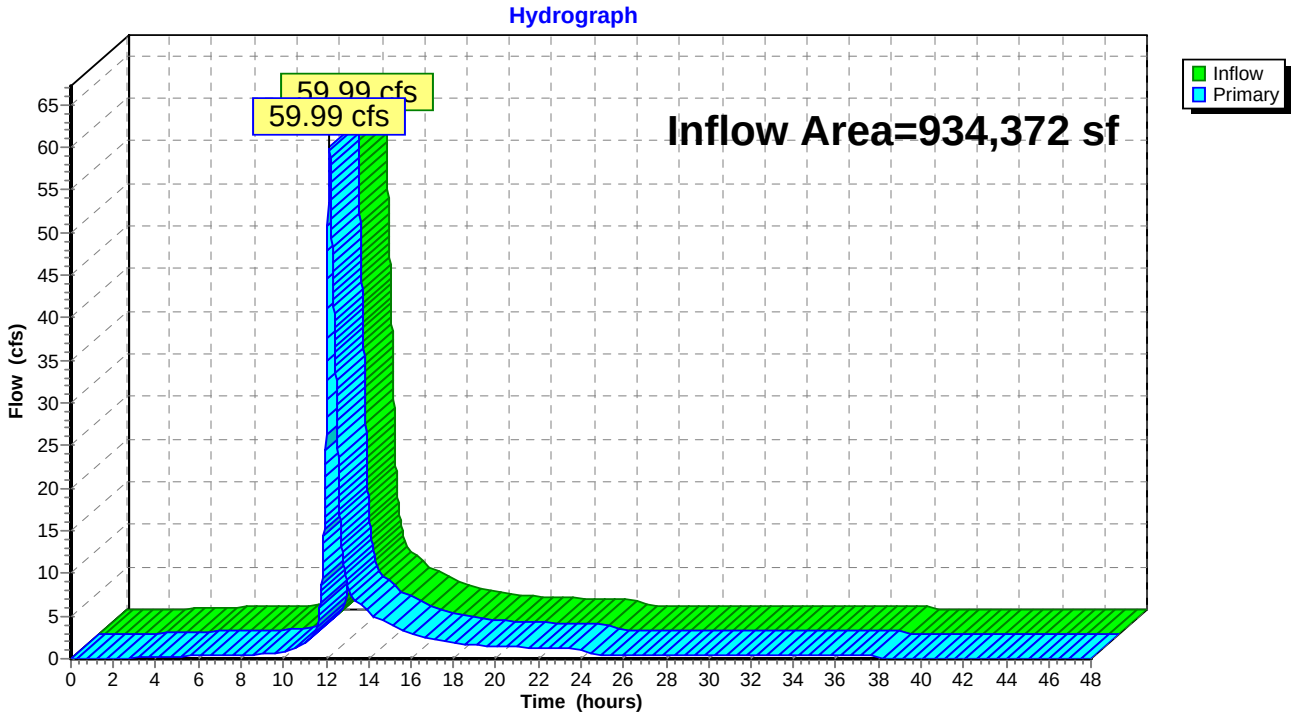


Summary for Link SP-1: Study Point 1

Inflow Area = 934,372 sf, 41.64% Impervious, Inflow Depth = 3.44" for 25-Year event
Inflow = 59.99 cfs @ 12.16 hrs, Volume= 267,628 cf
Primary = 59.99 cfs @ 12.16 hrs, Volume= 267,628 cf, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs

Link SP-1: Study Point 1

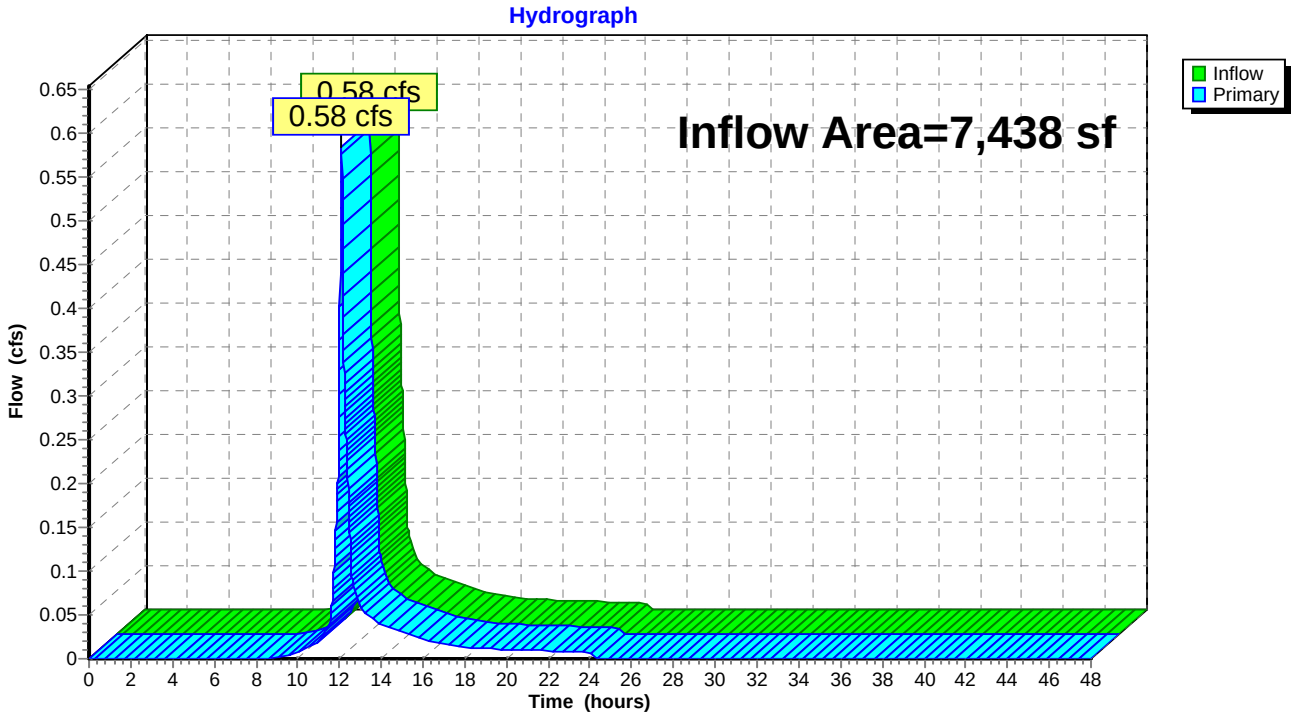


Summary for Link SP-2: Study Point 2

Inflow Area = 7,438 sf, 31.78% Impervious, Inflow Depth = 2.92" for 25-Year event
Inflow = 0.58 cfs @ 12.09 hrs, Volume= 1,812 cf
Primary = 0.58 cfs @ 12.09 hrs, Volume= 1,812 cf, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs

Link SP-2: Study Point 2



Attachment D

Inspection, Maintenance, and Housekeeping Plan

INSPECTION, MAINTENANCE, AND HOUSEKEEPING PLAN
Portland Transportation Center
Thompson's Point Connector
Portland, Maine

Introduction

The following plan outlines the anticipated inspection and maintenance procedures for the erosion and sedimentation control measures as well as stormwater management facilities for the project. This plan also outlines several housekeeping requirements that shall be followed during and after construction. These procedures shall be followed in order to ensure the intended function of the designed measures and to prevent unreasonably adverse impacts to the surrounding environment.

The procedures outlined in this Inspection, Maintenance and Housekeeping Plan are provided as an overview of the anticipated practices to be used on this site. In some instances, additional measures may be required due to unexpected conditions. For additional detail on any of the erosion and sedimentation control measures or stormwater management devices to be utilized on this project, refer to the most recently revised edition of the "Maine Erosion and Sedimentation Control BMP" manual and/or the "Stormwater Management for Maine: Best Management Practices" manual as published by the Maine Department of Environmental Protection (MDEP).

During Construction

1. **Inspection:** During the construction process, it is the Contractor's responsibility to comply with the inspection and maintenance procedures outlined in this section and the erosion and sedimentation control plan for the project. These responsibilities include inspecting disturbed and impervious areas, erosion control measures, materials storage areas that are exposed to precipitation, and locations where vehicles enter or exit the site. These areas shall be inspected at least once a week as well as before and after a storm event, and prior to completing permanent stabilization measures. A person with knowledge of erosion and stormwater control, including the standards and conditions in any applicable permits, shall conduct the inspections.

2. **Maintenance:** All measures shall be maintained in an effective operating condition until areas are permanently stabilized. If Best Management Practices (BMPs) need to be maintained or modified, additional BMPs are necessary, or other corrective action is needed, implementation must be completed within 7 calendar days and prior to any storm event (rainfall).

3. **Documentation:** A log summarizing the inspections and any corrective action taken must be maintained on-site. Corrective action shall be performed in general conformance with the Maine Construction General Permit and Maine DEP Chapter 500 Stormwater standards. The log must include the name(s) and qualifications of the person making the inspections, the date(s) of the inspections, and major observations about the operation and maintenance of erosion and sedimentation controls, material storage areas, and vehicle access points to the site. Major observations must include BMPs that need maintenance, BMPs that failed to operate as designed or proved inadequate for a particular location, and locations where additional BMPs are needed. For each BMP requiring maintenance, BMP needing replacement, and location needing additional BMPs, note in the log the corrective action taken and when it was taken. The log must be made

accessible to the appropriate regulatory agency upon request. The permittee shall retain a copy of the log for a period of at least three years from the completion of permanent stabilization.

4. **Specific Inspection and Maintenance Tasks:** The following is a list of erosion control and stormwater management measures and the specific inspection and maintenance tasks to be performed during construction.

A. Filter Berms:

- Hay bale barriers, silt fences, and filter berms shall be inspected immediately after each rainfall and at least daily during prolonged rainfall.
- If the fabric on a silt fence or filter barrier should decompose or become ineffective prior to the end of the expected usable life and the barrier is still necessary, it shall be replaced.
- Sediment deposits should be removed after each storm event. They must be removed before deposits reach approximately one-half the height of the barrier.
- Filter berms shall be reshaped as needed.
- Any sediment deposits remaining in place after the silt fence or filter barrier is no longer required should be dressed to conform to the existing grade, prepared, and seeded.

B. Stone Check Dams:

- Inspect the center of the dam to make sure it is lower than the edges. Erosion caused by high flows around the edges of the dam must be corrected.
- Sediment accumulation shall be removed prior to reaching half of the original design height.
- Areas beneath stone check dams must be seeded and mulched upon removal.

C. Riprap Materials:

- Once a riprap installation has been completed, it should require very little maintenance. It shall, however, be inspected periodically to determine if high flows have caused scour beneath the riprap or dislodged any of the stone.

D. Erosion Control Blankets:

- Inspect these reinforced areas semi-annually and after significant rainfall events for slumping, sliding, seepage, and scour. Pay close attention to unreinforced areas adjacent to the erosion control blankets, which may experience accelerated erosion.
- Review all applicable inspection and maintenance procedures recommended by the specific blanket manufacturer. These tasks shall be included in addition to the requirements of this plan.

E. Stabilized Construction Entrances/Exits:

- The exit shall be maintained in a condition that will prevent tracking of sediment onto public rights-of-way.

- When the control pad becomes ineffective, the stone shall be removed along with the collected soil material. The entrance should then be reconstructed.
- Areas that have received mud-tracking or sediment deposits shall be swept or washed. Washing shall be done on an area stabilized with aggregate, which drains into an approved sediment-trapping device (not into storm drains, ditches, or waterways).

F. Temporary Seed and Mulch:

- Mulched areas should be inspected after rain events to check for rill erosion.
- If less than 90% of the soil surface is covered by mulch, additional mulch shall be applied in bare areas.
- In applications where seeding and mulch have been applied in conjunction with erosion control blankets, the blankets must be inspected after rain events for dislocation or undercutting.
- Mulch shall continue to be reapplied until 95% of the soil surface has established temporary vegetative cover.

G. Stabilized Temporary Drainage Swales:

- Sediment accumulation in the swale shall be removed once the cross section of the swale is reduced by 25%.
- The swales shall be inspected after rainfall events. Any evidence of sloughing of the side slopes or channel erosion shall be repaired and corrective action should be taken to prevent reoccurrence of the problem.
- In addition to the stabilized lining of the channel (i.e. erosion control blankets), stone check dams may be needed to further reduce channel velocity.

5. **Housekeeping:** The following general performance standards apply to the proposed project.

A. Spill prevention: Controls must be used to prevent pollutants from being discharged from materials on-site, including storage practices to minimize exposure of the materials to stormwater, and appropriate spill prevention, containment, and response planning and implementation. A Spill, Prevention, Control and Countermeasures Plan is created for the project and is to be kept onsite at all times.

B. Groundwater protection: During construction, liquid petroleum products and other hazardous materials with the potential to contaminate groundwater may not be stored or handled in areas of the site draining to an infiltration area. An "infiltration area" is any area of the site that by design or as a result of soils, topography and other relevant factors, accumulates runoff that infiltrates into the soil. Dikes, berms, sumps, and other forms of secondary containment that prevent discharge to groundwater may be used to isolate portions of the site for the purposes of storage and handling of these materials.

C. Fugitive sediment and dust: Actions must be taken to insure that activities do not result in noticeable erosion of soils or fugitive dust emissions during or after construction. Oil may not be used for dust control.

D. Debris and other materials: Litter, construction debris, and chemicals exposed to stormwater must be prevented from becoming a pollutant source.

E. Trench or foundation dewatering: Trench dewatering is the removal of water from trenches, foundations, cofferdams, ponds, and other areas within the construction area that retain water after excavation. In most cases, the collected water is heavily silted and hinders correct and safe construction practices. The collected water must be removed from the ponded area, either through gravity or pumping, and must be spread through natural wooded buffers or removed to areas that are specifically designed to collect the maximum amount of sediment possible, like a cofferdam sedimentation basin. Avoid allowing the water to flow over disturbed areas of the site. Equivalent measures may be taken if approved.

Post-Construction

1. **Inspection:** After construction, it is the responsibility of Langdon Street Real Estate to comply with the inspection and maintenance procedures outlined in this section. All measures must be maintained in effective operating condition. A person with knowledge of erosion and stormwater control, including the standards and conditions in all applicable permits, shall conduct the inspections.

2. **Specific Inspection and Maintenance Tasks:** The following is a list of permanent erosion control and stormwater management measures and the inspection and maintenance tasks to be performed after construction.

   A. Vegetated Areas:
   - Inspect vegetated areas, particularly slopes and embankments, early in the growing season or after heavy rains to identify active or potential erosion problems.
   - Replant bare areas or areas with sparse growth. Where rill erosion is evident, armor the area with an appropriate lining or divert the erosive flows to on-site areas able to withstand the concentrated flows.

   B. Ditches, Swales and Other Open Channels:

   - Inspect ditches, swales, level spreaders and other open stormwater channels in the spring, in the late fall, and after heavy rains to remove any obstructions to flow. Remove accumulated sediments and debris, remove woody vegetative growth that could obstruct flow, and repair any erosion of the ditch lining.
   - Vegetated ditches must be mowed at least annually or otherwise maintained to control the growth of woody vegetation and maintain flow capacity.
   - Any woody vegetation growing through riprap linings must also be removed. Repair any slumping side slopes as soon as practicable.
   - If the ditch has a riprap lining, replace riprap in areas where any underlying filter fabric or underdrain gravel is showing through the stone or where stones have dislodged.

   C. Winter Sanding:

   - Clear accumulations of winter sand along access road at least once a year,

preferably in the spring.

- Accumulations of sand along road shoulders may be removed by grading excess sand to the pavement edge and removing it manually or by a front-end loader or other acceptable method.

D. Culverts:

- Inspect culverts in the spring, in the late fall, and after heavy rains to remove any obstructions to flow.
- Remove accumulated sediments and debris at the inlet, at the outlet, and within the conduit.
- Inspect and repair any erosion damage at the culvert's inlet and outlet.

E. Subsurface Sand Filter:

- Inspect the site monthly for the first few months after construction. Then inspections can occur on an annual basis, preferably after rain events when clogging will be obvious.
- Make any repairs necessary to ensure the measure is operating properly.
- Regular maintenance is necessary to remove surface sediment, trash, debris, and leaf litter.
- Outlets and chambers need to be cleaned/repaired when drawdown times in the filter exceed 36 hours.
- In certain cases, layers of sand may need to be replaced every 3 to 5 years.

3. Documentation:

A. A log summarizing the inspections and any corrective action taken must be maintained. The log must include the name(s) and qualifications of the person making the inspections, the date(s) of the inspections, and major observations about the operation and maintenance of controls. Major observations must include BMPs that need maintenance, BMPs that failed to operate as designed or proved inadequate for a particular location, and locations where additional BMPs are needed. For each BMP requiring maintenance, BMP needing replacement, and location needing additional BMPs, note in the log the corrective action taken and when it was taken. The log must be made accessible to the appropriate regulatory agency upon request. A sample "Stormwater Inspection and Maintenance Form" has been included as Attachment 1 of this Inspection, Maintenance, and Housekeeping Plan.

4. Maine DEP Recertification: A certification of the following shall be submitted to the MDEP within three months of the expiration of each five year interval from the date of issuance of MDEP permits.

A. Identification and repair of erosion problems. All areas of the project site have been inspected for areas of erosion, and appropriate steps have been taken to permanently stabilize these areas.

B. Inspection and repair of stormwater control system. All aspects of the stormwater control system have been inspected for damage, wear, and malfunction, and appropriate steps have been taken to repair or replace the system, or portions of the system.

C. The Inspection, Maintenance, and Housekeeping Plan for the site is being implemented as written, or modifications to the plan have been submitted to and approved by the MDEP, and the maintenance log is being maintained.

5. Duration of Maintenance: Perform maintenance as described and required for any associated permits unless and until the system is formally accepted by a municipality or quasi-municipal district, or is placed under the jurisdiction of a legally created association that will be responsible for the maintenance of the system. If a municipality or quasi-municipal district chooses to accept a stormwater management system, or a component of a stormwater system, it must provide a letter to the MDEP stating that it assumes responsibility for the system. The letter must specify the components of the system for which the municipality or district will assume responsibility, and that the municipality or district agrees to maintain those components of the system in compliance with MDEP standards. Upon such assumption of responsibility, and approval by the MDEP, the municipality, quasi-municipal district, or association becomes a co-permittee for this purpose only and must comply with all terms and conditions of the permit.

Attachments

Attachment 1 – Stormwater Inspection and Maintenance Log Form

ATTACHMENT 1 – STORMWATER INSPECTION AND MAINTENANCE LOG

Portland Transportation Center
Thompson's Point Connector
Portland, Maine

This log is intended to accompany the Inspection, Maintenance and Housekeeping Plan for the proposed Portland Transportation Center. The following items shall be checked, cleaned and maintained on a regular basis as specified in the Maintenance Plan and as described in the table below. This log shall be kept on file for a minimum of five (5) years and shall be available for review by the municipality and MDEP. Qualified personnel familiar with the onsite drainage systems and soils shall perform all inspections. Attached is a copy of the construction and post-construction maintenance logs.

Items	INSPECTOR NAME	DATE PERFORMED	SUGGESTED INTERVAL
Vegetated Areas			
Inspect all slopes and embankments			Annually
Replant bare areas or areas with sparse growth			Annually
Paved Surfaces			
Clear accumulated winter sand			Annually
Remove sediment along edges and in pockets			Annually
Ditches & Swales			
Remove any obstructions and accumulated sediments and debris			Monthly
Repair any erosion of ditch lining			Annually
Mow vegetated ditches			Annually
Remove woody vegetation growing through riprap			Annually
Repair any slumping side slopes			Annually
Replace riprap where stones have dislodged			Annually
Catch Basins			
Remove accumulated sediments and debris in the sump and at grate			Annually
Culverts			
Remove accumulated sediments and debris at the inlet, outlet, within conduit			Annually
Repair any erosion at inlet and outlet			Annually
Sump Depth			Annually

Subsurface Sand Filter				
	Inspection of subsurface structure following major storm events			Semi-Annually (during first year)
	Inspection after major storm to ensure proper function			Bi-Annually
	Remove sediment and debris			Annually
	Clean/repair outlets and chambers			When drawdown times in filter exceed 48 hrs

Section 13

Urban Impaired Stream Submissions

Section 13

Urban Impaired Stream Standard

Not Applicable. The proposed project is not within the watershed of an urban impaired stream.

Please refer to the Stormwater Management Report enclosed as part of Section 12 for more detailed information on the subject site.

Section 14

Basic Standards Submissions

Section 14

Basic Standards

Erosion & Sediment Control

The design of the expansion of the Portland Transportation Center parking has incorporated best management practices to minimize the potential for erosion and the transport of sediments from the construction activities. An Erosion and Sediment Control Plan has been prepared and is included in this section of the application and includes provisions for inspection, maintenance, and winter erosion control measures. Specific erosion control measures and their associated construction details are included on the design plans for the proposed development.

The site contractor for project will be responsible for the maintenance of all erosion and sedimentation control measures during the construction of the project, and the keeping of records. At a minimum, the appropriate and relevant activities for each of the erosion and sedimentation control measures will be performed on the prescribed schedule.

A. Siltation fencing needs to be inspected every seven days or after a major rainfall event to assure that debris or sediments do not reduce the effectiveness of the system. Any breeches in the siltation fencing should be repaired immediately. Any sediment which leaves the project site must be removed immediately. Siltation fencing shall be repaired in accordance with installation instruction shown on the project plan set.

B. Stabilized construction entrances shall be maintained in a condition which will prevent tacking or flowing of sediment onto public right-of-way. This may require periodic top dressing with additional stone as conditions demand and repair and/or cleanout of any measures used to trap sediment. All sediment spilled dropped washed or tracked onto public right-of-way must be removed immediately.

C. Following the temporary and/or final seeding the contractor shall inspect the work area semimonthly until the seeding has been established. Established means a minimum 85%-90% of areas vegetated with vigorous growth. Reseeding shall be carried out by the contractor with follow-up inspections in the event of any failures until vegetation is adequately established.

D. The contractor must install any added measures which may be necessary to control erosion/sedimentation from the site dependent on the site and actual weather conditions.

E. Maintenance measures shall be applied as needed during the entire construction cycle. After each rainfall, snow storm or period of thawing and runoff or at least every seven days, the contractor shall perform a visual inspection of all installed erosion control measures. The contractor shall perform repairs as needed to allow continued and proper functioning of the erosion control measure. The contractor shall provide the necessary regulating agencies with written documentation describing dates of inspections and the necessary follow up work to maintain erosion control measures meeting the requirements of the plan set.

F. Care should be taken not to disturb erosion control measures during snowplowing. Any damage to erosion control measures during plowing should be repaired immediately.

Section 15

Groundwater

Section 15

Groundwater

A. Narrative and Report

1. Location

   See this Section for a copy of a Maine Geologic Survey Bedrock, Surficial Geology and Sand & Gravel Aquifer map with the project location depicted.

2. Quantity

   There will be no groundwater use or underground wastewater disposal. The proposed project involves the expansion of an existing parking area. There will be no additional impacts to the amount of potable water currently provided to the existing facility by Portland Water District.

3. Sources

   The proposed project involves the expansion of an existing parking area for the Portland Transportation Center. The proposed expansion will not result in any additional sources of contamination at the site.

4. Measures to Prevent Degradation

   All impervious drainage areas associated with streets, drives and walkways are directed to stormwater management facilities designed to current DEP treatment standards.

B. Groundwater Protection Plan

Inspection and housekeeping plans have been prepared for the maintenance of the stormwater treatment facilities.

C. Monitoring Plan

Not applicable.

SEBAGO TECHNICS

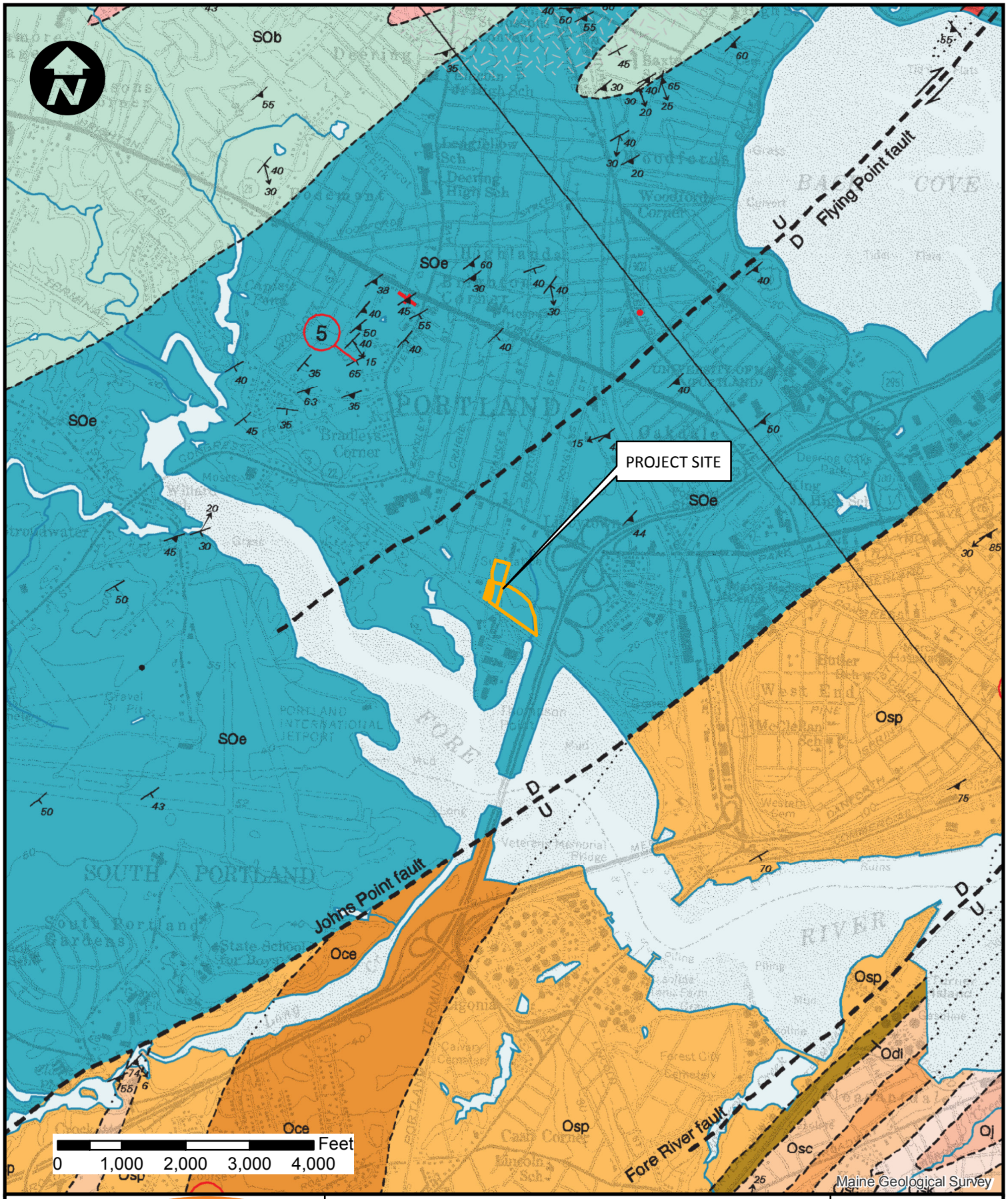
WWW.SEBAGOTECHNICS.COM

75 John Roberts Rd. - Suite 1A
South Portland, ME 04106
Tel. 207-200-2100

TITLE FOR:	AQUIFERS MAP PORTLAND TRANSPORTATION CENTER	SCALE:	1 " = 2,000 '
		DATE:	02/15/2018
LOCATION:	100 Thompsons Point Portland, ME 04102	INFORMATION:	Maine Geological Survey_ Aquifer Maps_24K_Portland West

99607_Aquifers Map.mxd

PROJECT NUMBER: 99607



SEBAGO TECHNICS

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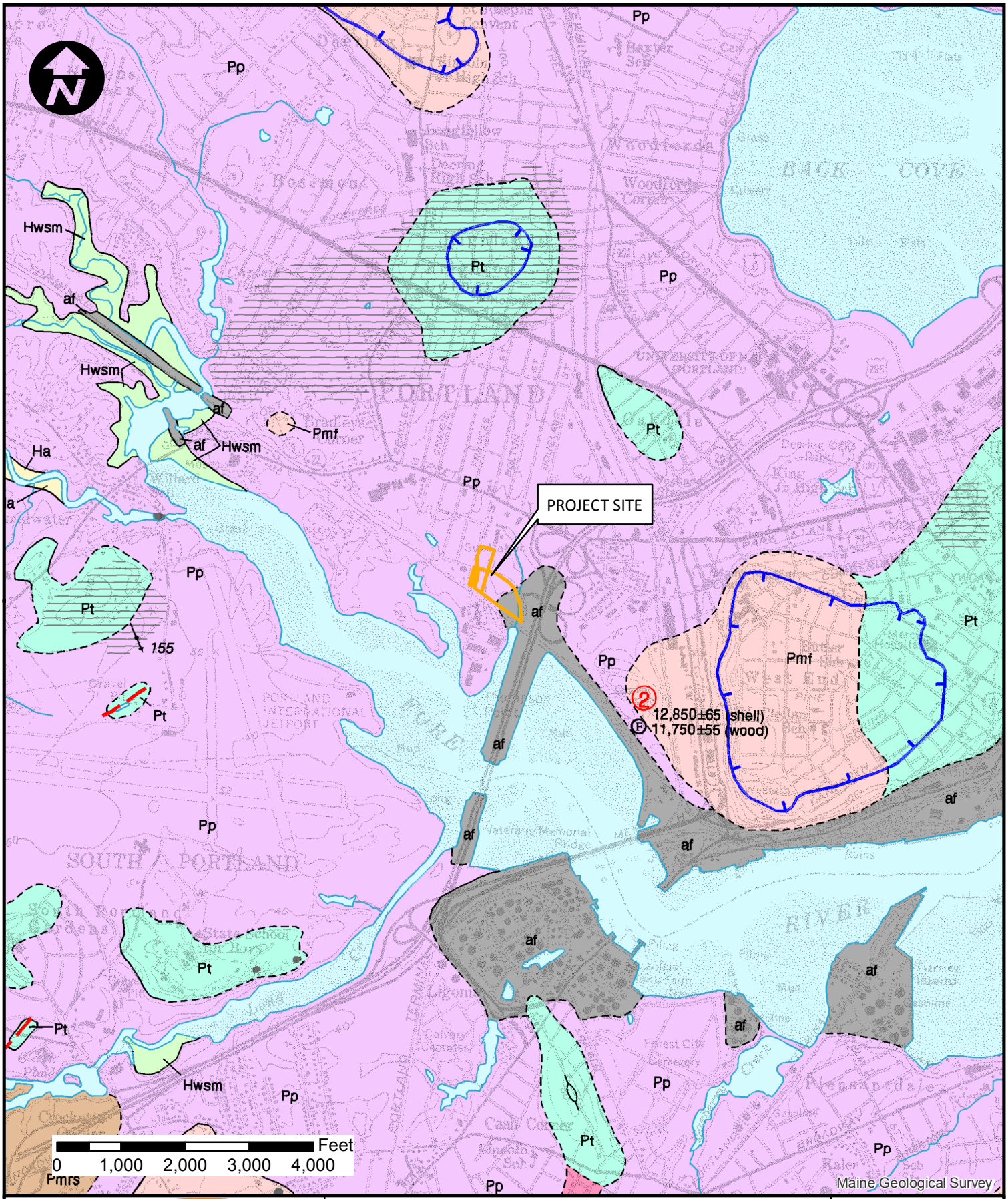
75 John Roberts Rd. - Suite 1A
South Portland, ME 04106
Tel. 207-200-2100

TITLE FOR:	BEDROCK GEOLOGY MAP PORTLAND TRANSPORTATION CENTER	SCALE:	1 " = 2,000 '
		DATE:	02/15/2018
LOCATION:	100 Thompsons Point Portland, ME 04102	INFORMATION:	Maine Geological Survey_Bedrock Geology Maps_24K_Portland West



SEBAGO TECHNICS

WWW.SEBAGOTECHNICS.COM

75 John Roberts Rd. - Suite 1A
South Portland, ME 04106
Tel. 207-200-2100

TITLE FOR:	SURFICIAL GEOLOGY MAP PORTLAND TRANSPORTATION CENTER	SCALE:	1 " = 2,000 '
		DATE:	02/15/2018
LOCATION:	100 Thompsons Point Portland, ME 04102	INFORMATION:	Maine Geological Survey_ Surficial Geology Maps_24K_Portland West

Section 16

Water Supply

Section 16

Water Supply

A. **Water Supply Method**

The proposed project involves the expansion of an existing parking lot at the Portland Transportation Center. The proposed project will not require additional water capacity from the Portland Water District.

B. Subsurface Wastewater Disposal

Not applicable. No subsurface wastewater disposal areas are proposed.

The project site is serviced by municipal sanitary sewer; however, given that the proposed project involves the expansion of an existing parking lot at the Portland Transportation Center, no additional sanitary sewer capacity is needed.

C. Total Usage

No additional water usage is proposed as par to f this project.

Section 17

Wastewater Disposal

Section 17

Wastewater Disposal

A. On-Site Subsurface Wastewater Disposal Systems

Not applicable. No subsurface wastewater disposal areas are proposed.

The project site is serviced by municipal sanitary sewer; however, given that the proposed project involves the expansion of an existing parking lot at the Portland Transportation Center, no additional sanitary sewer capacity is needed

B. Nitrate-Nitrogen Impact Assessment

Not applicable. As no individual or common subsurface sewage disposal systems are proposed for this project, no hydrogeological or nitrate-nitrogen impact assessment is required.

C. Municipal Facility or Utility Company Letter

Not applicable. The proposed project involves the expansion of an existing parking lot at the Portland Transportation Center. The proposed project will not require additional water capacity from the Portland Water District.

D. Wastewater Discharge Information

The proposed development will not discharge any liquid waste into any stream, river, pond, lake or other body of water.

E. Storage or Treatment Lagoons

The proposed development will not include any lagoons, impoundments, ponds or similar structures for storage involving liquid waste other than storm water.

Please see the stormwater management plan in Section 12 for stormwater related water treatment

Section 18

Solid Waste

Section 18

Solid Waste

A. Estimated Quantities of Solid Waste

The proposed project involves the expansion of an existing parking lot. It is expected to generate average quantities of waste as follows:

Municipal Solid Waste:
The proposed project will not result in the generation of any additional municipal solid waste.

Construction Waste:
The proposed project will result in the generation of approximately 418 cy of construction waste.

B. Off-Site Disposal of Construction/Demolition Debris

The construction debris associated with the proposed project will be comprised mostly from the demolition of the existing paved parking lot areas, and will include dry material such as asphalt and concrete. Roughly 23,751 square feet of pavement and other demolition debris (including precast structures, pipes and curbing) is to be removed: approximately 293 cubic yards of pavement; 105 cubic yards of curbing; 10 cubic yards of structures; and 345 linear feet of pipe; for a total of **418 cubic yards** of waste solid. All construction debris will be transported to the Riverside Recycling Facility located at 910 Riverside St, Portland, ME 04103 by a licensed Non-Hazardous Waste Transporter, likely Casella Waste Systems

C. On-Site Disposal of Wood Waste/Land Clearing Debris

No tree clearing is proposed. The proposed parking lot expansion is to occur within an area of wetland that is to be filled prior to construction. All fill material brought to the site will be clean fill. There will be no on-site disposal of debris.

D. Special or Hazardous Waste

The proposed parking lot expansion will not require storage of any special or hazardous waste.

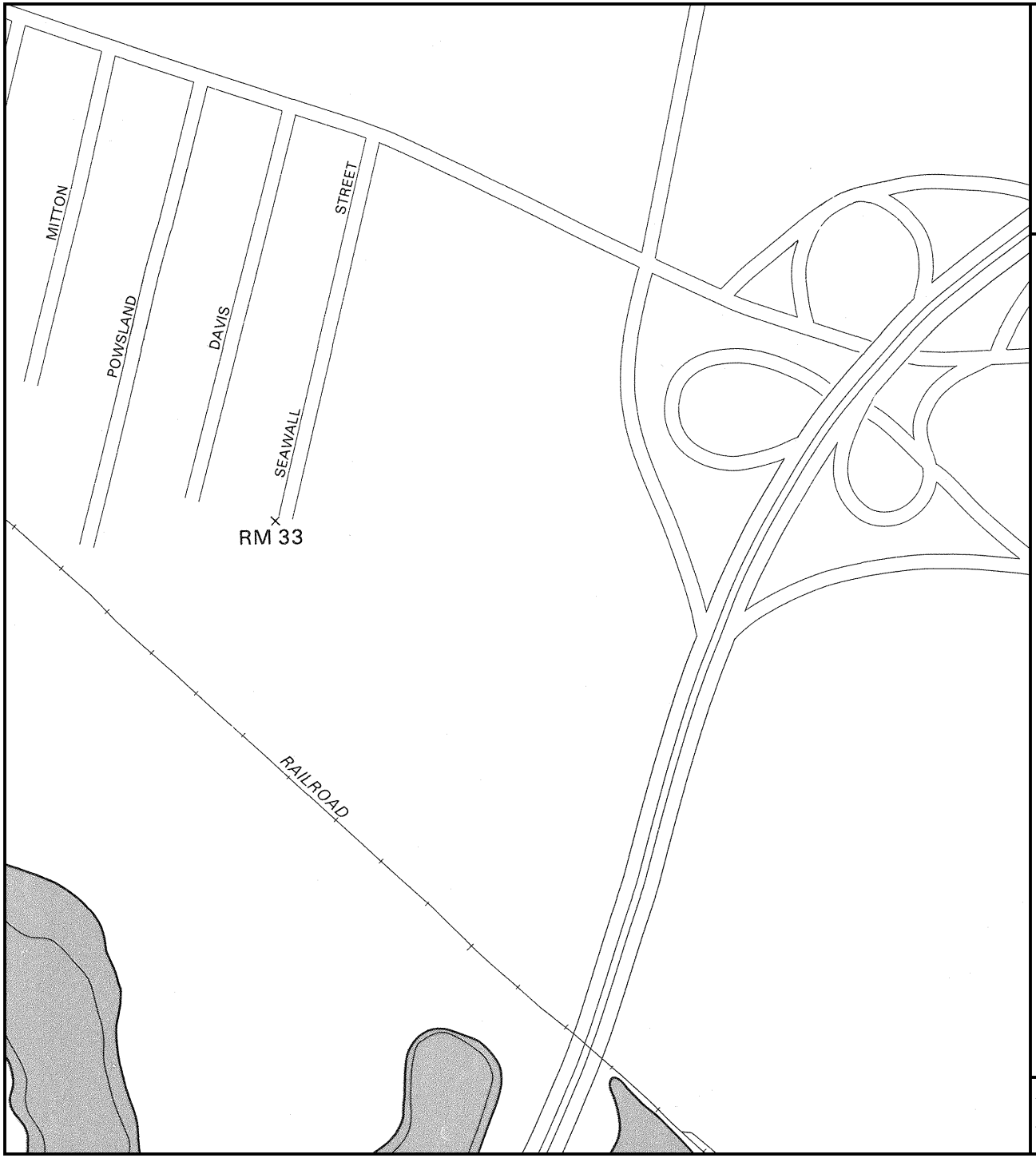
Section 19

Flooding

Section 19

Flooding

The Flood Insurance Rate Map (FIRM) for the City of Portland (Community Panel 230051 0013B, dated July 17, 1986) identifies the project site outside of any flood zone.



APPROXIMATE SCALE

400 0 400 FEET

NATIONAL FLOOD INSURANCE PROGRAM

FIRM

FLOOD INSURANCE RATE MAP

CITY OF
PORTLAND, MAINE
CUMBERLAND COUNTY

PANEL 13 OF 17
(SEE MAP INDEX FOR PANELS NOT PRINTED)

COMMUNITY-PANEL NUMBER
230051 0013 B

EFFECTIVE DATE:
JULY 17, 1986

Federal Emergency Management Agency

This is an official copy of a portion of the above referenced flood map. It was extracted using F-MIT On-Line. This map does not reflect changes or amendments which may have been made subsequent to the date on the title block. For the latest product information about National Flood Insurance Program flood maps check the FEMA Flood Map Store at www.msc.fema.gov

Section 20

Blasting

Section 20

Blasting

Given the nature of the site and the proposed project scope, it is not anticipated that blasting will be required. Should ledge be encountered during construction, a blasting plan will be submitted for approval that has been developed to be in compliance with the accepted limit for safe levels of blasting vibrations as developed by the U.S. Bureau of Mines as presented in Appendix B of the U.S. Bureau of Mines, RI 8507.

Blasting Requirements

Should blasting be necessary, we recommend that the following controls be implemented for the project:

The Contractor should comply with all applicable laws, rules, ordinances, and regulations of the federal government, the State of Maine, and the City of Portland governing transportation, storage, handling and use of explosives.

Prior to the start of rock excavation or blasting work, notices should be sent to residents and businesses in the area describing the blasting and rock excavation work, indicating the approximate schedule of work, and describing blasting procedures, mitigation measures, and blast warning signals.

Prior to the start of blasting work, pre-blast condition surveys should be conducted of all existing structures and conditions on the site, adjacent to the site, or in the vicinity of the site. These surveys should extend to such structures, wells, or an item that may be affected by the Contractor's blasting operations. As a minimum, condition surveys should be performed on all structures within 500 feet of anticipated blasting areas.

Prior to the start of blasting work, the Contractor should submit to the engineer for review a blasting plan containing details of proposed blasting and construction operations including:

A. Sequence and schedule of blasting rounds including the general sequence of drilling, blasting, excavating, etc.

B. Specifics of typical blast rounds and open cut blast rounds in deepest rock cut areas and areas closest to existing structures.

C. In each area specified, include the following blast round details:

- Diameter, spacing, burden, depth and orientation of each blast hole for each round design.
- Nomenclature and amount (in terms of weight and number of cartridges) of explosives and distribution of charge to be used within each hole, on each delay,

and the total for the blast.

- Nomenclature and type of detonators and delay pattern for the round.
- Type and location of stemming to be used in holes.
- Calculations of anticipated vibration levels at nearest adjacent structure or well.

D. Specifics of Test Blasts to check effectiveness and vibration characteristics of typical trench and open cut blasting rounds.

E. Methods of matting or covering the blast area to prevent fly rock and excessive air blast overpressure.

F. Name and qualifications of licensed blaster who will be on site at all times directly supervising the loading and detonation of each blast.

G. Name and qualifications of the person responsible for conducting pre-blast condition surveys.

H. Name and qualifications of the person responsible for monitoring and reporting blast vibrations.

I. Details of an audible advance signal system to be employed at the job site as a means of informing workers, Engineer, Architect, Owner, and the general public that a blast is about to occur. Details of access control during blasting.

The Contractor should conduct all blasting activity in such a manner that the peak particle velocity of ground vibration measured at the locations of the nearest structures or wells to the blast does not exceed the "safe limits" recommended by the U.S. Bureau of Mines as presented in Figure B-1 of Appendix B of U.S. Bureau of Mines, RI 8507.

The Contractor should conduct all blasting activities in such a way that sound levels from blasting shall not exceed the limits given in the Maine Department of Environmental Protection Rules, Chapter 375.10 (c)(4)(c).

# of Blasts Per Day	Sound Level Limit
1	129 dBL
2	126 dBL
3	124 dBL
4	123 dBL

Blast monitoring should be conducted by an independent firm trained in the use of a seismograph, and records should be analyzed and results reported by persons familiar with analyzing and reporting the frequency content of a seismograph record. A minimum of two (2) engineering seismographs shall be used for each blast, one each adjacent to the nearest off-site structures or wells which lie within a 300-foot radius of blasting activities.

Blast Monitoring Equipment: All instrumentation proposed for use on the project shall have been calibrated within the previous six (6) months to a standard traceable to the National Bureau of Standards. Characteristics of required instrumentation are listed below:

- Measure the three (3) mutually perpendicular components of particle velocity in the directions vertical, radial and perpendicular to the vibration source.

- Measure and display the maximum peak particle velocity component and air blast overpressure. These readings must be displayed and be able to be read in the field, immediately after each blast.

- Furnish a permanent time history record of particle velocity waveforms and air blast overpressure waveforms, so that frequency and time of maximum peak particle velocity or air blast overpressure can be determined.

Blast Monitoring Reports: Within 24 hours following each blast, the Contractor should submit to the Engineer a Blast Monitoring Report. Each Blast Monitoring Report should include all of the following applicable items:

- Blast round design data, as indicate in Section C of the Blasting Requirements.

- Blast Monitoring Location Plan, indicating the location of the blast, the monitoring locations, and the distances from the blast to monitoring locations.

- Vibration and air blast overpressure data from each seismograph, including a copy of the strip chart (or other permanent record of velocity/time waveform) with calibration and monitoring record marked with the date, time and location of the blast.

- In the event that the Contractor's design round results in ground vibrations and/or air blast overpressures exceed the blasting limit criteria presented herein, the Contractor should immediately revise the round design appropriately and submit the revised round design to the Engineer for review. Allow sufficient time for review.

- The Contractor should report to the Engineer in writing all blasting complaints received by the Contractor within 24 hours of receipt. Each blast complaint report should include the name and address of the complaint, time received, date and time of blast complained about, and a description of the circumstances, which led to the complaint. Upon receipt of a written complaint from a resident alleging damage from the blasting, the Contractor's representative or a representative of the Blaster's Insurance Company should investigate the claim and a written report should be issued to the homeowner, with a copy to the Engineer, of the results of the investigation and the response of the Contractor. This written report should be received by the resident and the Engineer within 15 work days of receipt of the written complaint.

Review by the owner and the owner's consultant of the blast designs and techniques shall not relieve the Contractor of his responsibility for the accuracy, adequacy and safety of the blasting, exercising proper supervision and field judgment and producing the results within the blasting limits required by the requirements.

Blasting shall be limited to between the hours of 9:00 a.m. and 4:00 p.m., Monday through Friday.

Blasting mats shall be utilized for all blast rounds detonated to prevent the throw of fly rock from the blasting area, unless the Contractor's independent professional engineer/seismologist determines that the overburden is sufficient enough to prevent fly rock.

Ammonium Nitrate Fuel Oil (ANFO) shall not be permitted for blasting.

At the start of blasting, the Contractor shall perform a series of test blast to establish a site-specific relationship between the charge weight per millisecond delay and peak ground vibration levels at various distances from the blast. The results of the test blasts will form the basis for selection of maximum permissible charge weights during production blasting.

Section 21

Air Emissions

Section 21

Air Emissions

The proposed development is not anticipated to generate adverse air emissions which could impact the developed area or abutting properties. Temporary emissions may occur during the construction of the project due to earth moving activities and construction equipment. These emissions are expected to be limited in nature and of short duration. Provisions for dust control, if needed during construction, have been included in the Erosion and Sediment Control Plan attached to Section 14 of this application.

Section 22

Odors

Section 22

Odors

Odor generation is expected to be insignificant and consistent with surrounding areas. Temporary limited odors may arise during construction as a result of construction equipment working on the site. This odor potential is short-term and also not expected to be significant.

Section 23

Water Vapor

Section 23

Water Vapor

This proposed site improvements will not generate water vapor emissions impacting the developed area or abutting properties.

Section 24

Sunlight

Section 24

Sunlight

The proposed project involves the improvements to the parking lot of an existing facility and will not impact the elevation profile of the site and therefore will not result in a sunlight impact to abutting properties.

Section 25

Notices

Section 25

Notices

A. Evidence That a Notice Has Been Sent

A notice was published in the Portland Press Herald on February 14, 2018 as well as forwarded via certified mail to the abutting property owners. Please see this Section for a copy of this notice.

A Public Informational meeting was held on February 26, 2018. Please see this Section for a copy of Form C, Public Notice Filing and Certification form.

B. List of Abutters

Please see this Section for the abutters list.

Portland Press Herald
Maine Sunday Telegram
pressherald.com

Classified Advertising Proof

Public Notice

Portland Transportation Center: Notice of Intent to File

Please take notice that the Portland Transportation Center, 100 Thompsons Point Road, Portland, ME 04102, 1-800-639-3317, is intending to file an application pursuant to the provisions of the Natural Resources Protection Act (Title 38 M.R.S.A. §§ 480-A thru 480-BB), and the Site Location of Development Act (Title 38 M.R.S.A. §§ 481 thru 490-SS) on or about March 2, 2018.

A public informational meeting will be held on February 26, 2018 at 5 p.m. at the Portland Transportation Center conference room, 100 Thompsons Point Road, Portland, Maine 04102.

The applications are for expansion of the existing parking area to relieve ongoing congestion related to increased demand. The expansion will include an additional 289 parking spaces, landscaping, and stormwater treatment at the following location:
100 Thompsons Point Road, Portland, Maine

A request for a public hearing or a request that the Board of Environmental Protection assume jurisdiction over this application must be received by the Department of Environmental Protection ("the Department") in writing no later than 20 days after the application is found by the Department to be complete and is accepted for processing. A public hearing may or may not be held by the Commissioner of the Department of Environmental Protection or the Board of Environmental Protection. Public comment on the applications will be accepted throughout the processing of the applications.

The applications will be filed for public inspection at the Department of Environmental Protection's office in Portland during working hours. A copy of this application may also be seen at the Portland City Hall Planning Division, 389 Congress Street, 4th floor, Portland, ME 04101.

Written public comments may be sent to the Maine Department of Environmental Protection regional office in Portland, where the applications are filed for public inspection.
MEDEP, Southern Maine Regional Office, 312 Canco Road, Portland, Maine 04103.

PROJECT:
Portland Transportation Center
100 Thompson Point Rd
Portland

MEETING LOCATION:
Portland Transportation Center
100 Thompson Point Rd
Portland

MEETING DATE/TIME:
Monday,
February 26, 2018
5:00 PM

NAME	ADDRESS
Brian Brooks	One Canal Plaza, suite 500 Portland, ME 04101
DANA KNAPP	160 Sewall St. Portland, Me.
Erik Lema	32 Brentwood Rd. Cape Eliz, ME

Abutter List

Map/Lot	Owner Address
189/X001, 077/X001, 190/X001, 067/X001, 067/X002	MDOT 16 State House Station Augusta, ME 04333-0016
189/A031	Olympia Equity Investors II LLC P.O. Box 508 Portland, ME 04112
067/K017, 067/K016	Lawrence & Claudia Stoddard 47 Frederic St Portland, ME 04102
067/H014	Rin Sem 15 Huntress St Portland, ME 04102
067/K019, 076/A003	Avesta Fore River Housing LP 307 Cumberland Portland, ME 04101
067/K018	Zhanna Dzabiev 14 Independence Scarborough, ME 04074
076/A034, 190/C001	PTC 100 Sewall St Portland, ME 04102
067/K015	Rebecca & Curtis Barnes 35 Frederic St. Portland, ME 04102
076/A005	YC Portland LP 307 Cumberland Portland, ME 04101
067/K005	Zachary Barowitz 22 Huntress St Portland, ME 04103
202/A004	Forefront Partners I LP 501 Danforth St Portland, ME 04102

Map/Lot	Owner Address
202/A005	Northern New England Passenger Rail Authority 75 West Commercial St Portland, ME 04101
202/A002	Suburban Propane, LP P.O. Box 206 Tax Department Whippany, NJ 07981
076A/B002, 076/A033	Mercy Hospital 144 State St Portland, ME 04101
076A/A001	State of Maine 16 State House Station Augusta, ME 04333
075/B001	Inhabitants of the County of Cumberland 42 Federal St Portland, ME 04101

FORM C

PUBLIC NOTICE FILING AND CERTIFICATION

The DEP Rules, Chapter 2, require an applicant to provide public notice for all Site Location projects with the exception of minor revisions and condition compliance applications. In the notice, the applicant must describe the proposed activity and where it is located. **"Abutter"** for the purposes of the notice provision means any person who owns property that is BOTH (1) adjoining and (2) within one mile of the delineated project boundary, including owners of property directly across a public or private right of way.

1. **Newspaper:** You must publish the Notice of Intent to File in a newspaper circulated in the area where the activity is located. The notice must appear in the newspaper within 30 days prior to the filing of the application with the Department. You may use the attached Notice of Intent to File form, or one containing identical information, for newspaper publication and certified mailing.

2. **Abutting Property Owners:** You must send a copy of the Notice of Intent to File by certified mail to the owners of the property abutting the activity. Their names and addresses can be obtained from the town tax maps or local officials. They must receive notice within 30 days prior to the filing of the application with the Department.

3. **Municipal Office:** You must send a copy of the Notice of Intent to File and a **duplicate of the entire application** to the Municipal Office.

   ATTACH a list of the names and addresses of the owners of abutting property.

CERTIFICATION

By signing below, the applicant or authorized agent certifies that:

1. A Notice of Intent to File was published in a newspaper circulated in the area where the project site is located within 30 days prior to filing the application;
2. A certified mailing of the Notice of Intent to File was sent to all abutters within 30 days of the filing of the application;
3. A certified mailing of the Notice of Intent to File, and a duplicate copy of the application was sent to the town office of the municipality in which the project is located; and
4. Provided notice of, if required, and held a public informational meeting in accordance with Chapter 2, Rules Concerning the Processing of Applications, Section 14, prior to filing the application. Notice of the meeting was sent by certified mail to abutters and to the town office of the municipality in which the project is located at least ten days prior to the meeting. Notice of the meeting was also published once in a newspaper circulated in the area where the project site is located at least seven days prior to the meeting.

The Public Informational Meeting was held on 2/26/18 (Date).

Approximately 3 members of the public attended the Public Informational Meeting.

Stephen S Sawyer Jr. — Signature of Applicant or Authorized Agent

2/27/18 — Date

Department of Environmental Protection
Bureau of Land & Water Quality
17 State House Station
Augusta, Maine 04333
Telephone: 207-287-3901

FOR DEP USE **FORM A PAGE 1**
ATS # _____
L-_____
Total Fees: _____
Date: Received _____

****

SITE LOCATION OF DEVELOPMENT PERMIT APPLICATION 38 M.R.SA. §§481-490

PLEASE TYPE OR PRINT IN *INK ONLY*

This application is for: (CHECK THE ONE THAT APPLIES)	☐ **20 acre development** ☐ **Planning Permit** ☐ **Metallic Mining**	☐ **Marine Oil Terminal** ☐ **Structure** ☐ **Subdivision**	☐ **Major Amendment** ■ **Minor Amendment**

1. Name of Applicant:	Langdon Street Real Estate	**6. Name of Agent (if applicable):**	Sebago Technics, Inc
2. Applicant's Mailing Address:	7 Langdon Street Concord NH	**7. Agent's Mailing Address:**	75 John Roberts Rd, So Portland
3. Applicant's Daytime Phone #:	603-228-3535	**8. Agent's Daytime Phone # :**	207-200-2082
4. Applicant's Fax # (if available):	603-228-3524	**9. Agent's Fax # (if available):**	207-856-2206
5. Applicant's *e-mail address* (REQUIRED -license will be sent via: e-mail):	bblunt@concordcoachlines.com	**10. Agent's *e-mail address* (REQUIRED - license will be sent via e-mail):**	ssawyer@sebagotechnics.com

PROJECT INFORMATION

11. Name of Development:	Portland Transportation Center Parking Expansion						
12. Map and Lot #'s:	**Map #:** 077	**Lot #:** A001	**13. Deed Reference #'s:**		**Book #:** 12719	**Page #:** 277	
14. Location of Project City/Town:	Portland	**15. County:**	Cumberland	**16. UTM Northing**		**17. UTM Easting**	
18. Brief Description of Project including total parcel size:	The proposed project involves the expansion of an existing parking lot associated with the Portland Transportation Center. Subject Parcel size is approximately 8.72 acres.						

19. Type of Direct Watershed: (Check all that apply)
☐ Lake not most at risk ■ River, stream or brook ☐ Coastal wetland
☐ Lake most at risk ☐ Urban impaired stream ☐ Wellhead or public water
☐ Lake most at risk, severely blooming ☐ Freshwater wetland

20. Name of Waterbody Project Site drains to:	Fore River		
21. Amount of Developed Area:	Total acres: 7.362	Existing Developed area: 4.42 acres	New Developed area: 2.9 acres
22. Amount of Impervious Area:	Total acres: 6.326	Existing Impervious areas 3.46 acres	New Impervious area: 2.8 acres

23. Development started prior to obtaining a license?:	☐ **Yes** ■ **No**				
24. .Development or any portion of the site subject to enforcement action?	☐ **Yes** ■ **No**	**If yes,** name of enforcement staff involved?			
25. Common scheme of development?:	☐ **Yes** ■ **No**	**26. Title, Right or Interest:**	☒ **own** ☐ **lease**	☐ **purchase option** ☐ **written agreement**	
27. Natural Resources Protection Act permit required?:	■ **Yes** ☐ **No**	**If yes:** ☐ **PBR**	☐ **Tier 1** ☐ **Tier 2**	☐ **Full Permit**	
28. Existing DEP Permit number (if applicable):	number unknown				
29. Names of DEP staff person(s) present at the pre-application meeting:	City Review				
30. Does agent have an interest in project? If yes, what is the interest?	☐ **Yes** ■ **No**				

CERTIFICATIONS AND SIGNATURES LOCATED ON PAGE 2

IMPORTANT: IF THE SIGNATURE BELOW IS NOT THE APPLICANT'S SIGNATURE, ATTACH LETTER OF AGENT AUTHORIZATION SIGNED BY THE APPLICANT.

By signing below the applicant (or authorized agent), certifies that he or she has read and understood the following :

CERTIFICATIONS / SIGNATURES

"I certify under penalty of law that I have personally examined the information submitted in this document and all attachments thereto and that, based on my inquiry of those individuals immediately responsible for obtaining the information, I believe the information is true, accurate, and complete. I am aware there are significant penalties for submitting false information, including the possibility of fine and imprisonment. I authorize the Department to enter the property that is the subject of this application, at reasonable hours, including buildings, structures or conveyances on the property, to determine the accuracy of any information provided herein.

Further, I hereby authorize the DEP to send me an electronically signed decision on the license I am applying for with this application by emailing the decision to the electronic address located on the front page of this application (see #5 for the applicant and #10 for the agent)"..

Signed: Stephen S Sawyer **Title** Senior Vice President Sebago Technics **Date:** 6/21/18

Notice of Intent to Comply with Maine Construction General Permit	**With this Site Law application form and my signature, I am filing notice of my intent to carry out work which meets the requirements of the Maine Construction General Permit (MCGP). I have read and will comply with all of the MCGP standards.** **If this form is not being signed by the landowner or lessee of the property, attach documentation showing authorization to sign.** **Signed**_____ **Date:**_____

NOTE: You must file a MCGP Notice of Termination (Form K) within 20 days of completing permanent stabilization of the project site.

CERTIFICATION

The person responsible for preparing this application and/or attaching pertinent site and design information hereto, by signing below, certifies that the application for development approval is complete and accurate to the best of his/her knowledge.

Signature: Stephen S Sawyer

Name (print): Stephen S. Sawyer

Date: 6/21/18

Re/Cert/Lic No.: ME 3736 PE

Engineer X

Geologist _____

Soil Scientist _____

Land Surveyor _____

Site Evaluator _____

Active Member of the Maine Bar _____

Professional Landscape Architect _____

Other _____

REPORT

17-0938 S

January 8, 2018

Explorations and Geotechnical Engineering Services

Proposed Amtrak-Concord Coach
Parking Lot Expansion
Portland Transportation Center
100 Thompsons Point Road
Portland, Maine

Prepared For:
Sebago Technics, Inc.
Attention: Stephen S. Sawyer, Jr., P.E. – Vice President
75 John Roberts Road, Suite 1A
South Portland, Maine 04106

Prepared By:
S. W. Cole Engineering, Inc.
286 Portland Road
Gray, Maine 04039
T: 207-657-2866

S.W.COLE ENGINEERING, INC.

- *Geotechnical Engineering*
- *Construction Materials Testing and Special Inspections*
- *GeoEnvironmental Services*
- *Test Boring Explorations*

www.swcole.com

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Appendix D Laboratory Test Results
Appendix E Computations

17-0938 S

January 8, 2018

Sebago Technics, Inc.
Attention: Stephen S. Sawyer, Jr., P.E. – Vice President
75 John Roberts Road, Suite 1A
South Portland, Maine 04106

Subject: Explorations and Geotechnical Engineering Services
Proposed Amtrak-Concord Coach Parking Lot Expansion
Portland Transportation Center
100 Thompsons Point Road
Portland, Maine

Dear Steve:

In accordance with our Proposal, dated September 5, 2017, we have performed subsurface explorations for the subject project. This report summarizes our findings and geotechnical recommendations and its contents are subject to the limitations set forth in Appendix A.

1.0 INTRODUCTION

1.1 Scope and Purpose

The purpose of our services was to obtain subsurface information at the site in order to develop geotechnical recommendations relative to earthwork and pavement associated with the proposed construction. Our scope of services included a review of available prior explorations, three test boring explorations, one hand boring exploration, soils laboratory testing, a geotechnical analysis of the subsurface findings and preparation of this report.

1.2 Site and Proposed Construction

The site is an undeveloped, vegetated parcel located east of the existing Portland Transportation Center and west of the I-295 approach ramp in Portland, Maine. The site is principally occupied by low wet areas. We understand development plans

include a new, 507-space parking lot expansion. We understand proposed grades will roughly match that of the existing adjacent parking lot, then generally sloping down to the southeast, requiring tapered fills approaching 18 feet thick. A subsurface stormwater management gallery is proposed beneath the southern portion of the new parking lot. Proposed and existing site features are shown on the "Exploration Location Plan" attached in Appendix B.

2.0 EXPLORATION AND TESTING

2.1 Explorations

2.1.1 Current Explorations

Three test borings (B-101 through B-103) and one hand boring (HB-1) were made at the site on September 25 through 28, 2017 by S. W. Cole Explorations, LLC, a subsidiary of S. W. Cole Engineering, Inc. (S.W.COLE). The exploration locations were selected and established in the field by S.W.COLE using measurements from existing site features. The approximate exploration locations are shown on the "Exploration Location Plan" attached in Appendix B. Logs of the explorations and a key to the notes and symbols used on the logs are attached in Appendix C. The elevations shown on the logs were estimated based on topographic information shown on the "Exploration Location Plan".

2.1.2 Prior Explorations

Five test borings (B-1 through B-5) were made on the southwest side of the rail alignment abutting the southern site boundary in 2010 as part of a prior study by S.W.COLE for a then proposed train maintenance facility. The approximate locations of these borings are shown on the "Exploration Location Plan" attached in Appendix B. Logs of these explorations are attached in Appendix C.

2.2 Field Testing

The test borings were drilled using a combination of solid stem auger and cased wash-boring techniques. The soils were sampled at 2 to 10 foot intervals using a split spoon sampler and Standard Penetration Testing (SPT) techniques. Pocket Penetrometer Testing (PPT) was performed where relatively stiff cohesive soils were encountered. Shelby tube sampling, Vane Shear Testing (VST), and rod probing were performed where softer cohesive soils were encountered. SPT blow counts, PPT and VST results are shown on the logs.

2.3 Laboratory Testing

Soil samples obtained from the explorations were returned to our laboratory for further classification and testing. Atterberg Limits and moisture content test results are noted on the logs. The results of four, one-dimensional laboratory consolidation tests are attached in Appendix D.

3.0 SUBSURFACE CONDITIONS

3.1 Soil and Bedrock

Underlying pavement or surficial organics, the borings encountered a soils profile generally consisting of fill, overlying organic and bay mud deposits, overlying a relatively thick layer of glaciomarine clay, overlying glacial till and bedrock with depth. The principal soils are summarized below. Not all the strata were encountered at each exploration; refer to the attached logs for more detailed subsurface information.

Fill: The borings encountered fill extending to depths varying from about 4 to 23 feet. The fill consisted of very loose to medium dense sand with varying portions of silt and gravel. The fill at boring B-101 contained miscellaneous debris including brick, plastic and wood.

Organics and Bay Mud: Underlying the fill, the borings encountered deposits of organics and bay mud consisting of layered peat, relic marsh organics, and loose sands, silts and clays with shells and varying portions of organics. The bay mud varied in thickness from approximately to 3 to 27 feet, with peat layers up to about 5 feet thick.

Glaciomarine Soils: Underlying the organics and bay mud, the borings encountered glaciomarine silty clay. At several borings, the clay consists of an upper “crust” of hard to stiff brown and gray silty clay up to about 7 feet thick. The upper “crust”, where present, transitions to a relatively thick layer of softer gray silty clay extending to depths varying from about 47 to 65 feet. Vane Shear Testing performed on the gray silty clay indicates undrained shear strengths varying from approximately 490 to 1,000 psf. One-dimensional consolidation testing performed on the gray silty clay indicates the clay is overconsolidated by approximately 2 to 4 ksf. A layer of sand with varying portions of silt and gravel was present beneath the silty clay at several locations.

Glacial Till: Underlying the glaciomarine soils, several borings encountered up to about 4 feet glacial till, consisting of dense sand with varying portions of silt and gravel.

Bedrock: Underlying the glaciomarine soils and glacial till, where penetrated, the borings encountered bedrock at depths varying from about 64 to 71 feet.

3.2 Groundwater

Saturated soils and free water were encountered in the borings at depths varying from about 2 to 9 feet. Groundwater likely becomes perched on the relatively impervious silts and clays encountered at the test borings. Long term groundwater information is not available. It should be anticipated that groundwater levels will fluctuate, particularly in response to periods of snowmelt and precipitation, as well as changes in site use.

4.0 EVALUATION AND RECOMMENDATIONS

4.1 General Findings

Based on the subsurface findings, the proposed construction appears feasible from a geotechnical standpoint. The principle geotechnical considerations include:

- The site is underlain by compressible relic organics, peat, bay mud and a relatively thick layer of softer gray silty clay which will settle during and after construction. To reduce post-construction settlement, we recommend the site be preloaded prior to the installation of utilities, storm water drainage systems and surface finishes including paving, landscaping and lighting. We understand a preload period of 12 to 18 months is available.

- We recommend the site be filled to bottom of hot mix asphalt (HMA) elevation, including placing pavement subbase and base gravels. Following settlement through the preload period, the site should be shimmed back to plan grade with additional pavement base material. Similarly, the rail tracks may require re-ballasting to re-level the tracks after preloading.

- We recommend the site be instrumented with settlement platforms and a vibrating wire piezometer prior to filling to help monitor and forecast settlement progress

during and after the preload period. Additionally, we recommend survey points be established along the rail alignment and monitored throughout preloading.

- Imported Gravel Borrow, Granular Borrow, Common Borrow, and pavement gravels will be needed for construction.

4.2 Settlement and Stability

4.2.1 Settlement

The bay mud, organics and softer gray silty clay underlying the site are compressible under new loading from the proposed site fills. Based on the subsurface findings and proposed construction, we estimate that settlement may approach several feet during the preload period and several inches post-construction.

4.2.2 Global Stability

We performed global stability analysis for the fill slope along the rail alignment. The stability evaluation was made using a two-dimensional stability model and SLOPE/W computer software. Our global stability analysis utilized a method of slices assuming moment equilibrium, and was based on: 1) our current understanding of the project; 2) subsurface information obtained at the explorations; and, 3) proposed and existing site grades shown on Sheet 1. Our analysis indicates a safety factor of about 1.3 during filling and post-construction. Safety factors of 1.3 are considered acceptable for slopes supporting paved areas. Based on our analysis, the factors of safety against a deep rotational failure are at or above the acceptable thresholds for the proposed construction provided the geotechnical recommendations presented herein are followed. Slope stability output graphics are attached in Appendix E.

4.3 Site and Subgrade Preparation

We recommend that site preparation begin with the construction of an erosion control system to protect adjacent drainage ways and areas outside the construction limits. As much vegetation as possible should remain outside the construction areas to lessen the potential for erosion and site disturbance.

Prior to site filling, tree and shrub growth should be cut off at ground surface; surficial organics, wetland mat, topsoil, and grassy growth may remain in place where greater than 5 feet below proposed finished grade. Existing utilities should be removed and rerouted

from the fill area. Site filling should commence by placing a minimum of three feet of compacted MaineDOT 703.19 Granular Borrow for Underwater Backfill, or as much as required to fill one foot above free water, over the prepared subgrade. Above this elevation, MaineDOT 703.18 Common Borrow may be used to construct the fill embankment up to one-foot below pavement subgrade. The embankment should be capped with at least one-foot of MaineDOT 703.20 Gravel Borrow prior to placing pavement subbase and base gravels.

We recommend the site be filled to bottom of hot mix asphalt (HMA) elevation, including placing pavement subbase and base gravels. Following settlement through the preload period, the site should be shimmed back to plan grade with additional pavement base material prior to paving. Similarly, the railroad tracks may require re-ballasting to re-level the tracks during fill placement and after preloading.

Instrumentation and Monitoring: We recommend settlement plates and a vibrating-wire piezometer be installed after the initial lift of Granular Borrow is installed. We recommend the contractor furnish and install the settlement plates. Survey readings on the settlement plates should be obtained by the contractor on installation and weekly during filling. The settlement plates must be referenced to a benchmark established at least 100 feet away from the fill area. The piezometer should be installed by S.W.COLE and monitored weekly during filling. After site is filled, the settlement plates and piezometer should be read monthly and reviewed by S.W.COLE to monitor preload progress and assess appropriate complete dates and remaining post-construction settlement. Details of the geotechnical instruments (settlement monitoring plates and piezometer) are illustrated on Sheets 1 and 2 in Appendix B.

Preload Duration: At this time, we estimate a preload duration of 12 to 18 months will be required to consolidate the compressible soils beneath the site. The final determination of completion of the preload period should be made by S.W.COLE based upon readings from the geotechnical instruments (settlement monitoring plates and piezometers).

4.4 Excavation and Dewatering

Excavation work will generally encounter surficial organics and fills. Care must be exercised during construction to limit disturbance of the bearing soils. Earthwork and

grading activities should ideally occur during drier, non-freezing weather of Spring, Summer and Fall. Rubber tired construction equipment should not operate directly on the wetland mat or native silt and clays. Low ground pressure tracked equipment will be needed and temporary haul roads overlying geotextile fabric may be necessary.

Groundwater and free standing should be anticipated in the wetland areas. Dewatering prior to filling is not anticipated, as the site is proposed to be raised above free standing water. The contractor should anticipate temporary dewatering for utilities installed below the level of the existing wetlands.

Excavations must be properly shored or sloped in accordance with OSHA Regulations to prevent sloughing and caving of the sidewalls during construction. Care must be taken to preclude undermining adjacent structures, utilities and roadways. The design and planning of excavations, excavation support systems, and dewatering is the responsibility of the contractor.

4.5 Fill, Backfill and Compaction

We recommend the following fill and backfill materials: recycled products must also be tested in accordance with applicable environmental regulations and approved by a qualified environmental consultant.

Granular Borrow: The initial lifts of fill to raise grades in the wetland area should consist of at least 3 feet, and at least 1 foot above free water, of sand meeting the requirements of 2014 MaineDOT Standard Specification 703.19 Granular Borrow for Underwater Backfill.

Common Borrow: Fill to raise grades above the Granular Borrow and up to one-foot from bottom of pavement subbase should be non-organic compactable earth meeting the requirements of 2014 MaineDOT Standard Specification 703.18 Common Borrow.

Gravel Borrow: Fill to raise grades within one foot of pavement subbase should be sand and gravel meeting the requirements of 2014 MaineDOT Standard Specification 703.20 Gravel Borrow.

Structural Fill: Backfill for structures, such as light pole bases, should be clean, non-frost susceptible sand and gravel meeting the gradation requirements for Structural Fill as given below:

Structural Fill	
Sieve Size	**Percent Finer by Weight**
4 inch	100
3 inch	90 to 100
¼ inch	25 to 90
#40	0 to 30
#200	0 to 6

Reuse of Site Soils: The non-organic on-site soils may be suitable for reuse as Common Borrow, provided they are at a compactable moisture content at the time of reuse.

Placement and Compaction: Fill should be placed in horizontal lifts and compacted such that the desired density is achieved throughout the lift thickness with 3 to 5 passes of the compaction equipment. Loose lift thicknesses for grading, fill and backfill activities should not generally exceed 12 inches. We recommend that fill be compacted to at least 95 percent of its maximum dry density as determined by ASTM D-1557.

4.6 Weather Considerations

Construction activity should be limited during wet and freezing weather and the site soils may require drying or thawing before construction activities may continue. The contractor should anticipate the need for water to temper fills in order to facilitate compaction during dry weather. If construction takes place during cold weather, subgrades, foundations and floor slabs must be protected during freezing conditions. Fill must not be placed on frozen soil; and once placed, soil must be protected from freezing.

4.7 Paved Areas

We anticipate paved areas will be subjected primarily to passenger vehicle and light service truck traffic. Considering the site soils, and proposed usage, we offer the following pavement section for consideration.

FLEXIBLE (HMA) PAVEMENT SECTION – 2014 MaineDOT Standard Specs	
Pavement Layer	**Material Thickness**
MaineDOT 9.5 mm Hot Mix Asphalt	1 ½ inches
MaineDOT 19.0 mm Hot Mix Asphalt	2 ½ inches
MaineDOT 703.06 Aggregate Base Type A	3 inches
MaineDOT 703.06 Aggregate Subbase Type D	15 inches

The base and subbase materials should be compacted to at least 95 percent of their maximum dry density as determined by ASTM D-1557. Hot mix asphalt pavement should be compacted to 92 to 97 percent of its theoretical maximum density as determined by ASTM D-2041. A tack coat should be used between successive lifts of bituminous pavement.

It should be understood that frost penetration can be on the order of 4.5 feet in this area. If embankments are not constructed using non-frost susceptible fill or in the absence full depth excavation of frost susceptible soils and replacement with non-frost susceptible compacted fill, frost penetration into the subgrade will occur and some heaving and distress of pavement must be anticipated.

4.8 Design Review and Construction Testing

S.W.COLE should be retained to review the construction documents prior to bidding to determine that our earthwork and pavement recommendations have been properly interpreted and implemented.

A soils and concrete testing program should be implemented during construction to observe compliance with the design concepts, plans, and specifications. S.W.COLE is available to observe earthwork activities, as well as to provide testing services for soils, concrete, and asphalt construction materials.

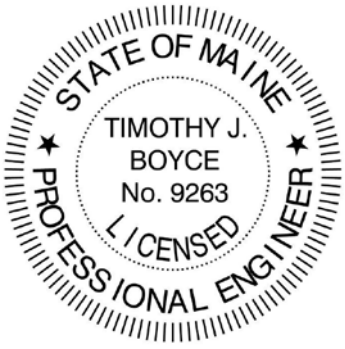
5.0 CLOSURE

It has been a pleasure to be of assistance to you with this phase of your project. We look forward to working with you during the construction phase of the project.

Sincerely,

S. W. Cole Engineering, Inc.

Evan M. Walker, P.E.
Geotechnical Engineer



Timothy J. Boyce, P.E.
Senior Geotechnical Engineer

EMW:tjb

APPENDIX A

Limitations

This report has been prepared for the exclusive use of Sebago Technics, Inc. for specific application to the proposed Amtrak-Concord Coach Parking Lot Expansion at the Portland Transportation Center at 100 Thompsons Point Road in Portland, Maine. S. W. Cole Engineering, Inc. (S.W.COLE) has endeavored to conduct our services in accordance with generally accepted soil and foundation engineering practices. No warranty, expressed or implied, is made.

The soil profiles described in the report are intended to convey general trends in subsurface conditions. The boundaries between strata are approximate and are based upon interpretation of exploration data and samples.

The analyses performed during this investigation and recommendations presented in this report are based in part upon the data obtained from subsurface explorations made at the site. Variations in subsurface conditions may occur between explorations and may not become evident until construction. If variations in subsurface conditions become evident after submission of this report, it will be necessary to evaluate their nature and to review the recommendations of this report.

Observations have been made during exploration work to assess site groundwater levels. Fluctuations in water levels will occur due to variations in rainfall, temperature, and other factors.

S.W.COLE's scope of services has not included the investigation, detection, or prevention of any Biological Pollutants at the project site or in any existing or proposed structure at the site. The term "Biological Pollutants" includes, but is not limited to, molds, fungi, spores, bacteria, and viruses, and the byproducts of any such biological organisms.

Recommendations contained in this report are based substantially upon information provided by others regarding the proposed project. In the event that any changes are made in the design, nature, or location of the proposed project, S.W.COLE should review such changes as they relate to analyses associated with this report. Recommendations contained in this report shall not be considered valid unless the changes are reviewed by S.W.COLE.

APPENDIX B

Figures

LEGEND:

- APPROXIMATE BORING LOCATION
- PROPOSED SETTLEMENT MONITORING PLATFORMS
- PROPOSED VIBRATING WIRE PIEZOMETER
- PROPOSED SURVEY MONITOR POINTS

NOTES:

1. EXPLORATION LOCATION PLAN WAS PREPARED FROM A SCALED PLAN OF THE SITE ENTITLED "PRELIMINARY SITE LAYOUT AND GRADING PLAN," PREPARED BY SEBAGO TECHNICS, INC., DATED OCTOBER 2017.
2. BORINGS B-101 THROUGH B-103 AND HB-1 WERE LOCATED IN THE FIELD BY TAPED MEASUREMENTS FROM EXISTING SITE FEATURES.
3. BORINGS B-1 THROUGH B-5 WERE PERFORMED UNDER THE DIRECTION OF S. W. COLE ENGINEERING, INC. IN 2010.
4. THIS PLAN SHOULD BE USED IN CONJUNCTION WITH THE ASSOCIATED S. W. COLE ENGINEERING, INC. GEOTECHNICAL REPORT.
5. THE PURPOSE OF THIS PLAN IS ONLY TO DEPICT THE LOCATION OF THE EXPLORATIONS IN RELATION TO THE EXISTING CONDITIONS AND PROPOSED CONSTRUCTION AND IS NOT TO BE USED FOR CONSTRUCTION.

0 80 160 Feet

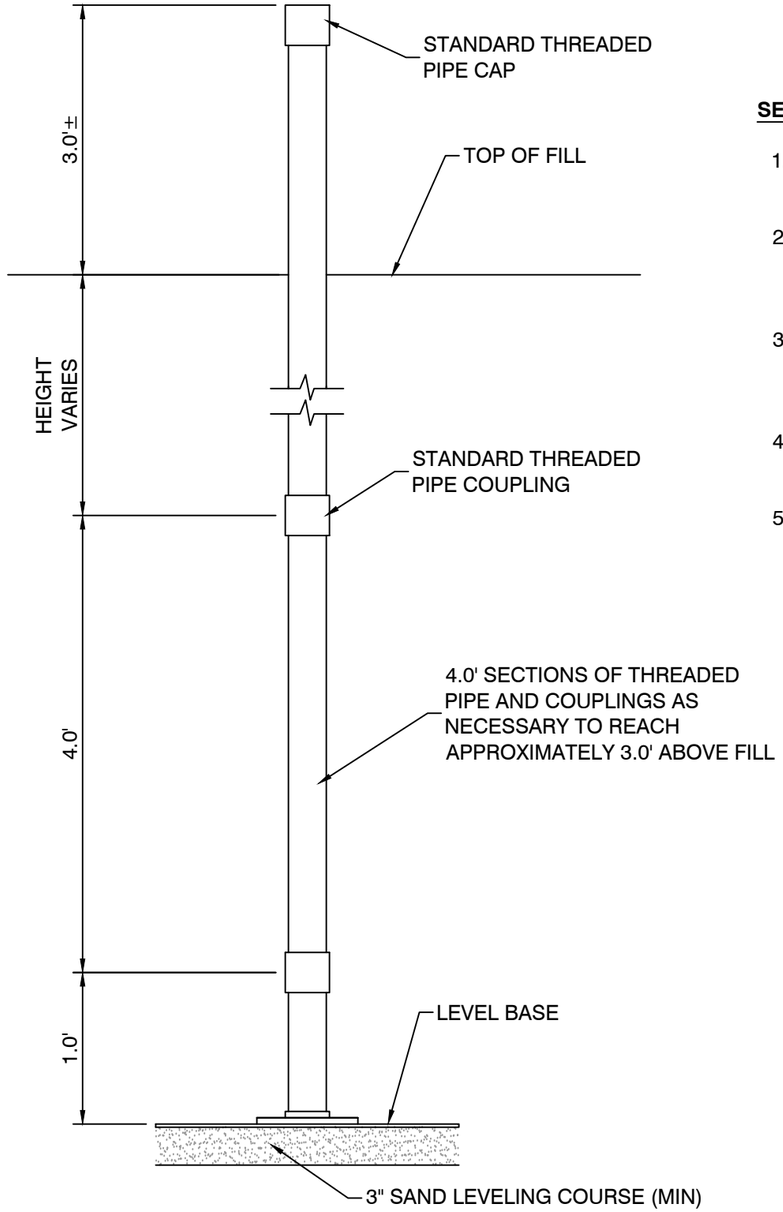
S.W.COLE ENGINEERING, INC.

SEBAGO TECHNICS

EXPLORATION LOCATION PLAN

PROPOSED AMTRAK-CONCORD COACH PARKING LOT EXPANSION
PORTLAND TRANSPORTATION CENTER
100 THOMPSONS POINT ROAD
PORTLAND, MAINE

Job No.:	17-0938	Scale:	1" = 80'
Date :	12/01/2017	Sheet:	1

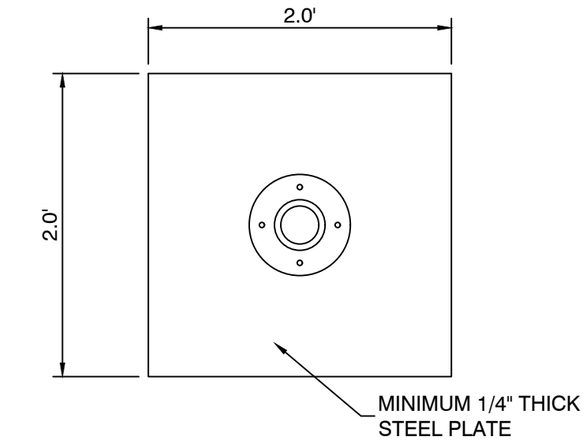


SETTLEMENT MONITORING PLATFORM INSTALLATION AND DETAIL

NOT TO SCALE

SETTLEMENT MONITORING PLATFORM NOTES:

1. SEE SHEET 1 FOR SETTLEMENT MONITORING PLATFORM LOCATIONS.
2. A COMPACTED 3" SAND LEVELING COURSE SHALL BE CONSTRUCTED UNDERNEATH BASES OF SETTLEMENT PLATES.
3. RECORD ELEVATION OF BASE AND TOP OF RISER AT TIME OF INSTALLATION, RECORD ELEVATION OF RISE AT EACH EXTENSION
4. AFFIX PLATE NUMBERS TO RISER PIPES AS SP-1 THROUGH SP-4.
5. CONTRACTOR SHALL TAKE CARE NOT TO DISTURB SETTLEMENT PLATES AFTER THEY HAVE BEEN INSTALLED. DISTURBED PLATES SHALL BE REPLACED.



SETTLEMENT PLATE - STEEL BASE CONSTRUCTION

NOT TO SCALE

S.W.COLE ENGINEERING, INC.

SEBAGO TECHNICS

INSTRUMENTATION DETAILS

PROPOSED AMTRAK-CONCORD COACH PARKING LOT EXPANSION
PORTLAND TRANSPORTATION CENTER
100 THOMPSONS POINT ROAD
PORTLAND, MAINE

Job No.:	17-0938	Scale:	As Noted
Date :	12/01/2017	Sheet:	2

APPENDIX C

Exploration Logs and Key

BORING LOG

S.W.COLE ENGINEERING, INC.

CLIENT: Sebago Technics, Inc.
PROJECT: Proposed Amtrak-Concord Coach Parking Lot Exp.
LOCATION: 100 Thompsons Point Road, Portland, Maine

BORING NO.: B-101
SHEET: 1 of 2
PROJECT NO. 17-0938
DATE START: 9/25/2017
DATE FINISH: 9/25/2017

Drilling Information

LOCATION: See Exploration Location Plan | **ELEVATION (FT):** 26' +/- | **TOTAL DEPTH (FT):** 67.0 | **LOGGED BY:** Patrick Otto
DRILLING CO.: S. W. Cole Explorations, LLC | **DRILLER:** Jeff Lee | **DRILLING METHOD:** Cased Boring
RIG TYPE: Track Mounted Mobile Drill B-53 | **AUGER ID/OD:** N/A / N/A | **SAMPLER:** Standard Split-Spoon
HAMMER TYPE: Safety | **HAMMER WEIGHT (lbs):** 140 / 140 | **CASING ID/OD:** 4 in / 4 1/2 in | **CORE BARREL:**
HAMMER EFFICIENCY FACTOR: | **HAMMER DROP (inch):** 30 / 30
WATER LEVEL DEPTHS (ft): ▽ 9 ft 9/25/2017 Soils saturated below 9'
GENERAL NOTES:

KEY TO NOTES AND SYMBOLS: Water Level; ▽ At time of Drilling; ▼ At Completion of Drilling; ▼ After Drilling; D = Split Spoon Sample; U = Thin Walled Tube Sample; R = Rock Core Sample; V = Field Vane Shear; Pen. = Penetration Length; Rec. = Recovery Length; bpf = Blows per Foot; mpf = Minute per Foot; WOR = Weight of Rods; WOH = Weight of Hammer; RQD = Rock Quality Designation; PID = Photoionization Detector; S_v = Field Vane Shear Strength, kips/sq.ft.; q_u = Unconfined Compressive Strength, kips/sq.ft.; N/A = Not Applicable

Elev. (ft)	Depth (ft)	Casing Pen. (bpf)	SAMPLE INFORMATION: Sample No.	Type	Depth (ft)	Pen./ Rec. (in)	Blow Count or RQD	Field / Lab Test Data	Graphic Log	Sample Description & Classification	H_20 Depth	Remarks
25			1D		0-2	24/15	7-14-8-5			0.5 6"+/- ASPHALT Medium dense, brown SAND and gravel, some silt (FILL) 1.8 Loose, gray gravelly silty SAND with shells, brick, plastic, wood fragments (FILL)		
20	5		2D		5-7	24/15	3-3-6-5				▽	
15	10		3D		10-12	24/15	6-4-2-3					
10	15		4D		15-17	24/4	2-1-3-4					
5	20		5D		20-22	24/0	2-2-5-5			23.0 Loose, dark brown PEAT (Relic Wetland Deposit)		
0	25		6D		25-27	24/12	2-3-4-7					
			7D		27-29	24/24	10-15-23-26			27.2 Medium dense, gray clayey SAND and silt with organics 28.0 Hard, gray-brown sandy SILT and CLAY		
-5	30		8D		30-32	24/20	8-16-20-25	q_P=9 ksf				
										33.5 Medium, olive-brown silty CLAY		
-10	35		9D		35-37	24/6	4-4-6-7	q_P=1 ksf				
										38.5 Medium to soft, gray silty CLAY		

Stratification lines represent approximate boundary between soil types, transitions may be gradual. Water level readings have been made at times and under conditions stated. Fluctuations of groundwater may occur due to other factors than those present at the time measurements were made.

(Continued Next Page)

BORING LOG

S.W.COLE ENGINEERING, INC.

CLIENT: Sebago Technics, Inc.
PROJECT: Proposed Amtrak-Concord Coach Parking Lot Exp.
LOCATION: 100 Thompsons Point Road, Portland, Maine

BORING NO.: B-101
SHEET: 2 of 2
PROJECT NO. 17-0938
DATE START: 9/25/2017
DATE FINISH: 9/25/2017

Elev. (ft)	Depth (ft)	Casing Pen. (bpf)	SAMPLE INFORMATION: Sample No.	Type	Depth (ft)	Pen./ Rec. (in)	Blow Count or RQD	Field / Lab Test Data	Graphic Log	Sample Description & Classification	H_20 Depth	Remarks
-15			10D		40-42	24/24	WOH-WOH-1-2					
	45		1V		45-45.8	9		S_V=0.86/0.05ksf		Medium to soft, gray silty CLAY		
-20			1V'		45.8-46.6	9		S_V=1.08/0.17ksf				
	50											
-25												
	55		2V		55-55.8	9		S_V=0.49/0.03ksf				
-30			2V'		55.8-56.6	9						No Vane Rotation @ 2V'
										56.5 Probable gray silty CLAY with frequent SAND layers		
	60											
-35												
										63.0 Dense, gray silty SAND and GRAVEL		
	65		11D		65-67	24/11	30-25-23-31					
-40										67.0 Bottom of Exploration at 67.0 feet		

Stratification lines represent approximate boundary between soil types, transitions may be gradual. Water level readings have been made at times and under conditions stated. Fluctuations of groundwater may occur due to other factors than those present at the time measurements were made.

BORING / WELL 17-0938.GPJ SWCE TEMPLATE.GDT 12/1/17

BORING LOG

CLIENT: Sebago Technics, Inc.
PROJECT: Proposed Amtrak-Concord Coach Parking Lot Exp.
LOCATION: 100 Thompsons Point Road, Portland, Maine

BORING NO.: B-102
SHEET: 1 of 2
PROJECT NO. 17-0938
DATE START: 9/25/2017
DATE FINISH: 9/26/2017

Drilling Information

LOCATION: See Exploration Location Plan | **ELEVATION (FT):** 14' +/- | **TOTAL DEPTH (FT):** 49.0 | **LOGGED BY:** Patrick Otto
DRILLING CO.: S. W. Cole Explorations, LLC | **DRILLER:** Jeff Lee | **DRILLING METHOD:** Cased Boring
RIG TYPE: Track Mounted Mobile Drill B-53 | **AUGER ID/OD:** N/A / N/A | **SAMPLER:** Standard Split-Spoon
HAMMER TYPE: Safety | **HAMMER WEIGHT (lbs):** 140 / 140 | **CASING ID/OD:** 4 in / 4 1/2 in | **CORE BARREL:**
HAMMER EFFICIENCY FACTOR: | **HAMMER DROP (inch):** 30 / 30
WATER LEVEL DEPTHS (ft): ▽ 9 ft 9/25/2017 Soils saturated below 9'
GENERAL NOTES:

KEY TO NOTES AND SYMBOLS: Water Level; ▽ At time of Drilling; ▼ At Completion of Drilling; ▼ After Drilling; D = Split Spoon Sample; U = Thin Walled Tube Sample; R = Rock Core Sample; V = Field Vane Shear; Pen. = Penetration Length; Rec. = Recovery Length; bpf = Blows per Foot; mpf = Minute per Foot; WOR = Weight of Rods; WOH = Weight of Hammer; RQD = Rock Quality Designation; PID = Photoionization Detector; S_v = Field Vane Shear Strength, kips/sq.ft.; q_u = Unconfined Compressive Strength, kips/sq.ft.; N/A = Not Applicable

Elev. (ft)	Depth (ft)	Casing Pen. (bpf)	SAMPLE INFORMATION: Sample No.	Type	Depth (ft)	Pen./ Rec. (in)	Blow Count or RQD	Field / Lab Test Data	Graphic Log	Sample Description & Classification	H_2O Depth	Remarks
			1D		0-2	24/10	2-4-7-14			Loose, brown SAND and silt with rootlets		
										1.5 Very loose to loose, brown SAND, some silt, trace gravel (FILL)		
10	5		2D		5-7	24/14	4-3-3-2					
5	10		3D		10-12	24/16	2-1-1-2				▽	
										13.0 Loose, dark gray clayey SILT with organics		
0	15		4D		15-17	24/16	1-3-6-6	q_P=5 - 6.5 ksf		16.0 Very stiff, brown silty clay with sand seams		
-5	20		5D		20-22	24/18	3-5-5-6					
-10	25		6D		25-27	24/24	WOH-WOH-2-1			23.5 Medium, gray silty CLAY with sand seams/layers		
-15	30		1U		30-32	24/24		W_L=43 W_P=23 w =44.5 % S_V=0.93/0.18ksf				
-20			1V		32-32.8	9						No Vane Penetration @ 1V'
	35		1V'		32.8-32.8	0						
-25												

Stratification lines represent approximate boundary between soil types, transitions may be gradual. Water level readings have been made at times and under conditions stated. Fluctuations of groundwater may occur due to other factors than those present at the time measurements were made.

(Continued Next Page)

BORING LOG

CLIENT: Sebago Technics, Inc.
PROJECT: Proposed Amtrak-Concord Coach Parking Lot Exp.
LOCATION: 100 Thompsons Point Road, Portland, Maine

BORING NO.: B-102
SHEET: 2 of 2
PROJECT NO. 17-0938
DATE START: 9/25/2017
DATE FINISH: 9/26/2017

Elev. (ft)	Depth (ft)	Casing Pen. (bpf)	SAMPLE INFORMATION: Sample No.	Type	Depth (ft)	Pen./ Rec. (in)	Blow Count or RQD	Field / Lab Test Data	Graphic Log	Sample Description & Classification	H_20 Depth	Remarks
			2U		40-42	24/22		W_L=34 W_P=19 w =36.2 %		Medium, gray silty CLAY with sand seams/layers		
-30	45		2V		42-42.8	9						No Vane Rotation @ 2V
										47.0 Probable glacial till or bedrock		
-35										49.0 Bottom of Exploration at 49.0 feet		

Stratification lines represent approximate boundary between soil types, transitions may be gradual. Water level readings have been made at times and under conditions stated. Fluctuations of groundwater may occur due to other factors than those present at the time measurements were made.

BORING / WELL 17-0938.GPJ SWCE TEMPLATE.GDT 12/1/17

BORING LOG

S.W.COLE ENGINEERING, INC.

CLIENT: Sebago Technics, Inc.
PROJECT: Proposed Amtrak-Concord Coach Parking Lot Exp.
LOCATION: 100 Thompsons Point Road, Portland, Maine

BORING NO.: B-103
SHEET: 1 of 2
PROJECT NO. 17-0938
DATE START: 9/26/2017
DATE FINISH: 9/27/2017

Drilling Information

LOCATION: See Exploration Location Plan | **ELEVATION (FT):** 12' +/- | **TOTAL DEPTH (FT):** 64.5 | **LOGGED BY:** P. Otto / E. Walker
DRILLING CO.: S. W. Cole Explorations, LLC | **DRILLER:** Jeff Lee | **DRILLING METHOD:** Cased Boring
RIG TYPE: Track Mounted Mobile Drill B-53 | **AUGER ID/OD:** N/A / N/A | **SAMPLER:** Standard Split-Spoon
HAMMER TYPE: Safety | **HAMMER WEIGHT (lbs):** 140 / 140 | **CASING ID/OD:** 4 in / 4 1/2 in | **CORE BARREL:**
HAMMER EFFICIENCY FACTOR: | **HAMMER DROP (inch):** 30 / 30
WATER LEVEL DEPTHS (ft): ▽ 5 ft 9/26/2017 Soils saturated below 5'
GENERAL NOTES:

KEY TO NOTES AND SYMBOLS: Water Level: ▽ At time of Drilling; ▼ At Completion of Drilling; ▼ After Drilling
D = Split Spoon Sample; U = Thin Walled Tube Sample; R = Rock Core Sample; V = Field Vane Shear
Pen. = Penetration Length; Rec. = Recovery Length; bpf = Blows per Foot; mpf = Minute per Foot
WOR = Weight of Rods; WOH = Weight of Hammer; RQD = Rock Quality Designation; PID = Photoionization Detector
S_v = Field Vane Shear Strength, kips/sq.ft.; q_u = Unconfined Compressive Strength, kips/sq.ft.; N/A = Not Applicable

Elev. (ft)	Depth (ft)	Casing Pen. (bpf)	SAMPLE INFORMATION: Sample No.	Type	Depth (ft)	Pen./ Rec. (in)	Blow Count or RQD	Field / Lab Test Data	Graphic Log	Sample Description & Classification	H_20 Depth	Remarks
10			1D		0-2	24/16	3-5-7-12			Medium dense, brown silty SAND, some gravel with rootlets top 12" (FILL)		
										4.0		
5	5		2D		5-7	24/15	1-1-1-1			Very loose, gray layered coarse SAND and silty CLAY with shells and few organics	▽	
0	10		3D		10-12	24/16	1-1-1-1			11.5 Loose, dark gray clayey SILT with shells and few organics		
										14.0 Soft to medium, gray silty CLAY with shells		
-5	15		4D		15-17	24/24	WOH					
-10	20		5D		20-22	24/24	WOH					
-15	25		1V		25-25.8	9		S_V=0.93/0.09ksf				
			1V'		25.8-26.6	9		S_V=0.89/0.12ksf				
-20	30		1U		30-32	24/10		W_L=40 W_P=20 w =21 %		31.0 Stiff to very stiff, gray silty CLAY, some sand		
			6D		32-34	24/24	7-10-11-16					
-25	35									38.0 Medium, gray, silty CLAY		

Stratification lines represent approximate boundary between soil types, transitions may be gradual. Water level readings have been made at times and under conditions stated. Fluctuations of groundwater may occur due to other factors than those present at the time measurements were made.

(Continued Next Page)

BORING LOG

CLIENT: Sebago Technics, Inc.
PROJECT: Proposed Amtrak-Concord Coach Parking Lot Exp.
LOCATION: 100 Thompsons Point Road, Portland, Maine

BORING NO.: B-103
SHEET: 2 of 2
PROJECT NO. 17-0938
DATE START: 9/26/2017
DATE FINISH: 9/27/2017

Elev. (ft)	Depth (ft)	Casing Pen. (bpf)	SAMPLE INFORMATION: Sample No.	Type	Depth (ft)	Pen./ Rec. (in)	Blow Count or RQD	Field / Lab Test Data	Graphic Log	Sample Description & Classification	H_20 Depth	Remarks
			2U		40-42	24/24		W_L=45 W_P=23				
-30			2V		42-42.8	9		w =46.4 % S_V=0.92/0.14ksf				
			2V'		42.8-43.6	9		S_V=0.92/0.13ksf				
	45											
-35												
	50		3U		50-52	24/24		W_L=37 W_P=21				
-40			3V		52-52.8	9		w =40.4 % S_V=0.92/0.16ksf				
			3V'		52.8-53.6	9		S_V=0.91/0.20ksf				
	55									Roller Cone Probe Below 53.6'		
-45												
	60											
-50										63.0 Probable Granular Soils - Advance by Roller Cone		
										64.0 Probable Boulder or Bedrock - Advance by Roller Cone		
										64.5 Refusal at 64.5 feet		

Stratification lines represent approximate boundary between soil types, transitions may be gradual. Water level readings have been made at times and under conditions stated. Fluctuations of groundwater may occur due to other factors than those present at the time measurements were made.

BORING / WELL 17-0938.GPJ SWCE TEMPLATE.GDT 12/1/17

BORING LOG

S.W.COLE ENGINEERING, INC.

CLIENT: Sebago Technics, Inc.
PROJECT: Proposed Amtrak-Concord Coach Parking Lot Exp.
LOCATION: 100 Thompsons Point Road, Portland, Maine

BORING NO.: HB-1
SHEET: 1 of 1
PROJECT NO. 17-0938
DATE START: 9/28/2017
DATE FINISH: 9/28/2017

Drilling Information

LOCATION: See Exploration Location Plan | **ELEVATION (FT):** 7' +/- | **TOTAL DEPTH (FT):** 17.0 | **LOGGED BY:** P. Otto
DRILLING CO.: S.W. Cole Engineering, Inc. | **DRILLER:** P. Otto | **DRILLING METHOD:**
RIG TYPE: Hand Auger/Tile Probe | **AUGER ID/OD:** N/A / N/A | **SAMPLER:**
HAMMER TYPE: N/A | **HAMMER WEIGHT (lbs):** N/A | **CASING ID/OD:** N/A /N/A | **CORE BARREL:**
HAMMER EFFICIENCY FACTOR: | **HAMMER DROP (inch):** N/A
WATER LEVEL DEPTHS (ft): ▽ 2 ft 9/28/2017 Free Water Below 2' +/-
GENERAL NOTES:

KEY TO NOTES AND SYMBOLS:
Water Level: ▽ At time of Drilling; ▼ At Completion of Drilling; ▼ After Drilling
D = Split Spoon Sample; U = Thin Walled Tube Sample; R = Rock Core Sample; V = Field Vane Shear
Pen. = Penetration Length; Rec. = Recovery Length; bpf = Blows per Foot; mpf = Minute per Foot
WOR = Weight of Rods; WOH = Weight of Hammer; RQD = Rock Quality Designation; PID = Photoionization Detector
S_v = Field Vane Shear Strength, kips/sq.ft.; q_u = Unconfined Compressive Strength, kips/sq.ft.; N/A = Not Applicable

Elev. (ft)	Depth (ft)	Casing Pen. (bpf)	SAMPLE INFORMATION: Sample No.	Type	Depth (ft)	Pen./ Rec. (in)	Blow Count or RQD	Field / Lab Test Data	Graphic Log	Sample Description & Classification	H_2O Depth	Remarks
5										Vegetation / Organics		
										1.0 Gray, clayey sandy SILT with shells and organics	▽	
	5									5.0 Gray, clayey sandy SILT		
0										Becomes More Clayey with Depth		
	10									Advance by Tile Probe Below 10'		
-5												
	15									15.0 Probable Sand Layer - Advance by Tile Probe		
-10										17.0 Bottom of Exploration at 17.0 feet		

Stratification lines represent approximate boundary between soil types, transitions may be gradual. Water level readings have been made at times and under conditions stated. Fluctuations of groundwater may occur due to other factors than those present at the time measurements were made.

BORING / WELL 17-0938.GPJ SWCE TEMPLATE.GDT 12/1/17

S.W.COLE ENGINEERING, INC.

BORING LOG

BORING NO.: **B-1**
SHEET: 1 OF 2
PROJECT NO.: 09-0538

PROJECT: PROPOSED NNEPRA LAYOVER FACILITY
CLIENT : VHB, INC.
LOCATION: THOMPSON'S POINT/SEWALL ROAD, PORTLAND, MAINE
DRILLING FIRM: NORTHERN TEST BORING DRILLER: MIKE NADEAU

DATE START: 7/22/2010
DATE FINISH: 7/22/2010
ELEVATION:
SWC REP.: E. WALKER

	TYPE	SIZE I.D.	HAMMER WT.	HAMMER FALL
CASING:	HW	4"	140 LBS.	30"
SAMPLER:	SS	1 3/8"	140 LBS.	30"
CORE BARREL:				

WATER LEVEL INFORMATION
SOILS DAMP TO WET BELOW 5'
SOILS SATURATED BELOW 7'

CASING BLOWS PER FOOT	SAMPLE NO.	PEN.	REC.	DEPTH @ BOT	SAMPLER BLOWS PER 6" 0-6	6-12	12-18	18-24	DEPTH	STRATA & TEST DATA
									3"	BITUMINOUS ASPHALT PAVEMENT
	1D	24"	14"	2.2'	12	7	8	9		BROWN AND BLACK SILTY SAND WITH SOME GRAVEL WITH COAL AND ASH (FILL)
	2D	24"	16"	4.2'	13	7	6	6		~ MEDIUM DENSE TO LOOSE ~
	3D	24"	18"	7.0'	4	3	2	3	6.3'	
	4D	24"	20"	9.0'	2	2	2	3	8.7'	ORANGE-BROWN SILTY FINE SAND ~ LOOSE ~
	5D	24"	10"	12.0'	1/12"		1/12"		12.0'	GRAY SILTY FINE SAND WITH OCCASIONAL SILT SEAMS ~ VERY LOOSE ~
										~ FREQUENT ORGANICS/PEAT IN WASH WATER 12' - 15' ~ ~ SOFT/LOOSE ~ GRAY CLAYEY SILT WITH FREQUENT ORGANICS AND PEAT SEAMS
									16.0'	w = 71.0%
	6D	24"	24"	17.0'	1/12"		1/12"			GRAY SILTY CLAY WITH VERY FREQUENT SHELLS AND ORGANICS ~ MEDIUM ~
									20.0'	
	1U	24"	24"	22.0'	PISTON SAMPLER					GRAY SILTY CLAY
	1V			22.8'	3-5/8" X 7" VANE					Sv = 0.90 KSF / 0.19 KSF
	1V'			23.6'	3-5/8" X 7" VANE					Sv = 0.93 KSF / 0.16 KSF ~ MEDIUM ~
										~ TRACE SHELL FRAGMENTS 35' - 37' ~
	7D	24"	24"	37.0'	WOH/24"					w = 52.0%

SAMPLES:
D = SPLIT SPOON
C = 3" SHELBY TUBE
U = 3.5" SHELBY TUBE

SOIL CLASSIFIED BY:
[ ] DRILLER - VISUALLY
[X] SOIL TECH. - VISUALLY
[X] LABORATORY TEST

REMARKS:
STRATIFICATION LINES REPRESENT THE APPROXIMATE BOUNDARY BETWEEN SOIL TYPES AND THE TRANSITION MAY BE GRADUAL.

BORING NO.: **B-1**

S.W.COLE ENGINEERING, INC.

BORING LOG

BORING NO.: **B-1**
SHEET: 2 OF 2
PROJECT NO.: 09-0538

PROJECT: PROPOSED NNEPRA LAYOVER FACILITY
CLIENT : VHB, INC.
LOCATION: THOMPSON'S POINT/SEWALL ROAD, PORTLAND, MAINE
DRILLING FIRM: NORTHERN TEST BORING DRILLER: MIKE NADEAU

DATE START: 7/22/2010
DATE FINISH: 7/22/2010
ELEVATION:
SWC REP.: E. WALKER

	TYPE	SIZE I.D.	HAMMER WT.	HAMMER FALL
CASING:	HW	4"	140 LBS.	30"
SAMPLER:	SS	1 3/8"	140 LBS.	30"
CORE BARREL:				

WATER LEVEL INFORMATION
SOILS DAMP TO WET BELOW 5'
SOILS SATURATED BELOW 7'

CASING BLOWS PER FOOT	SAMPLE NO.	PEN.	REC.	DEPTH @ BOT	SAMPLER BLOWS PER 6" 0-6	6-12	12-18	18-24	DEPTH	STRATA & TEST DATA
										GRAY SILTY CLAY
	8D	24"	24"	47.0'	WOH/24"					~ MEDIUM ~
	9D	24"	24"	57.0'	WOR/24"					
									64.0'	
	10D	24"	16"	67.0'	7	7	8	10	67.0'	GRAY SAND WITH SOME SILT AND SOME GRAVEL ~ MEDIUM DENSE ~
									71.3'	INCREASED RESISTANCE - FREQUENT COBBLES AND GRAVEL POSSIBLE GLACIAL TILL SOILS
									73.5'	PROBABLE BEDROCK ADVANCE BY ROLLER CONE
										BOTTOM OF EXPLORATION @ 73.5'

SAMPLES:
D = SPLIT SPOON
C = 3" SHELBY TUBE
U = 3.5" SHELBY TUBE

SOIL CLASSIFIED BY:
[ ] DRILLER - VISUALLY
[X] SOIL TECH. - VISUALLY
[X] LABORATORY TEST

REMARKS:
STRATIFICATION LINES REPRESENT THE APPROXIMATE BOUNDARY BETWEEN SOIL TYPES AND THE TRANSITION MAY BE GRADUAL.

BORING NO.: **B-1**

S.W.COLE ENGINEERING, INC.

BORING LOG

BORING NO.: **B-2**
SHEET: 1 OF 1
PROJECT NO.: 09-0538

PROJECT: PROPOSED NNEPRA LAYOVER FACILITY
CLIENT : VHB, INC.
LOCATION: THOMPSON'S POINT/SEWALL ROAD, PORTLAND, MAINE
DRILLING FIRM: NORTHERN TEST BORING DRILLER: MIKE NADEAU

DATE START: 7/23/2010
DATE FINISH: 7/23/2010
ELEVATION:
SWC REP.: E. WALKER

	TYPE	SIZE I.D.	HAMMER WT.	HAMMER FALL
CASING:	HSA	2 1/4"		
SAMPLER:	SS	1 3/8"	140 LBS.	30"
CORE BARREL:				

WATER LEVEL INFORMATION
SOILS DAMP TO WET BELOW 5'
SOILS SATURATED BELOW 7'

CASING BLOWS PER FOOT	SAMPLE NO.	PEN.	REC.	DEPTH @ BOT	SAMPLER BLOWS PER 6" 0-6	6-12	12-18	18-24	DEPTH	STRATA & TEST DATA
									3" +/-	BITUMINOUS ASPHALT PAVEMENT
									1.0'	BROWN GRAVELLY SAND WITH SOME SILT (FILL) ~ MEDIUM DENSE ~
	1D	24"	18"	2.2'	6	6	9	24	2.0'	BLACK SILTY SAND WITH TRACE GRAVEL WITH COAL & ASH (FILL) ~MED. DENSE~
										ORANGE BROWN SAND WITH SOMES SILT (FILL)
									6.0'	~ LOOSE ~
	2D	24"	18"	7.0'	5	6	3	4	7.0'	BROWN CLAYEY SILTY SAND ~ LOOSE ~
	3D	24"	14"	9.0'	2	3	3	4		GRAY SILTY FINE SAND
	4D	24"	6"	12.0'	1	1	1	1		~ LOOSE ~
									15.0'	
	5D	24"	22"	17.0'	1	1/12"		1		w = 70.2%, O = 7.8%
										DARK BROWN PEAT WITH FREQUENT GRAY CLAYEY SILT LAYERS
										~ VERY LOOSE ~
									20.3'	
	6D	24"	24"	20.0'	1/12"		1	1		GRAY SILTY CLAY WITH FREQUENT SHELLS
										~ MEDIUM ~
	7D	24"	24"	27.0'	1	1	1	1	27.0'	
										BOTTOM OF EXPLORATION @ 27.0'

SAMPLES:
D = SPLIT SPOON
C = 3" SHELBY TUBE
U = 3.5" SHELBY TUBE

SOIL CLASSIFIED BY:
[ ] DRILLER - VISUALLY
[X] SOIL TECH. - VISUALLY
[X] LABORATORY TEST

REMARKS:
STRATIFICATION LINES REPRESENT THE APPROXIMATE BOUNDARY BETWEEN SOIL TYPES AND THE TRANSITION MAY BE GRADUAL.

BORING NO.: **B-2**

S.W.COLE ENGINEERING, INC.

BORING LOG

BORING NO.: **B-3**
SHEET: 1 OF 2
PROJECT NO.: 09-0538

PROJECT: PROPOSED NNEPRA LAYOVER FACILITY
CLIENT : VHB, INC.
LOCATION: THOMPSON'S POINT/SEWALL ROAD, PORTLAND, MAINE
DRILLING FIRM: NORTHERN TEST BORING DRILLER: MIKE NADEAU

DATE START: 7/22/2010
DATE FINISH: 7/22/2010
ELEVATION:
SWC REP.: E. WALKER

	TYPE	SIZE I.D.	HAMMER WT.	HAMMER FALL
CASING:	HW	4"	140 LBS.	30"
SAMPLER:	SS	1 3/8"	140 LBS.	30"
CORE BARREL:	NQ	2"		

WATER LEVEL INFORMATION
SOILS DAMP TO WET BELOW 5'
SOILS SATURATED BELOW 7'

CASING BLOWS PER FOOT	SAMPLE NO.	PEN.	REC.	DEPTH @ BOT	SAMPLER BLOWS PER 6" 0-6	6-12	12-18	18-24	DEPTH	STRATA & TEST DATA
									3"	BITUMINOUS ASPHALT PAVEMENT
									1.0'	BROWN SILTY GRAVELLY SAND (FILL) ~ MEDIUM DENSE ~
	1D	24"	10"	2.2'	6	5	9	9	2.0'	BLACK SILTY SAND WITH ASH (FILL) ~ MEDIUM DENSE ~
	2D	24"	12"	4.2'	6	8	9	9		BROWN SAND WITH SOME SILT (FILL) ~ MEDIUM DENSE TO LOOSE ~
	3D	24"	16"	7.0'	4	2	3	4	6.5'	
	4D	24"	10"	9.0'	4	4	7	8	8.6'	BROWN SILTY CLAYEY SAND ~ LOOSE ~
									10.0'	ORANGE-RED MEDIUM SAND WITH SOME SILT ~ MEDIUM DENSE ~
	5D	24"	16"	12.0'	1	1	1	1	15.0'	GRAY CLAYEY SILT WITH OCCASIONAL FINE SAND SEAMS, VERY FREQUENT DARK BROWN ORGANIC/PEAT SEAMS ~ VERY LOOSE ~
									15.5'	DARK BROWN PEAT ~ STRONG ORGANIC ODOR ~ ~ VERY LOOSE ~
	6D	24"	22"	17.0'	1	1	2	2		w = 118.0%, O = 18.4% GRAY SILTY CLAY WITH OCCASIONAL SAND SEAMS, VERY FREQUENT ORGANIC/PEAT SEAMS ~ MEDIUM ~
	1V			20.0'	3-5/8" X 7" VANE				20.0'	VANE SHEAR ATTEMPTED @ 20' - NO PENETRATION
	7D	24"	20"	22.0'	1	2	4	6	25.0'	GRAY CLAYEY SILT WITH OCCASIONAL SAND SEAMS, FREQUENT SHELLS AND ORGANICS ~ MEDIUM ~
	8D	24"	22"	27.0'	7	9	10	10	30.0'	BROWN SILTY CLAY WITH FREQUENT SILT SEAMS q_p = 4.5 KSF ~ VERY STIFF ~
	9D	24"	24"	32.0'	1/12"		1/12"			GRAY SILTY CLAY
	1U	24"	24"	37.0'	PISTON SAMPLER					
	2V			37.8'	3-5/8" X 7" VANE					S_v = 1.06 KSF / 0.21 KSF ~ STIFF ~
	2V'			38.6'	3-5/8" X 7" VANE					S_v = 1.11 KSF / 0.21 KSF

SAMPLES:
D = SPLIT SPOON
C = 3" SHELBY TUBE
U = 3.5" SHELBY TUBE

SOIL CLASSIFIED BY:
[ ] DRILLER - VISUALLY
[X] SOIL TECH. - VISUALLY
[X] LABORATORY TEST

REMARKS: CONTINUED…

STRATIFICATION LINES REPRESENT THE APPROXIMATE BOUNDARY BETWEEN SOIL TYPES AND THE TRANSITION MAY BE GRADUAL.

BORING NO.: **B-3**

S.W.COLE ENGINEERING, INC.

BORING LOG

BORING NO.: **B-3**
SHEET: 2 OF 2
PROJECT NO.: 09-0538

PROJECT: PROPOSED NNEPRA LAYOVER FACILITY
CLIENT : VHB, INC.
LOCATION: THOMPSON'S POINT/SEWALL ROAD, PORTLAND, MAINE
DRILLING FIRM: NORTHERN TEST BORING DRILLER: MIKE NADEAU

DATE START: 7/22/2010
DATE FINISH: 7/22/2010
ELEVATION:
SWC REP.: E. WALKER

	TYPE	SIZE I.D.	HAMMER WT.	HAMMER FALL
CASING:	HW	4"	140 LBS.	30"
SAMPLER:	SS	1 3/8"	140 LBS.	30"
CORE BARREL:				

WATER LEVEL INFORMATION
SOILS DAMP TO WET BELOW 5'
SOILS SATURATED BELOW 7'

CASING BLOWS PER FOOT	SAMPLE NO.	PEN.	REC.	DEPTH @ BOT	SAMPLER BLOWS PER 6" 0-6	6-12	12-18	18-24	DEPTH	STRATA & TEST DATA
										GRAY SILTY CLAY
										~ MEDIUM TO SOFT ~
	10D	24"	24"	52.0'	WOH-24"					
	11D	24"	24"	62.0'	1	1	1	1		
									65.4'	
										INCREASED RESISTANCE @ 65.4'
									68.0'	PROBABLE GRANULAR GLACIAL TILL SOILS
									69.5'	BEDROCK - ADVANCE BY ROLLER CONE
										BEDROCK - SEE ROCK CORE LOG
	R1	5.0'	3.3'	74.5'					74.5'	RQD = 57%
										BOTTOM OF EXPLORATION @ 74.5'

SAMPLES:
D = SPLIT SPOON
C = 3" SHELBY TUBE
U = 3.5" SHELBY TUBE

SOIL CLASSIFIED BY:
[ ] DRILLER - VISUALLY
[X] SOIL TECH. - VISUALLY
[X] LABORATORY TEST

REMARKS:
STRATIFICATION LINES REPRESENT THE APPROXIMATE BOUNDARY BETWEEN SOIL TYPES AND THE TRANSITION MAY BE GRADUAL.

BORING NO.: **B-3**

S.W.COLE ENGINEERING, INC.

BORING LOG

BORING NO.: **B-4**
SHEET: 1 OF 1
PROJECT NO.: 09-0538

PROJECT: PROPOSED NNEPRA LAYOVER FACILITY
CLIENT : VHB, INC.
LOCATION: THOMPSON'S POINT/SEWALL ROAD, PORTLAND, MAINE
DRILLING FIRM: NORTHERN TEST BORING DRILLER: MIKE NADEAU

DATE START: 7/23/2010
DATE FINISH: 7/23/2010
ELEVATION:
SWC REP.: E. WALKER

	TYPE	SIZE I.D.	HAMMER WT.	HAMMER FALL
CASING:	HSA	2 1/4"		
SAMPLER:	SS	1 3/8"	140 LBS.	30"
CORE BARREL:				

WATER LEVEL INFORMATION
SOILS DAMP TO WET BELOW 3'
WATER MEASURED IN PIEZOMETER @ 3.6' 7/30/10

CASING BLOWS PER FOOT	SAMPLE NO.	PEN.	REC.	DEPTH @ BOT	SAMPLER BLOWS PER 6" 0-6	6-12	12-18	18-24	DEPTH	STRATA & TEST DATA
										GRASS AND DARK BROWN SILTY SAND (FILL)
	1D	24"	16"	2.0'	3	3	4	7	2.0'	~ LOOSE TO MEDIUM DENSE ~
	2D	24"	14"	4.0'	8	9	11	8		BROWN TO ORANGE-BROWN MEDIUM TO COARSE SAND (FILL)
										~ MEDIUM DENSE ~
									6.0'	
	3D	24"	16"	7.0'	7	5	3	2	6.7'	BLACK COAL AND ASH (FILL) ~ LOOSE ~
	4D	24"	14"	9.0'	1	2	3	3		GRAY SILTY CLAY WITH FREQUENT SAND SEAMS
	5D	24"	16"	12.0'	1	1	1	1		~ MEDIUM ~
										w = 41.3%
									15.0'	
	6D	24"	20"	17.0'	1	2	2	1		w = 141.4%, O=27.4%
										DARK BROWN PEAT WITH CLAYEY SILT AND SILTY CLAY LAYERS
										~ STRONG ORGANIC ODOR ~
										~ VERY LOOSE ~
	7D	24"	14"	22.0'	1	1	1	1	22.0'	
										BOTTOM OF EXPLORATION @ 22.0'
										PIEZOMETER INSTALLED:
										2" PVC SCREEN 15.0' - 5.0'
										2" PVC RISER 5.0' - GROUND SURFACE
										FILTER SAND 22.0' - 4.0'
										BENTONITE SEAL 4.0' - 3.0'
										DRILL CUTTINGS 3.0' - GROUND SURFACE
										ROADBOX CAP INSTALLED

SAMPLES:
D = SPLIT SPOON
C = 3" SHELBY TUBE
U = 3.5" SHELBY TUBE

SOIL CLASSIFIED BY:
[ ] DRILLER - VISUALLY
[X] SOIL TECH. - VISUALLY
[X] LABORATORY TEST

REMARKS:
STRATIFICATION LINES REPRESENT THE APPROXIMATE BOUNDARY BETWEEN SOIL TYPES AND THE TRANSITION MAY BE GRADUAL.

BORING NO.: **B-4**

S.W.COLE ENGINEERING, INC.

BORING LOG

BORING NO.: **B-5**
SHEET: 1 OF 2
PROJECT NO.: 09-0538

PROJECT: PROPOSED NNEPRA LAYOVER FACILITY
CLIENT : VHB, INC.
LOCATION: THOMPSON'S POINT/SEWALL ROAD, PORTLAND, MAINE
DRILLING FIRM: NORTHERN TEST BORING DRILLER: MIKE NADEAU

DATE START: 7/22/2010
DATE FINISH: 7/22/2010
ELEVATION:
SWC REP.: E. WALKER

	TYPE	SIZE I.D.	HAMMER WT.	HAMMER FALL
CASING:	HSA	2 1/4"		
SAMPLER:	SS	1 3/8"	140 LBS.	30"
CORE BARREL:				

WATER LEVEL INFORMATION
SOILS DAMP BELOW 3'
SOILS SATURATED BELOW 5'

CASING BLOWS PER FOOT	SAMPLE NO.	PEN.	REC.	DEPTH @ BOT	SAMPLER BLOWS PER 6" 0-6	6-12	12-18	18-24	DEPTH	STRATA & TEST DATA
									3"	BITUMINOUS ASPHALT PAVEMENT
									2.0'	BROWN SAND WITH SOME SILT (FILL) ~ MEDIUM DENSE ~
	1D	24"	16"	2.2'	8	9	11	8		BROWN SAND WITH SOME SILT AND SOME GRAVEL (FILL)
									4.0'	~ MEDIUM DENSE ~
	2D	24"	10"	4.2'	5	6	7	8		q_p=8 KSF
										~ ORGANICS @ 6-7' ~
	3D	24"	18"	7.0'	2	2	2	2		q_p=3 KSF
										GRAY-BROWN LAYERED CLAYEY SILT AND SANDY SILT
										~ LOOSE ~
	4D	24"	18"	18.0'	1	1	2	2	12.0'	q_p=0.5-1 KSF
										ROD PROBE 12.0' - 60.4'
										NO ROD PROBE ADVANCE BY WEIGHT OF MAN
										HYDRAULIC PUSH: 12.0' - 59.5'
										140 LB. HAMMER:
										59.0' - 59.5' - 38 BLOWS
										59.5' - 60.0' - 39 BLOWS
										60.0' - 60.4' - 100 BLOWS, HAMMER BOUNCING
										ROD PROBE REFUSAL @ 60.4'
										PROBABLE BEDROCK, POSSIBLE BOULDER

SAMPLES:
D = SPLIT SPOON
C = 3" SHELBY TUBE
U = 3.5" SHELBY TUBE

SOIL CLASSIFIED BY:
[ ] DRILLER - VISUALLY
[X] SOIL TECH. - VISUALLY
[ ] LABORATORY TEST

REMARKS: CONTINUED…

STRATIFICATION LINES REPRESENT THE APPROXIMATE BOUNDARY BETWEEN SOIL TYPES AND THE TRANSITION MAY BE GRADUAL.

BORING NO.: **B-5**

S.W.COLE ENGINEERING, INC.

ROCK CORE LOG

PROJECT: PROPOSED NNEPRA LAYOVER FACILITY / PORTLAND, ME

BORING NO.: B-3

CLIENT: VHB, INC.

PROJECT NO.: 09-0538

LOGGED BY P. Otto DATE: 8/3/2010 SHEET 1 OF 1

CHECKED BY E. Walker DATE: 8/3/2010 CORE SIZE NQ

DEPTH BELOW SURFACE (FT)	CORE RUN	CORE INTERVAL (FT)	CORE RECOVERY (FT)	RQD (%)	ROCK QUALITY	GRAPHIC LOG	ROCK DESCRIPTION AND IDENTIFICATION
70.5		69.5					
71.5	R1	5.0	3.3	57	FAIR		Eliot Formation - Dark gray Phyllite, trace pyrite and/or muscovite mica; moderately hard; fine grained; fresh to very slightly weathered. Contains quartz veins up to 2½ inches thick and thin calcite veins. Low to moderate fracture angles between 0-45 degrees from horizontal. Foliation at 30-40 degrees from horizontal.
72.5							
73.5							Probable zone of core loss, rock fragment left in borehole.
74.5		74.5					BOTTOM OF EXPLORATION @ 74.5'

S.W.COLE ENGINEERING, INC. • Geotechnical Engineering • Field & Lab Testing • Scientific & Environmental Consulting

KEY TO THE NOTES & SYMBOLS
Test Boring and Test Pit Explorations

All stratification lines represent the approximate boundary between soil types and the transition may be gradual.

Key to Symbols Used:

w	-	water content, percent (dry weight basis)
q_u	-	unconfined compressive strength, kips/sq. ft. - laboratory test
S_v	-	field vane shear strength, kips/sq. ft.
L_v	-	lab vane shear strength, kips/sq. ft.
q_p	-	unconfined compressive strength, kips/sq. ft. – pocket penetrometer test
O	-	organic content, percent (dry weight basis)
W_L	-	liquid limit - Atterberg test
W_P	-	plastic limit - Atterberg test
WOH	-	advance by weight of hammer
WOM	-	advance by weight of man
WOR	-	advance by weight of rods
HYD	-	advance by force of hydraulic piston on drill
RQD	-	Rock Quality Designator - an index of the quality of a rock mass.
γ_T	-	total soil weight
γ_B	-	buoyant soil weight

Description of Proportions:

Trace:	0 to 5%
Some:	5 to 12%
"Y"	12 to 35%
And	35+%

Description of Stratified Soils

Parting:	0 to 1/16" thickness
Seam:	1/16" to ½" thickness
Layer:	½" to 12" thickness
Varved:	Alternating seams or layers
Occasional:	one or less per foot of thickness
Frequent:	more than one per foot of thickness

REFUSAL: **Test Boring Explorations** - Refusal depth indicates that depth at which, in the drill foreman's opinion, sufficient resistance to the advance of the casing, auger, probe rod or sampler was encountered to render further advance impossible or impracticable by the procedures and equipment being used.

REFUSAL: **Test Pit Explorations** - Refusal depth indicates that depth at which sufficient resistance to the advance of the backhoe bucket was encountered to render further advance impossible or impracticable by the procedures and equipment being used.

Although refusal may indicate the encountering of the bedrock surface, it may indicate the striking of large cobbles, boulders, very dense or cemented soil, or other buried natural or man-made objects or it may indicate the encountering of a harder zone after penetrating a considerable depth through a weathered or disintegrated zone of the bedrock.

APPENDIX D

Laboratory Test Results

S.W.COLE ENGINEERING, INC.

Consolidation Test

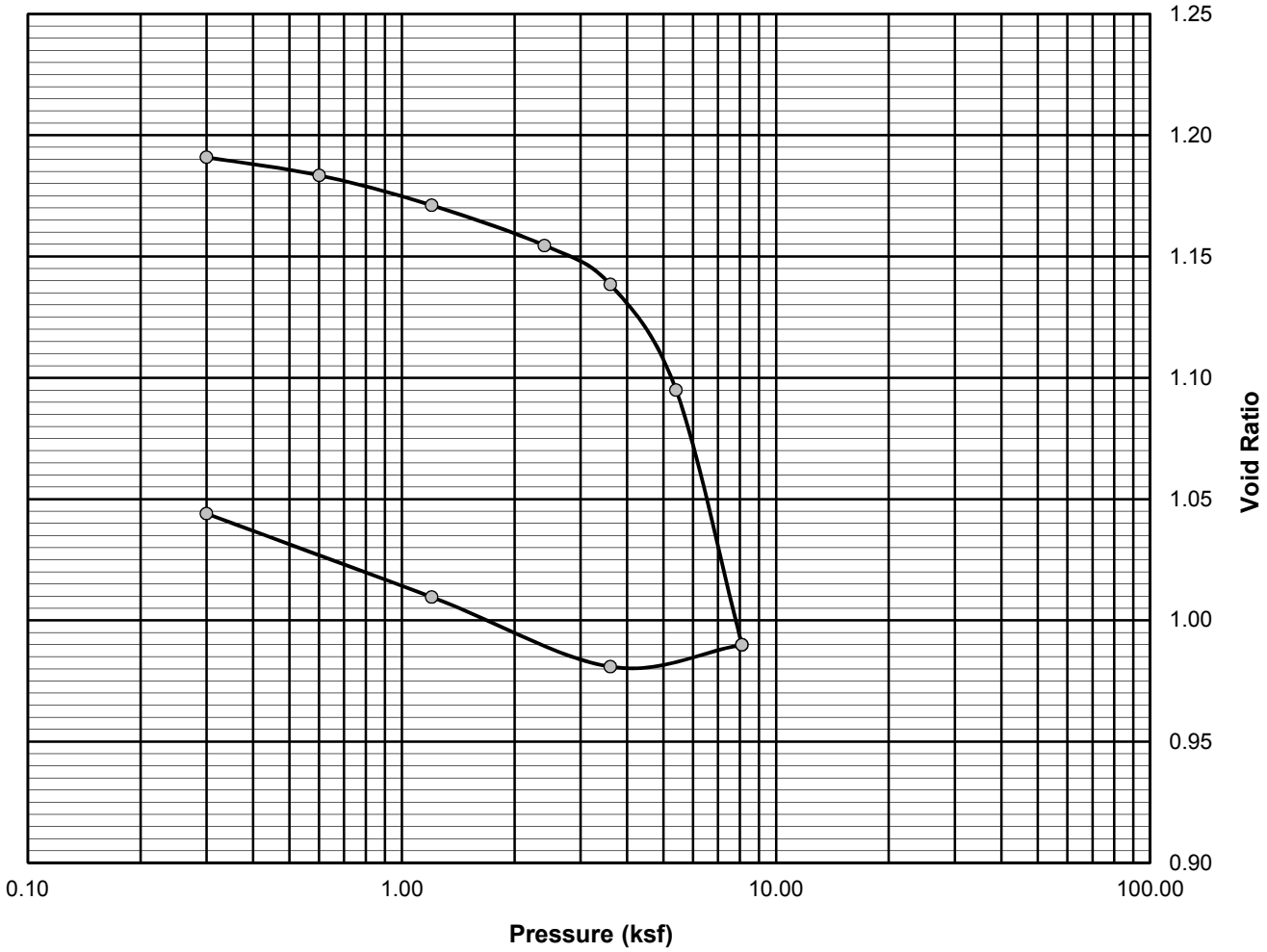
ASTM D-4767

Project Name: Proposed Amtrak-Concord Coach Parking Lot Expansion
Client: Sebago Technics, Inc.

Project Number: 17-0938
Lab ID: 21062B
Date: 10/11/2017

Boring: B-102
Sample: 1U
Depth: 30-32'

P_C =	4.8 KSF +/-
C_C =	0.6
C_R =	0.05
w =	44.5%
W_L =	43
W_P =	23



Comments:

EMW
Reviewed By

S.W.COLE ENGINEERING, INC.

Consolidation Test

ASTM D-4767

Project Name: Proposed Amtrak-Concord Coach Parking Lot Expansion
Client: Sebago Technics, Inc.

Project Number: 17-0938
Lab ID: 21063B
Date: 10/11/2017

Boring: B-102
Sample: 2U
Depth: 40-42'

P_C =	6.8 KSF +/-
C_C =	0.56
C_R =	0.03
w =	36.2%
W_L =	34
W_P =	19

Comments:

EMW
Reviewed By

S.W.COLE ENGINEERING, INC.

Consolidation Test

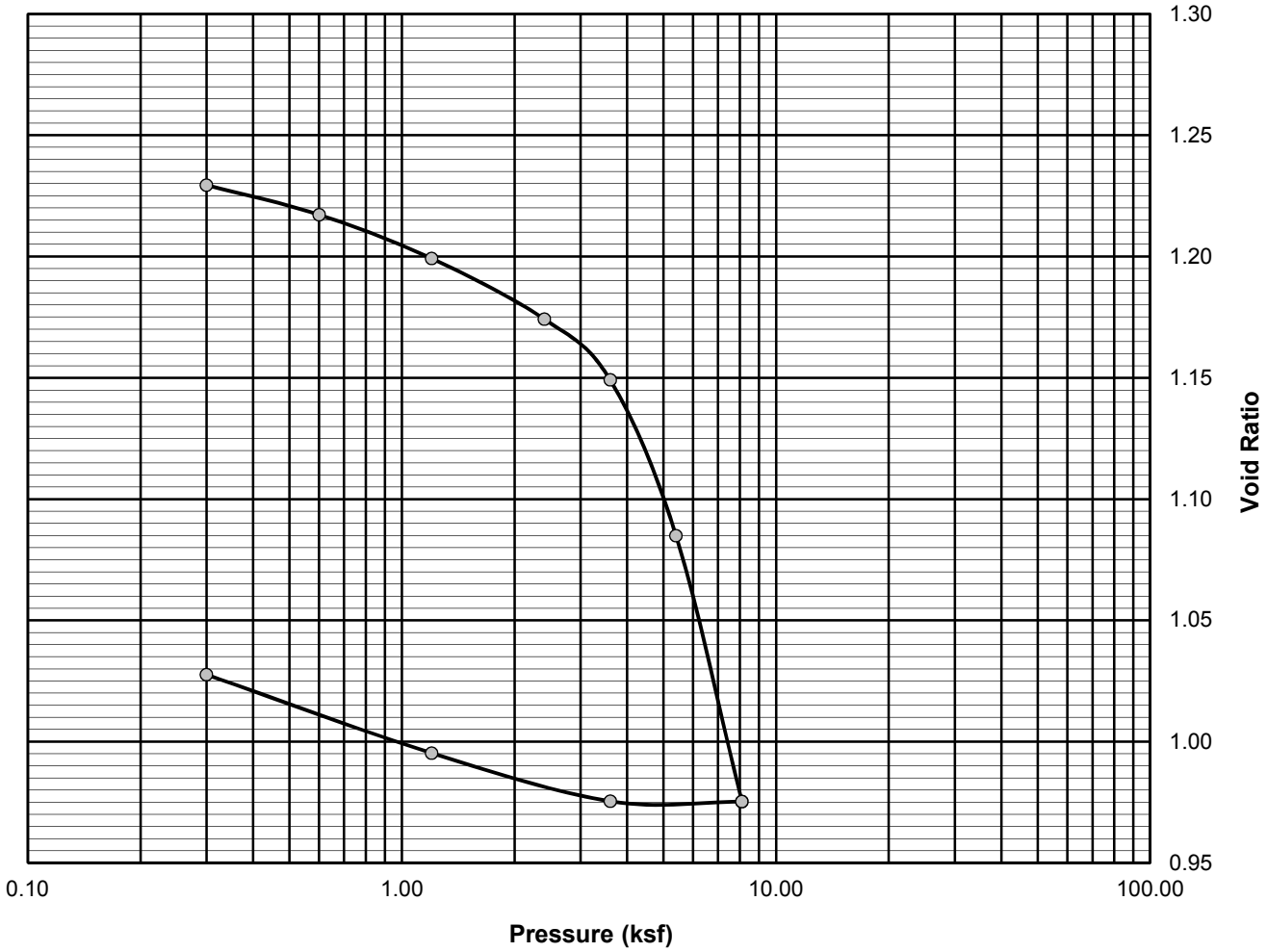
ASTM D-4767

Project Name: Proposed Amtrak-Concord Coach Parking Lot Expansion
Client: Sebago Technics, Inc.

Project Number: 17-0938
Lab ID: 21065B
Date: 10/11/2017

Boring: B-103
Sample: 2U
Depth: 40-42'

P_C =	4.3 KSF +/-
C_C =	0.62
C_R =	0.06
w =	46.4%
W_L =	45
W_P =	23



Comments:

EMW
Reviewed By

S.W.COLE ENGINEERING, INC.

Consolidation Test

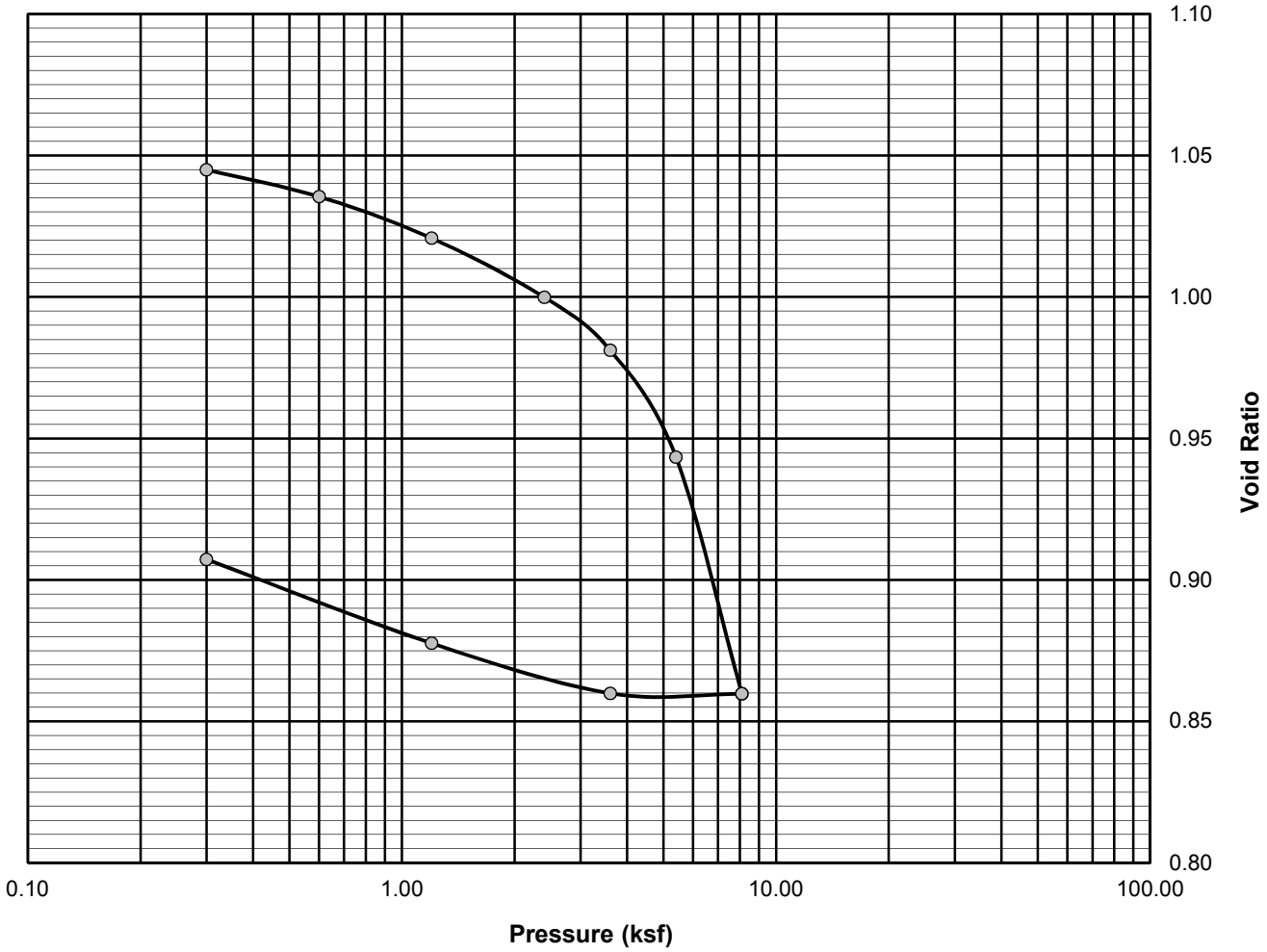
ASTM D-4767

Project Name: Proposed Amtrak-Concord Coach Parking Lot Expansion
Client: Sebago Technics, Inc.

Project Number: 17-0938
Lab ID: 21066B
Date: 10/11/2017

Boring: B-103
Sample: 3U
Depth: 50-52'

P_C =	4.8 KSF +/-
C_C =	0.48
C_R =	0.04
w =	40.4%
W_L =	37
W_P =	21

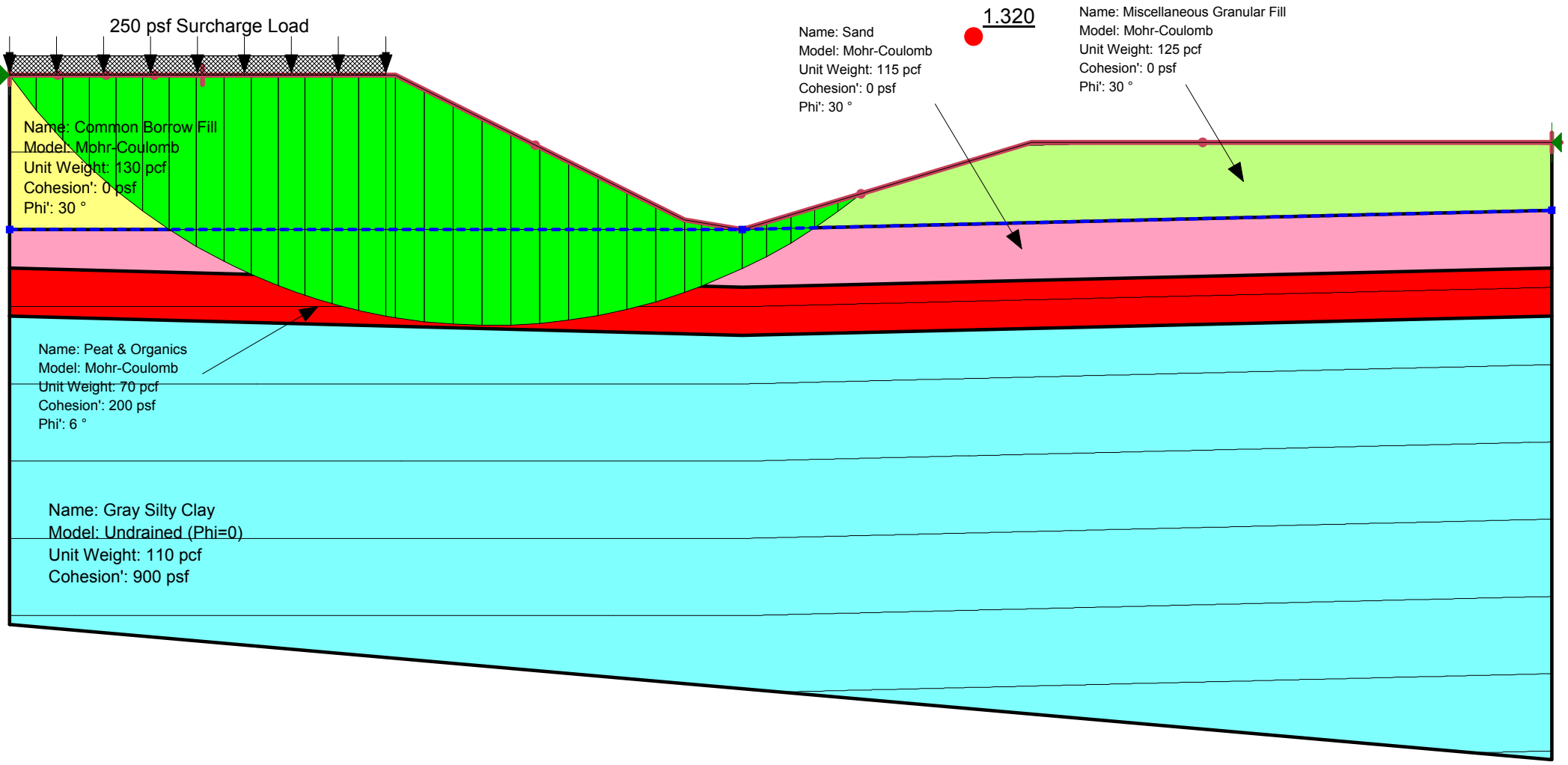


Comments:

EMW
Reviewed By

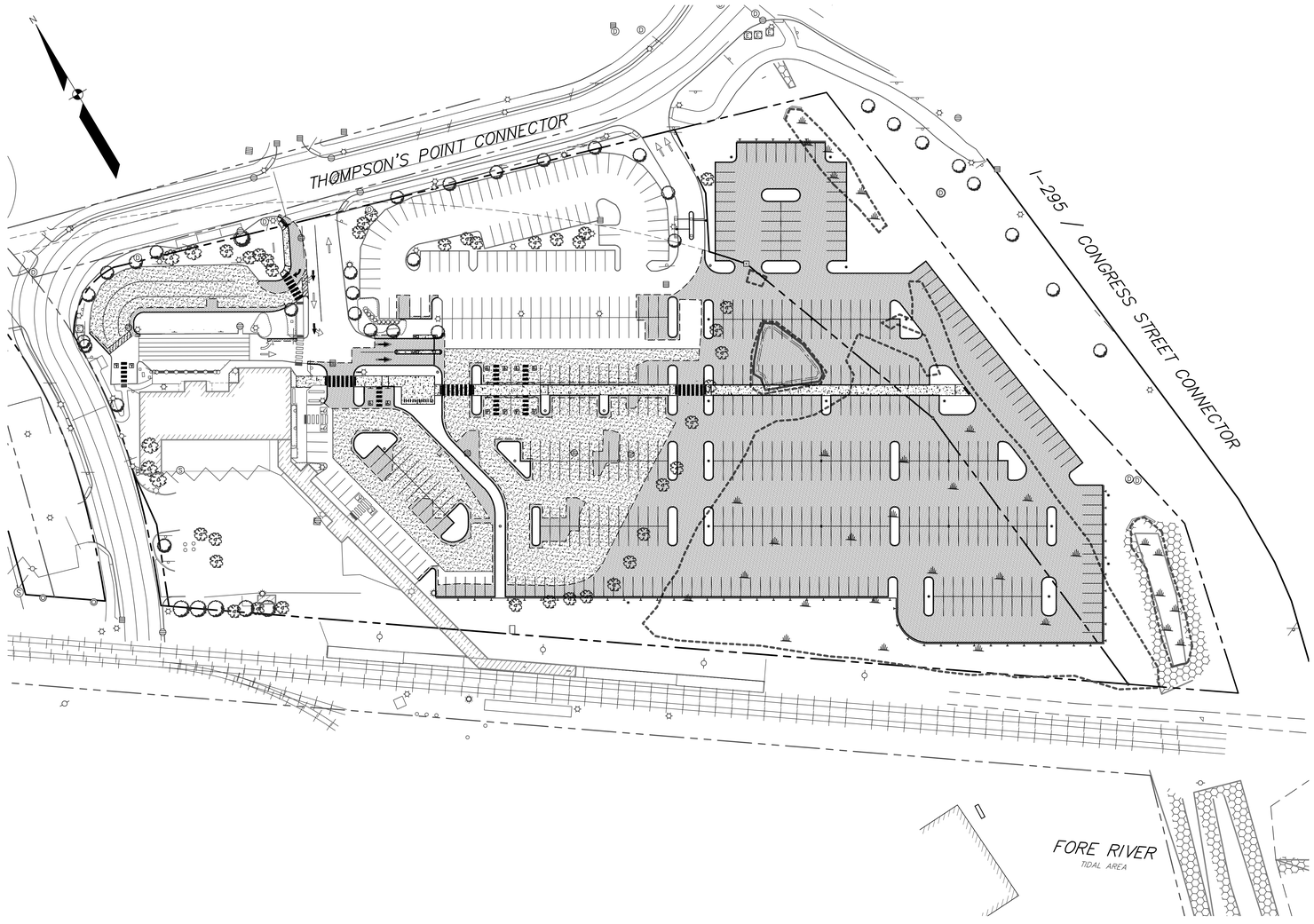
APPENDIX E

Computations


250 psf Surcharge Load
1.320
Name: Sand
Model: Mohr-Coulomb
Unit Weight: 115 pcf
Cohesion': 0 psf
Phi': 30 °
Name: Miscellaneous Granular Fill
Model: Mohr-Coulomb
Unit Weight: 125 pcf
Cohesion': 0 psf
Phi': 30 °
Name: Common Borrow Fill
Model: Mohr-Coulomb
Unit Weight: 130 pcf
Cohesion': 0 psf
Phi': 30 °
Name: Peat & Organics
Model: Mohr-Coulomb
Unit Weight: 70 pcf
Cohesion': 200 psf
Phi': 6 °
Name: Gray Silty Clay
Model: Undrained (Phi=0)
Unit Weight: 110 pcf
Cohesion': 900 psf

PORTLAND TRANSPORTATION CENTER

THOMPSON'S POINT CONNECTOR
PORTLAND, MAINE

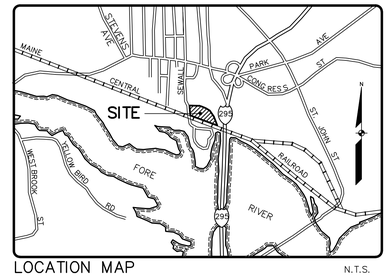


SCALE: 1" = 50'

APPLICANT:
LANGDON STREET
REAL ESTATE, INC.
7 LANGDON STREET
CONCORD, NH 03301

ENGINEER/SURVEYOR/
LANDSCAPE ARCHITECT:

SEBAGO
TECHNICS
WWW.SEBAGOTECHNICS.COM
75 John Roberts Rd.
Suite 4A
South Portland, ME 04106
Tel. 207-200-2100



LOCATION MAP N.T.S.

SHEET INDEX

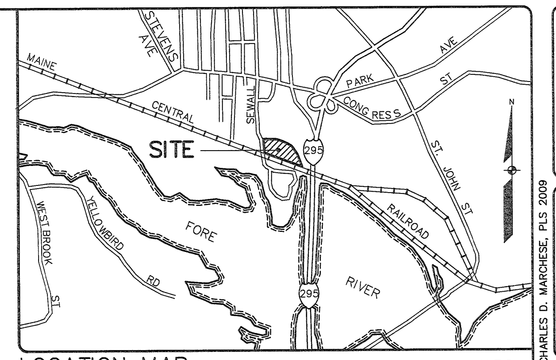
SHEET NUMBER	SHEET TITLE
1	COVER SHEET
2	EXISTING CONDITIONS PLAN
3	DEMOLITION PLAN - PART A
4	DEMOLITION PLAN - PART B
5	OVERALL SITE PLAN
6	SITE PLAN - PART A
7	SITE PLAN - PART B
8	PRELOAD SITE PLAN
9	PRELOAD GRADING AND UTILITY PLAN - PART A
10	PRELOAD GRADING AND UTILITY PLAN - PART B
11	PRELOAD STORMWATER BMP PLAN
12	GRADING AND UTILITY PLAN - PART A
13	GRADING AND UTILITY PLAN - PART B
14	SUBSURFACE SAND FILTER PLAN
15	LANDSCAPE PLAN - PART A
16	LANDSCAPE PLAN - PART B
17	PRELOAD LANDSCAPE PLAN
18	DETAILS
19	DETAILS
20	DETAILS
21	DETAILS
1	PRE DEVELOPMENT DRAINAGE PLAN
2	PRELOAD DEVELOPMENT DRAINAGE PLAN
3	POST DEVELOPMENT DRAINAGE PLAN

STATE OF MAINE
CRAIG A BURGESS
No. 12638
REGISTERED PROFESSIONAL ENGINEER
07/10/18

REVISED THROUGH 07-10-18

GENERAL NOTES CONTINUED:

1. PLAN ORIENTATION IS GRID NORTH, MAINE STATE PLANE COORDINATE SYSTEM, WEST ZONE 1802-NAD83, ELEVATIONS DEPICTED HEREON ARE NAVD88, BASED ON DUAL FREQUENCY GPS OBSERVATIONS.
2. THE LOCUS PROPERTY AS DEPICTED HEREON DOES NOT FALL WITHIN A SPECIAL FLOOD HAZARD AREA AS DELINEATED ON THE FLOOD INSURANCE RATE MAP FOR THE CITY OF PORTLAND, MAINE, CUMBERLAND COUNTY, COMMUNITY–PANEL NUMBER 230051 0013 B, HAVING AN EFFECTIVE DATE OF JULY 17, 1986. THE LOCUS FALLS WITHIN AN UNSHADED ZONE C, AREAS OF MINIMAL FLOODING. (NO SHADING).
3. A WETLAND DELINEATION WAS PERFORMED ON THIS PROJECT SITE IN SEPTEMBER, 2017 BY ERIK B. LEMA, CERTIFIED WETLAND SCIENTIST OF NORMANDEAU ASSOCIATES, INC. THIS DELINEATION CONFORMS TO THE STANDARDS AND METHODS OUTLINED IN THE 1987 WETLANDS DELINEATION MANUAL AND NORTHEAST REGIONAL SUPPLEMENT AUTHORED AND PUBLISHED BY THE U.S. ARMY CORPS OF ENGINEERS. ALL WETLAND FLAGS WERE LOCATED BY SEBAGO TECHNICS USING GLOBAL POSITIONING SYSTEMS (GPS) TECHNOLOGY CAPABLE OF DECIMETER ACCURACY.
4. THE HIGHEST ANNUAL TIDE ELEVATION FOR THE LOCUS SITE IS 6.7 FEET NAVD 88 AS PUBLISHED BY THE MAINE DEPARTMENT OF ENVIRONMENTAL PROTECTION FOR THE YEAR 2017 FOR THE FORE RIVER IN PORTLAND MAINE.



LOCATION MAP N.T.S.

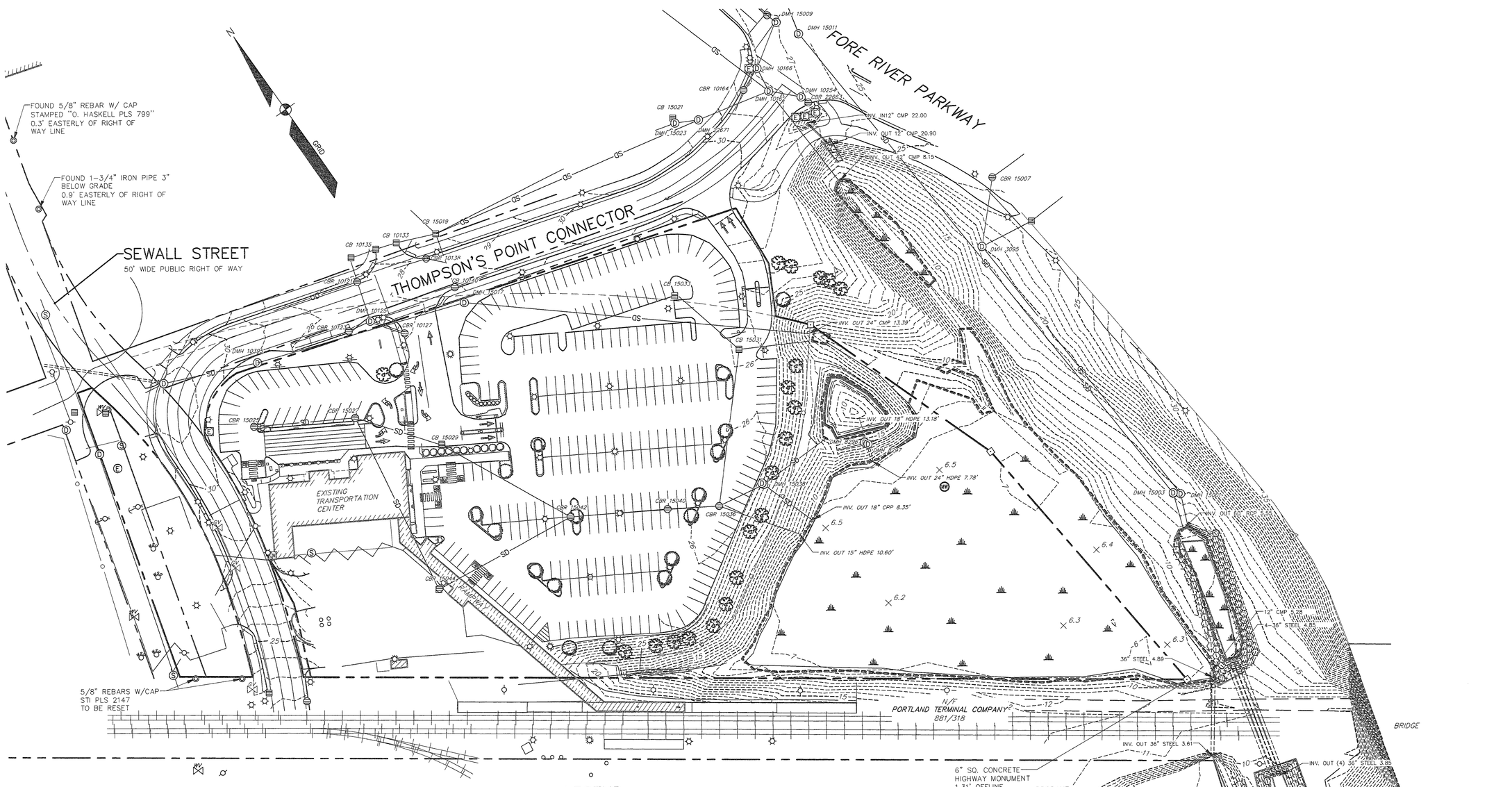
GENERAL NOTES:

1. THE RECORD OWNER OF THE PARCEL IS LANGDON STREET REAL ESTATE, INC. BY DEED DATED SEPTEMBER 12, 1996 AND RECORDED AT THE CUMBERLAND COUNTY REGISTRY OF DEEDS IN BOOK 12719, PAGE 277.
2. THE PROPERTY IS SHOWN AS LOT A-1 ON THE CITY OF PORTLAND TAX MAP 77, LOT C-1 AND LOTS F-8 TO F-13 ON MAP 190 AND IS LOCATED IN THE B5 AND R5 ZONING DISTRICTS.
3. SPACE AND BULK CRITERIA FOR THE B5 AND R5 ZONING DISTRICTS ARE AS FOLLOWS:

	B5	R5 (SEE ORDINANCE)
NET RESIDENTIAL DENSITY:	N/A	6,000 S.F.
MINIMUM LOT SIZE:	NONE	SEE ORDINANCE (SO)
MINIMUM FRONTAGE:	NONE	50 FEET FRONTAGE
MINIMUM FRONT YARD:	NONE	20 FEET
MINIMUM SIDE YARD:	NONE	VARIES (SO)
MINIMUM REAR YARD:	NONE	20 FEET
MAXIMUM BUILDING HEIGHT:	65 FEET	35 FEET
MAXIMUM LOT COVERAGE:	100%	40%

* SEE ORDINANCE FOR MORE PARTICULAR INFORMATION.

4. TOTAL AREA OF PARCEL IS APPROXIMATELY 6.82 ACRES.
5. BOUNDARY AND TOPOGRAPHIC INFORMATION SHOWN HEREON IS BASED UPON FIELD WORK RECENTLY PERFORMED BY SEBAGO TECHNICS, INC. IN SEPTEMBER & OCTOBER 2017 AS WELL AS PAST PROJECTS PERFORMED OVER MANY YEARS.
6. PLAN REFERENCES:
   A. "PLOT PLAN OF CONCORD TRAILWAY FACILITY SEWALL STREET, PORTLAND, MAINE MADE FOR LANGDON STREET REAL ESTATE, INC., 7 LANGDON STREET, CONCORD, N.H. 03301" DATED SEPTEMBER 17, 2002 AND REVISED THROUGH DECEMBER 4, 2002 BY SEBAGO TECHNICS, INC., PROJECT NUMBER 99607.
   B. "PLAN SHOWING LAND AND HOUSE LOTS BELONGING TO THE WEST END LAND CO. AND P.H. AND J.M. BROWN" SURVEYED IN 1887 BY E.C. JORDAN, C.E., BEING FILED IN THE CITY OF PORTLAND'S ENGINEERING FILES AS DRAWING #358/4.
   C. "MAINE STATE HIGHWAY COMMISSION RIGHT OF WAY MAP S.H.C. FILE NO. 3–185 SHEETS 39 & 40 OF 73" DATED MAY 1967 AND RECORDED AT THE CUMBERLAND COUNTY REGISTRY OF DEEDS IN PLAN BOOK 112, PAGES 41 & 42.
   D. "PROPERTY AND TOPOGRAPHIC PLAN FOR BEACON WHARF DEVELOPMENT TRUST" DATED THROUGH AUGUST 20, 1986 BY HTA–DEST ASSOCIATES, INC.
   E. "SITE PLAN/STANDARD BOUNDARY SURVEY OF CONCORD TRAILWAYS TRANSPORTATION CENTER FOR CONCORD TRAILWAYS" DATED THROUGH OCTOBER 16,1996 BY SEBAGO TECHNICS, INC.
   F. "RIGHT OF WAY AND TRACK MAP, THE PORTLAND AND OGDENSBURG RY. OWNED & OPERATED BY THE PORTLAND TERMINAL COMPANY, STATION 0+00 TO STATION 52+80, VALUATION PLAN V–2/1" DATED JUNE 30, 1916 WITH RECORD INFORMATION UPDATED THROUGH AUGUST 30, 1985.
   G. "MAINE DEPARTMENT OF TRANSPORTATION RIGHT OF WAY MAP D.O.T. FILE NO. 3–185A, SHEET 1 OF 1" DATED MARCH, 2001.
   H. "ALTA/ACSM LAND TITLE SURVEY OF 1 THOMPSON'S POINT, END OF SEWALL STREET, PORTLAND, MAINE 04102 FOR THOMPSON'S POINT DEVELOPMENT CO., INC., 55 LISBON STREET, LEWISTON, MAINE 04240" DATED MAY 27, 2011 AND REVISED THROUGH NOVEMBER 23, 2011 BY SEBAGO TECHNICS, INC., PROJECT 11122EC, SHEETS 1 THROUGH 4.
   I. "THE FOREFRONT AT THOMPSON'S POINT - CITY OF PORTLAND PLANNING BOARD SUBDIVISION APPROVAL FOR SECTIONAL RECORDING OF PHASE 1A – OWNER: FOREFRONT PARTNER'S I, LP, 55 LISBON STREET, LEWSTON, MAINE 04240" DATED OCTOBER 2013 AND REVISED THROUGH JANUARY 12, 2015 BY FAY, SPOFFARD & THORNDIKE. THIS PLAN IS RECORDED AT THE CUMBERLAND COUNTY REGISTRY OF DEEDS IN PLAN BOOK 215, PAGE 75. THIS PLAN AMENDS THE PLAN RECORDED IN PLAN BOOK 214, PAGE 266.
   J. "SUBDIVISION PLAN SECTIONAL 1 RECORDING PLAT PORTLAND, MAINE THE FOREFRONT AT THOMPSON'S POINT FOR FOREFRONT PARTNERS I, LP, 501 DANFORTH STREET, PORTLAND, MAINE 04101" DATED SEPTEMBER 2014 AND REVISED THROUGH SEPTEMBER16, 2016 BY STANTEC CONSULTING SERVICES, INC. THIS PLAN IS RECORDED AT THE CUMBERLAND COUNTY REGISTRY OF DEEDS IN PLAN BOOK 216, PAGE 438.
   K. "PARCEL EXCHANGE – PHASE I NNEPRA AND FOREFRONT PARTNERS I, LP PORTLAND CUMBERLAND COUNTY 501 DANFORTH ST, PORTLAND, ME 04101" DATED APRIL 2016 BY THE STATE OF MAINE DEPARTMENT OF TRANSPORTATION PORTLAND RIGHT–OF–WAY MAP SHEET 1 OF 2 D.O.T. FILE NO. 3–614. THIS PLAN IS RECORDED AT THE CUMBERLAND COUNTY REGISTRY OF DEEDS IN PLAN BOOK 216, PAGE 485.
   L. "PARCEL EXCHANGE – PHASE I NNEPRA AND FOREFRONT PARTNERS I, LP PORTLAND CUMBERLAND COUNTY 501 DANFORTH ST, PORTLAND, ME 04101" DATED APRIL 2016BY THE STATE OF MAINE DEPARTMENT OF TRANSPORTATION PORTLAND RIGHT–OF–WAY MAP SHEET 2 OF 2 D.O.T FILE NO. 3–614. THIS PLAN IS RECORDED AT THE CUMBERLAND COUNTY REGISTRY OF DEEDS IN PLAN BOOK 216, PAGE 486.
   M. "AMENDED SUBDIVISION PLAN SECTIONAL 1 RECORDING PLAT PORTLAND, MAINE THE FOREFRONT AT THOMPSON'S POINT FOR FOREFRONT PARTNERS I, LP, 501 DANFORTH STREET, PORTLAND, MAINE 04101" DATED SEPTEMBER 2014 AND REVISED THROUGH JULY 14, 2017. THIS PLAN IS RECORDED AT THE CUMBERLAND COUNTY REGISTRY OF DEEDS IN BOOK 217, PAGE 511.
   N. "ALTA/ACSM LAND TITLE SURVEY LOT 7 OF LAND OWNED BY FOREFRONT PARTNERS I, LP 501 DANFORTH STREET, PORTLAND, MAINE 04102 PREPARED FOR: CHILDREN'S MUSEUM AND THEATRE OF MAINE 142 FREE STREET, PORTLAND, MAINE 04101" PREPARED BY SEBAGO TECHNICS, INC., DATED FEBRUARY 12, 2016, REVISED THROUGH MARCH 8, 2016.
   O. "ALTA/NSPS LAND TITLE SURVEY LOT 7 OF LAND OWNED BY FOREFRONT PARTNERS I, LP 501 DANFORTH STREET, PORTLAND, MAINE 04101 PREPARED FOR: CHILDREN'S MUSEUM AND THEATRE OF MAINE 142 FREE STREET, PORTLAND, MAINE 04101" PREPARED BY SEBAGO TECHNICS, INC., DATED FEBRUARY 12, 2016, REVISED THROUGH DECEMBER 18, 2017.



STRUCTURE TABLE

STRUCTURE #	RIM	SUMP	INVERT IN	INVERT OUT	COMMENTS
					CONCRETE COLLAR: 15.73'
DMH 998	21.94	10.89			
CBR 1379	29.59	24.44		25.69 12" HDPE @ 5	
CBR 1380	29.26	22.93	24.53 12" HDPE @ 7 24.57 12" HDPE @ 10	23.96 12" HDPE @ 5	
CB 1668	25.58	18.12	21.85 12" HDPE @ 12 20.38 15" HDPE @ 8	20.65 12" HDPE @ 4	
CBR 1709	25.90	16.90	15.53 18" HDPE @ 9	15.83 18" HDPE @ 3	
CBR 1710	25.22	12.53	18.30 15" HDPE @ 1 18.69 18" HDPE @ 10	14.91 18" HDPE @ 3 16.61 15" HDPE @ 5	
CB 2113	29.47	20.75	23.11 12" HDPE @ 11	22.80 15" HDPE @ 6	
DMH 3095	18.99	9.69	9.89 24" RCP @ 3 11.70 12" RCP @ 5	9.95 24" RCP @ 7	
DMH 3193	14.49	5.06	6.08 24" RCP @ 2	???	
DMH 8296	17.67	---	5.07 18" HDPE @ 2	???	
DMH 8297	17.61	9.71	???	5.40 24" HDPE @ 8	
CBR 10121	27.18	6.28	22.86 8" HDPE @ 5 22.48 8" HDPE @ 10 22.12 15" HDPE @ 7	22.01 12" HDPE @ 1	
CBR 10123	27.01	21.26	23.71 8" HDPE @ 10	23.26 12" HDPE @ 5	
DMH 10125	27.87	22.27	22.86 15" HDPE @ 2 22.93 12" HDPE @ 10 22.86 10" HDPE @ 7 22.90 10" HDPE @ 7	22.97 8 HDPE @ 5	
CBR 10127	27.61	21.06		23.12 10" HDPE @ 10 23.14 10" HDPE @ 10	
CB 10133	28.46	18.26	20.64 18" HDPE @ 5	20.82 18" HDPE @ 10	
CB 10135	28.51	18.67	21.01 18" HDPE @ 5	21.07 18" HDPE @ 2	
CBR 10138	27.92	21.92	23.85 12" HDPE @ 5	24.07 8" HDPE @ 9	
CBR 10140	28.34	21.89	24.39 8" HDPE @ 5	24.21 12" HDPE @ 2	
DMH 10162	28.14	7.92	9.05 30" RCP @ 2 14.58 24" RCP @ 3 14.01 18" ??? @ 11	9.18 30" RCP @ 8	
CBR 10164	27.89	20.17	22.60 6" HDPE @ 11	22.27 12" RCP @ 12	
DMH 10166	27.99	9.71	15.39 24" RCP @ 5 23.40 12" ??? @ 8 21.96" 12" RCP @ 11	15.17 30" RCP @ 9	STUBBED & PLUGGED
DMH 10254	27.38	19.58	22.67 12" HDPE @ 7	22.62 12" RCP @ 12	
CBR 22663	26.85	22.80	NONE	22.75 12" HDPE @ 1	
DMH 22671	30.06	15.07	15.90 12" HDPE @ 10 17.86 12" HDPE @ 12	15.49 18" RCP @ 5	

LEGEND

EXISTING

- PROPERTY LINE/R.O.W.
- ABUTTER LINE/R.O.W.
- DEED LINE/R.O.W.
- TIE LINE
- SETBACK
- EASEMENT
- FLOODPLAIN
- IRON PIPE/ROD
- BENCHMARK (BENCHMARK DESCRIPTION WITH ELEVATION)
- BUILDING
- EDGE WETLAND
- WETLANDS
- EDGE PAVEMENT
- EDGE GRAVEL
- EDGE OF WATER
- HYDRANT
- CATCH BASIN
- OHU — OVERHEAD UTILITY
- ELECTRICAL BOX ON POST
- LIGHT POLE
- UTILITY POLE
- GUY WIRE
- BOLLARD
- SIGN
- RAILROAD
- GAS
- GAS GATE VALVE
- GAS METER
- W — WATER
- WATER GATE VALVE
- HYDRANT
- WATER MANHOLE
- SANITARY MANHOLE
- SD — STORM DRAIN
- DRAINAGE MANHOLE
- TRANSFORMER PAD
- ELECTRICAL MANHOLE
- MONUMENT
- RIPRAP
- MONITORING WELL
- --420-- --418-- CONTOURS
- X120.00 SPOT GRADE

GRAPHIC SCALE

40 0 30 60 120

(IN FEET)
1 INCH = 60 FT.

SURVEYOR'S STATEMENT

THIS SURVEY WAS PERFORMED UNDER MY DIRECT SUPERVISION AND TO THE BEST OF MY KNOWLEDGE AND BELIEF, IT WAS DONE IN ACCORDANCE WITH CHAPTER 90, PART 1 (PROFESSIONAL STANDARDS OF PRACTICE) AND PART 2 (TECHNICAL STANDARDS OF PRACTICE) OF THE MAINE BOARD OF LICENSURE FOR PROFESSIONAL LAND SURVEYORS.

CHARLES D. MARCHESE, PLS DECEMBER 28, 2017

CHARLES D. MARCHESE, PLS 2009

STATE OF MAINE CHARLES D. MARCHESE 2009 PROFESSIONAL LAND SURVEYOR

DESIGNED	CHECKED
CDM	JIB

REV.	BY:	DATE:	STATUS:
C	CDM	06-21-18	REVISED PER MDEP COMMENTS
B	CDM	02-01-18	ISSUED FOR CITY SITE PLAN REVIEW
A	CDM	12-28-17	ISSUED FOR CLIENT REVIEW

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SEBAGO TECHNICS
WWW.SEBAGOTECHNICS.COM
75 John Roberts Rd. Suite B
South Portland, ME 04106
Tel. 207-200-2100
250 Goddard Rd.
Lewiston, ME 04240
Tel. 207-783-9565

99607 EC.dwg, TAB:99607EC 30x42

EXISTING CONDITIONS PLAN
OF
PORTLAND TRANSPORTATION CENTER
THOMPSON'S POINT CONNECTOR
PORTLAND, MAINE
FOR RECORD OWNER:
LANGDON STREET REAL ESTATE, INC.
7 LANGDON STREET
CONCORD, NH 03301

PROJECT NO.	SCALE
99607	1" = 60'

SHEET 2 OF 19

LEGEND

EXISTING

- PROPERTY LINE/R.O.W.
- ABUTTER LINE/R.O.W.
- DEED LINE/R.O.W.
- TIE LINE
- EASEMENT
- CENTERLINE
- MONUMENT
- IRON PIPE/ROD
- C1/L1 DEED CALL
- C1/L1 CURVE/LINE NO.
- BENCHMARK DESCRIPTION WITH ELEVATION — BENCHMARK
- BUILDING
- DECK/STEPS/OVERHANG
- B-1 BORING
- EDGE WETLAND
- WETLANDS
- STREAM
- EDGE PAVEMENT
- EDGE CONCRETE
- PAVEMENT PAINT
- EDGE GRAVEL
- CURB LINE
- EDGE OF WATER
- TREELINE
- 120 118 CONTOURS
- ×120.00 SPOT GRADE
- CHAIN LINK FENCE
- BARB WIRE FENCE
- STOCKADE FENCE
- GUARD RAIL
- STONE WALL
- RETAINING WALL
- DECIDUOUS TREE
- CONIFEROUS TREE
- BOLLARD
- SIGN
- G GAS
- GAS GATE VALVE
- GAS METER
- GAS MANHOLE
- W WATER
- WATER GATE VALVE
- WATER SHUT OFF
- HYDRANT
- WATER MANHOLE
- POTABLE WELL
- S SANITARY SEWER
- FM FORCE MAIN
- SANITARY MANHOLE
- SD STORM DRAIN
- UD UNDER DRAIN
- DRAINAGE MANHOLE
- CATCH BASIN
- FIELD INLET
- ST STEAM LINE
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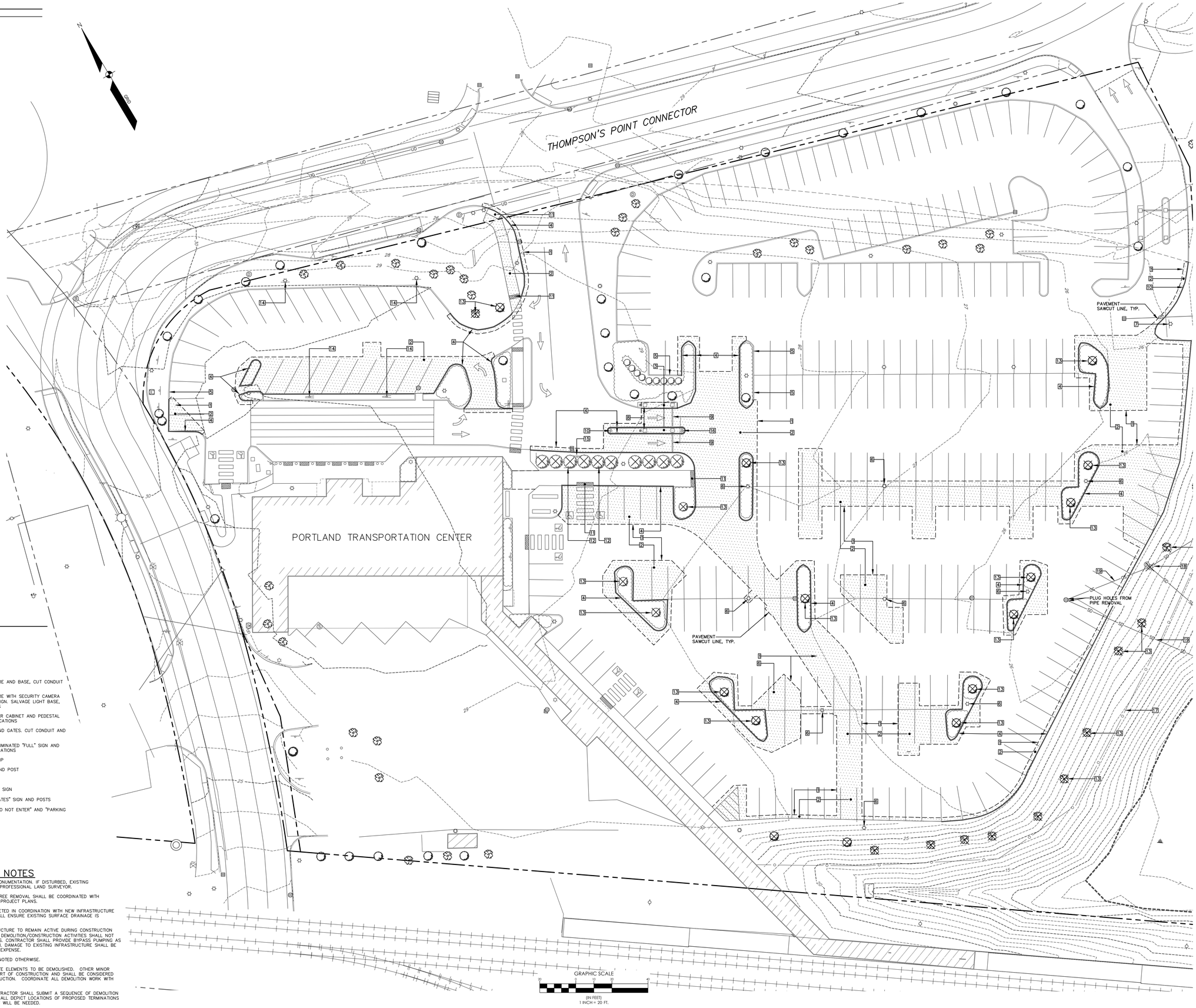
- TRANSFORMER PAD
- ELECTRICAL MANHOLE
- TELEPHONE MANHOLE
- LIGHT POLE
- UTILITY POLE
- GUY WIRE
- RIPRAP



DEMOLITION KEY

1. SAW CUT PAVEMENT
2. REMOVE ASPHALT PAVEMENT
3. REMOVE CONCRETE PAVEMENT
4. REMOVE CURBING
5. CURBING TO REMAIN
6. REMOVE AND SALVAGE LIGHT FIXTURE AND BASE, CUT CONDUIT AND MARK LOCATIONS
7. REMOVE AND SALVAGE LIGHT FIXTURE WITH SECURITY CAMERA AND "EXIT / PAYMENT REMINDER" SIGN. SALVAGE LIGHT BASE, CUT CONDUIT AND MARK LOCATIONS
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18. REMOVE DRAINAGE STRUCTURE
19. REMOVE DRAINAGE PIPE
20. REMOVE MONITORING WELL

UTILITY DEMOLITION NOTES

1. PROTECT EXISTING BOUNDARY LINE MONUMENTATION. IF DISTURBED, EXISTING MONUMENTATION TO BE RESET BY A PROFESSIONAL LAND SURVEYOR.
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7. PRIOR TO ANY DEMOLITION, THE CONTRACTOR SHALL SUBMIT A SEQUENCE OF DEMOLITION PLAN TO THE OWNER. THIS PLAN SHALL DEPICT LOCATIONS OF PROPOSED TERMINATIONS AND ANY TEMPORARY SERVICES THAT WILL BE NEEDED.

CRAIG BURGESS, P.E. #12638 WILLIAM T. CONWAY RLA 108

STATE OF MAINE — REGISTERED LANDSCAPE ARCHITECT — WILLIAM T. CONWAY — No. 108 — STATE OF MAINE — 07/10/18

STATE OF MAINE — CRAIG A. BURGESS — No. 12638 — REGISTERED PROFESSIONAL ENGINEER — 07/10/18

DESIGNED	CHECKED
WTC	WTC

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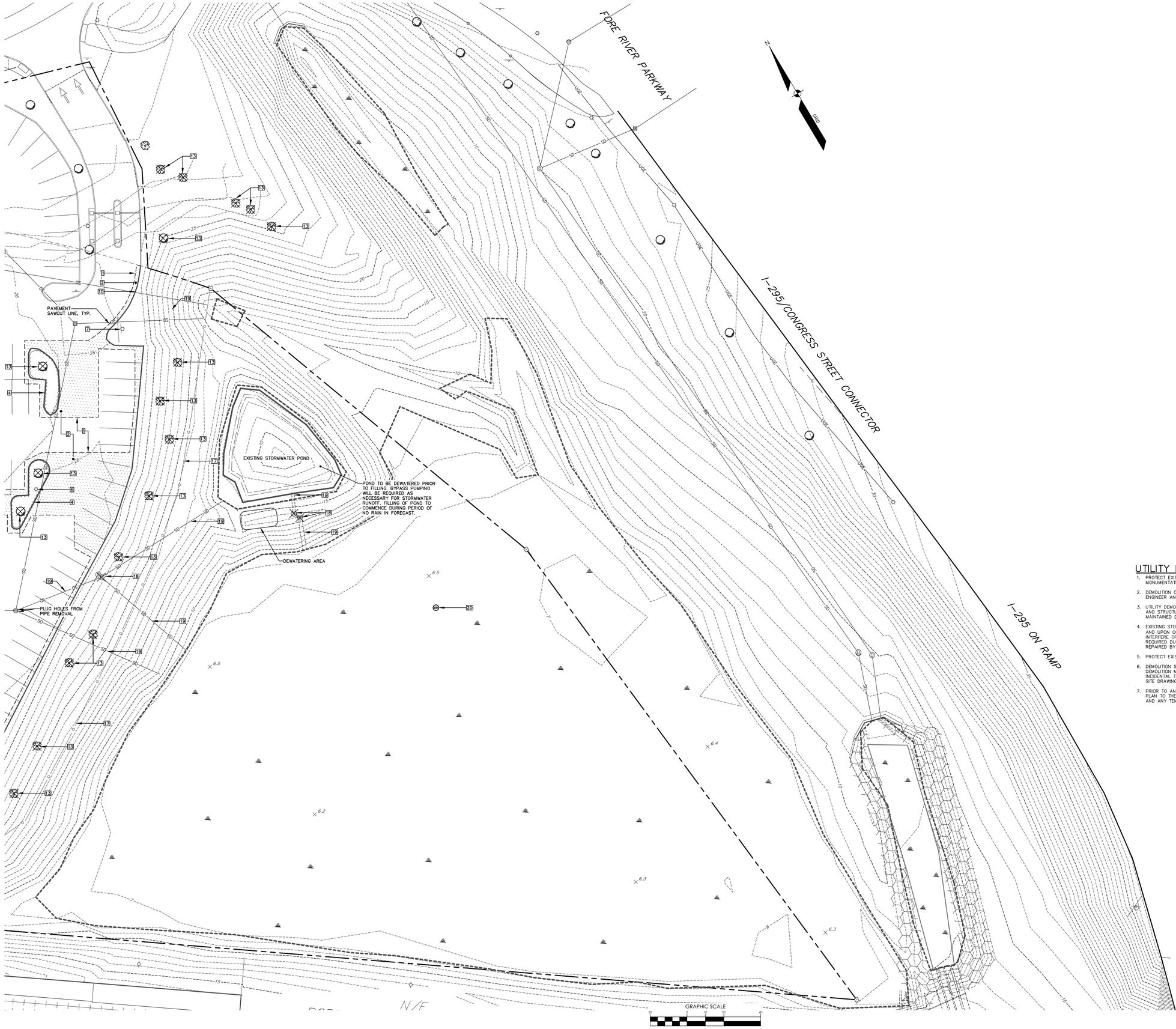
WWW.SEBAGOTECHNICS.COM
75 John Roberts Rd.
Suite A
South Portland, ME 04106
Tel: 207-200-2100

DEMOLITION PLAN - PART A
OF:
PORTLAND TRANSPORTATION CENTER
THOMPSON'S POINT CONNECTOR
PORTLAND, MAINE
FOR:
LANGDON STREET REAL ESTATE, INC.
7 LANGDON STREET
CONCORD, NH 03301

PROJECT NO.	SCALE
99607	1" = 20'

SHEET 3 OF 21

99607DEMO.dwg, TAB:DEMO1



LEGEND

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CRAIG BURGESS, P.E. #12638 WILLIAM T. CONWAY RLA 108

STATE OF MAINE — REGISTERED LANDSCAPE ARCHITECT — WILLIAM T. CONWAY — 108 — STATE OF MAINE — 07/10/18

STATE OF MAINE — CRAIG A. BURGESS — No. 12638 — REGISTERED PROFESSIONAL ENGINEER — CIVIL — STATE OF MAINE — 07/10/18

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WTC	WTC

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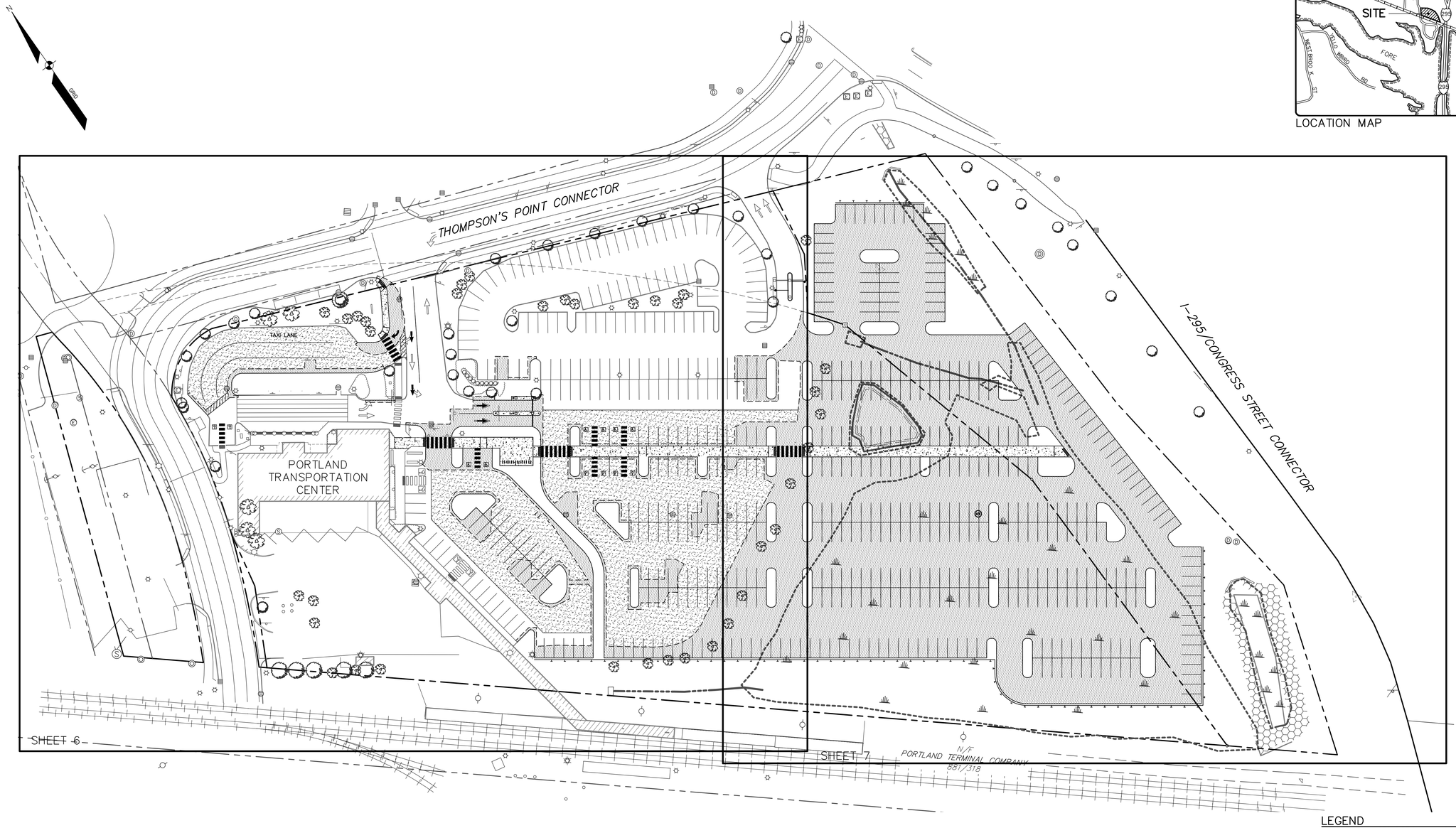
75 John Roberts Rd.
Suite E
South Portland, ME 04106
Tel: 207-200-2100

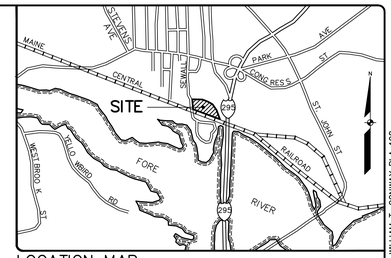
DEMOLITION PLAN - PART B
OF:
PORTLAND TRANSPORTATION CENTER
THOMPSON'S POINT CONNECTOR
PORTLAND, MAINE
FOR:
LANGDON STREET REAL ESTATE, INC.
7 LANGDON STREET
CONCORD, NH 03301

PROJECT NO.	SCALE
99607	1" = 20'

SHEET 4 OF 21

99607DEMO.dwg, TAB1:DEMO2





LOCATION MAP N.T.S.

GENERAL NOTES:

1. THE RECORD OWNER OF THE PARCEL IS LANGDON STREET REAL ESTATE, INC. BY DEED DATED SEPTEMBER 12, 1996 AND RECORDED AT THE CUMBERLAND COUNTY REGISTRY OF DEEDS IN BOOK 12719, PAGE 277.
2. THE PROPERTY IS SHOWN AS LOT A-1 ON THE CITY OF PORTLAND TAX MAP 77, LOT C-1 AND LOTS F-8 TO F-13 ON MAP 190 AND IS LOCATED IN THE B5 AND R5 ZONING DISTRICTS.
3. SPACE AND BULK CRITERIA FOR THE B5 AND R5 ZONING DISTRICTS ARE AS FOLLOWS:

	B5	R5 (SEE ORDINANCE)
NET RESIDENTIAL DENSITY:	N/A	6,000 S.F.
MINIMUM LOT SIZE:	NONE	SEE ORDINANCE (SO)
MINIMUM FRONTAGE:	NONE	50 FEET FRONTAGE
MINIMUM FRONT YARD:	NONE	20 FEET
MINIMUM SIDE YARD:	NONE	VARIES (SO)
MINIMUM REAR YARD:	NONE	20 FEET
MAXIMUM BUILDING HEIGHT:	65 FEET	35 FEET
MAXIMUM LOT COVERAGE:	100%	40%

• SEE ORDINANCE FOR MORE PARTICULAR INFORMATION.

4. TOTAL AREA OF PARCEL IS APPROXIMATELY 8.72 ACRES.
   EXISTING LOT COVERAGE IS 3.95 ACRES (45.29%)
   PROPOSED LOT COVERAGE IS 6.87 ACRES (78.78%)
5. BOUNDARY AND TOPOGRAPHIC INFORMATION SHOWN HEREON IS BASED UPON FIELD WORK RECENTLY PERFORMED BY SEBAGO TECHNICS, INC. IN SEPTEMBER & OCTOBER 2017 AS WELL AS PAST PROJECTS PERFORMED OVER MANY YEARS.
6. PLAN REFERENCES: SEE EXISTING CONDITIONS PLAN.
7. UTILITY INFORMATION DEPICTED HEREON IS COMPILED USING PHYSICAL EVIDENCE LOCATED IN THE FIELD. UTILITIES DEPICTED HEREON MAY NOT NECESSARILY REPRESENT ALL EXISTING UTILITIES. CONTRACTORS AND/OR DESIGNERS NEED TO CONTACT DIG-SAFE SYSTEMS, INC. (1-888-DIG-SAFE) AND FIELD VERIFY EXISTING UTILITIES PRIOR TO CONSTRUCTION AND/OR EXCAVATION.
8. A WETLAND DELINEATION WAS PERFORMED ON THIS PROJECT SITE IN SEPTEMBER, 2017 BY ERIK B. LEMA, CERTIFIED WETLAND SCIENTIST OF NORMANDEAU ASSOCIATES, INC. THIS DELINEATION CONFORMS TO THE STANDARDS AND METHODS OUTLINED IN THE 1987 WETLANDS DELINEATION MANUAL AND NORTHEAST REGIONAL SUPPLEMENT AUTHORED AND PUBLISHED BY THE U.S. ARMY CORPS OF ENGINEERS. ALL WETLAND FLAGS WERE LOCATED BY SEBAGO TECHNICS USING GLOBAL POSITIONING SYSTEMS (GPS) TECHNOLOGY CAPABLE OF DECIMETER ACCURACY.
9. SITE DEVELOPMENT AND EARTHWORK CONSTRUCTION WILL CONFORM TO THE EROSION PREVENTION PROVISIONS OUTLINED IN THE "MAINE EROSION AND SEDIMENTATION CONTROL PRACTICES FIELD GUIDE FOR CONTRACTORS" AND "MAINE EROSION AND SEDIMENTATION CONTROL BEST MANAGEMENT PRACTICES" BY MDEP BUREAU OF LAND AND WATER QUALITY DATED 2014 OR LATEST REVISION.
10. AN APPROVED SET OF PLANS AND ALL APPLICABLE PERMITS MUST BE AVAILABLE AT THE CONSTRUCTION SITE. THE DEVELOPER, OR AN AUTHORIZED AGENT, MUST BE AVAILABLE AT ALL TIMES DURING CONSTRUCTION.
11. THE PROJECT IS LOCATED IN OR WITHIN PROXIMITY TO PROTECTED NATURAL RESOURCES, INCLUDING WETLANDS, STREAMS AND HABITATS. THE CONTRACTOR SHALL WORK IN COMPLIANCE WITH THE NATURAL RESOURCES PROTECTION ACT (NRPA) PERMIT FROM THE MAINE DEPARTMENT OF ENVIRONMENTAL PROTECTION AND PERMIT FROM THE ARMY CORPS OF ENGINEERS. THESE ENVIRONMENTAL PERMIT APPLICATIONS AND CONDITIONS OF APPROVAL ARE INCLUDED IN APPENDIX OF THE SPECIFICATIONS. VARIATION FROM THE WORK DESCRIBED IN THESE PERMITS MUST BE APPROVED IN WRITING FROM THESE REGULATORY AGENCIES PRIOR TO CONSTRUCTION. WETLANDS SHALL NOT BE IMPACTED UNLESS SHOWN ON THIS PLAN. WETLANDS SHALL BE FLAGGED PRIOR TO CONSTRUCTION.
12. ALL EXISTING CATCH BASINS, MANHOLES, CONNECTIONS, CONDUIT AND PIPING SHALL BE CLEANED AND LEFT IN SATISFACTORY OPERATING CONDITION AFTER CONSTRUCTION HAS BEEN COMPLETED. NO SEPARATE PAYMENT WILL BE MADE FOR THIS WORK.
13. ALL LAWN AREAS, WALKWAYS, AND DRIVEWAYS OUTSIDE THE WORK AREA, DAMAGED BY THE CONTRACTOR, SHALL BE REPAIRED BY THE CONTRACTOR AT NO EXPENSE.
14. EXISTING PAVEMENT SHALL BE SAW CUT AND BUTTED TO THE NEW PAVEMENT. NO FEATHERING OF PAVEMENT WILL BE PERMITTED.
15. EXISTING DRAINAGE STRUCTURES SHALL NOT BE DISTURBED UNLESS OTHERWISE NOTED IN THE DRAWINGS OR APPROVED BY THE ENGINEER.
16. THE CONTRACTOR IS REQUIRED TO PROVIDE A SECURE PROJECT WORK AREA. ALL PIPE TRENCH EXCAVATIONS SHALL BE BACKFILLED AND "CLOSED" DURING CONTRACTOR NON-WORKING HOURS INCLUDING NIGHTS, HOLIDAYS AND WEEKENDS. THE CONTRACTOR MAY REQUEST IN WRITING TO THE ENGINEER AND OWNER TO SECURE OPEN EXCAVATION IN LIEU OF BACKFILLED AND "CLOSED." NOT ALLOWING A SECURE OPEN EXCAVATION SHALL NOT BE A BASIS FOR CLAIMS AGAINST THE OWNER.
17. AT HANDICAPPED PARKING SPACES, APPLY PAINTED BLUE AND WHITE INTERNATIONAL SYMBOL OF ACCESSIBILITY. ALL ADA PARKING SPACES SHALL BE SIGNED AS VAN ACCESSIBLE. ALL ADA SIGNS (SIGN NO. S-2) SHALL BE INSTALLED ON BOLLARDS SET 6" FROM ADJACENT CURB OR FLUSH CONCRETE PAVING, BOTTOM OF SIGN SET 60" ABOVE GRADE. FINISH GRADES WITHIN ACCESSIBLE SPACES SHALL NOT EXCEED 1:50 IN ANY DIRECTION.
18. ALL PAINTED CROSSWALKS AND ADA ACCESS AISLES SHALL BE PAINTED WITH 24" WIDE SOLID WHITE BARS SET 24" APART.
19. ALL PARKING SPACES SHALL BE DEFINED WITH 4" WHITE PAINTED LINES. VERIFY THAT PROPOSED PAINT MATCHES EXISTING PAINTED LINES
20. PARKING SUMMARY: EXISTING PARKING SPACES= 323
    PROPOSED PARKING SPACES= 621
21. CONTRACTOR SHALL NOT START CONSTRUCTION ON EXISTING PARKING LOT UNTIL PARKING IN PROPOSED PARKING LOT AVAILABLE.

GRAPHIC SCALE
40 0 20 40 80
(IN FEET)
1 INCH = 40 FT.

LEGEND

EXISTING	DESCRIPTION	PROPOSED
	PROPERTY LINE/R.O.W.	
	ABUTTER LINE/R.O.W.	
	SETBACK	
	BUILDING	
	EDGE WETLAND	
	WETLANDS	
	STREAM	
	EDGE PAVEMENT	
	PAVEMENT SAWCUT	
	EDGE CONCRETE	
	PAVEMENT PAINT	
	EDGE GRAVEL	
	CURB LINE	
	EDGE OF WATER	
	TREELINE	
	FENCE	
	GUARD RAIL	
	RETAINING WALL	
	DECIDUOUS TREE	
	CONIFEROUS TREE	
	BOLLARD	
	SIGN	
	GAS GATE VALVE	
	WATER GATE VALVE	
	SANITARY MANHOLE	
	DRAINAGE MANHOLE	
	CATCH BASIN	
	ELECTRICAL MANHOLE	
	LIGHT POLE	
	UTILITY POLE	
	GUY WIRE	

WILLIAM T. CONWAY RLA 108
LANDSCAPE ARCHITECT
WILLIAM T. CONWAY
No. 108
REGISTERED
STATE OF MAINE
07/10/18

CRAIG BURGESS, P.E. #12638
STATE OF MAINE
CRAIG A. BURGESS
No. 12638
REGISTERED PROFESSIONAL ENGINEER
07/10/18

DESIGNED	CHECKED
WTC	WTC

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OVERALL SITE PLAN
OF
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FOR:
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PROJECT NO.	SCALE
99607	1" = 40'

SHEET 5 OF 21

99607S-OVERALL.dwg, 1:40 S

LEGEND

EXISTING	DESCRIPTION	PROPOSED
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	WETLANDS	
	STREAM	
	EDGE PAVEMENT	
	PAVEMENT SAWCUT	
	EDGE CONCRETE	
	MILL PAVEMENT AREA	
	PAVEMENT PAINT	
	EDGE GRAVEL	
	CURB LINE	
	EDGE OF WATER	
	TREELINE	
	FENCE	
	GUARD RAIL	
	RETAINING WALL	
	DECIDUOUS TREE	
	CONIFEROUS TREE	
	BOLLARD	
	SIGN	
	GAS GATE VALVE	
	WATER GATE VALVE	
	SANITARY MANHOLE	
	DRAINAGE MANHOLE	
	CATCH BASIN	
	ELECTRICAL MANHOLE	
	LIGHT POLE	
	UTILITY POLE	
	GUY WIRE	

SIGN LEGEND

- S-1 EXISTING STOP SIGN TO REMAIN
- S-2 EXISTING "PARKING ONLY / LEFT ARROW "SIGN TO REMAIN
- S-3 EXISTING "DO NOT ENTER" SIGN TO REMAIN
- S-4 EXISTING ADA PARKING SIGN TO REMAIN
- S-5 EXISTING "TAXI STAND" SIGN TO REMAIN
- S-6 EXISTING METRO BUS SIGN TO REMAIN
- S-7 EXISTING "NO PARKING / TOW ZONE" SIGN TO REMAIN
- S-8 EXISTING "CUSTOMER DROP OFF / NO PARKING" SIGN TO REMAIN
- S-9 EXISTING EXIT SIGN TO REMAIN
- S-10 NEW STOP SIGN
- S-11 NEW 24" X 24" "SHORT TERM PARKING/ STRAIGHT ARROW AND LONG TERM PARKING / LEFT ARROW" SIGN, BLACK LETTERS ON WHITE BACKGROUND
- S-12 SALVAGED "PARKING RATES" SIGN
- S-13 SAVAGED "LOT B" AND ILLUMINATED "FULL" SIGN
- S-14 SALVAGED "ONE WAY DO NOT ENTER" AND "PARKING RATES"SIGN
- S-15 SALVAGED ADA PARKING SIGN
- S-16 NEW ADA "VAN ACCESSIBLE" PARKING SIGN
- S-17 EXISTING PTC SIGN TO REMAIN

NOTE - SIGN NOS. S-10 THRU S-15 SIGNS SHALL BE MOUNTED ON A SCH. 80 STEEL POST WITH TWO COATS PRIMER AND TWO COATS BLACK EPOXY BASE PAINT, INSTALL 30 INCHES BELOW GRADE IN A 12 INCH X 36 INCH CONCRETE FILLED SONATUBE.

SIGN NO. S-16 TO BE ST ON A SCH 80 STEEL POST WITH TWO COATS PRIMER AND TWO COATS BLACK EPOXY BASE PAINT, INSTALL POST 18 INCHES INTO CONCRETE FILLED STEEL BOLLARD.

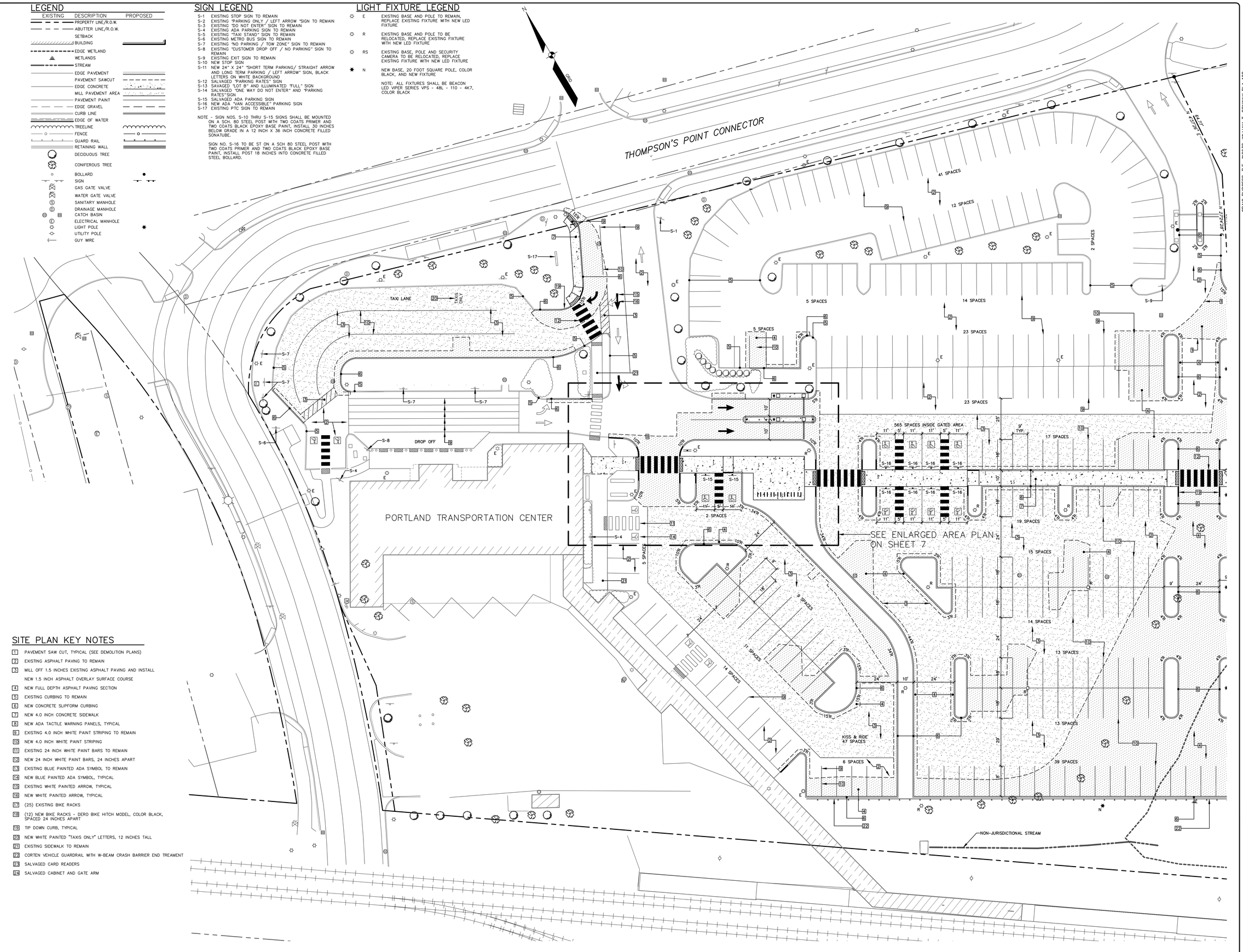
LIGHT FIXTURE LEGEND

- E — EXISTING BASE AND POLE TO REMAIN, REPLACE EXISTING FIXTURE WITH NEW LED FIXTURE
- R — EXISTING BASE AND POLE TO BE RELOCATED, REPLACE EXISTING FIXTURE WITH NEW LED FIXTURE
- RS — EXISTING BASE, POLE AND SECURITY CAMERA TO BE RELOCATED, REPLACE EXISTING FIXTURE WITH NEW LED FIXTURE
- N — NEW BASE, 20 FOOT SQUARE POLE, COLOR BLACK, AND NEW FIXTURE

NOTE: ALL FIXTURES SHALL BE BEACON LED VIPER SERIES VPS - 48L - 110 - 4K7, COLOR BLACK

SITE PLAN KEY NOTES

1. PAVEMENT SAW CUT, TYPICAL (SEE DEMOLITION PLANS)
2. EXISTING ASPHALT PAVING TO REMAIN
3. MILL OFF 1.5 INCHES EXISTING ASPHALT PAVING AND INSTALL NEW 1.5 INCH ASPHALT OVERLAY SURFACE COURSE
4. NEW FULL DEPTH ASPHALT PAVING SECTION
5. EXISTING CURBING TO REMAIN
6. NEW CONCRETE SLIPFORM CURBING
7. NEW 4.0 INCH CONCRETE SIDEWALK
8. NEW ADA TACTILE WARNING PANELS, TYPICAL
9. EXISTING 4.0 INCH WHITE PAINT STRIPING TO REMAIN
10. NEW 4.0 INCH WHITE PAINT STRIPING
11. EXISTING 24 INCH WHITE PAINT BARS TO REMAIN
12. NEW 24 INCH WHITE PAINT BARS, 24 INCHES APART
13. EXISTING BLUE PAINTED ADA SYMBOL TO REMAIN
14. NEW BLUE PAINTED ADA SYMBOL, TYPICAL
15. EXISTING WHITE PAINTED ARROW, TYPICAL
16. NEW WHITE PAINTED ARROW, TYPICAL
17. (25) EXISTING BIKE RACKS
18. (12) NEW BIKE RACKS - DERO BIKE HITCH MODEL, COLOR BLACK, SPACED 24 INCHES APART
19. TIP DOWN CURB, TYPICAL
20. NEW WHITE PAINTED "TAXIS ONLY" LETTERS, 12 INCHES TALL
21. EXISTING SIDEWALK TO REMAIN
22. CORTEN VEHICLE GUARDRAIL WITH W-BEAM CRASH BARRIER END TREAMENT
23. SALVAGED CARD READERS
24. SALVAGED CABINET AND GATE ARM



WILLIAM T. CONWAY
REGISTERED LANDSCAPE ARCHITECT
STATE OF MAINE
07/10/18

CRAIG A. BURGESS
No. 12638
REGISTERED PROFESSIONAL ENGINEER
STATE OF MAINE
07/10/18

CRAIG BURGESS, P.E. #12638 WILLIAM T. CONWAY RLA 108

DESIGNED	CHECKED
WTC	WTC

REV:	BY:	DATE:	STATUS:
C	WTC	07-10-18	RESUBMIT TO CITY
B	WTC	06-21-18	REVISED PER MDEP COMMENTS
A	WTC	02-01-18	ISSUED FOR CITY SITE PLAN REVIEW

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SEBAGO TECHNICS
WWW.SEBAGOTECHNICS.COM
75 John F. Roberts Rd.
Suite 4A
South Portland, ME 04106
Tel: 207-200-2100

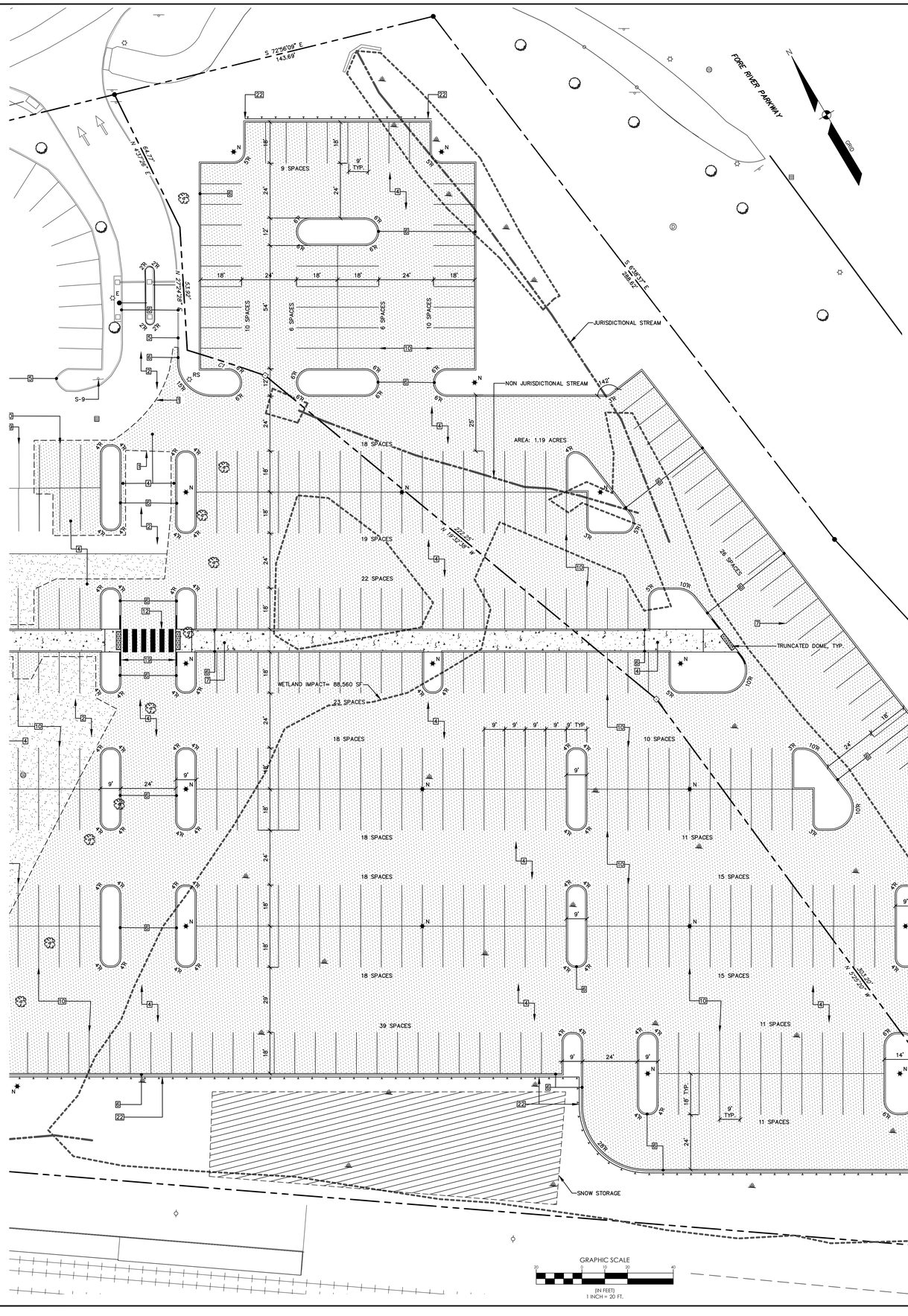
SITE PLAN - PART A
OF: PORTLAND TRANSPORTATION CENTER
THOMPSON'S POINT CONNECTOR
PORTLAND, MAINE

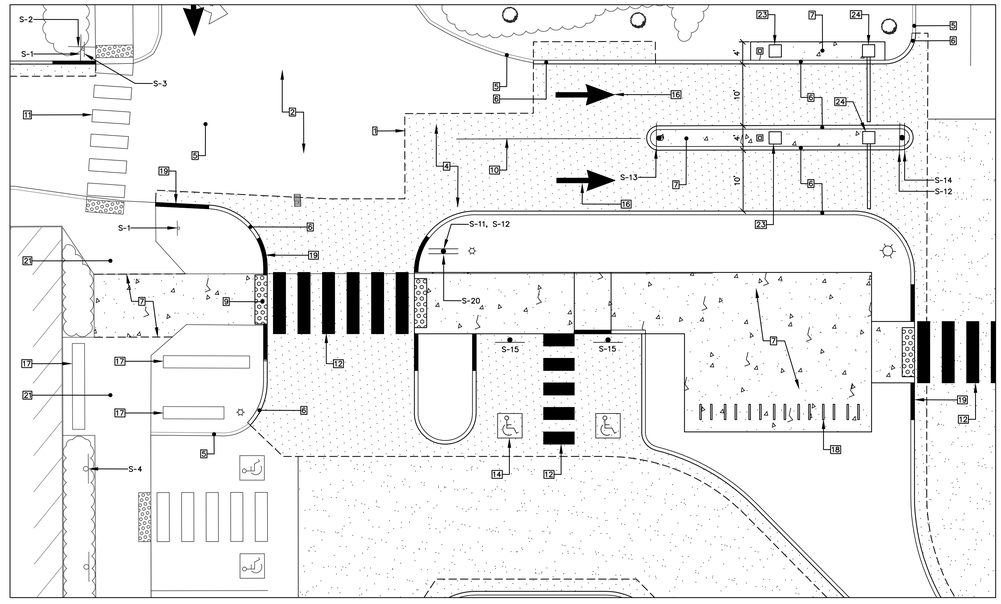
FOR:
LANGDON STREET REAL ESTATE, INC.
7 LANGDON STREET
CONCORD, NH 03301

PROJECT NO.	SCALE
99607	1" = 20'

SHEET 6 OF 21

99607S-site_TAB.S1





ENLARGED AREA SITE PLAN

SCALE: 1" = 10'

SIGN LEGEND

- S-1 EXISTING STOP SIGN TO REMAIN
- S-2 EXISTING "PARKING ONLY / LEFT ARROW "SIGN TO REMAIN
- S-3 EXISTING "DO NOT ENTER" SIGN TO REMAIN
- S-4 EXISTING ADA PARKING SIGN TO REMAIN
- S-5 EXISTING "TAXI STAND" SIGN TO REMAIN
- S-6 EXISTING METRO BUS SIGN TO REMAIN
- S-7 EXISTING "NO PARKING / TOW ZONE" SIGN TO REMAIN
- S-8 EXISTING "CUSTOMER DROP OFF / NO PARKING" SIGN TO REMAIN
- S-9 EXISTING EXIT SIGN TO REMAIN
- S-10 NEW STOP SIGN
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- S-15 SALVAGED ADA PARKING SIGN
- S-16 NEW ADA "VAN ACCESSIBLE" PARKING SIGN
- S-17 EXISTING PTC SIGN TO REMAIN

NOTE - SIGN NOS. S-10 THRU S-15 SIGNS SHALL BE MOUNTED ON A SCH. 80 STEEL POST WITH TWO COATS PRIMER AND TWO COATS BLACK EPOXY BASE PAINT, INSTALL 30 INCHES BELOW GRADE IN A 12 INCH X 36 INCH CONCRETE FILLED SONATUBE.

SIGN NO. S- 16 TO BE ST ON A SCH 80 STEEL POST WITH TWO COATS PRIMER AND TWO COATS BLACK EPOXY BASE PAINT, INSTALL POST 18 INCHES INTO CONCRETE FILLED STEEL BOLLARD.

SITE PLAN KEY NOTES

1. PAVEMENT SAW CUT, TYPICAL (SEE DEMOLITION PLANS)
2. EXISTING ASPHALT PAVING TO REMAIN
3. MILL OFF 1.5 INCHES EXISTING ASPHALT PAVING AND INSTALL NEW 1.5 INCH ASPHALT OVERLAY SURFACE COURSE
4. NEW FULL DEPTH ASPHALT PAVING SECTION
5. EXISTING CURBING TO REMAIN
6. NEW CONCRETE SLIPFORM CURBING
7. NEW 4.0 INCH CONCRETE SIDEWALK
8. NEW ADA TACTILE WARNING PANELS, TYPICAL
9. EXISTING 4.0 INCH WHITE PAINT STRIPING TO REMAIN
10. NEW 4.0 INCH WHITE PAINT STRIPING
11. EXISTING 24 INCH WHITE PAINT BARS TO REMAIN
12. NEW 24 INCH WHITE PAINT BARS, 24 INCHES APART
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20. NEW WHITE PAINTED "TAXIS ONLY" LETTERS, 12 INCHES TALL
21. EXISTING SIDEWALK TO REMAIN
22. CORTEN VEHICLE GUARDRAIL WITH W-BEAM CRASH BARRIER END TREAMENT
23. SALVAGED CARD READERS
24. SALVAGED CABINET AND GATE ARM

LIGHT FIXTURE LEGEND

- E EXISTING BASE AND POLE TO REMAIN, REPLACE EXISTING FIXTURE WITH NEW LED FIXTURE
- R EXISTING BASE AND POLE TO BE RELOCATED, REPLACE EXISTING FIXTURE WITH NEW LED FIXTURE
- RS EXISTING BASE, POLE AND SECURITY CAMERA TO BE RELOCATED, REPLACE EXISTING FIXTURE WITH NEW LED FIXTURE
- N NEW BASE, 20 FOOT SQUARE POLE, COLOR BLACK, AND NEW FIXTURE

NOTE : ALL FIXTURES SHALL BE BEACON LED VIPER SERIES VPS - 48L - 110 - 4K7, COLOR BLACK

LEGEND

EXISTING	DESCRIPTION	PROPOSED
	PROPERTY LINE/R.O.W.	
	ABUTTER LINE/R.O.W.	
	SETBACK	
	BUILDING	
	EDGE WETLAND	
	WETLANDS	
	STREAM	
	EDGE PAVEMENT	
	PAVEMENT SAWCUT	
	EDGE CONCRETE	
	MILL PAVEMENT AREA	
	PAVEMENT PAINT	
	EDGE GRAVEL	
	CURB LINE	
	EDGE OF WATER	
	TREELINE	
	FENCE	
	GUARD RAIL	
	RETAINING WALL	
	DECIDUOUS TREE	
	CONIFEROUS TREE	
	BOLLARD	
	SIGN	
	GAS GATE VALVE	
	WATER GATE VALVE	
	SANITARY MANHOLE	
	DRAINAGE MANHOLE	
	CATCH BASIN	
	ELECTRICAL MANHOLE	
	LIGHT POLE	
	UTILITY POLE	
	GUY WIRE	

CRAIG BURGESS, P.E. #12638 WILLIAM T. CONWAY RLA 108

STATE OF MAINE WILLIAM T. CONWAY 108 REGISTERED LANDSCAPE ARCHITECT 07/10/18

STATE OF MAINE CRAIG A. BURGESS No. 12638 REGISTERED PROFESSIONAL ENGINEER 07/10/18

DESIGNED	CHECKED
WTC	WTC

REV.	BY:	DATE:	STATUS:
D	WTC	07-10-18	RESUBMIT TO CITY
C	WTC	06-21-18	REVISED PER MDEP COMMENTS
B	WTC	02-01-18	ISSUED FOR CITY SITE PLAN REVIEW
A	CDM	01-18-18	EXHIBIT B LAND ACQUISITION SKETCH ISSUED TO STATE OF MAINE

THIS PLAN SHALL NOT BE MODIFIED WITHOUT WRITTEN PERMISSION FROM SEBAGO TECHNICS, INC. ANY ALTERATIONS, AUTHORIZED OR OTHERWISE, SHALL BE AT THE USER'S SOLE RISK AND WITHOUT LIABILITY TO SEBAGO TECHNICS, INC.

SEBAGO TECHNICS
WWW.SEBAGOTECHNICS.COM
75 John Roberts Rd.
Suite 4A
South Portland, ME 04106
Tel: 207-200-2100

SITE PLAN - PART B

OF:
PORTLAND TRANSPORTATION CENTER
THOMPSON'S POINT CONNECTOR
PORTLAND, MAINE

FOR:
LANGDON STREET REAL ESTATE, INC.
7 LANGDON STREET
CONCORD, NH 03301

PROJECT NO.	SCALE
99607	1" = 20'

SHEET 7 OF 21

99607S.dwg, 1:48:52

LEGEND

EXISTING	PROPOSED
PROPERTY LINE/R.O.W.	
FLOODPLAIN	
BUILDING	
EDGE WETLAND	
WETLANDS	
EDGE PAVEMENT	
EDGE CONCRETE	
EDGE GRAVEL	
CURB LINE	
EDGE OF WATER	
TREELINE	
CHAIN LINK FENCE	
RETAINING WALL	
BOLLARD	
SIGN	
LIGHT POLE	
TRUNCATED DOME	
DECIDUOUS TREE	
CONIFEROUS TREE	
SHRUB	
TEMPORARY OVERHEAD WIRES	OHU

REMOVE CURBING AND INSTALL ASPHALT BINDER COURSE

REMOVE LIGHTING FIXTURE

REMOVE CURBING, GRIND OFF EXISTING PAINT STRIPING

PROVIDE OPENINGS IN JERSEY BARRIERS WHERE SHOWN

TEMPORARY PEDESTRIAN WALKWAY

TELEPHONE POLE AND CMP LIGHT, TYP.

INSTALL JERSEY BARRIERS, TYP.

TEMPORARY OVERHEAD WIRING, TYP.

REMOVE CURBING, GRIND OFF EXISTING PAINT STRIPING

PAINT STRIPING TO REMAIN, TYP.

LIMITS OF GRAVEL PRELOAD SURFACE, TYP.

INSTALL TEMPORARY CONSTRUCTION FENCE, TYP.

GRAPHIC SCALE
20 0 10 20 40
(IN FEET)
1 INCH = 20 FT.

WILLIAM T. CONWAY, RLA #108

REGISTERED LANDSCAPE ARCHITECT
WILLIAM T. CONWAY
#108
STATE OF MAINE
07/10/19

DESIGNED	CHECKED
WTC	WTC

REV.	BY:	DATE:	STATUS:
B	WTC	07-10-18	RESUBMIT TO CITY
A	WTC	06-21-18	REVISED PER MDEP COMMENTS

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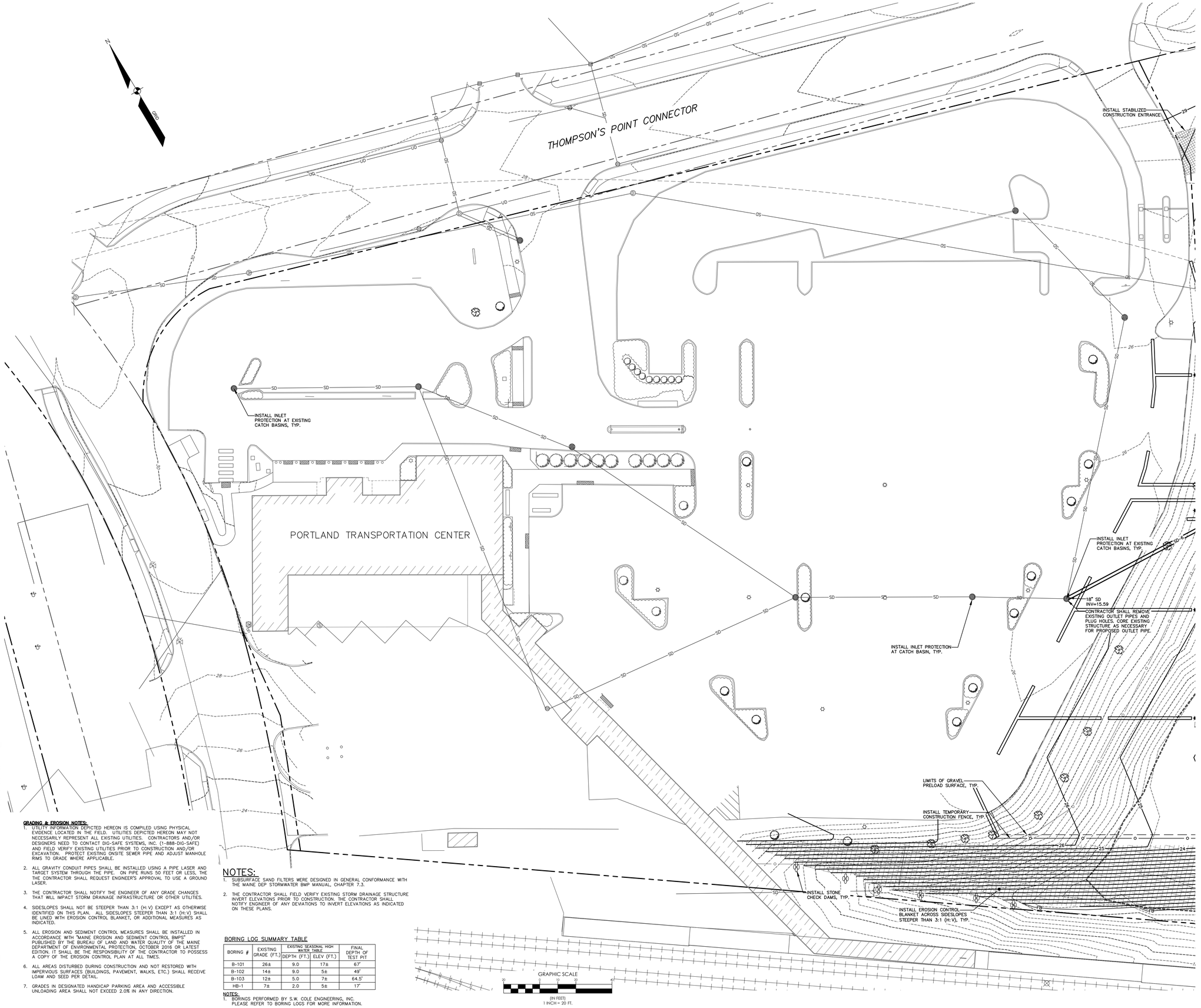
SEBAGO TECHNICS
WWW.SEBAGOTECHNICS.COM
75 John Roberts Rd.
Suite 4A
South Portland, ME 04106
Tel. 207-200-2100

PRELOAD SITE PLAN
OF:
PORTLAND TRANSPORTATION CENTER
THOMPSON'S POINT CONNECTOR
PORTLAND, MAINE
FOR:
LANGDON STREET REAL ESTATE, INC.
7 LANGDON STREET
CONCORD, NH 03301

PROJECT NO.	SCALE
99607	1" = 20'

SHEET 8 OF 21

99607S- PRELOAD.dwg, TAB:PRELOAD S



LEGEND

EXISTING		PROPOSED
	PROPERTY LINE/R.O.W.	
	FLOODPLAIN	
	BUILDING	
	EDGE WETLAND	
	WETLANDS	
	EDGE PAVEMENT	
	EDGE CONCRETE	
	EDGE GRAVEL	
	CURB LINE	
	EDGE OF WATER	
	TREELINE	
	CHAIN LINK FENCE	
	RETAINING WALL	
	BOLLARD	
	SIGN	
251 250	CONTOURS	250
250.00 +	SPOT GRADE	250.00 +
SP-2	SETTLEMENT PLATFORM	
B-101	BORING	
PZ-1	PIEZOMETER	
	LIGHT POLE	
	DRAINAGE DITCH	
	RIPRAP	
	INLET PROTECTION	
	CATCH BASIN	
	DRAINAGE MANHOLE	
	TRUNCATED DOME	
	EROSION CONTROL BLANKET	
	DECIDUOUS TREE	
	CONIFEROUS TREE	
	SHRUB	

GRADING & EROSION NOTES:

1. UTILITY INFORMATION DEPICTED HEREON IS COMPILED USING PHYSICAL EVIDENCE LOCATED IN THE FIELD. UTILITIES DEPICTED HEREON MAY NOT NECESSARILY REPRESENT ALL EXISTING UTILITIES. CONTRACTORS AND/OR DESIGNERS NEED TO CONTACT DIG-SAFE SYSTEMS, INC. (1-888-DIG-SAFE) AND FIELD VERIFY EXISTING UTILITIES PRIOR TO CONSTRUCTION AND/OR EXCAVATION. PROTECT EXISTING ONSITE SEWER PIPE AND ADJUST MANHOLE RIMS TO GRADE WHERE APPLICABLE.
2. ALL GRAVITY CONDUIT PIPES SHALL BE INSTALLED USING A PIPE LASER AND TARGET SYSTEM THROUGH THE PIPE. ON PIPE RUNS 50 FEET OR LESS, THE THE CONTRACTOR SHALL REQUEST ENGINEER'S APPROVAL TO USE A GROUND LASER.
3. THE CONTRACTOR SHALL NOTIFY THE ENGINEER OF ANY GRADE CHANGES THAT WILL IMPACT STORM DRAINAGE INFRASTRUCTURE OR OTHER UTILITIES.
4. SIDESLOPES SHALL NOT BE STEEPER THAN 3:1 (H:V) EXCEPT AS OTHERWISE IDENTIFIED ON THIS PLAN. ALL SIDESLOPES STEEPER THAN 3:1 (H:V) SHALL BE LINED WITH EROSION CONTROL BLANKET, OR ADDITIONAL MEASURES AS INDICATED.
5. ALL EROSION AND SEDIMENT CONTROL MEASURES SHALL BE INSTALLED IN ACCORDANCE WITH "MAINE EROSION AND SEDIMENT CONTROL BMPS" PUBLISHED BY THE BUREAU OF LAND AND WATER QUALITY OF THE MAINE DEPARTMENT OF ENVIRONMENTAL PROTECTION, OCTOBER 2016 OR LATEST EDITION. IT SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR TO POSSESS A COPY OF THE EROSION CONTROL PLAN AT ALL TIMES.
6. ALL AREAS DISTURBED DURING CONSTRUCTION AND NOT RESTORED WITH IMPERVIOUS SURFACES (BUILDINGS, PAVEMENT, WALKS, ETC.) SHALL RECEIVE LOAM AND SEED PER DETAIL.
7. GRADES IN DESIGNATED HANDICAP PARKING AREA AND ACCESSIBLE UNLOADING AREA SHALL NOT EXCEED 2.0% IN ANY DIRECTION.

NOTES:

1. SUBSURFACE SAND FILTERS WERE DESIGNED IN GENERAL CONFORMANCE WITH THE MAINE DEP STORMWATER BMP MANUAL, CHAPTER 7.3.
2. THE CONTRACTOR SHALL FIELD VERIFY EXISTING STORM DRAINAGE STRUCTURE INVERT ELEVATIONS PRIOR TO CONSTRUCTION. THE CONTRACTOR SHALL NOTIFY ENGINEER OF ANY DEVIATIONS TO INVERT ELEVATIONS AS INDICATED ON THESE PLANS.

BORING LOG SUMMARY TABLE

BORING #	EXISTING GRADE (FT.)	EXISTING SEASONAL HIGH WATER TABLE		FINAL DEPTH OF TEST PIT
		DEPTH (FT.)	ELEV (FT.)	
B-101	26±	9.0	17±	67'
B-102	14±	9.0	5±	49'
B-103	12±	5.0	7±	64.5'
HB-1	7±	2.0	5±	17'

NOTES:
1. BORINGS PERFORMED BY S.W. COLE ENGINEERING, INC. PLEASE REFER TO BORING LOGS FOR MORE INFORMATION.

CRAIG BURGESS, P.E. #12638

STATE OF MAINE — CRAIG A. BURGESS No. 12638 — REGISTERED PROFESSIONAL ENGINEER — FINAL, 07/10/19

DESIGNED	CHECKED
WTC	WTC

REV.	BY:	DATE:	STATUS:
B	WTC	07-10-18	RESUBMIT TO CITY
A	WTC	06-21-18	REVISED PER MDEP COMMENTS

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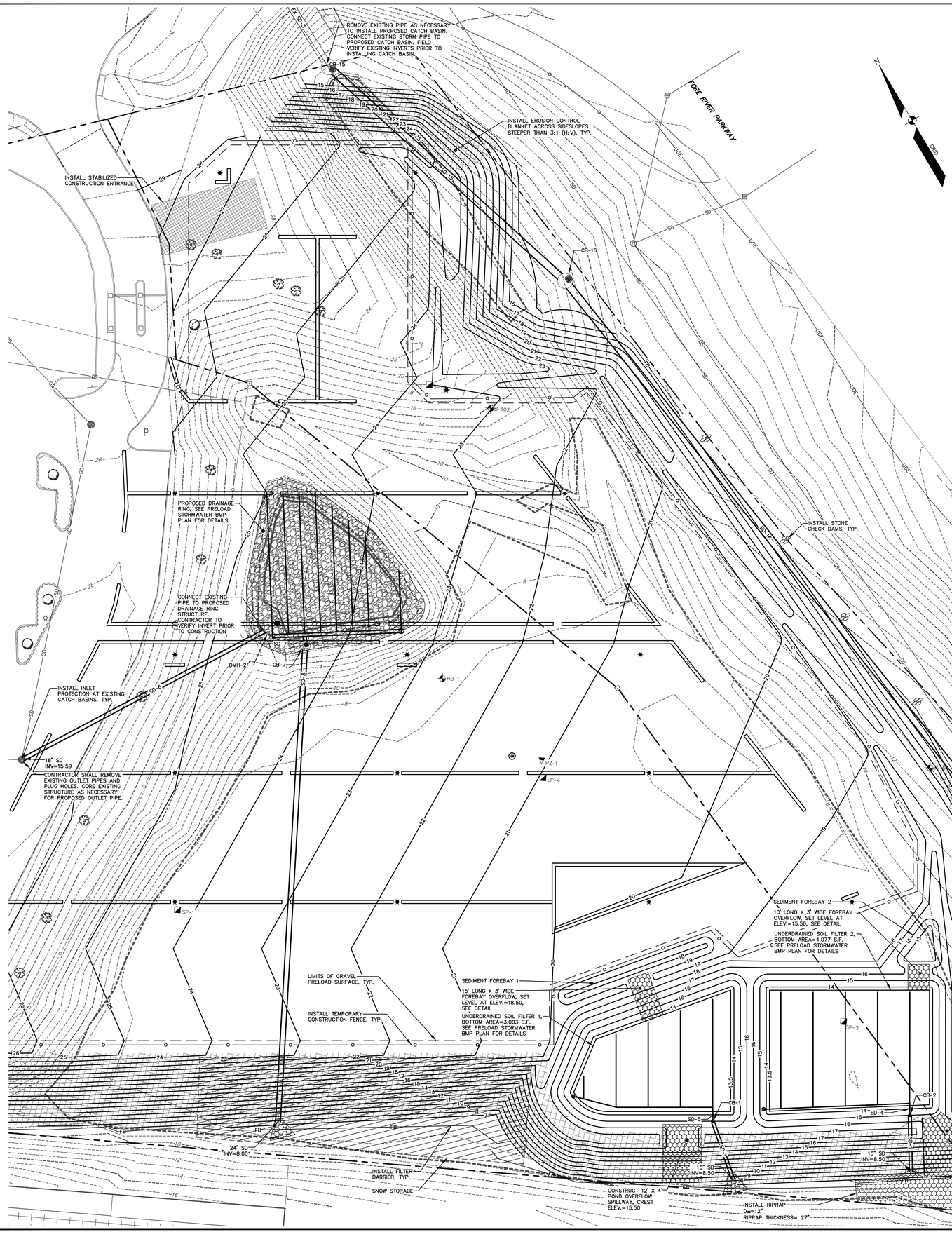
SEBAGO TECHNICS
WWW.SEBAGOTECHNICS.COM
75 John Roberts Rd.
Suite A
South Portland, ME 04106
Tel: 207-200-2100

PRELOAD GRADING AND UTILITY PLAN - PART A
OF:
PORTLAND TRANSPORTATION CENTER
THOMPSON'S POINT CONNECTOR
PORTLAND, MAINE
FOR:
LANGDON STREET REAL ESTATE, INC.
7 LANGDON STREET
CONCORD, NH 03301

PROJECT NO.	SCALE
99607	1" = 20'

SHEET 9 OF 21

99607GU - PRELOAD.dwg, TAB:PRELOAD GU-1



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3. THE CONTRACTOR SHALL NOTIFY THE ENGINEER OF ANY GRADE CHANGES THAT WILL IMPACT STORM DRAINAGE INFRASTRUCTURE OR OTHER UTILITIES.
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5. ALL SEDIMENT AND EROSION CONTROL MEASURES SHALL BE INSTALLED IN ACCORDANCE WITH "MAINE EROSION AND SEDIMENT CONTROL BMPS" MANUAL, PUBLISHED BY BUREAU OF LAND AND WATER QUALITY MAINE DEPARTMENT OF ENVIRONMENTAL PROTECTION, MARCH 2003 OR LATEST EDITION. IT SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR TO POSSESS A COPY OF THE EROSION CONTROL PLAN AT ALL TIMES.
6. ALL AREAS DISTURBED DURING CONSTRUCTION AND NOT RESTORED WITH IMPERVIOUS SURFACES (BUILDINGS, PAVEMENT, WALKS, ETC.) SHALL RECEIVE LOAM AND SEED PER DETAIL.

NOTES:

1. UNDERDRAINED SOIL FILTERS WERE DESIGNED IN GENERAL CONFORMANCE WITH THE MAINE DEP STORMWATER BMP MANUAL, CHAPTER 7.1.
2. THE CONTRACTOR SHALL FIELD VERIFY EXISTING STORM DRAINAGE STRUCTURE INVERT ELEVATIONS PRIOR TO CONSTRUCTION. THE CONTRACTOR SHALL NOTIFY ENGINEER OF ANY DEVIATIONS TO INVERT ELEVATIONS AS INDICATED ON THESE PLANS.

LEGEND

EXISTING		PROPOSED
	PROPERTY LINE/R.O.W.	
	FLOODPLAIN	
	BUILDING	
	EDGE WETLAND	
	WETLANDS	
	EDGE PAVEMENT	
	EDGE CONCRETE	
	EDGE GRAVEL	
	CURB LINE	
	EDGE OF WATER	
	TREELINE	
	CHAIN LINK FENCE	
	RETAINING WALL	
	BOLLARD	
	SIGN	
251 250	CONTOURS	250
250.00 +	SPOT GRADE	250.00 +
SP-2	SETTLEMENT PLATFORM	
B-101	BORING	
PZ-1	PIEZOMETER	
	LIGHT POLE	
	DRAINAGE DITCH	
	RIPRAP	
	INLET PROTECTION	
	CATCH BASIN	
	DRAINAGE MANHOLE	
	TRUNCATED DOME	
	EROSION CONTROL BLANKET	
	DECIDUOUS TREE	
	CONIFEROUS TREE	
	SHRUB	

BORING LOG SUMMARY TABLE

BORING #	EXISTING GRADE (FT.)	EXISTING SEASONAL HIGH WATER TABLE DEPTH (FT.)	EXISTING SEASONAL HIGH WATER TABLE ELEV (FT.)	FINAL DEPTH OF TEST PIT
B-101	26±	9.0	17±	67'
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HB-1	7±	2.0	5±	17'

NOTES:
1. BORINGS PERFORMED BY S.W. COLE ENGINEERING, INC. PLEASE REFER TO BORING LOGS FOR MORE INFORMATION.

STORM DRAIN STRUCTURE DATA

STRUCTURE	RIM	INV. IN	INV. OUT:	DIAM.
CB-1	15.00	11.03 (SD-5)	11.00 (SD-1)	12"
CB-2	15.00	11.03 (SD-4)	11.00 (SD-2)	12"
CB-7	27.92	12.90 (SD-7)	12.90 (SD-3)	48"
CB-15	14.50	8.54 (EX SD-3)	8.44 (SD-15)	72"
CB-16	14.50	7.71 (SD-15)	7.61 (SD-16)	72"
DMH-1	14.00	6.14 (SD-16)	6.04 (SD-26)	72"
DMH-2	26.40	12.90 (SD-6)		96"

STORM DRAIN PIPE DATA

NAME	SIZE	LENGTH	SLOPE
EX SD-3	42"	132'	5.26%
SD-1	15"	28'	8.99%
SD-2	15"	26'	9.58%
SD-3	24"	220'	2.21%
SD-4	6"	5'	0.40%
SD-5	6"	6'	0.29%
SD-6	18"	127'	2.11%
SD-7	15"	2'	0.00%
SD-15	36"	142'	0.51%
SD-16	36"	293'	0.50%
SD-26	36"	171'	0.50%

CRAIG BURGESS, P.E. #12638

STATE OF MAINE — CRAIG A. BURGESS — No. 12638 — REGISTERED PROFESSIONAL ENGINEER — SEAL — 07/10/18

DESIGNED	CHECKED
WTC	WTC

REV:	BY:	DATE:	COMMENTS
B	WTC	07-10-18	RESUBMIT TO CITY
A	WTC	06-21-18	REVISED PER MDEP COMMENTS

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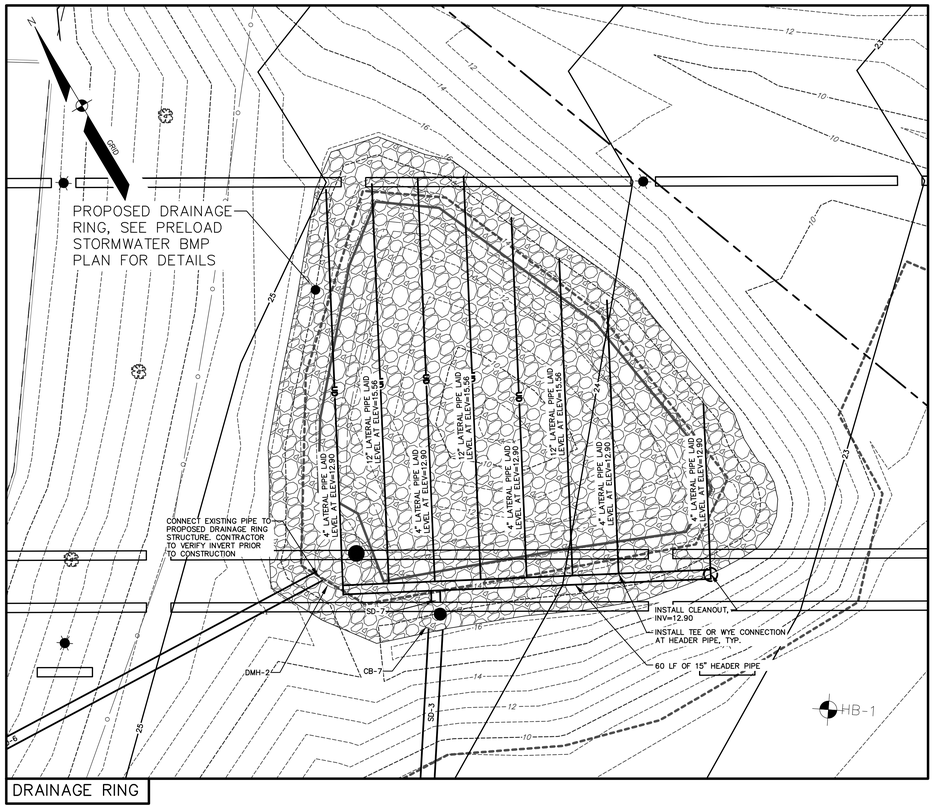
SEBAGO TECHNICS
WWW.SEBAGOTECHNICS.COM
75 John Roberts Rd.
Suite 4A
South Portland, ME 04106
Tel: 207-200-2100

PRELOAD GRADING AND UTILITY PLAN - PART B
OF:
PORTLAND TRANSPORTATION CENTER
THOMPSON'S POINT CONNECTOR
PORTLAND, MAINE
FOR:
LANGDON STREET REAL ESTATE, INC.
7 LANGDON STREET
CONCORD, NH 03301

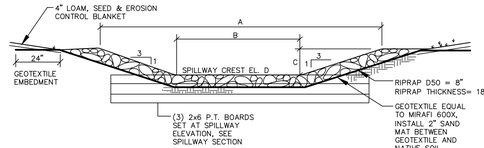
PROJECT NO.	SCALE
99607	1" = 20'

SHEET 10 OF 21

99607GU - PRELOAD.dwg, TAB:PRELOAD GU-2



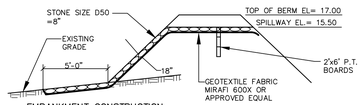
DRAINAGE RING



EMERGENCY SPILLWAY	DIMENSIONS IN FEET A	B	C	ELEVATION D
SEDIMENT FOREBAY 1	13'	10'	0.5	155.30
UNDERDRAINED SOIL FILTER 1	15	12'	1	154.00
SEDIMENT FOREBAY 1	13'	10'	0.5	155.30
UNDERDRAINED SOIL FILTER 1	15'	12'	1	154.00

EMERGENCY/ FOREBAY SPILLWAY CROSS-SECTION

NOT TO SCALE

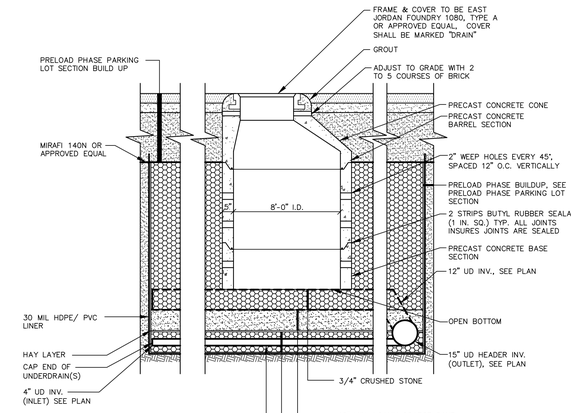


EMBANKMENT CONSTRUCTION

1. CONSTRUCTION OF COMMON BORROW MATERIAL MEETING M.D.O.T. SPECIFICATION.
2. PLACE BORROW MATERIAL IN 12" LIFTS COMPACTED TO 95% OF MAXIMUM DRY DENSITY.
3. INSTALL RIPRAP AND EROSION CONTROL MESH WHERE SPECIFIED ON PLANS
4. LOAM, SEED, AND STABILIZE IN ACCORDANCE WITH SEDIMENTATION AND EROSION CONTROL PLAN.

SPILLWAY SECTION

NOT TO SCALE



NOTES:
1. DRAINAGE STRUCTURE TO BE DESIGNED FOR H-20 LOADING.
2. PIPE CONNECTIONS SHALL BE WATERTIGHT FLEXIBLE BOOT CONNECTORS PROVIDES LEAKPROOF CONNECTION

DRAINAGE RING DETAIL

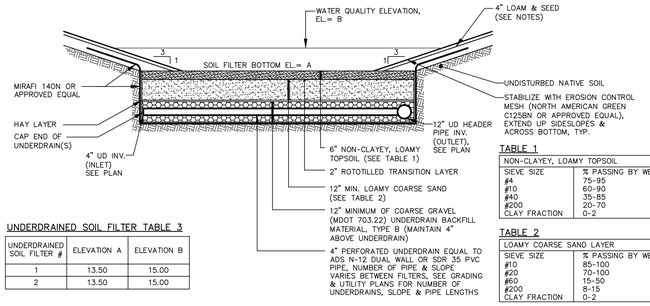
NOT TO SCALE

STORM DRAIN PIPE DATA

NAME	SIZE	LENGTH	SLOPE
EX SD-3	42"	132'	5.26%
SD-1	15"	28'	8.99%
SD-2	15"	26'	9.58%
SD-3	24"	220'	2.21%
SD-4	6"	5'	0.40%
SD-5	6"	6'	0.29%
SD-6	18"	127'	2.11%
SD-7	15"	2'	0.00%
SD-15	36"	142'	0.51%
SD-16	36"	293'	0.50%
SD-26	36"	171'	0.50%

STORM DRAIN STRUCTURE DATA

STRUCTURE	RIM	INV. IN	INV. OUT:	DIAM.
CB-1	15.00	11.03 (SD-5)	11.00 (SD-1)	12"
CB-2	15.00	11.03 (SD-4)	11.00 (SD-2)	12"
CB-7	27.92	12.90 (SD-7)	12.90 (SD-3)	48"
CB-15	14.50	8.54 (EX SD-3)	8.44 (SD-15)	72"
CB-16	14.50	7.71 (SD-15)	7.61 (SD-16)	72"
DMH-1	14.00	6.14 (SD-16)	6.04 (SD-26)	72"
DMH-2	26.40	12.90 (SD-6)		96"



UNDERDRAINED SOIL FILTER TABLE 3

UNDERDRAINED SOIL FILTER #	ELEVATION A	ELEVATION B
1	13.50	15.00
2	13.50	15.00

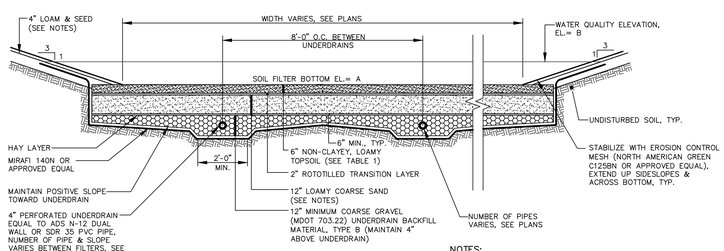
TABLE 1

NON-CLAYEY, LOAMY TOPSOIL SIEVE SIZE	% PASSING BY WEIGHT
#4	75-95
#10	60-90
#40	35-85
#200	20-70
CLAY FRACTION	0-2

TABLE 2

LOAMY COARSE SAND LAYER SIEVE SIZE	% PASSING BY WEIGHT
#10	85-100
#20	70-100
#60	15-50
#200	8-15
CLAY FRACTION	0-2

LONGITUDINAL SECTION



SECTION

NOTES:
1. MULTIPLE ROWS OF UNDERDRAIN SHALL CONNECT INTO A 6" HEADER LAID LEVEL PIPE.
2. THE CONTRACTOR SHALL PURCHASE MATERIAL FOR SOIL FILTER CONSTRUCTION FROM OUTSIDE VENDOR THAT HAS MATERIAL PRE-MIXED.

UNDERDRAINED SOIL FILTER CONSTRUCTION OVERSIGHT NOTES:

THE APPLICANT WILL RETAIN THE SERVICES OF A PROFESSIONAL ENGINEER TO INSPECT THE CONSTRUCTION AND STABILIZATION OF THE UNDERDRAINS. IF NECESSARY, THE INSPECTING ENGINEER WILL INTERPRET THE UNDERDRAIN'S CONSTRUCTION PLAN FOR THE CONTRACTOR. ONCE ALL STORMWATER MANAGEMENT STRUCTURES ARE CONSTRUCTED AND STABILIZED, THE INSPECTING ENGINEER WILL NOTIFY THE DEPARTMENT IN WRITING WITHIN 30 DAYS TO STATE THAT THE POND HAS BEEN COMPLETED. ACCOMPANYING THE ENGINEER'S NOTIFICATION MUST BE A LOG OF THE ENGINEER'S INSPECTIONS GIVING THE DATE OF EACH INSPECTION, THE TIME OF EACH INSPECTION, AND THE ITEMS INSPECTED ON EACH VISIT, AND INCLUDE ANY TESTING DATA OR SIEVE ANALYSIS DATA OF EVERY MINERAL SOIL AND SOIL MEDIA SPECIFIED IN THE PLANS AND USED ON SITE. THE CONTRACTOR SHALL CONTRACT WITH A QUALIFIED MATERIAL TESTING COMPANY FOR REQUIRED TESTING OF MATERIALS.

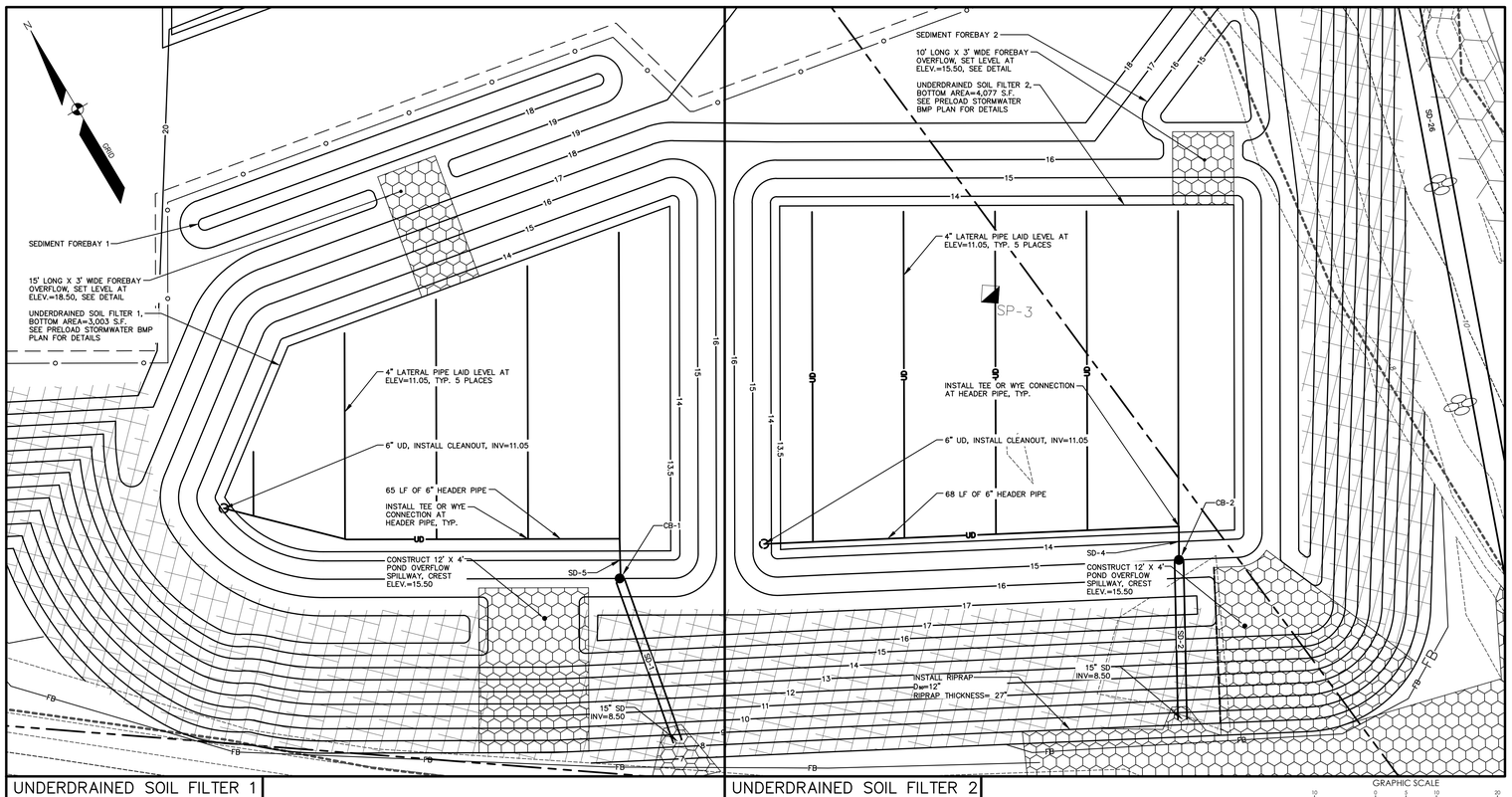
1. CONSTRUCTION SEQUENCE: THE UNDERDRAIN AND VEGETATION MUST NOT BE INSTALLED UNTIL THE AREA THAT DRAINS TO THE UNDERDRAIN HAS BEEN PERMANENTLY STABILIZED WITH PAVEMENT OR OTHER STRUCTURE, 90% VEGETATION COVER, OR OTHER PERMANENT STABILIZATION UNLESS THE RUNOFF FROM THE CONTRIBUTING DRAINAGE AREA IS DIVERTED AROUND THE FILTER UNTIL STABILIZATION IS COMPLETED.
2. COMPACTION OF UNDERDRAIN: UNDERDRAIN BEDDING MATERIAL MUST BE COMPACTED TO BETWEEN 90% AND 92% STANDARD PROCTOR. THE BED SHOULD BE INSTALLED IN AT LEAST 2 LIFTS OF 9 INCHES TO PREVENT POCKETS OF LOOSE MEDIA.
3. CONSTRUCTION OVERSIGHT: INSPECTION BY A PROFESSIONAL ENGINEER WILL OCCUR AT A MINIMUM:
   A. FOR FIRST UNDERDRAIN CONSTRUCTED, AFTER UNDERDRAIN PIPE IS INSTALLED AT GRADE AND BUT NOT BACKFILLED. AFTER THE UNDERDRAIN PIPE IS COMPLETELY BACKFILLED AND BEFORE PLACEMENT OF LOAMY COARSE SAND LAYER.
   B. AFTER THE LOAMY COARSE SAND LAYER AND SOD/ LOAM HAS BEEN INSTALLED.
   C. AFTER ONE YEAR TO INSPECT HEALTH OF THE VEGETATION AND MAKE CORRECTIONS.
   D. ALL MATERIAL USED FOR THE CONSTRUCTION OF THE UNDERDRAIN MUST BE CONFIRMED AS SUITABLE BY THE DESIGN ENGINEER. TESTING MUST BE DONE BY A CERTIFIED LABORATORY.

TESTING AND SUBMITTALS:
1. THE UNDERDRAIN SHALL CONSIST OF THE TOP THREE LAYERS IDENTIFIED AS LOAMY TOPSOIL, 2" TRANSITION AND 12" LOAMY COARSE SAND. THE CONTRACTOR SHALL IDENTIFY THE LOCATION OF THE SOURCE FOR EACH COMPONENT OF THE UNDERDRAIN AND SUBMIT GRADATIONS FOR THE UNDERDRAIN MATERIALS TO THE ENGINEER FOR APPROVAL. SAMPLES MUST BE A COMPOSITE OF THREE DIFFERENT LOCATIONS (GRABS) FROM THE STOCKPILE OR PIT FACE. SAMPLE SIZE REQUIRED WILL BE DETERMINED BY THE TESTING LABORATORY.

UNDERDRAIN SOIL FILTER MATERIAL NOTES:
1. ONSITE LOAM SHALL BE SCREENED FOR STONES LARGER THAN 1 INCH AND BE TESTED TO VERIFY THERE IS LESS THAN 2% CLAY CONTENT AND 5-8% ORGANIC MATTER. IF ONSITE LOAM DOES NOT MEET REQUIREMENTS, THEN LOAM FROM OFFSITE SHALL BE A NON-CLAYEY, LOAMY TOPSOIL SUCH AS A USDA SANDY LOAM TOPSOIL WITH 5-8% HUMIFIED ORGANIC MATTER AND 3-10% CLAY CONTENT.
2. 2" TRANSITION LAYER OF THE LOAM/SOD LAYER SHALL BE ROTOTILLED INTO THE LOAMY COARSE SAND LAYER BELOW.
3. THE LOAMY COARSE SAND LAYER SHALL BE TESTED IN ACCORDANCE WITH THE TESTING AND SUBMITTALS NOTES ABOVE.
4. A LAYER OF HAY SHALL BE PLACED BETWEEN 12" LOAMY COARSE LAYER AND UNDERDRAIN STONE BEDDING TO PREVENT SUBSIDENCE OR PLUGGING OF THE SAND/GRAVEL/STONE LAYER AND/OR PIPE.
5. UNDERDRAIN STONE BEDDING MATERIAL MUST CONFORM TO THE MDOT SPECIFICATION 703.22 UNDERDRAIN TYPE B FOR UNDERDRAIN BACKFILL MATERIAL. THE BEDDING MATERIAL MUST HAVE NO MORE THAN 5% PASSING THE 200 SIEVE.
6. MATERIAL LAYERS ABOVE THE UNDERDRAIN BACKFILL LAYER SHALL BE A UNIFORM MIX, FREE OF STONES, STUMPS, ROOTS, OR OTHER SIMILAR OBJECTS LARGER THAN TWO INCHES. NO OTHER MATERIALS OR SUBSTANCES THAT MAY BE HARMFUL TO PLANT GROWTH, OR PROVE A HINDRANCE TO THE PLANTING OR MAINTENANCE OPERATIONS CAN BE MIXED WITHIN THE FILTER. DURING CONSTRUCTION, CARE SHOULD BE TAKEN TO AVOID COMPACTION OF BOTH THE GRAVEL AND SOIL FILTER.
7. OVER COMPACTION OF UNDERDRAIN MATERIAL SHALL BE AVOIDED. IF OVER COMPACTION OCCURS, ROTOTILL AGAIN PRIOR TO SEEDING OR SODDING.

UNDERDRAINED SOIL FILTER DETAIL

NOT TO SCALE



UNDERDRAINED SOIL FILTER 1 | UNDERDRAINED SOIL FILTER 2

GRAPHIC SCALE
(IN FEET)
1 INCH = 10 FT.

CRAIG BURGESS, P.E. #12638

STATE OF MAINE — CRAIG A. BURGESS No. 12638 — REGISTERED PROFESSIONAL ENGINEER — 07/10/18

DESIGNED	CHECKED
WTC	WTC

REV:	BY:	DATE:	STATUS:
B	WTC	07-10-18	RESUBMIT TO CITY
A	WTC	06-21-18	REVISED PER MDEP COMMENTS

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75 John Roberts Rd.
Suite 4A
South Portland, ME 04106
Tel: 207-200-2100

PRELOAD STORMWATER BMP PLAN
OF:
PORTLAND TRANSPORTATION CENTER
THOMPSON'S POINT CONNECTOR
PORTLAND, MAINE
FOR:
LANGDON STREET REAL ESTATE, INC.
7 LANGDON STREET
CONCORD, NH 03301

PROJECT NO.	SCALE
99607	1" = 20'

SHEET 11 OF 21

99607.00 – PRELOAD.dwg, TAB:PRELOAD GU-3

STORM DRAIN STRUCTURE DATA

STRUCTURE	RIM	INV. IN	INV. OUT:	SIZE
CB-1	23.45		16.96 (SD-1)	72" DIA DOUBLE GRATE
CB-2	21.02	16.32 (SD-1)	16.22 (SD-2)	48" DIA
CB-3	21.02	15.24 (SD-2)	15.14 (SD-3)	72" DIA DOUBLE GRATE
CB-4	20.69	14.38 (SD-3) 14.38 (SD-5) 14.38 (SD-27)	14.28 (SD-4)	48" DIA
CB-5	20.55	14.76 (SD-6)	14.66 (SD-5)	48" DIA
CB-6	20.47		15.06 (SD-6)	48" DIA
CB-7	19.40	11.76 (SD-4) 11.76 (SD-8)	11.66 (SD-7)	72" DIA
CB-8	18.55	12.19 (SD-9)	12.09 (SD-8)	48" DIA
CB-9	16.50		13.00 (SD-9)	72" DIA DOUBLE GRATE
CB-10	27.30		21.90 (SD-10)	48" DIA
CB-11	27.30	21.57 (SD-10)	21.47 (SD-11)	48" DIA
CB-12	29.60		24.68 (SD-12)	48" DIA
CB-14	18.58		15.59 (SD-27)	48" DIA
CB-15	14.50	8.54 (EX SD-3)	8.44 (SD-15)	72" DIA
CB-16	14.50	7.71 (SD-15)	7.61 (SD-16)	72" DIA
CB-17	25.65		19.30 (SD-29)	48" DIA
CB-18	27.93		23.06 (SD-30)	48" DIA
CBR 15025	29.59		25.69 (EX SD-1)	EXIST. CB
CBR 15027	29.26	24.57 (EX SD-1) 24.57 (SD-12)	23.69 (EX SD-2)	EXIST. CB
DMH-1	14.00	6.14 (SD-16)	6.04 (SD-26)	72" DIA
DMH-2	18.67	11.00 (SD-17)	10.90 (SD-18)	48" DIA
DMH-3	17.04	8.24 (SD-18) 8.05 (UD-1)	7.95 (SD-19)	48" DIA
ICS-1	19.43	11.64 (SD-7)	11.54 (SD-20) 11.54 (SD-21) 11.54 (SD-28)	6'x12'
ICS-2	19.19	11.54 (SD-28)	11.54 (SD-22) 11.54 (SD-23) 11.54 (SD-17)	6'x12'
OCS-1	17.33	11.44 (SD-24)	10.40 (SD-25)	48" DIA

STORM DRAIN PIPE DATA

NAME	SIZE	LENGTH	SLOPE
EX SD-1	12"	98'	1.14%
EX SD-2	12"	88'	0.66%
EX SD-3	42"	106'	0.60%
SD-1	12"	63'	1.02%
SD-2	12"	77'	1.27%
SD-3	15"	75'	1.01%
SD-4	30"	104'	2.42%
SD-5	12"	56'	0.50%
SD-6	12"	60'	0.50%
SD-7	36"	2'	1.28%
SD-8	24"	65'	0.51%
SD-9	18"	159'	0.51%
SD-10	12"	63'	0.52%
SD-11	12"	12'	0.60%
SD-12	12"	10'	1.06%
SD-15	36"	142'	0.51%
SD-16	36"	29.3'	0.50%
SD-17	18"	27'	2.00%
SD-18	18"	133'	2.00%
SD-19	18"	30'	3.15%
SD-20	24"	3'	1.67%
SD-21	24"	3'	1.67%
SD-22	24"	3'	1.67%
SD-23	24"	3'	1.67%
SD-24	24"	3'	1.49%
SD-25	24"	34'	9.98%
SD-26	36"	171'	0.50%
SD-27	24"	233'	0.52%
SD-28	24"	5'	0.00%
SD-29	12"	17'	0.53%
SD-30	10"	22'	0.74%
UD-1	6"	15'	0.65%

LEGEND

EXISTING		PROPOSED
	PROPERTY LINE/R.O.W.	
	FLOODPLAIN	
	BUILDING	
	EDGE WETLAND	
	WETLANDS	
	EDGE PAVEMENT	
	EDGE CONCRETE	
	EDGE GRAVEL	
	CURB LINE	
	EDGE OF WATER	
	TREELINE	
	CHAIN LINK FENCE	
	RETAINING WALL	
	BOLLARD	
	SIGN	
251 250	CONTOURS	250
250.00 +	SPOT GRADE	250.00 +
SP-2	SETTLEMENT PLATFORM	
B-101	BORING	
PZ-1	PIEZOMETER	
	LIGHT POLE	
	DRAINAGE DITCH	
	RIPRAP	
	INLET PROTECTION	
	CATCH BASIN	
	DRAINAGE MANHOLE	
	TRUNCATED DOME	
	EROSION CONTROL BLANKET	
	DECIDUOUS TREE	
	CONIFEROUS TREE	
	SHRUB	

GRADING & EROSION NOTES:

1. UTILITY INFORMATION DEPICTED HEREON IS COMPILED USING PHYSICAL EVIDENCE LOCATED IN THE FIELD. UTILITIES DEPICTED HEREON MAY NOT NECESSARILY REPRESENT ALL EXISTING UTILITIES. CONTRACTORS AND/OR DESIGNERS NEED TO CONTACT DIG-SAFE SYSTEMS, INC. (1-888-DIG-SAFE) AND FIELD VERIFY EXISTING UTILITIES PRIOR TO CONSTRUCTION AND/OR EXCAVATION. PROTECT EXISTING ONSITE SEWER PIPE AND ADJUST MANHOLE RIMS TO GRADE WHERE APPLICABLE.
2. ALL GRAVITY CONDUIT PIPES SHALL BE INSTALLED USING A PIPE LASER AND TARGET SYSTEM THROUGH THE PIPE. ON PIPE RUNS 50 FEET OR LESS, THE THE CONTRACTOR SHALL REQUEST ENGINEER'S APPROVAL TO USE A GROUND LASER.
3. THE CONTRACTOR SHALL NOTIFY THE ENGINEER OF ANY GRADE CHANGES THAT WILL IMPACT STORM DRAINAGE INFRASTRUCTURE OR OTHER UTILITIES.
4. SIDESLOPES SHALL NOT BE STEEPER THAN 3:1 (H:V) EXCEPT AS OTHERWISE IDENTIFIED ON THIS PLAN. ALL SIDESLOPES STEEPER THAN 3:1 (H:V) SHALL BE LINED WITH EROSION CONTROL BLANKET, OR ADDITIONAL MEASURES AS INDICATED.
5. ALL EROSION AND SEDIMENT CONTROL MEASURES SHALL BE INSTALLED IN ACCORDANCE WITH "MAINE EROSION AND SEDIMENT CONTROL BMPS" PUBLISHED BY THE BUREAU OF LAND AND WATER QUALITY OF THE MAINE DEPARTMENT OF ENVIRONMENTAL PROTECTION, OCTOBER 2016 OR LATEST EDITION. IT SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR TO POSSESS A COPY OF THE EROSION CONTROL PLAN AT ALL TIMES.
6. ALL AREAS DISTURBED DURING CONSTRUCTION AND NOT RESTORED WITH IMPERVIOUS SURFACES (BUILDINGS, PAVEMENT, WALKS, ETC.) SHALL RECEIVE LOAM AND SEED PER DETAIL.
7. GRADES IN DESIGNATED HANDICAP PARKING AREA AND ACCESSIBLE UNLOADING AREA SHALL NOT EXCEED 2.0% IN ANY DIRECTION.

NOTES:

1. SUBSURFACE SAND FILTERS WERE DESIGNED IN GENERAL CONFORMANCE WITH THE MAINE DEP STORMWATER BMP MANUAL, CHAPTER 7.3.
2. THE CONTRACTOR SHALL FIELD VERIFY EXISTING STORM DRAINAGE STRUCTURE INVERT ELEVATIONS PRIOR TO CONSTRUCTION. THE CONTRACTOR SHALL NOTIFY ENGINEER OF ANY DEVIATIONS TO INVERT ELEVATIONS AS INDICATED ON THESE PLANS.

BORING LOG SUMMARY TABLE

BORING #	EXISTING GRADE (FT.)	EXISTING SEASONAL HIGH WATER TABLE		FINAL DEPTH OF TEST PIT
		DEPTH (FT.)	ELEV (FT.)	
B-101	26±	9.0	17±	67'
B-102	14±	9.0	5±	49'
B-103	12±	5.0	7±	64.5'
HB-1	7±	2.0	5±	17'

NOTES:
1. BORINGS PERFORMED BY S.W. COLE ENGINEERING, INC. PLEASE REFER TO BORING LOGS FOR MORE INFORMATION.

GRAPHIC SCALE
0 10 20 40
(IN FEET)
1 INCH = 20 FT.

CRAIG BURGESS, P.E. #12638

STATE OF MAINE
CRAIG A. BURGESS
No. 12638
REGISTERED PROFESSIONAL ENGINEER
10/10/19

DESIGNED	CHECKED
WTC	WTC

REV.	BY:	DATE:	STATUS:
C	WTC	07-10-18	RESUBMIT TO CITY
B	WTC	06-21-18	REVISED PER MDEP COMMENTS
A	WTC	02-01-18	ISSUED FOR CITY SITE PLAN REVIEW

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75 John F. Roberts Rd.
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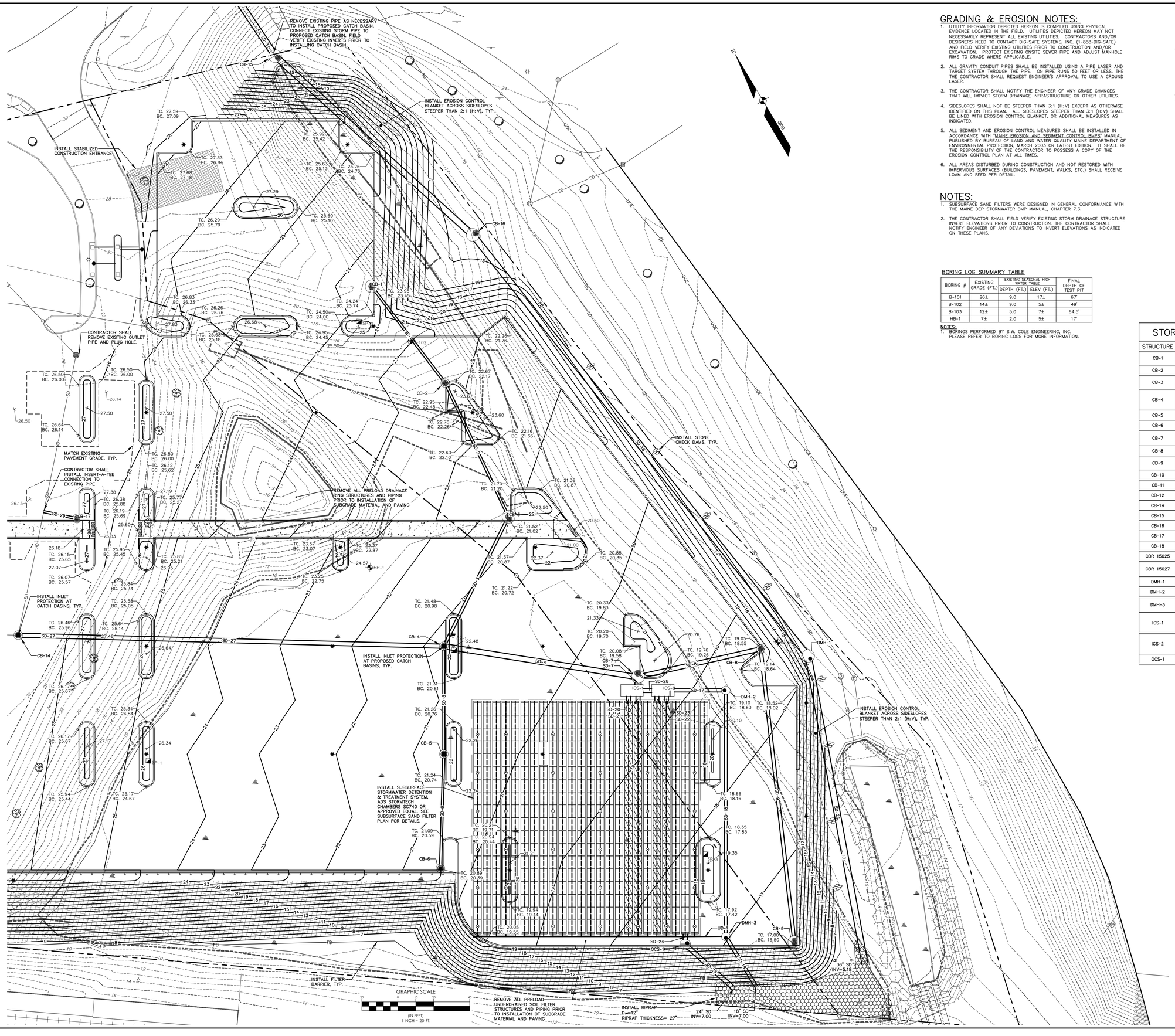
Tel: 207-200-2100

GRADING AND UTILITY PLAN - PART A
OF:
PORTLAND TRANSPORTATION CENTER
THOMPSON'S POINT CONNECTOR
PORTLAND, MAINE
FOR:
LANGDON STREET REAL ESTATE, INC.
7 LANGDON STREET
CONCORD, NH 03301

PROJECT NO.	SCALE
99607	1" = 20'

SHEET 12 OF 21

99607GU.dwg, TAB:121



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3. THE CONTRACTOR SHALL NOTIFY THE ENGINEER OF ANY GRADE CHANGES THAT WILL IMPACT STORM DRAINAGE INFRASTRUCTURE OR OTHER UTILITIES.
4. SIDESLOPES SHALL NOT BE STEEPER THAN 3:1 (H:V) EXCEPT AS OTHERWISE IDENTIFIED ON THIS PLAN. ALL SIDESLOPES STEEPER THAN 3:1 (H:V) SHALL BE LINED WITH EROSION CONTROL BLANKET, OR ADDITIONAL MEASURES AS INDICATED.
5. ALL SEDIMENT AND EROSION CONTROL MEASURES SHALL BE INSTALLED IN ACCORDANCE WITH "MAINE EROSION AND SEDIMENT CONTROL BMPS" MANUAL, PUBLISHED BY BUREAU OF LAND AND WATER QUALITY MAINE DEPARTMENT OF ENVIRONMENTAL PROTECTION, MARCH 2003 OR LATEST EDITION. IT SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR TO POSSESS A COPY OF THE EROSION CONTROL PLAN AT ALL TIMES.
6. ALL AREAS DISTURBED DURING CONSTRUCTION AND NOT RESTORED WITH IMPERVIOUS SURFACES (BUILDINGS, PAVEMENT, WALKS, ETC.) SHALL RECEIVE LOAM AND SEED PER DETAIL.

NOTES:

1. SUBSURFACE SAND FILTERS WERE DESIGNED IN GENERAL CONFORMANCE WITH THE MAINE DEP STORMWATER BMP MANUAL, CHAPTER 7.3.
2. THE CONTRACTOR SHALL FIELD VERIFY EXISTING STORM DRAINAGE STRUCTURE INVERT ELEVATIONS PRIOR TO CONSTRUCTION. THE CONTRACTOR SHALL NOTIFY ENGINEER OF ANY DEVIATIONS TO INVERT ELEVATIONS AS INDICATED ON THESE PLANS.

BORING LOG SUMMARY TABLE

BORING #	EXISTING GRADE (FT.)	EXISTING SEASONAL HIGH WATER TABLE DEPTH (FT.)	EXISTING SEASONAL HIGH WATER TABLE ELEV (FT.)	FINAL DEPTH OF TEST PIT
B-101	26±	9.0	17±	67'
B-102	14±	9.0	5±	49'
B-103	12±	5.0	7±	64.5'
HB-1	7±	2.0	5±	17'

NOTES:
1. BORINGS PERFORMED BY S.W. COLE ENGINEERING, INC. PLEASE REFER TO BORING LOGS FOR MORE INFORMATION.

LEGEND

EXISTING	PROPOSED
PROPERTY LINE/R.O.W.	
FLOODPLAIN	
BUILDING	
EDGE WETLAND	
WETLANDS	
EDGE PAVEMENT	
EDGE CONCRETE	
EDGE GRAVEL	
CURB LINE	
EDGE OF WATER	
TREELINE	
CHAIN LINK FENCE	
RETAINING WALL	
BOLLARD	
SIGN	
251 250 CONTOURS	250
250.00 + SPOT GRADE	250.00 +
SP-2 SETTLEMENT PLATFORM	
B-101 BORING	
PZ-1 PIEZOMETER	
LIGHT POLE	
DRAINAGE DITCH	
RIPRAP	
INLET PROTECTION	
CATCH BASIN	
DRAINAGE MANHOLE	
TRUNCATED DOME	
EROSION CONTROL BLANKET	
DECIDUOUS TREE	
CONIFEROUS TREE	
SHRUB	

STORM DRAIN STRUCTURE DATA

STRUCTURE	RIM	INV. IN	INV. OUT:	SIZE
CB-1	23.45		16.96 (SD-1)	72" DIA DOUBLE GRATE
CB-2	21.02	16.32 (SD-1)	16.22 (SD-2)	48" DIA
CB-3	21.02	15.24 (SD-2)	15.14 (SD-3)	72" DIA DOUBLE GRATE
CB-4	20.69	14.38 (SD-3) 14.38 (SD-5) 14.38 (SD-27)	14.28 (SD-4)	48" DIA
CB-5	20.55	14.76 (SD-6)	14.66 (SD-5)	48" DIA
CB-6	20.47		15.06 (SD-6)	48" DIA
CB-7	19.40	11.76 (SD-4) 11.76 (SD-8)	11.66 (SD-7)	72" DIA
CB-8	18.55	12.19 (SD-9)	12.09 (SD-8)	48" DIA
CB-9	16.50		13.00 (SD-9)	72" DIA DOUBLE GRATE
CB-10	27.30		21.90 (SD-10)	48" DIA
CB-11	27.30	21.57 (SD-10)	21.47 (SD-11)	48" DIA
CB-12	29.60		24.68 (SD-12)	48" DIA
CB-14	18.58		15.59 (SD-27)	48" DIA
CB-15	14.50	8.54 (EX SD-3)	8.44 (SD-15)	72" DIA
CB-16	14.50	7.71 (SD-15)	7.61 (SD-16)	72" DIA
CB-17	25.65		19.30 (SD-29)	48" DIA
CB-18	27.93		23.06 (SD-30)	48" DIA
CBR 15025	29.59		25.69 (EX SD-1)	EXIST. CB
CBR 15027	29.26	24.57 (EX SD-1) 24.57 (SD-12)	23.69 (EX SD-2)	EXIST. CB
DMH-1	14.00	6.14 (SD-16)	6.04 (SD-26)	72" DIA
DMH-2	18.67	11.00 (SD-17)	10.90 (SD-18)	48" DIA
DMH-3	17.04	8.24 (SD-18) 8.05 (UD-1)	7.95 (SD-19)	48" DIA
ICS-1	19.43	11.64 (SD-7)	11.54 (SD-20) 11.54 (SD-21) 11.54 (SD-28)	6'x12'
ICS-2	19.19	11.54 (SD-28)	11.54 (SD-22) 11.54 (SD-23) 11.54 (SD-17)	6'x12'
OCS-1	17.33	11.44 (SD-24)	10.40 (SD-25)	48" DIA

STORM DRAIN PIPE DATA

NAME	SIZE	LENGTH	SLOPE
EX SD-1	12"	98'	1.14%
EX SD-2	12"	88'	0.66%
EX SD-3	42"	106'	0.60%
SD-1	12"	63'	1.02%
SD-2	12"	77'	1.27%
SD-3	15"	75'	1.01%
SD-4	30"	104'	2.42%
SD-5	12"	56'	0.50%
SD-6	12"	60'	0.50%
SD-7	36"	2'	1.28%
SD-8	24"	65'	0.51%
SD-9	18"	159'	0.51%
SD-10	12"	63'	0.52%
SD-11	12"	12'	0.60%
SD-12	12"	10'	1.06%
SD-15	36"	142'	0.51%
SD-16	36"	293'	0.50%
SD-17	18"	27'	2.00%
SD-18	18"	133'	2.00%
SD-19	18"	30'	3.15%
SD-20	24"	3'	1.67%
SD-21	24"	3'	1.67%
SD-22	24"	3'	1.67%
SD-23	24"	3'	1.67%
SD-24	24"	3'	1.49%
SD-25	24"	34'	9.98%
SD-26	36"	171'	0.50%
SD-27	24"	233'	0.52%
SD-28	24"	5'	0.00%
SD-29	12"	17'	0.53%
SD-30	10"	22'	0.74%
UD-1	6"	15'	0.65%

CRAIG BURGESS, P.E. #12638

STATE OF MAINE — CRAIG A. BURGESS — No. 12638 — REGISTERED PROFESSIONAL ENGINEER — SEAL — 07/10/18

DESIGNED	CHECKED
WTC	WTC

REV.:	BY:	DATE:	STATUS:
C	WTC	07-10-18	RESUBMIT TO CITY
B	WTC	06-21-18	REVISED PER MDEP COMMENTS
A	WTC	02-01-18	ISSUED FOR CITY SITE PLAN REVIEW

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.

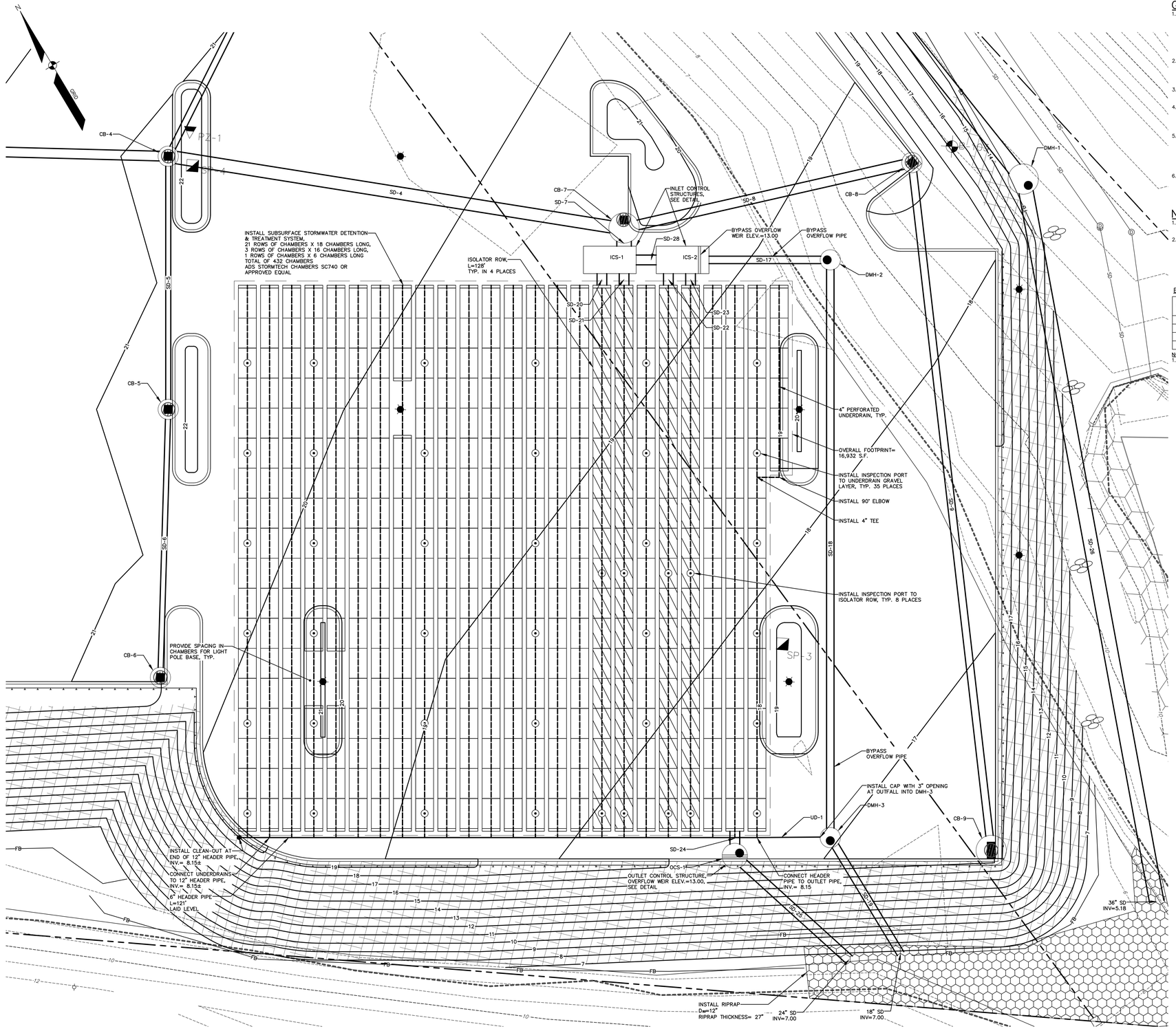
SEBAGO TECHNICS
WWW.SEBAGOTECHNICS.COM
75 John Roberts Rd.
Suite A
South Portland, ME 04106
Tel: 207-200-2100

GRADING AND UTILITY PLAN - PART B
OF:
PORTLAND TRANSPORTATION CENTER
THOMPSON'S POINT CONNECTOR
PORTLAND, MAINE
FOR:
LANGDON STREET REAL ESTATE, INC.
7 LANGDON STREET
CONCORD, NH 03301

PROJECT NO.	SCALE
99607	1" = 20'

SHEET 13 OF 21

9960700.dwg, TAB: C2



GRADING & EROSION NOTES:

1. UTILITY INFORMATION DEPICTED HEREON IS COMPILED USING PHYSICAL EVIDENCE LOCATED IN THE FIELD. UTILITIES DEPICTED HEREON MAY NOT NECESSARILY REPRESENT ALL EXISTING UTILITIES. CONTRACTORS AND/OR DESIGNERS NEED TO CONTACT DIG-SAFE SYSTEMS, INC. (1-888-DIG-SAFE) AND FIELD VERIFY EXISTING UTILITIES PRIOR TO CONSTRUCTION AND/OR EXCAVATION. PROTECT EXISTING ONSITE SEWER PIPE AND ADJUST MANHOLE RIMS TO GRADE WHERE APPLICABLE.
2. ALL GRAVITY CONDUIT PIPES SHALL BE INSTALLED USING A PIPE LASER AND TARGET SYSTEM THROUGH THE PIPE. ON PIPE RUNS 50 FEET OR LESS, THE THE CONTRACTOR SHALL REQUEST ENGINEER'S APPROVAL TO USE A GROUND LASER.
3. THE CONTRACTOR SHALL NOTIFY THE ENGINEER OF ANY GRADE CHANGES THAT WILL IMPACT STORM DRAINAGE INFRASTRUCTURE OR OTHER UTILITIES.
4. SIDESLOPES SHALL NOT BE STEEPER THAN 3:1 (H:V) EXCEPT AS OTHERWISE IDENTIFIED ON THIS PLAN. ALL SIDESLOPES STEEPER THAN 3:1 (H:V) SHALL BE LINED WITH EROSION CONTROL BLANKET, OR ADDITIONAL MEASURES AS INDICATED.
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WETLANDS	
EDGE PAVEMENT	
EDGE CONCRETE	
EDGE GRAVEL	
CURB LINE	
EDGE OF WATER	
TREELINE	
CHAIN LINK FENCE	
RETAINING WALL	
BOLLARD	
SIGN	
251 250 CONTOURS	250
250.00 + SPOT GRADE	250.00 +
SP-2 SETTLEMENT PLATFORM	
B-101 BORING	
PZ-1 PIEZOMETER	
LIGHT POLE	
DRAINAGE DITCH	
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CATCH BASIN	
DRAINAGE MANHOLE	
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EROSION CONTROL BLANKET	
DECIDUOUS TREE	
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SHRUB	

BORING LOG SUMMARY TABLE

BORING #	EXISTING GRADE (FT.)	EXISTING SEASONAL HIGH WATER TABLE		FINAL DEPTH OF TEST PIT
		DEPTH (FT.)	ELEV (FT.)	
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NOTES:
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SD-19	18"	30'	3.15%
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SD-29	12"	17'	0.53%
SD-30	10"	22'	0.74%
UD-1	6"	15'	0.65%

CRAIG BURGESS, P.E. #12638

STATE OF MAINE — CRAIG A. BURGESS — No. 12638 — REGISTERED PROFESSIONAL ENGINEER — 07/10/19

REV.	BY:	DATE:	STATUS:
C	WTC	07-10-18	RESUBMIT TO CITY
B	WTC	06-21-18	REVISED PER NDEP COMMENTS
A	WTC	02-01-18	ISSUED FOR CITY SITE PLAN REVIEW

DESIGNED WTC | CHECKED WTC

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SEBAGO TECHNICS
WWW.SEBAGOTECHNICS.COM
75 John F. Roberts Rd.
Suite 4A
South Portland, ME 04106
Tel. 207-200-2100

SUBSURFACE SAND FILTER PLAN
OF:
PORTLAND TRANSPORTATION CENTER
THOMPSON'S POINT CONNECTOR
PORTLAND, MAINE
FOR:
LANGDON STREET REAL ESTATE, INC.
7 LANGDON STREET
CONCORD, NH 03301

PROJECT NO.	SCALE
99607	1" = 20'

SHEET 14 OF 21

99607GU.dwg, 11x17

EROSION CONTROL MEASURES

PRE-CONSTRUCTION PHASE

PRIOR TO CONSTRUCTION, PROPERLY INSTALL SEDIMENT BARRIERS AT THE DOWNGRADIENT EDGE OF ANY AREA TO BE DISTURBED AND ADJACENT TO ANY DRAINAGE CHANNELS WITHIN THE DISTURBED AREA. SEDIMENT BARRIERS SHOULD BE INSTALLED DOWNGRADIENT OF SOIL OR SEDIMENT STOCKPILES AND STORMWATER PREVENTED FROM RUNNING ONTO THE STOCKPILE. MAINTAIN THE SEDIMENT BARRIERS BY REMOVING ACCUMULATED SEDIMENT, OR REMOVING AND REPLACING THE BARRIER, UNTIL THE DISTURBED AREA IS PERMANENTLY STABILIZED. WHERE A DISCHARGE TO A STORM DRAIN INLET OCCURS, IF THE STORM DRAIN CARRIES WATER DIRECTLY TO A SURFACE WATER AND YOU HAVE AUTHORITY TO ACCESS THE STORM DRAIN INLET, YOU MUST INSTALL AND MAINTAIN PROTECTION MEASURES THAT REMOVE SEDIMENT FROM THE DISCHARGE.

PRIOR TO CONSTRUCTION, PROPERLY INSTALL A STABILIZED CONSTRUCTION ENTRANCE (SCE) AT ALL POINTS OF EGRESS FROM THE SITE. THE SCE IS A STABILIZED PAD OF AGGREGATE, UNDERLAIN BY A GEOTEXTILE FILTER FABRIC, USED TO PREVENT TRAFFIC FROM TRACKING MATERIAL AWAY FROM THE SITE ONTO PUBLIC ROWS. MAINTAIN THE SCE UNTIL ALL DISTURBED AREAS ARE STABILIZED.

PRIOR TO CONSTRUCTION, THE CONTRACTOR SHALL PREPARE A DETAILED SCHEDULE AND MARKED UP PLAN INDICATING AREAS AND COMPONENTS OF THE WORK AND KEY DATES SHOWING DATE OF DISTURBANCE AND COMPLETION OF THE WORK. THE CONTRACTOR SHALL SCHEDULE A PRE-CONSTRUCTION MEETING WITH THE MUNICIPAL STAFF. THREE COPIES OF THE SCHEDULE AND MARKED UP PLAN SHALL BE PROVIDED TO THE MUNICIPALITY THREE DAYS PRIOR TO THE SCHEDULED PRE-CONSTRUCTION MEETING. SPECIAL ATTENTION SHALL BE GIVEN TO THE 14 DAY LIMIT OF DISTURBANCE IN THE SCHEDULE ADDRESSING TEMPORARY AND PERMANENT VEGETATION MEASURES.

CONSTRUCTION AND POST-CONSTRUCTION PHASE

DURING CONSTRUCTION

1. INSPECTION AND CORRECTIVE ACTION:
INSPECT DISTURBED AND IMPERVIOUS AREAS, EROSION CONTROL MEASURES, MATERIALS STORAGE AREAS THAT ARE EXPOSED TO PRECIPITATION, AND LOCATIONS WHERE VEHICLES ENTER OR EXIT THE SITE. INSPECT THESE AREAS AT LEAST ONCE A WEEK AS WELL AS BEFORE AND WITHIN 24 HOURS AFTER A STORM EVENT (RAINFALL), AND PRIOR TO COMPLETING PERMANENT STABILIZATION MEASURES. A PERSON WITH KNOWLEDGE OF EROSION AND STORMWATER CONTROL, INCLUDING THE STANDARDS AND CONDITIONS IN THE PERMIT, SHALL CONDUCT THE INSPECTIONS.

2. MAINTENANCE:
IF BEST MANAGEMENT PRACTICES (BMPS) NEED TO BE REPAIRED, THE REPAIR WORK SHOULD BE INITIATED UPON DISCOVERY OF THE PROBLEM BUT NO LATER THAN THE END OF THE NEXT WORKDAY. IF ADDITIONAL BMPS OR SIGNIFICANT REPAIR OF BMPS ARE NECESSARY, IMPLEMENTATION MUST BE COMPLETED WITHIN 7 CALENDAR DAYS AND PRIOR TO ANY STORM EVENT (RAINFALL). ALL MEASURES MUST BE MAINTAINED IN EFFECTIVE OPERATING CONDITION UNTIL AREAS ARE PERMANENTLY STABILIZED.

3. DOCUMENTATION:
KEEP A LOG (REPORT) SUMMARIZING THE INSPECTIONS AND ANY CORRECTIVE ACTION TAKEN. THE LOG MUST INCLUDE THE NAME(S) AND QUALIFICATIONS OF THE PERSON MAKING THE INSPECTIONS, THE DATE(S) OF THE INSPECTIONS, AND MAJOR OBSERVATIONS ABOUT THE OPERATION AND MAINTENANCE OF EROSION AND SEDIMENTATION CONTROLS, MATERIALS STORAGE AREAS, AND VEHICLES ACCESS POINTS TO THE PARCEL. MAJOR OBSERVATIONS MUST INCLUDE BMPS THAT NEED MAINTENANCE, BMPS THAT FAILED TO OPERATE AS DESIGNED OR PROVED INADEQUATE FOR A PARTICULAR LOCATION, AND LOCATION(S) WHERE ADDITIONAL BMPS ARE NEEDED. FOR EACH BMP REQUIRING MAINTENANCE, BMP NEEDING REPLACEMENT, AND LOCATION NEEDING ADDITIONAL BMPS, NOTE IN THE LOG THE CORRECTIVE ACTION TAKEN AND WHEN IT WAS TAKEN.

THE LOG MUST BE MADE ACCESSIBLE TO DEPARTMENT STAFF AND A COPY MUST BE PROVIDED UPON REQUEST. THE PERMITTEE SHALL RETAIN A COPY OF THE LOG FOR A PERIOD OF AT LEAST THREE YEARS FROM THE COMPLETION OF PERMANENT STABILIZATION.

POST-CONSTRUCTION

1. PLAN:
CARRY OUT AN APPROVED INSPECTION AND MAINTENANCE PLAN THAT IS CONSISTENT WITH THE MINIMUM REQUIREMENTS OF THIS SECTION. THE PLAN MUST ADDRESS INSPECTION AND MAINTENANCE OF THE PROJECT'S PERMANENT EROSION CONTROL MEASURES AND STORMWATER MANAGEMENT SYSTEM. THIS PLAN MAY BE COMBINED WITH THE PLAN LISTED IN SECTION 2(A) OF THIS APPENDIX. SEE SECTION 7(C)(2) FOR SUBMISSION REQUIREMENTS.

2. INSPECTION AND MAINTENANCE:
ALL MEASURES MUST BE MAINTAINED IN EFFECTIVE OPERATING CONDITION. A PERSON WITH KNOWLEDGE OF EROSION AND STORMWATER CONTROL, INCLUDING THE STANDARDS AND CONDITIONS IN THE PERMIT, SHALL CONDUCT THE INSPECTIONS. THE FOLLOWING AREAS, FACILITIES, AND MEASURES MUST BE INSPECTED AND IDENTIFIED DEFICIENCIES MUST BE CORRECTED. AREAS, FACILITIES, AND MEASURES OTHER THAN THOSE LISTED BELOW MAY ALSO REQUIRE INSPECTION ON A SPECIFIC SITE. INSPECTION OR MAINTENANCE TASKS OTHER THAN THOSE DISCUSSED BELOW MUST BE INCLUDED IN THE MAINTENANCE PLAN DEVELOPED FOR A SPECIFIC SITE.

3. REGULAR MAINTENANCE:
CLEAR ACCUMULATIONS OF WINTER SAND IN PARKING LOTS AND ALONG ROADWAYS AT LEAST ONCE A YEAR, PREFERABLY IN THE SPRING. ACCUMULATIONS ON PAVEMENT MAY BE REMOVED BY PAVEMENT SWEEPING. ACCUMULATIONS OF SAND ALONG ROAD SHOULDERS MAY BE REMOVED BY GRADING EXCESS SAND TO THE PAVEMENT EDGE AND REMOVING IT MANUALLY OR BY A FRONT-END LOADER. GRADING OF GRAVEL ROADS, OR GRADING OF THE GRAVEL SHOULDERS OF GRAVEL OR PAVED ROADS, MUST BE ROUTINELY PERFORMED TO ENSURE THAT STORMWATER DRAINS IMMEDIATELY OFF THE ROAD SURFACE TO ADJACENT BUFFER AREAS OR STABLE DITCHES, AND IS NOT IMPEDED BY ACCUMULATIONS OF GRADED MATERIAL ON THE ROAD SHOULDER OR BY EXCAVATION OF FALSE DITCHES IN THE SHOULDER. IF WATER BARS OR OPEN-TOP CULVERTS ARE USED TO DIVERT RUNOFF FROM ROAD SURFACES, CLEAN-OUT ANY SEDIMENTS WITHIN OR AT THE OUTLET OF THESE STRUCTURES TO RESTORE THEIR FUNCTION.

4. DOCUMENTATION:
KEEP A LOG (REPORT) SUMMARIZING INSPECTIONS, MAINTENANCE, AND ANY CORRECTIVE ACTIONS TAKEN. THE LOG MUST INCLUDE THE DATE ON WHICH EACH INSPECTION OR MAINTENANCE TASK WAS PERFORMED, A DESCRIPTION OF THE INSPECTION FINDINGS OR MAINTENANCE COMPLETED, AND THE NAME OF THE INSPECTOR OR MAINTENANCE PERSONNEL PERFORMING THE TASK. IF A MAINTENANCE TASK REQUIRES THE CLEAN-OUT OF ANY SEDIMENTS OR DEBRIS, INDICATE WHERE THE SEDIMENT AND DEBRIS WAS DISPOSED AFTER REMOVAL. THE LOG MUST BE MADE ACCESSIBLE TO DEPARTMENT STAFF AND A COPY PROVIDED TO THE DEPARTMENT UPON REQUEST. THE PERMITTEE SHALL RETAIN A COPY OF THE LOG FOR A PERIOD OF AT LEAST FIVE YEARS FROM THE COMPLETION OF PERMANENT STABILIZATION.

EROSION CONTROL APPLICATIONS & MEASURES

THE PLACEMENT OF EROSION CONTROL MEASURES SHALL BE COMPLETED IN ACCORDANCE WITH GUIDELINES ESTABLISHED WITHIN THE CURRENT MAINE DEPARTMENT OF ENVIRONMENTAL PROTECTION CHAPTER 500 RULES, THE DEPARTMENTS BEST MANAGEMENT PRACTICES AND IN ACCORDANCE WITH THE EROSION CONTROL PLAN AND DETAILS IN THE PLAN SET. EROSION CONTROL MEASURES MUST BE IN PLACE BEFORE THE ACTIVITY BEGINS. MEASURES MUST REMAIN IN PLACE AND FUNCTIONAL UNTIL THE SITE IS PERMANENTLY STABILIZED. ADEQUATE AND TIMELY TEMPORARY AND PERMANENT STABILIZATION MEASURES MUST BE TAKEN.

1. POLLUTION PREVENTION:
WHENEVER PRACTICABLE, NO DISTURBANCE ACTIVITIES SHOULD TAKE PLACE WITHIN 50 FEET OF ANY PROTECTED NATURAL RESOURCE. IF DISTURBANCE ACTIVITIES TAKE PLACE BETWEEN 30 FEET AND 50 FEET OF ANY PROTECTED NATURAL RESOURCE, AND STORMWATER DISCHARGES THROUGH THE DISTURBED AREAS TOWARD THE PROTECTED NATURAL RESOURCE, PERIMETER EROSION CONTROLS MUST BE DOUBLED. IF DISTURBANCE ACTIVITIES TAKE PLACE LESS THAN 30 FEET FROM ANY PROTECTED NATURAL RESOURCE, AND STORMWATER DISCHARGES THROUGH THE DISTURBED AREAS TOWARD THE PROTECTED NATURAL RESOURCE, PERIMETER EROSION CONTROLS MUST BE DOUBLED AND DISTURBED AREAS MUST BE TEMPORARILY OR PERMANENTLY STABILIZED WITHIN 48 HOURS.

2. TEMPORARY MULCHING:
ALL DISTURBED AREAS SHALL BE MULCHED WITH MATERIALS SPECIFIED BELOW PRIOR TO ANY STORM EVENT. ALL DISTURBED AREAS NOT FINAL GRADED WITHIN 7 DAYS SHALL BE MULCHED. ALSO, AREAS, WHICH HAVE BEEN TEMPORARILY OR PERMANENTLY SEEDED, SHALL BE MULCHED IMMEDIATELY FOLLOWING SEEDING. EROSION CONTROL BLANKETS ARE RECOMMENDED TO BE USED AT THE BASE OF GRASSED WATERWAYS AND ON SLOPES GREATER THAN 15%. MULCH ANCHORING SHOULD BE USED ON SLOPES GREATER THAN 5% AFTER SEPTEMBER 15TH OF THE CONSTRUCTION YEAR (SEE WINTER EROSION CONTROL NOTES).
TYPES OF MULCH:
HAY OR STRAW: SHALL BE APPLIED AT A RATE OF 75 LBS/1,000 S.F. (1.5 TONS PER ACRE).
EROSION CONTROL MIX: SHALL BE PLACED EVENLY AND MUST PROVIDE 100% SOIL COVERAGE. EROSION CONTROL MIX SHALL BE APPLIED SUCH THAT THE THICKNESS ON SLOPES 3:1 OR LESS IS 2 INCHES PLUS 1/2 INCH PER 20 FEET OF SLOPE UP TO 100 FEET. THE THICKNESS ON SLOPES BETWEEN 3:1 AND 2:1 SHALL BE 4 INCHES PLUS 1/2 INCH PER 20 FEET OF SLOPE UP TO 100 FEET. THIS SHALL NOT BE USED ON SLOPES GREATER THAN 2:1.
EROSION CONTROL BLANKET: SHALL BE INSTALLED SUCH THAT CONTINUOUS CONTACT BETWEEN THE MAT AND THE SOIL IS OBTAINED. INSTALL BLANKETS AND STAPLE IN ACCORDANCE WITH THE MANUFACTURER'S RECOMMENDATIONS.

3. SOIL STOCKPILES:
STOCKPILES OF SOIL OR SUBSOIL SHALL BE MULCHED WITH HAY OR STRAW AT A RATE OF 75 LBS/1,000 S.F. (1.5 TONS PER ACRE) OR WITH A FOUR-INCH LAYER OF WOOD WASTE EROSION CONTROL MIX. THIS WILL BE DONE WITHIN 24 HOURS OF STOCKING AND RE-ESTABLISHED PRIOR TO ANY RAINFALL. ANY SOIL STOCKPILE WILL NOT BE PLACED (EVEN COVERED WITH HAY OR STRAW) WITHIN 100 FEET FROM ANY NATURAL RESOURCES.

4. NATURAL RESOURCES PROTECTION:
ANY AREAS WITHIN 100 FEET FROM ANY NATURAL RESOURCES, IF NOT STABILIZED WITH A MINIMUM OF 75% MATURE VEGETATION CATCH, SHALL BE STABILIZED USING TEMPORARY MULCHING (AS DESCRIBED IN PART 1. OF THIS SECTION) OR OTHER NON-ERODIBLE COVER WITHIN 48 HOURS OF EXPOSURE OR PRIOR TO ANY STORM EVENT. SEDIMENT BARRIERS (AS DESCRIBED IN PART 4. OF THIS SECTION) SHALL BE PLACED BETWEEN ANY NATURAL RESOURCE AND THE DISTURBED AREA. PROJECTS CROSSING THE NATURAL RESOURCE SHALL BE PROTECTED A MINIMUM DISTANCE OF 100 FEET ON EITHER SIDE FROM THE RESOURCE. IF DISTURBANCE TAKES PLACE LESS THAN 30 FEET FROM A PROTECTED RESOURCE AND STORMWATER DISCHARGES THROUGH THE DISTURBED AREAS TO THE RESOURCE, PERIMETER EROSION CONTROLS MUST BE DOUBLED.

5. SEDIMENT BARRIERS:
PRIOR TO THE BEGINNING OF ANY CONSTRUCTION, SEDIMENT BARRIERS SHALL BE STAKED ACROSS THE SLOPE(S), ON THE CONTOUR AT OR JUST BELOW THE LIMITS OF CLEARING OR GRUBBING, AND/OR JUST ABOVE ANY ADJACENT PROPERTY LINE OR WATERCOURSE TO PROTECT AGAINST CONSTRUCTION RELATED EROSION. SEDIMENT BARRIERS SHALL BE MAINTAINED BY THE CONTRACTOR UNTIL ALL EXPOSED SLOPES HAVE AT LEAST 85%-90% VIGOROUS PERENNIAL VEGETATIVE COVER TO PREVENT EROSION.

SILT FENCE: SHALL BE INSTALLED PER THE DETAIL ON THE PLANS. THE EFFECTIVE HEIGHT OF THE FENCE SHALL NOT EXCEED 36 INCHES. IT IS RECOMMENDED THAT SILT FENCE BE REMOVED BY CUTTING THE FENCE MATERIALS AT GROUND LEVEL SO AS TO AVOID ADDITIONAL SOIL DISTURBANCE.

HAY BALES: SHALL BE INSTALLED PER THE DETAIL ON THE PLANS. BALES SHALL BE WIRE-BOUND OR STRING-TIED AND THESE BINDINGS MUST REMAIN PARALLEL WITH THE GROUND SURFACE DURING INSTALLATION TO PREVENT DETERIORATION OF THE BINDINGS. BALES SHALL BE INSTALLED WITHIN A MINIMUM 4 INCH DEEP TRENCH LINE WITH ENDS OF ADJACENT BALES TIGHTLY ABUTTING ONE ANOTHER.

EROSION CONTROL MIX: SHALL BE INSTALLED PER THE DETAIL ON THE PLANS. THE MIX SHALL CONSIST PRIMARILY OF ORGANIC MATERIAL AND CONTAIN A WELL-GRADED MIXTURE OF PARTICLE SIZES AND MAY CONTAIN ROCKS LESS THAN 4 INCHES IN DIAMETER. THE MIX COMPOSITION SHALL MEET THE STANDARDS DESCRIBED WITHIN THE MDEP BEST MANAGEMENT PRACTICES. NO TRENCHING IS REQUIRED FOR INSTALLATION OF THIS BARRIER.

CONTINUOUS CONTAINED BERM: SHALL BE INSTALLED PER THE DETAIL ON THE PLANS. THIS SEDIMENT BARRIER IS EROSION CONTROL MIX PLACED WITHIN A SYNTHETIC TUBULAR NETTING AND PERFORMS AS A STURDY SEDIMENT BARRIER THAT WORKS WELL ON HARD GROUND SUCH AS FROZEN CONDITIONS, TRAVELED AREAS OR PAVEMENT. NO TRENCHING IS REQUIRED FOR INSTALLATION OF THIS BARRIER.

6. TEMPORARY CHECK DAMS:
SHALL BE INSTALLED PER THE DETAIL ON THE PLANS. CHECK DAMS ARE TO BE PLACED WITHIN DITCHES/ SWALES AS SPECIFIED ON THE DESIGN PLANS IMMEDIATELY AFTER FINAL GRADING. CHECK DAMS SHALL BE 2 FEET HIGH. TEMPORARY CHECK DAMS MAY BE REMOVED ONLY AFTER THE ROADWAYS ARE PAVED AND THE VEGETATED SWALE ARE ESTABLISHED WITH AT LEAST 85%-90% OF VIGOROUS PERENNIAL GROWTH. THE AREA BENEATH THE CHECK DAM MUST BE SEEDED AND MULCHED IMMEDIATELY AFTER REMOVAL OF THE CHECK DAM.

STONE CHECK DAMS: SHOULD BE CONSTRUCTED OF 2 TO 3 INCH STONE AND PLACED SUCH THAT COMPLETE COVERAGE OF THE SWALE IS OBTAINED AND THAT THE CENTER OF THE DAM IS 6 INCHES LOWER THAT THE OUTER EDGES.

HAY BALE CHECK DAMS: WE DO NOT RECOMMEND THE USE OF HAY BALES AS CHECK DAMS.

MANUFACTURED CHECK DAMS: MANUFACTURED CHECK DAMS, AS SPECIFIED IN THE DETAIL ON THE PLANS, MAY BE USED IF AUTHORIZED BY THE PROPER LOCAL, STATE OR FEDERAL REGULATING AGENCIES. THESE UNITS SHALL BE INSTALLED IN ACCORDANCE WITH THE MANUFACTURE'S RECOMMENDATIONS.

1. STORMDRAIN INLET PROTECTION:
INLET PROTECTION SHALL BE PLACED AROUND A STORMDRAIN DROP INLET OR CURB INLET PRIOR TO PERMANENT STABILIZATION OF THE IMMEDIATE AND UPSTREAM DISTURBED AREAS. THEY SHALL BE CONSTRUCTED IN A MANNER THAT WILL FACILITATE CLEAN-OUT AND DISPOSAL OF TRAPPED SEDIMENTS AND MINIMIZE INTERFERENCE WITH CONSTRUCTION ACTIVITIES. ANY RESULTANT PONDING OF WATER FROM THE PROTECTION METHOD MUST NOT CAUSE EXCESSIVE INCONVENIENCE OR DAMAGE TO ADJACENT AREAS OR STRUCTURES.

HAY BALE DROP INLET PROTECTION: WE DO NOT RECOMMEND THE USE OF HAY BALES AS INLET PROTECTION.

CONCRETE BLOCK AND STONE INLET SEDIMENT FILTER (DROP OR CURB INLET): SHALL BE INSTALLED PER THE DETAIL ON THE PLANS. THE HEIGHT OF THE CONCRETE BLOCK BARRIER CAN VARY BUT MUST BE BETWEEN 12 AND 24 INCHES TALL. A MINIMUM OF 1 INCH CRUSHED STONE SHALL BE USED.

MANUFACTURED SEDIMENT BARRIERS AND FILTER (DROP OR CURB INLET): MANUFACTURED FILTERS, AS SPECIFIED IN THE DETAIL ON THE PLANS, MAY BE USED IF INSTALLED IN ACCORDANCE WITH THE MANUFACTURER'S RECOMMENDATIONS.

2. STABILIZED CONSTRUCTION EXIT:
PRIOR TO CLEARING AND/OR GRUBBING THE SITE A STABILIZED CONSTRUCTION ENTRANCE/EXIT SHALL BE CONSTRUCTED WHEREVER TRAFFIC WILL EXIT THE CONSTRUCTION SITE ONTO A PAVED ROADWAY IN ORDER TO MINIMIZE THE TRACKING OF SEDIMENT AND DEBRIS FROM THE CONSTRUCTION SITE ONTO PUBLIC ROADWAYS. THE ENTRANCES AND ADJACENT ROADWAY AREAS SHALL BE PERIODICALLY SWEPT OR WASHED TO FURTHER MINIMIZE THE TRACKING OF MUD, DUST OR DEBRIS FROM THE CONSTRUCTION AREA. STABILIZED CONSTRUCTION EXITS SHALL BE CONSTRUCTED IN AREAS SPECIFIED ON THE PLANS AND AS DETAILED ON THE PLANS.

3. DUST CONTROL:
DUST CONTROL DURING CONSTRUCTION SHALL BE ACHIEVED BY THE USE OF A WATERING TRUCK TO PERIODICALLY SPRINKLE THE EXPOSED ROADWAY AREAS AS NECESSARY TO REDUCE DUST DURING THE DRY MONTHS. APPLYING OTHER DUST CONTROL PRODUCTS SUCH AS CALCIUM CHLORIDE OR OTHER MANUFACTURED PRODUCTS ARE ALLOWED IF AUTHORIZED BY THE PROPER LOCAL, STATE AND/OR FEDERAL REGULATING AGENCIES. HOWEVER, IT IS THE CONTRACTOR'S ULTIMATE RESPONSIBILITY TO MITIGATE DUST AND SOIL LOSS FROM THE SITE.

4. TEMPORARY VEGETATION:
TEMPORARY VEGETATION SHALL BE APPLIED TO DISTURBED AREAS THAT WILL NOT RECEIVE FINAL GRADING FOR PERIODS UP TO 12 MONTHS. THIS PROCEDURE SHOULD BE USED EXTENSIVELY IN AREAS ADJACENT TO NATURAL RESOURCES. SEEDBED PREPARATION AND APPLICATION OF SEED SHALL BE CONDUCTED AS INDICATED IN THE PERMANENT VEGETATION SECTION OF THIS NARRATIVE. SPECIFIC SEEDS (FAST GROWING AND SHORT LIVING) SHALL BE SELECTED FROM THE MAINE EROSION AND SEDIMENT CONTROL BMP MANUAL DATED 3/2003 OR LATER. ALTERNATIVE EROSION CONTROL MEASURES SHOULD BE USED IF SEEDING CAN NOT BE DONE BEFORE SEPTEMBER 15TH OF THE CONSTRUCTION YEAR.

5. PERMANENT VEGETATION:
REVEGETATION MEASURES SHALL COMMENCE IMMEDIATELY UPON COMPLETION OF FINAL GRADING OF AREAS TO BE LOAMED AND SEEDED. THE APPLICATION OF SEED SHALL BE CONDUCTED BETWEEN APRIL 1ST AND OCTOBER 1ST OF THE CONSTRUCTION YEAR, PLEASE REFER TO THE WINTER EROSION CONTROL NOTES FOR MORE DETAIL. REVEGETATION MEASURES SHALL CONSIST OF THE FOLLOWING:

SEEDBED PREPARATION:
A. FOUR (4) INCHES OF LOAM SHALL BE SPREAD OVER DISTURBED AREAS AND SMOOTHED TO A UNIFORM SURFACE. LOAM SHALL BE FREE OF SUBSOIL, CLAY LUMPS, STONES AND OTHER OBJECTS OVER 2 INCHES OR LARGER IN ANY DIMENSION, AND WITHOUT WEEDS, ROOTS OR OTHER OBJECTIONABLE MATERIAL.
B. SOILS TESTS SHALL BE TAKEN AT THE TIME OF SOIL STRIPPING TO DETERMINE FERTILIZATION REQUIREMENTS. SOILS TESTS SHALL BE TAKEN PROMPTLY AS TO NOT INTERFERE WITH THE 14-DAY LIMIT ON SOIL EXPOSURE. BASED UPON TEST RESULTS, SOIL AMENDMENTS SHALL BE INCORPORATED INTO THE SOIL PRIOR TO FINAL SEEDING. IN LIEU OF SOIL TESTS, SOIL AMENDMENTS MAY BE APPLIED AS FOLLOWS:

ITEM	APPLICATION RATE
10-20-20 FERTILIZER (N-P205-K20 OR EQUAL)	18.4 LBS./1,000 S.F.
GROUND LIMESTONE (50% CALCIUM & MAGNESIUM OXIDE)	138 LBS./1,000 S.F.

C. WORK LIME AND FERTILIZER INTO THE SOIL AS NEARLY AS PRACTICAL TO A DEPTH OF 4 INCHES WITH PROPER EQUIPMENT. ROLL THE AREA TO FIRM THE SEEDBED EXCEPT ON CLAY OR SILTY SOILS OR COARSE SAND.

APPLICATION OF SEED:
A. SEEDING: SHALL BE CONDUCTED BETWEEN APRIL 1ST AND OCTOBER 1ST OF THE CONSTRUCTION YEAR. GENERALLY A SEED MIXTURE MAY BE APPLIED AS FOLLOWS: (MDEP SEED MIX 2 IS DISPLAYED)

SEED TYPE	APPLICATION RATE
CREEPING RED FESCUE	0.46 LBS/1,000 S.F. (20 LBS/ACRE)
REDTOP	0.05 LBS/1,000 S.F. (2 LBS/ACRE)
TALL FESCUE	0.46 LBS/1,000 S.F. (20 LBS/ACRE)
TOTAL:	0.97 LBS/1,000 S.F. (42 LBS/ACRE)

NOTE: A SPECIFIC SEED MIXTURE SHOULD BE CHOSEN TO MATCH THE SOILS CONDITION OF THE SITE. VARIOUS AGENCIES CAN RECOMMEND SEED MIXTURES. MDEP RECOMMENDED SEED MIXTURES ARE IN THE EROSION AND SEDIMENT CONTROL BMP MANUAL DATED 3/2003 OR LATER.

B. HYDROSEEDING: SHALL BE CONDUCTED ON PREPARED AREAS WITH SLOPES LESS THAN 2:1. LIME AND FERTILIZER MAY BE APPLIED SIMULTANEOUSLY WITH THE SEED. RECOMMENDED SEEDING RATES MUST BE INCREASED BY 10% WHEN HYDROSEEDING.

C. MULCHING: SHALL COMMENCE IMMEDIATELY AFTER SEED IS APPLIED. REFER TO THE TEMPORARY MULCHING SECTION OF THIS NARRATIVE FOR DETAILS.

SODDING:

FOLLOWING SEEDBED PREPARATION, SOD CAN BE APPLIED IN LIEU OF SEEDING IN AREAS WHERE IMMEDIATE VEGETATION IS MOST BENEFICIAL SUCH AS DITCHES, AROUND STORMWATER DROP INLETS AND AREAS OF AESTHETIC VALUE. SOD SHOULD BE LAID AT RIGHT ANGLES TO THE DIRECTION OF FLOW, STARTING AT THE LOWEST ELEVATION. SOD SHOULD BE ROLLED OR TAMPED DOWN TO EVEN OUT THE JOINTS ONCE LAID DOWN. WHERE FLOW IS PREVALENT THE SOD MUST BE PROPERLY ANCHORED DOWN. IRRIGATE THE SOD IMMEDIATELY AFTER INSTALLATION. IN MOST CASES, SOD CAN BE ESTABLISHED BETWEEN APRIL 1ST AND NOVEMBER 15TH OF THE CONSTRUCTION YEAR, HOWEVER, REFER TO THE WINTER EROSION CONTROL NOTES FOR ANY ACTIVITIES AFTER OCTOBER 1ST.

TRENCH DEWATERING AND TEMPORARY STREAM DIVERSION:

WATER FROM CONSTRUCTION TRENCH DEWATERING OR TEMPORARY STREAM DIVERSION WILL PASS FIRST THROUGH A FILTER BAG OR SECONDARY CONTAINMENT STRUCTURE (E.G. HAY BALE LINED POOL) PRIOR TO DISCHARGE. THE DISCHARGE SITE SHALL BE SELECTED TO AVOID FLOODING AND SEDIMENT DISCHARGES TO A PROTECTED RESOURCE. IN NO CASE SHALL THE FILTER BAG OR CONTAINMENT STRUCTURE BE LOCATED WITHIN 100 FEET OF A PROTECTED NATURAL RESOURCE.

STANDARDS FOR TIMELY STABILIZATION:

STANDARD FOR THE TIMELY STABILIZATION OF DISTURBED SLOPES -- THE CONTRACTOR WILL CONSTRUCT AND STABILIZE STONE-COVERED SLOPES BY NOVEMBER 15. THE CONTRACTOR WILL SEED AND MULCH ALL SLOPES TO BE VEGETATED BY SEPTEMBER 15. THE MDEP WILL CONSIDER ANY AREA HAVING A GRADE GREATER THAN 8% (12.5H:1V) TO BE A SLOPE. IF THE CONTRACTOR FAILS TO STABILIZE ANY SLOPE TO BE VEGETATED BY SEPTEMBER 15, THEN THE CONTRACTOR WILL TAKE ONE OF THE FOLLOWING ACTIONS TO STABILIZE THE SLOPE FOR LATE FALL AND WINTER.

A. STABILIZE THE SOIL WITH TEMPORARY VEGETATION AND EROSION CONTROL MATS -- BY OCTOBER 1 THE CONTRACTOR WILL SEED THE DISTURBED SLOPE WITH WINTER RYE AT A SEEDING RATE OF 3 POUNDS PER 1,000 SQUARE FEET AND APPLY EROSION CONTROL MATS OVER THE MULCHED SLOPE. THE CONTRACTOR WILL MONITOR GROWTH OF THE RYE OVER THE NEXT 30 DAYS. IF THE RYE FAILS TO GROW AT LEAST THREE INCHES OR COVER AT LEAST 75% OF THE DISTURBED SLOPE BY NOVEMBER 1, THEN THE APPLICANT WILL COVER THE SLOPE WITH A LAYER OF EROSION CONTROL MIX AS DESCRIBED IN ITEM 2(C.) OF THIS STANDARD OR WITH STONE RIPRAP AS DESCRIBED IN ITEM 2(D.) OF THIS STANDARD.
B. STABILIZE THE SLOPE WITH SOD -- THE CONTRACTOR WILL STABILIZE THE DISTURBED SLOPE WITH PROPERLY INSTALLED SOD BY NOVEMBER 15. PROPER INSTALLATION INCLUDES THE APPLICANT PINNING THE SOD ONTO THE SLOPE WITH WIRE PINS, ROLLING THE SOD TO GUARANTEE CONTACT BETWEEN THE SOD AND UNDERLYING SOIL, AND WATERING THE SOD TO PROMOTE ROOT GROWTH INTO THE DISTURBED SOIL. THE APPLICANT WILL NOT USE LATE-SEASON SOD INSTALLATION TO STABILIZE SLOPES HAVING A GRADE GREATER THAN 33% (3H:1V).
C. STABILIZE THE SLOPE WITH EROSION CONTROL MIX -- THE CONTRACTOR WILL PLACE A SIX-INCH LAYER OF EROSION CONTROL MIX ON THE SLOPE BY NOVEMBER 15. PRIOR TO PLACING THE EROSION CONTROL MIX, THE APPLICANT WILL REMOVE ANY SNOW ACCUMULATION ON THE DISTURBED SLOPE. DO NOT USE EROSION CONTROL MIX TO STABILIZE SLOPES HAVING GRADES GREATER THAN 1H:1V OR HAVING GROUNDWATER SEEPS ON THE SLOPE FACE.
D. STABILIZE THE SLOPE WITH STONE RIPRAP -- THE CONTRACTOR WILL PLACE A LAYER OF STONE RIPRAP ON THE SLOPE BY NOVEMBER 15. THE APPLICANT WILL HIRE A REGISTERED PROFESSIONAL ENGINEER TO DETERMINE THE STONE SIZE NEEDED FOR STABILITY AND TO DESIGN A FILTER LAYER FOR UNDERNEATH THE RIPRAP.

STANDARD FOR THE TIMELY STABILIZATION OF DISTURBED SOILS -- BY SEPTEMBER 15 THE CONTRACTOR WILL SEED AND MULCH ALL DISTURBED SOILS ON AREAS HAVING A SLOPE LESS THAN 8%. IF THE CONTRACTOR FAILS TO STABILIZE THESE SOILS BY THIS DATE, THEN THE CONTRACTOR WILL TAKE ONE OF THE FOLLOWING ACTIONS TO STABILIZE THE SOIL FOR LATE FALL AND WINTER.

A. STABILIZE THE SOIL WITH TEMPORARY VEGETATION -- BY OCTOBER 1 THE CONTRACTOR WILL SEED THE DISTURBED SOIL WITH WINTER RYE AT A SEEDING RATE OF 3 POUNDS PER 1000 SQUARE FEET, LIGHTLY MULCH THE SEEDED SOIL WITH HAY OR STRAW AT 75 POUNDS PER 1000 SQUARE FEET, AND ANCHOR THE MULCH WITH PLASTIC NETTING. THE APPLICANT WILL MONITOR GROWTH OF THE RYE OVER THE NEXT 30 DAYS. IF THE RYE FAILS TO GROW AT LEAST THREE INCHES OR COVER AT LEAST 75% OF THE DISTURBED SOIL BEFORE NOVEMBER 15, THEN THE APPLICANT WILL MULCH THE AREA FOR OVER-WINTER PROTECTION AS DESCRIBED IN ITEM 3(C.) OF THIS STANDARD.
B. STABILIZE THE SOIL WITH SOD -- THE APPLICANT WILL STABILIZE THE DISTURBED SOIL WITH PROPERLY INSTALLED SOD BY OCTOBER 1. PROPER INSTALLATION INCLUDES THE APPLICANT PINNING THE SOD ONTO THE SOIL WITH WIRE PINS, ROLLING THE SOD TO GUARANTEE CONTACT BETWEEN THE SOD AND UNDERLYING SOIL, AND WATERING THE SOD TO PROMOTE ROOT GROWTH INTO THE DISTURBED SOIL.
C. STABILIZE THE SOIL WITH MULCH -- BY NOVEMBER 15 THE APPLICANT WILL MULCH THE DISTURBED SOIL BY SPREADING HAY OR STRAW AT A RATE OF AT LEAST 150 POUNDS PER 1000 SQUARE FEET ON THE AREA SO THAT NO SOIL IS VISIBLE THROUGH THE MULCH. PRIOR TO APPLYING THE MULCH, THE APPLICANT WILL REMOVE ANY SNOW ACCUMULATION ON THE DISTURBED AREA. IMMEDIATELY AFTER APPLYING THE MULCH, THE APPLICANT WILL ANCHOR THE MULCH WITH PLASTIC NETTING TO PREVENT WIND FROM MOVING THE MULCH OFF THE DISTURBED SOIL.
D. STABILIZE THE SOIL WITH EROSION CONTROL MIX -- THE CONTRACTOR WILL PLACE A MINIMUM TWO-INCH LAYER OF EROSION CONTROL MIX ON THE SOIL BY NOVEMBER 15. PRIOR TO PLACING THE EROSION CONTROL MIX, THE APPLICANT WILL REMOVE ANY SNOW ACCUMULATION ON THE DISTURBED SLOPE.

CONSTRUCTION SCHEDULE

SITE IMPROVEMENTS WILL MOST LIKELY BEGIN IN 2018, DEPENDING UPON FINAL PROJECT APPROVAL. THE FOLLOWING SCHEDULE IS ANTICIPATED:

1.	ESTIMATED CONSTRUCTION TIME:	24 MONTHS
2.	EROSION CONTROL MEASURES PLACED	WEEK 1 - WEEK 2
3.	SITE CLEARING AND GRUBBING	WEEK 2 - WEEK 3
4.	PRELOAD PROPOSED PARKING LOT SITE	WEEK 4 - WEEK 8
5.	PRELOAD SETTLEMENT PERIOD	WEEK 8 - WEEK 86
6.	STORMWATER MANAGEMENT AREA CONSTRUCTION	WEEK 86 - WEEK 91
7.	UTILITY INSTALLATION AND PARKING LOT CONSTRUCTION	WEEK 91 - WEEK 95
8.	MULCH SPREAD FOR EROSION CONTROL	2020 OF CONSTRUCTION YEAR
9.	START FINAL SEEDING ON PREPARED AREAS (DURING GROWING SEASON)	WEEK 91
10.	BIWEEKLY MONITORING OF VEGETATIVE GROWTH	WEEK 91
11.	RE-SEEDING OF AREAS, IF NEEDED	WEEK 102
12.	REMOVAL OF EROSION CONTROL DEVICES	UPON FINAL PROJECT COMPLETION

* DATES ARE SUBJECT TO CHANGE AT THE DISCRETION OF THE ENGINEER, DEPENDING ON CONSTRUCTION PROGRESS.

HOUSEKEEPING:

THE FOLLOWING GENERAL PERFORMANCE STANDARDS APPLY TO THE PROPOSED PROJECT.

A. SPILL PREVENTION:
CONTROLS MUST BE USED TO PREVENT POLLUTANTS FROM CONSTRUCTION AND WASTE MATERIALS STORED ON SITE TO ENTER STORMWATER, WHICH INCLUDES STORAGE PRACTICES TO MINIMIZE EXPOSURE OF THE MATERIALS TO STORMWATER. THE SITE CONTRACTOR OR OPERATOR MUST DEVELOP, AND IMPLEMENT AS NECESSARY, APPROPRIATE SPILL PREVENTION, CONTAINMENT, AND RESPONSE PLANNING MEASURES.

B. GROUNDWATER PROTECTION:
DURING CONSTRUCTION, LIQUID PETROLEUM PRODUCTS AND OTHER HAZARDOUS MATERIALS WITH THE POTENTIAL TO CONTAMINATE GROUNDWATER MAY NOT BE STORED OR HANDLED IN AREAS OF THE SITE DRAINING TO AN INFILTRATION AREA. AN "INFILTRATION AREA" IS ANY AREA OF THE SITE THAT BY DESIGN OR AS A RESULT OF SOILS, TOPOGRAPHY AND OTHER RELEVANT FACTORS ACCUMULATES RUNOFF THAT INFILTRATES INTO THE SOIL. DIKES, BERMS, SUMPS, AND OTHER FORMS OF SECONDARY CONTAINMENT THAT PREVENT DISCHARGE TO GROUNDWATER MAY BE USED TO ISOLATE PORTIONS OF THE SITE FOR THE PURPOSES OF STORAGE AND HANDLING OF THESE MATERIALS. ANY PROJECT PROPOSING INFILTRATION OF STORMWATER MUST PROVIDE ADEQUATE PRE-TREATMENT OF STORMWATER PRIOR TO DISCHARGE OF STORMWATER TO THE INFILTRATION AREA, OR PROVIDE FOR TREATMENT WITHIN THE INFILTRATION AREA, IN ORDER TO PREVENT THE ACCUMULATION OF FINES, REDUCTION IN INFILTRATION RATE, AND CONSEQUENT FLOODING AND DESTABILIZATION.

C. FUGITIVE SEDIMENT AND DUST:
ACTIONS MUST BE TAKEN TO ENSURE THAT ACTIVITIES DO NOT RESULT IN NOTICEABLE EROSION OF SOILS OR FUGITIVE DUST EMISSIONS DURING OR AFTER CONSTRUCTION. OIL MAY NOT BE USED FOR DUST CONTROL, BUT OTHER WATER ADDITIVES MAY BE CONSIDERED AS NEEDED. A STABILIZED CONSTRUCTION ENTRANCE (SCE) SHOULD BE INCLUDED TO MINIMIZE TRACKING OF MUD AND SEDIMENT. IF OFF-SITE TRACKING OCCURS, PUBLIC ROADS SHOULD BE SWEPT IMMEDIATELY AND NO LESS THAN ONCE A WEEK AND PRIOR TO SIGNIFICANT STORM EVENTS. OPERATIONS DURING DRY MONTHS, THAT EXPERIENCE FUGITIVE DUST PROBLEMS, SHOULD WET DOWN UNPAVED ACCESS ROADS ONCE A WEEK OR MORE FREQUENTLY AS NEEDED WITH A WATER ADDITIVE TO SUPPRESS FUGITIVE SEDIMENT AND DUST.

D. DEBRIS AND OTHER MATERIALS:
MINIMIZE THE EXPOSURE OF CONSTRUCTION DEBRIS, BUILDING AND LANDSCAPING MATERIALS, TRASH, FERTILIZERS, PESTICIDES, HERBICIDES, DETERGENTS, SANITARY WASTE AND OTHER MATERIALS TO PRECIPITATION AND STORMWATER RUNOFF. THESE MATERIALS MUST BE PREVENTED FROM BECOMING A POLLUTANT SOURCE.

E. EXCAVATION DE-WATERING:
EXCAVATION DE-WATERING IS THE REMOVAL OF WATER FROM TRENCHES, FOUNDATIONS, COFFER DAMS, PONDS, AND OTHER AREAS WITHIN THE CONSTRUCTION AREA THAT RETAIN WATER AFTER EXCAVATION. IN MOST CASES THE COLLECTED WATER IS HEAVILY SILTED AND HINDERS CORRECT AND SAFE CONSTRUCTION PRACTICES. THE COLLECTED WATER REMOVED FROM THE PONDED AREA, EITHER THROUGH GRAVITY OR PUMPING, MUST BE SPREAD THROUGH NATURAL WOODED BUFFERS OR REMOVED TO AREAS THAT ARE SPECIFICALLY DESIGNED TO COLLECT THE MAXIMUM AMOUNT OF SEDIMENT POSSIBLE, LIKE A COFFERDAM SEDIMENTATION BASIN. AVOID ALLOWING THE WATER TO FLOW OVER DISTURBED AREAS OF THE SITE. EQUIVALENT MEASURES MAY BE TAKEN IF APPROVED BY THE DEPARTMENT.

F. AUTHORIZED NON-STORMWATER DISCHARGES:
IDENTIFY AND PREVENT CONTAMINATION BY NON-STORMWATER DISCHARGES. WHERE ALLOWED NON-STORMWATER DISCHARGES EXIST, THEY MUST BE IDENTIFIED AND STEPS SHOULD BE TAKEN TO ENSURE THE IMPLEMENTATION OF APPROPRIATE POLLUTION PREVENTION MEASURES FOR THE NON-STORMWATER COMPONENT(S) OF THE DISCHARGE. AUTHORIZED NON-STORMWATER DISCHARGES ARE:
DISCHARGES FROM FIREFIGHTING ACTIVITY; FIRE HYDRANT FLUSHINGS;
VEHICLE WASHWATER IF DETERGENTS ARE NOT USED AND WASHING IS LIMITED TO THE EXTERIOR OF VEHICLES (ENGINE, UNDERCARRIAGE AND TRANSMISSION WASHING IS PROHIBITED);
DUST CONTROL RUNOFF IN ACCORDANCE WITH PERMIT CONDITIONS;
ROUTINE EXTERNAL BUILDING WASHDOWN, NOT INCLUDING SURFACE PAINT REMOVAL, THAT DOES NOT INVOLVE DETERGENTS;
PAVEMENT WASHWATER (WHERE SPILLS/LEAKS OF TOXIC OR HAZARDOUS MATERIALS HAVE NOT OCCURRED, UNLESS ALL SPILLED MATERIAL HAD BEEN REMOVED) IF DETERGENTS ARE NOT USED;
UNCONTAMINATED AIR CONDITIONING OR COMPRESSOR CONDENSATE;
UNCONTAMINATED GROUNDWATER OR SPRING WATER;
FOUNDATION OR FOOTER DRAIN-WATER WHERE FLOWS ARE NOT CONTAMINATED;
UNCONTAMINATED EXCAVATION DEWATERING;
POTABLE WATER SOURCES INCLUDING WATERLINE FLUSHINGS;
LANDSCAPE IRRIGATION;

G. UNAUTHORIZED NON-STORMWATER DISCHARGES:
THE DEP DOES NOT AUTHORIZE A DISCHARGE THAT IS MIXED WITH A SOURCE OF NON_STORMWATER, SPECIFICALLY, THE DEPARTMENT'S APPROVAL DOES NOT AUTHORIZE DISCHARGES OF THE FOLLOWING:
WASTEWATER FROM THE WASHOUT OR CLEANOUT OF CONCRETE, STUCCO, PAINT, FORM RELEASE OILS, CURING COMPOUNDS OR OTHER CONSTRUCTION MATERIALS;
FUELS, OILS OR OTHER POLLUTANTS USED IN VEHICLE AND EQUIPMENT OPERATION AND MAINTENANCE;
SOAPS, SOLVENTS, OR DETERGENTS USED IN VEHICLE AND EQUIPMENT WASHING;
TOXIC OR HAZARDOUS SUBSTANCES FROM A SPILL OR OTHER RELEASE

WINTER EROSION CONTROL MEASURES

THE WINTER CONSTRUCTION PERIOD IS FROM NOVEMBER 1 THROUGH APRIL 15. IF THE CONSTRUCTION SITE IS NOT STABILIZED WITH PAVEMENT, A ROAD GRAVEL BASE, 75% MATURE VEGETATION COVER OR RIPRAP BY NOVEMBER 1 THEN THE SITE NEEDS TO BE PROTECTED WITH OVER-WINTER STABILIZATION.

AN AREA CONSIDERED OPEN IS ANY AREA NOT STABILIZED WITH PAVEMENT, VEGETATION, MULCHING, EROSION CONTROL MATS, RIPRAP OR GRAVEL BASE ON A ROAD. LIMIT THE EXPOSED AREA TO THOSE AREAS IN WHICH WORK IS EXPECTED TO BE UNDER TAKEN DURING THE PROCEEDING 15 DAYS AND THAT CAN BE MULCHED IN ONE DAY PRIOR TO ANY SNOW EVENT.

ALL AREAS SHALL BE CONSIDERED TO BE DENUDED UNTIL THE SUBBASE GRAVEL IS INSTALLED IN ROADWAY AREAS OR THE AREAS OF FUTURE LOAM AND SEED HAVE BEEN LOAMED, SEEDED AND MULCHED. HAY AND STRAW MULCH RATE SHALL BE A MINIMUM OF 150 LBS./1,000 S.F. (3 TONS/ACRE) AND SHALL BE PROPERLY ANCHORED. THE CONTRACTOR MUST INSTALL ANY ADDED MEASURES WHICH MAY BE NECESSARY TO CONTROL EROSION/SEDIMENTATION FROM THE SITE DEPENDENT UPON THE ACTUAL SITE AND WEATHER CONDITIONS. CONTINUATION OF EARTHWORK OPERATIONS ON ADDITIONAL AREAS SHALL NOT BEGIN UNTIL THE EXPOSED SOIL SURFACE ON THE AREA BEING WORKED HAS BEEN STABILIZED, IN ORDER TO MINIMIZE AREAS WITHOUT EROSION CONTROL PROTECTION.

1. SOIL STOCKPILES
STOCKPILES OF SOIL OR SUBSOIL WILL BE MULCHED FOR OVER WINTER PROTECTION WITH HAY OR STRAW AT TWICE THE NORMAL RATE OR AT 150 LBS/1,000 S.F. (3 TONS PER ACRE) OR WITH A FOUR-INCH LAYER OF WOOD WASTE EROSION CONTROL MIX. THIS WILL BE DONE WITHIN 24 HOURS OF STOCKING AND RE-ESTABLISHED PRIOR TO ANY RAINFALL OR SNOWFALL. ANY SOIL STOCKPILE WILL NOT BE PLACED (EVEN COVERED WITH HAY OR STRAW) WITHIN 100 FEET FROM ANY NATURAL RESOURCES.

2. NATURAL RESOURCES PROTECTION
ANY AREAS WITHIN 100 FEET FROM ANY NATURAL RESOURCES, IF NOT STABILIZED WITH A MINIMUM OF 75% MATURE VEGETATION CATCH, SHALL BE MULCHED BY DECEMBER 1 AND ANCHORED WITH PLASTIC NETTING OR PROTECTED WITH EROSION CONTROL MATS. DURING WINTER CONSTRUCTION, A DOUBLE LINE OF SEDIMENT BARRIERS (I.E. SILT FENCE BACKED WITH HAY BALES OR EROSION CONTROL MIX) WILL BE PLACED BETWEEN ANY NATURAL RESOURCE AND THE DISTURBED AREA. PROJECTS CROSSING THE NATURAL RESOURCE SHALL BE PROTECTED A MINIMUM DISTANCE OF 100 FEET ON EITHER SIDE FROM THE RESOURCE. EXISTING PROJECTS NOT STABILIZED BY DECEMBER 1 SHALL BE PROTECTED WITH THE SECOND LINE OF SEDIMENT BARRIER TO ENSURE FUNCTIONALITY DURING THE SPRING THAW AND RAINS.

3. SEDIMENT BARRIERS
DURING FROZEN CONDITIONS, SEDIMENT BARRIERS SHALL CONSIST OF WOOD WASTE FILTER BERMS AS FROZEN SOIL PREVENTS THE PROPER INSTALLATION OF HAY BALES AND SEDIMENT SILT FENCES.

4. MULCHING
ALL AREA SHALL BE CONSIDERED TO BE DENUDED UNTIL AREAS OF FUTURE LOAM AND SEED HAVE BEEN LOAMED, SEEDED AND MULCHED. HAY AND STRAW MULCH SHALL BE APPLIED AT A RATE OF 150 LB. PER 1.000 SQUARE FEET OR 3 TONS/ACRE (TWICE THE NORMAL ACCEPTED RATE OF 75-LBS./1,000 S.F. OR 1.5 TONS/ACRE) AND SHALL BE PROPERLY ANCHORED.
MULCH SHALL NOT BE SPREAD ON TOP OF SNOW. THE SNOW WILL BE REMOVED DOWN TO A ONE-INCH DEPTH OR LESS PRIOR TO APPLICATION. AFTER EACH DAY OF FINAL GRADING, THE AREA WILL BE PROPERLY STABILIZED WITH ANCHORED HAY OR STRAW OR EROSION CONTROL MATTING. AN AREA SHALL BE CONSIDERED TO HAVE BEEN STABILIZED WHEN EXPOSED SURFACES HAVE BEEN EITHER MULCHED WITH STRAW OR HAY AT A RATE OF 150 LB. PER 1.000 SQUARE FEET (3TONS/ACRE) AND ADEQUATELY ANCHORED THAT GROUND SURFACE IS NOT VISIBLE THOUGH THE MULCH.

BETWEEN THE DATES OF SEPTEMBER 1 AND APRIL 15, ALL MULCH SHALL BE ANCHORED BY EITHER PEG LINE, MULCH NETTING, ASPHALT EMULSION CHEMICAL, TRACK OR WOOD CELLULOSE FIBER. WHEN GROUND SURFACE IS NOT VISIBLE THOUGH THE MULCH THEN COVER IS SUFFICIENT.
AFTER NOVEMBER 1ST, MULCH AND ANCHORING OF ALL BARE SOIL SHALL OCCUR AT THE END OF EACH FINAL GRADING WORK DAY.

5. MULCHING ON SLOPES AND DITCHES
SLOPES SHALL NOT BE LEFT EXPOSED FOR ANY EXTENDED TIME OF WORK SUSPENSION UNLESS FULLY MULCHED AND ANCHORED WITH PEG AND NETTING OR WITH EROSION CONTROL BLANKETS.
MULCHING SHALL BE APPLIED AT A RATE OF 230 LBS/1,000 S.F. ON ALL SLOPES GREATER THAN 8% MULCH NETTING SHALL BE USED TO ANCHOR MULCH IN ALL DRAINAGE WAYS WITH A SLOPE GREATER THAN 3% FOR SLOPES EXPOSED TO DIRECT WINDS AND FOR ALL OTHER SLOPES GREATER THAN 8%. EROSION CONTROL BLANKETS SHALL BE USED IN LIEU OF MULCH IN ALL DRAINAGE WAYS WITH SLOPES 8%. EROSION CONTROL MIX CAN BE USED TO SUBSTITUTE EROSION CONTROL BLANKETS ON ALL SLOPES EXCEPT DITCHES.

6. SEEDING
BETWEEN THE DATES OF OCTOBER 15 AND APRIL 1ST, LOAM OR SEED WILL NOT BE REQUIRED. DURING PERIODS OF ABOVE FREEZING TEMPERATURES FINISHED AREAS SHALL BE FINE GRADED AND EITHER PROTECTED WITH MULCH OR TEMPORARILY SEEDED AND MULCHED UNTIL SUCH TIME AS THE FINAL TREATMENT CAN BE APPLIED. IF THE DATE IS AFTER NOVEMBER 1ST AND IF THE EXPOSED AREA HAS BEEN LOOMED, FINAL GRADED WITH A UNIFORM SURFACE, THEN THE AREA MAY BE DORMANT SEEDED AT A RATE OF 3 TIMES HIGHER THAN SPECIFIED FOR PERMANENT SEED AND THEN MULCHED. DORMANT SEEDING MAY BE SELECTED TO BE PLACED PRIOR TO THE PLACEMENT OF MULCH AND FABRIC NETTING ANCHORED WITH STAPLES. IF DORMANT SEEDING IS USED FOR THE SITE, ALL DISTURBED AREAS SHALL RECEIVE 4' OF LOAM AND SEED AT AN APPLICATION RATE OF 5LBS/1000 S.F. ALL AREAS SEEDED DURING THE WINTER WILL BE INSPECTED IN THE SPRING FOR ADEQUATE CATCH. ALL AREAS SUFFICIENTLY VEGETATED (LESS THAN 75% CATCH) SHALL BE REVEGETATED BY REPLACING LOAM, SEED AND MULCH.
IF DORMANT SEEDING IS NOT USED FOR THE SITE, ALL DISTURBED AREAS SHALL BE REVEGETATED IN THE SPRING.

7. TRENCH DEWATERING AND TEMPORARY STREAM DIVERSION
WATER FROM CONSTRUCTION TRENCH DEWATERING OR TEMPORARY STREAM DIVERSION WILL PASS FIRST THROUGH A FILTER BAG OR SECONDARY CONTAINMENT STRUCTURE (E.G. HAY BALE LINED POOL) PRIOR TO DISCHARGE. THE DISCHARGE SITE SHALL BE SELECTED TO AVOID FLOODING, ICING, AND SEDIMENT DISCHARGES TO A PROTECTED RESOURCE. IN NO CASE SHALL THE FILTER BAG OR CONTAINMENT STRUCTURE BE LOCATED WITHIN 100 FEET OF A PROTECTED NATURAL RESOURCE.

8. INSPECTION AND MONITORING
MAINTENANCE MEASURES SHALL BE APPLIED AS NEEDED DURING THE ENTIRE CONSTRUCTION SEASON. AFTER EACH RAINFALL, SNOW STORM OR PERIOD OF THAWING AND RUNOFF, THE SITE CONTRACTOR SHALL PERFORM A VISUAL INSPECTION OF ALL INSTALLED EROSION CONTROL MEASURES AND PERFORM REPAIRS AS NEEDED TO INSURE THEIR CONTINUOUS FUNCTION. FOLLOWING THE TEMPORARY AND OR FINAL SEEDING AND MULCHING, THE CONTRACTOR SHALL IN THE SPRING INSPECT AND REPAIR ANY DAMAGES AND/ OR UNESTABLISHED SPOTS. ESTABLISHED VEGETATIVE COVER MEANS A MINIMUM OF 85 TO 90% OF AREAS VEGETATED WITH VIGOROUS GROWTH.

STANDARDS FOR TIMELY STABILIZATION OF CONSTRUCTION SITES DURING WINTER

1. STANDARD FOR THE TIMELY STABILIZATION OF DITCHES AND CHANNELS -- THE APPLICANT WILL CONSTRUCT AND STABILIZE ALL STONE-LINED DITCHES AND CHANNELS ON THE SITE BY NOVEMBER 15. THE APPLICANT WILL CONSTRUCT AND STABILIZE ALL GRASS-LINED DITCHES AND CHANNELS ON THE SITE BY SEPTEMBER 15. IF THE APPLICANT FAILS TO STABILIZE A DITCH OR CHANNEL TO BE GRASS-LINED BY SEPTEMBER 15, THEN THE APPLICANT WILL TAKE ONE OF THE FOLLOWING ACTIONS TO STABILIZE THE DITCH FOR LATE FALL AND WINTER.

INSTALL A SOD LINING IN THE DITCH -- THE APPLICANT WILL LINE THE DITCH WITH PROPERLY INSTALLED SOD BY OCTOBER 1. PROPER INSTALLATION INCLUDES THE APPLICANT PINNING THE SOD ONTO THE SOIL WITH WIRE PINS, ROLLING THE SOD TO GUARANTEE CONTACT BETWEEN THE SOD AND UNDERLYING SOIL, WATERING THE SOD TO PROMOTE ROOT GROWTH INTO THE DISTURBED SOIL, AND ANCHORING THE SOD WITH JUTE OR PLASTIC MESH TO PREVENT THE SOD STRIPS FROM SLOUGHING DURING FLOW CONDITIONS.

INSTALL A STONE LINING IN THE DITCH --THE APPLICANT WILL LINE THE DITCH WITH STONE RIPRAP BY NOVEMBER 15. THE APPLICANT WILL HIRE A REGISTERED PROFESSIONAL ENGINEER TO DETERMINE THE STONE SIZE AND LINING THICKNESS NEEDED TO WITHSTAND THE ANTICIPATED FLOW VELOCITIES AND FLOW DEPTHS WITHIN THE DITCH. IF NECESSARY, THE APPLICANT WILL REGRADE THE DITCH PRIOR TO PLACING THE STONE LINING SO TO PREVENT THE STONE LINING FROM REDUCING THE DITCH'S CROSS-SECTIONAL AREA.

2. STANDARD FOR THE TIMELY STABILIZATION OF DISTURBED SLOPES -- THE APPLICANT WILL CONSTRUCT AND STABILIZE STONE-COVERED SLOPES BY NOVEMBER 1. THE APPLICANT WILL SEED AND MULCH ALL SLOPES TO BE VEGETATED BY SEPTEMBER 15. THE DEPARTMENT WILL CONSIDER ANY AREA HAVING A GRADE GREATER THAN 8% (12.5H:1V) TO BE A SLOPE. IF THE APPLICANT FAILS TO STABILIZE ANY SLOPE TO BE VEGETATED BY SEPTEMBER 15, THEN THE APPLICANT WILL TAKE ONE OF THE FOLLOWING ACTIONS TO STABILIZE THE SLOPE FOR LATE FALL AND WINTER.

STABILIZE THE SOIL WITH TEMPORARY VEGETATION AND EROSION CONTROL MATS -- BY OCTOBER 1 THE APPLICANT WILL SEED THE DISTURBED SLOPE WITH WINTER RYE AT A SEEDING RATE OF 3 POUNDS PER 1000 SQUARE FEET AND APPLY EROSION CONTROL MATS OVER THE MULCHED SLOPE. THE APPLICANT WILL MONITOR GROWTH OF THE RYE OVER THE NEXT 30 DAYS. IF THE RYE FAILS TO GROW AT LEAST THREE INCHES OR COVER AT LEAST 75% OF THE DISTURBED SLOPE BY NOVEMBER 1, THEN THE APPLICANT WILL COVER THE SLOPE WITH A LAYER OF EROSION CONTROL MIX OR WITH STONE RIPRAP.

STABILIZE THE SLOPE WITH SOD -- THE APPLICANT WILL STABILIZE THE DISTURBED SLOPE WITH PROPERLY INSTALLED SOD BY OCTOBER 1. PROPER INSTALLATION INCLUDES THE APPLICANT PINNING THE SOD ONTO THE SLOPE WITH WIRE PINS, ROLLING THE SOD TO GUARANTEE CONTACT BETWEEN THE SOD AND UNDERLYING SOIL, AND WATERING THE SOD TO PROMOTE ROOT GROWTH INTO THE DISTURBED SOIL. THE APPLICANT WILL NOT USE LATE-SEASON SOD INSTALLATION TO STABILIZE SLOPES HAVING A GRADE GREATER THAN 33% (3H:1V).

STABILIZE THE SLOPE EROSION CONTROL MIX -- THE APPLICANT WILL PLACE A SIX-INCH LAYER OF WOOD WASTE COMPOST ON THE SLOPE BY NOVEMBER 1. PRIOR TO PLACING THE WOOD WASTE COMPOST, THE APPLICANT WILL REMOVE ANY SNOW ACCUMULATION ON THE DISTURBED SLOPE. THE APPLICANT WILL NOT USE WOOD WASTE COMPOST TO STABILIZE SLOPES HAVING GRADES GREATER THAN 1H:1V OR HAVING GROUNDWATER SEEPS ON THE SLOPE FACE.

STABILIZE THE SLOPE WITH STONE RIPRAP -- THE APPLICANT WILL PLACE A LAYER OF STONE RIPRAP ON THE SLOPE BY NOVEMBER 15. THE APPLICANT WILL HIRE A REGISTERED PROFESSIONAL ENGINEER TO DETERMINE THE STONE SIZE NEEDED FOR STABILITY AND TO DESIGN A FILTER LAYER FOR UNDERNEATH THE RIPRAP.

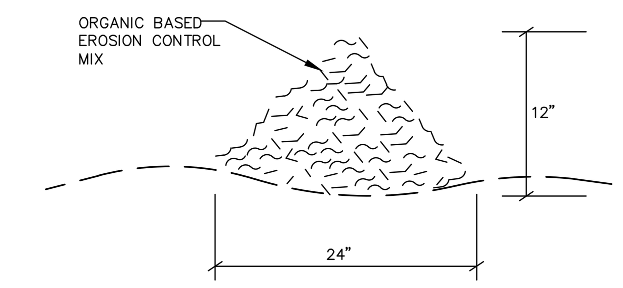
3. STANDARD FOR THE TIMELY STABILIZATION OF DISTURBED SOILS -- BY SEPTEMBER 15 THE APPLICANT WILL SEED AND MULCH ALL DISTURBED SOILS ON AREAS HAVING A SLOPE LESS THAN 15%. IF THE APPLICANT FAILS TO STABILIZE THESE SOILS BY THIS DATE, THEN THE APPLICANT WILL TAKE ONE OF THE FOLLOWING ACTIONS TO STABILIZE THE SOIL FOR LATE FALL AND WINTER.

STABILIZE THE SOIL WITH TEMPORARY VEGETATION -- BY OCTOBER 1 THE APPLICANT WILL SEED THE DISTURBED SOIL WITH WINTER RYE AT A SEEDING RATE OF 3 POUNDS PER 1000 SQUARE FEET, LIGHTLY MULCH THE SEEDED SOIL WITH HAY OR STRAW AT 75 POUNDS PER 1000 SQUARE FEET, AND ANCHOR THE MULCH WITH PLASTIC NETTING. THE APPLICANT WILL MONITOR GROWTH OF THE RYE OVER THE NEXT 30 DAYS. IF THE RYE FAILS GROW AT LEAST THREE INCHES OR COVER AT LEAST 75% OF THE DISTURBED SOIL BEFORE NOVEMBER 15, THEN THE APPLICANT WILL MULCH THE AREA FOR OVER-WINTER PROTECTION AS DESCRIBED IN ITEM III OF THIS STANDARD.

STABILIZE THE SOIL WITH SOD -- THE APPLICANT WILL STABILIZE THE DISTURBED SOIL WITH PROPERLY INSTALLED SOD BY OCTOBER 1. PROPER INSTALLATION INCLUDES THE APPLICANT PINNING THE SOD ONTO THE SOIL WITH WIRE PINS, ROLLING THE SOD TO GUARANTEE CONTACT BETWEEN THE SOD AND UNDERLYING SOIL, AND WATERING THE SOD TO PROMOTE ROOT GROWTH INTO THE DISTURBED SOIL.

STABILIZE THE SOIL WITH MULCH -- BY NOVEMBER 15 THE APPLICANT WILL MULCH THE DISTURBED SOIL BY SPREADING HAY OR STRAW AT A RATE OF AT LEAST 150 POUNDS PER 1000 SQUARE FEET ON THE AREA SO THAT NO SOIL IS VISIBLE THROUGH THE MULCH. PRIOR TO APPLYING THE MULCH, THE APPLICANT WILL REMOVE ANY SNOW ACCUMULATION ON THE DISTURBED AREA. IMMEDIATELY AFTER APPLYING THE MULCH, THE APPLICANT WILL ANCHOR THE MULCH WITH PLASTIC NETTING TO PREVENT WIND FROM MOVING THE MULCH OFF THE DISTURBED SOIL.

STABILIZE THE SOIL EROSION CONTROL MIX -- THE APPLICANT WILL PLACE A MINIMUM 2-INCH LAYER OF EROSION CONTROL MIX ON SOILS WITH SLOPES OF 8% OR LESS AND ADD AN ADDITIONAL ½ -INCH PER 20 FEET OF SLOPE OR UP TO 4-INCHES ON A 100 FOOT SLOPE.



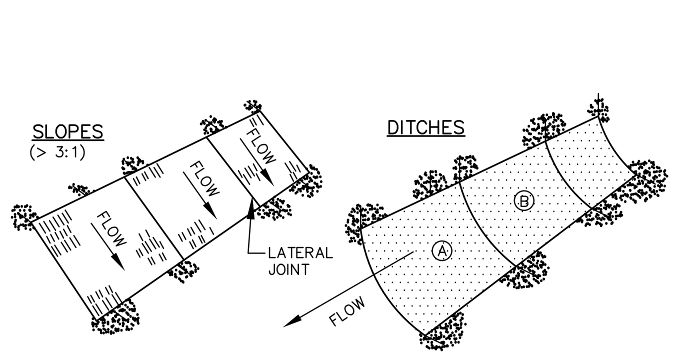
COMPOSITION

EROSION CONTROL MIX SHALL BE MANUFACTURED ON OR OFF THE PROJECT SITE SUCH THAT ITS COMPOSITION IS IN ACCORDANCE WITH THE MDEP MAINE EROSION AND SEDIMENT CONTROL BMP MANUAL, LAST REVISED 3/2003 OR LATER. IT MUST CONSIST PRIMARILY OF ORGANIC MATERIAL, SEPARATED AT THE POINT OF GENERATION, AND MAY INCLUDE: SHREDDED BARK, STUMP GRINDINGS, COMPOSTED BARK, OR ACCEPTABLE MANUFACTURED PRODUCTS. WOOD AND BARK CHIPS, GROUND CONSTRUCTION DEBRIS OR REPROCESSED WOOD PRODUCTS WILL NOT BE ACCEPTABLE AS THE ORGANIC COMPONENT OF THE MIX.

INSTALLATION:

1. THE BARRIER MUST BE PLACED ACROSS THE SLOPE, ALONG THE CONTOUR.
2. EXISTING GROUND SHALL BE PREPARED SUCH THAT THE BARRIER MAY LIE NEARLY FLAT ALONG THE GROUND TO AVOID THE CREATION OF VOIDS AND BRIDGES IN ORDER TO MINIMIZE THE POTENTIAL OF WASH OUTS UNDER THE BARRIER.
3. THE BARRIER SHALL BE A MINIMUM OF 1 FOOT HIGH (AS MEASURED ON THE UPHILL SIDE) AND 2 FEET WIDE FOR SLOPES LESS THAN 5% IN GRADE AND SHALL BE WIDER TO ACCOMMODATE THE ADDITIONAL RUNOFF.
4. EROSION CONTROL MIX CAN BE INSTALLED WHERE SILT FENCE IS ILLUSTRATED ON THE DESIGN PLANS IN AREAS EXCEPT IN, BUT NOT LIMITED TO, THE FOLLOWING AREAS: WETLAND AREAS, AT POINTS OF CONCENTRATED FLOW, BELOW CULVERT OUTLET APRONS, AROUND CATCH BASINS AND CLOSED STORM SYSTEMS AND AT THE BOTTOM OF STEEP SLOPES THAT ARE MORE THAN 50 FEET FROM TOP TO BOTTOM.

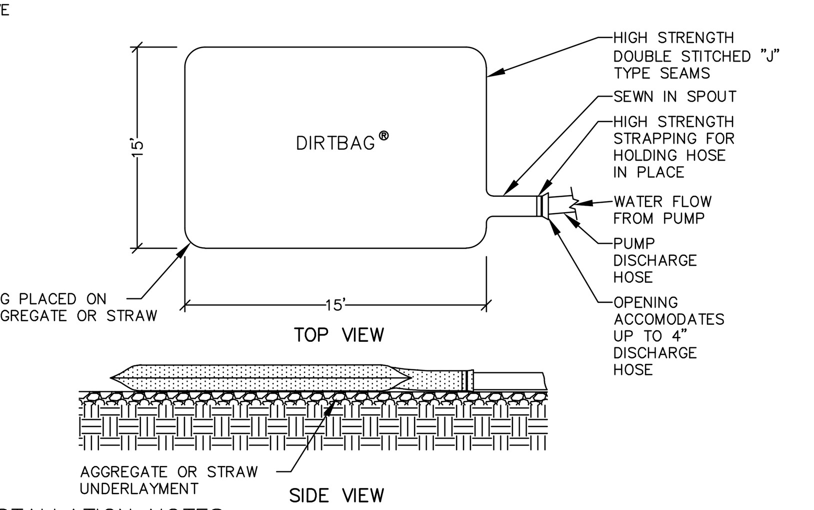
EROSION CONTROL MIX BERM
NOT TO SCALE



NOTES:

1. BURY THE TOP END OF THE MESH MATERIAL IN A 6" TRENCH AND BACKFILL AND TAMP TRENCHING SECURE END WITH STAPLES AT 6" SPACING, 4" DOWN FROM EXPOSED END.
2. FLOW DIRECTION JOINTS TO HAVE UPPER END OF LOWER STRIP BURIED WITH UPPER LAYERS OVERLAPPED 4" AND STAPLED. OVERLAP B OVER A.
3. LATERAL JOINTS TO HAVE 4" OVERLAP OF STRIPS. STAPLE 18" ON CENTER.
4. STAPLE OUTSIDE LATERAL EDGE 2" ON CENTER.
5. WIRE STAPLES TO BE MIN OF #11 WIRE 6" LONG AND 1-1/2" WIDE.
6. USE NORTH AMERICAN GREEN DS 150 OR APPROVED EQUAL.

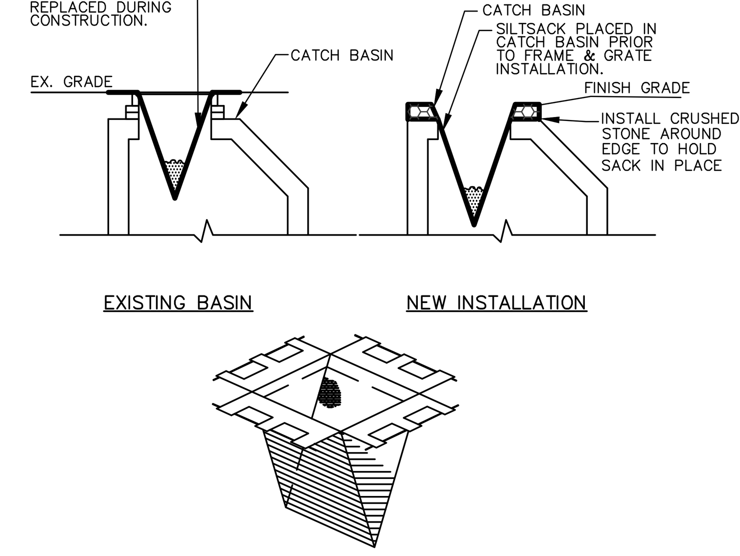
EROSION CONTROL BLANKET
NOT TO SCALE



INSTALLATION NOTES

1. DEWATERING IF NECESSARY FOR UNDERDRAINED POND CONSTRUCTION AND REMOVAL OF ACCUMULATED SEDIMENT SHALL BE ACCOMPLISHED WITHOUT DISCHARGING SEDIMENT LADEN WATER TO THE STREAM AND WETLANDS ABUTTING THE SITE.
2. CONTRACTOR MAY UTILIZE A GEOTEXTILE PUMPED SEDIMENT CONTROL DEVICE ("DIRTBAG" OR EQUIVALENT).
3. DIRTBAG SHALL BE INSTALLED TO MAINTAIN A MINIMUM 75' UNDISTURBED BUFFER FROM THE STREAM AND WETLANDS.
4. INSTALL DIRTBAG ON A 3" BED OF HAY TO MAXIMIZE FLOW OF WATER THROUGH ALL SURFACES OF THE BAG.
5. SURROUND DIRTBAG WITH A DOUBLE ROW OF SILTATION FENCE, OR AN EROSION CONTROL BERM BACKED BY SILTATION FENCE.

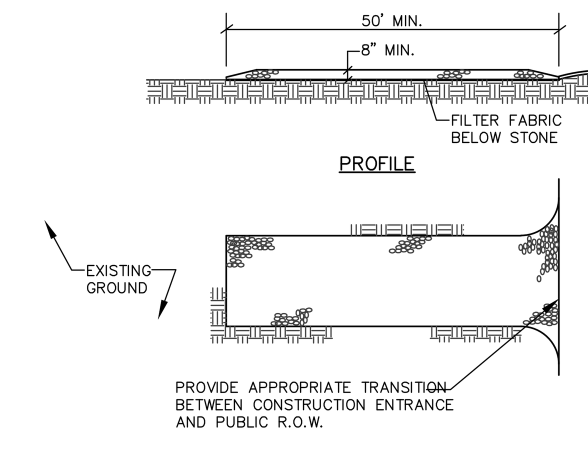
DIRTBAG PUMPED SILT CONTROL SYSTEM
NOT TO SCALE



NOTES:

PRIOR TO FINAL GRADING AND PAVING OPERATIONS, A CATCH BASIN INSERT (SUCH AS A SILT SACK OR A DANDY BAG II) MUST BE INSTALLED IN EACH BASIN PER MANUFACTURES INSTRUCTIONS. HAY BALES SHOULD BE REMOVED ONCE INSERTS ARE INSTALLED.

CATCH BASIN PROTECTION DETAIL (FOR PAVED AREAS)
NOT TO SCALE



NOTES:

1. STONE SIZE- AASHTO DESIGNATION M43, SIZE NO. 2 (2 1/2" TO 1 1/2"). USE CRUSHED STONE.
2. LENGTH- AS SHOWN ON PLANS, MIN. 50 FEET.
3. THICKNESS- NOT LESS THAN EIGHT (8) INCHES.
4. WIDTH- NOT LESS THAN FULL WIDTH OF ALL POINT OF INGRESS OR EGRESS.
5. MAINTENANCE- THE ENTRANCE SHALL BE MAINTAINED IN A CONDITION WHICH WILL PREVENT TRACKING OR FLOWING OF SEDIMENT ONTO PUBLIC RIGHT-OF-WAY. THIS MAY REQUIRE PERIODIC TOP DRESSING WITH ADDITIONAL STONE AS CONDITIONS DEMAND AND REPAIR AND/OR CLEANOUT OF ANY MEASURES USED TO TRAP SEDIMENT. ALL SEDIMENT SPILLED, DROPPED, WASHED OR TRACKED ONTO PUBLIC RIGHT-OF-WAY MUST BE REMOVED IMMEDIATELY.

STABILIZED CONSTRUCTION ENTRANCE
NOT TO SCALE

CRAIG BURGESS, P.E. #12638

STATE OF MAINE
CRAIG A. BURGESS
No. 12638
PROFESSIONAL ENGINEER
07/10/18

DESIGNED	CHECKED
WTC	WTC

REV:	BY:	DATE:	STATUS:
C	WTC	07-10-18	RESUBMIT TO CITY
B	WTC	06-21-18	REVISED PER MDEP COMMENTS
A	WTC	02-01-18	ISSUED FOR CITY SITE PLAN REVIEW

THIS PLAN SHALL NOT BE MODIFIED WITHOUT WRITTEN PERMISSION FROM SEBAGO TECHNICS, INC. ANY ALTERATIONS, AUTHORIZED OR OTHERWISE, SHALL BE AT THE USER'S SOLE RISK AND WITHOUT LIABILITY TO SEBAGO TECHNICS, INC.

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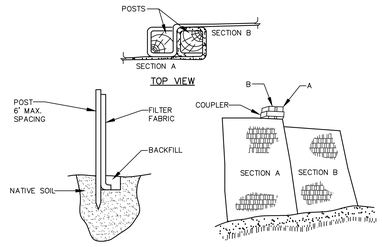
DETAILS
OF:
PORTLAND TRANSPORTATION CENTER
THOMPSON'S POINT CONNECTOR
PORTLAND, MAINE
FOR:
LANGDON STREET REAL ESTATE, INC.
7 LANGDON STREET
CONCORD, NH 03301

PROJECT NO.	SCALE
99607	NTS

SHEET 18 OF 21

99607D.dwg, TAB:D1



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

PLAN VIEW

SECTION VIEW

NOTES:
1. RIPRAP TO BE PROCESSED ANGULAR ROCK
2. RIPRAP GRADIATION SHALL BE A WELL GRADED MIX FROM ABOUT 1.5 TIMES D SIZE TO 25 PERCENT OF THE D SIZE
3. THE RIPRAP STONES SHALL BE CAREFULLY PLACED FROM THE TOE OF THE SLOPE UPWARD
4. STONES SHALL BE LOWERED TO THE SLOPE AND NOT BE ALLOWED TO DROP MORE THAN 12" ONTO THE GEOTEXTILE
5. THE FINISHED SURFACE SHALL BE A RELATIVELY SMOOTH, UNIFORMLY SLOPED SURFACE

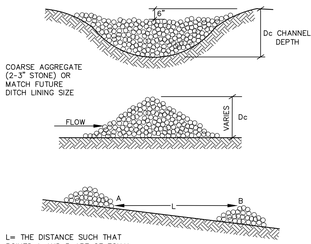
TYPICAL RIPRAP APRON SCHEDULE

CULVERT DIAMETER - D (IN.)	APRON LENGTH - L (FT.)	WIDTH -W1 (FT)	WIDTH -W2 (FT)	RIPRAP D50 (IN.)*	RIPRAP THICKNESS (IN.)*
12	8	3	9	6	14
15	10	4	12	6	14
18	13	5	15	7	16
24	18	6	20	8	18
36	29	9	32	11	25

*UNLESS NOTES OTHERWISE ON PLANS

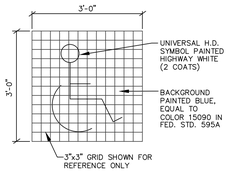
SIZING NOTES:
1. VALUES CALCULATED USING AN HDPE CULVERT AT A SLOPE OF 1% FLOWING FULL.
2. APRON LENGTHS AND RIPRAP D50 SIZES DETERMINED FROM THE OUTLET PROTECTION SIZING CHART IN THE MARCH 2003 MAINE EROSION AND SEDIMENT CONTROL BMP MANUAL.
3. APRON WIDTHS W1 & W2 WERE BASED ON THE STANDARDS SET FORTH IN THE MARCH 2003 MAINE EROSION AND SEDIMENT CONTROL BMP MANUAL SECTION E-3-2.
4. THESE DIMENSIONS ARE MINIMUM VALUES FOR EACH PIPE. IF NECESSARY, THESE DIMENSIONS CAN BE INCREASED AND ARE LABELED BY THE ENGINEER ON THE PLANS.

RIPRAP APRON
NOT TO SCALE

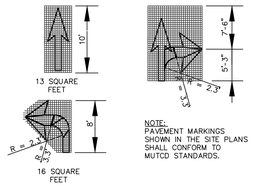


L= THE DISTANCE SUCH THAT POINTS A AND B ARE OF EQUAL ELEVATION

STONE CHECK DAM
NOT TO SCALE

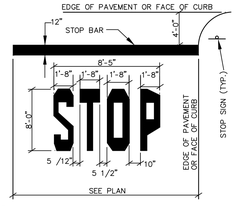


HANDICAP PAINT
NOT TO SCALE



NOTE:
PAVEMENT MARKINGS SHOWN IN THE SITE PLANS SHALL CONFORM TO MUTCD STANDARDS.

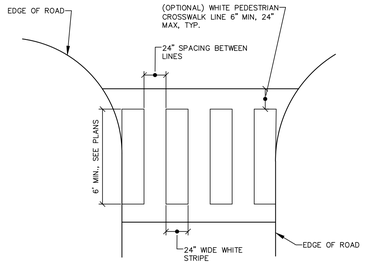
PAVEMENT ARROW DETAILS
NOT TO SCALE



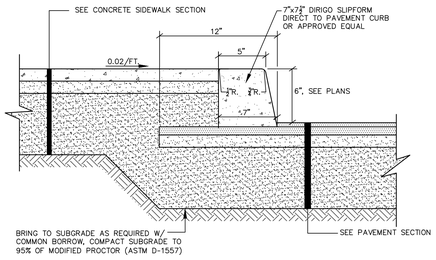
NOTE: WORDS AND ARROWS FOR DRIVEWAYS SHALL BE APPLIED ACCORDING TO REQUIREMENTS AS OUTLINED IN SECTION 3B OF THE MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES FOR STREETS AND HIGHWAYS.

1. THESE WORDS AND BAR ARE TO BE PAINTED REFLECTIVE WHITE.

STOP BAR
NOT TO SCALE

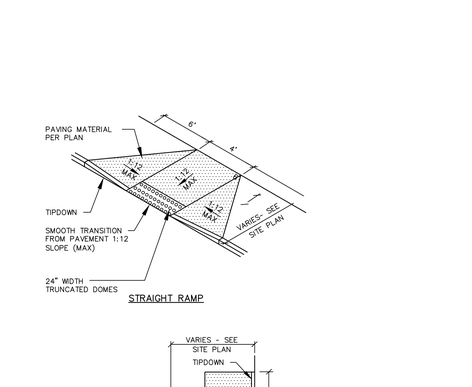


CROSSWALK MARKINGS
NOT TO SCALE

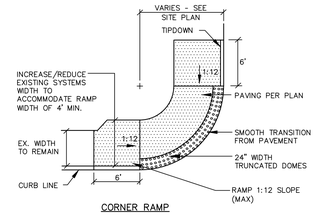


NOTES:
1. COMPACT GRAVEL SUBBASE AND BASE COURSES TO 95% OF MAXIMUM DENSITY USING HEAVY ROLLER COMPACTION.
2. HOT MIX ASPHALT SURFACE COARSE SHALL BE COMPACTED TO 95% OF ITS THEORETICAL MAXIMUM DENSITY (ASTM D-2041). BASE COARSE SHALL BE COMPACTED TO 95% ±2.5% OF ITS THEORETICAL MAXIMUM DENSITY (ASTM D-2041).
3. APPLY TACK COAT BETWEEN SUCCESSIVE LIFTS OF BITUMINOUS PAVEMENT.
4. CONTRACTOR SHALL SET GRADE STAKES MARKING SUBBASE AND FINISH GRADE ELEVATIONS FOR CONSTRUCTION REFERENCE.

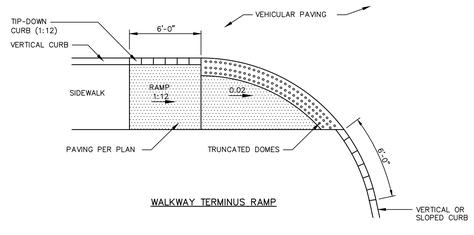
PEDESTRIAN WALK W/ CURB
NOT TO SCALE



STRAIGHT RAMP

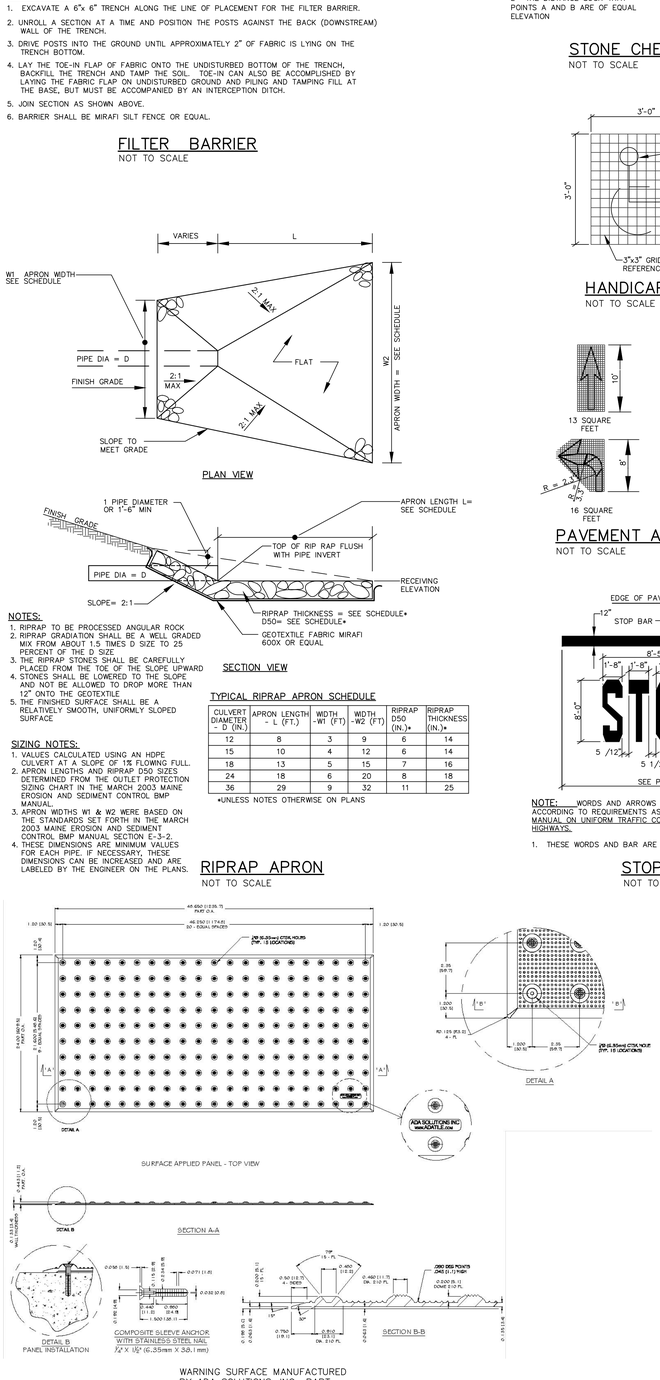


CORNER RAMP



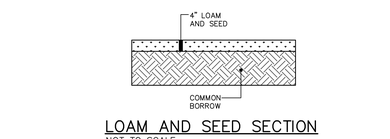
WALKWAY TERMINUS RAMP

HANDICAP RAMP WITH TRUNCATED DOME BAND
NOT TO SCALE

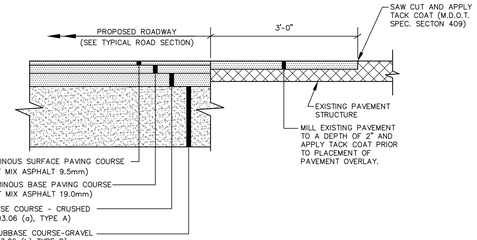


WARNING SURFACE MANUFACTURED BY ADA SOLUTIONS, INC., PART NO. 244BIDRET2

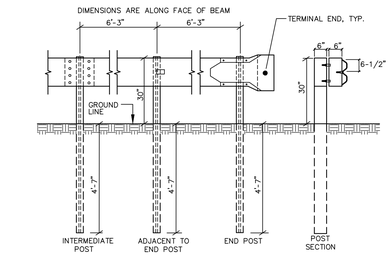
TRUNCATED DOME DETAIL
NOT TO SCALE



LOAM AND SEED SECTION
NOT TO SCALE

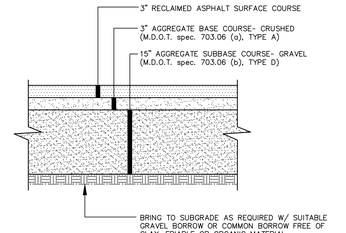


TYPICAL PAVEMENT JOINT
NOT TO SCALE



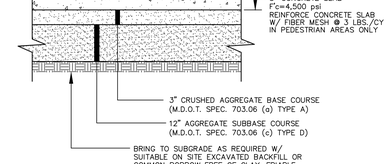
NOTES:
1. INTERMEDIATE POST SPACING SHALL BE 6'-3" UNLESS OTHERWISE SHOWN.
2. POSTS AND OFFSET BRACKETS FOR TYPE 3b GUARD RAIL SHALL BE W 6x9.
3. ALL HOLES IN BEAM TO BE SHOP-PUNCHED BEFORE GALVANIZING.
4. ALL MATERIALS AND INSTALLATION SHALL CONFORM WITH MDOT SPECIFICATIONS.
5. SUBMIT SHOP DRAWINGS PRIOR TO FABRICATION.
6. ALL POSTS SHALL BE 7'-0" IN LENGTH, MEASURED FROM THE TOP ON THE GUARDRAIL.
7. W-BEAM CRASH BARRIER END TREAMENT

VEHICULAR GUARDRAIL
NOT TO SCALE

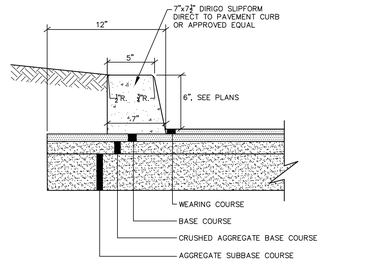


NOTES:
1. COMPACT GRAVEL SUBBASE AND BASE COURSES TO 95% OF MAXIMUM DENSITY USING HEAVY ROLLER COMPACTION.

PRELOAD PHASE PARKING LOT SECTION
NOT TO SCALE



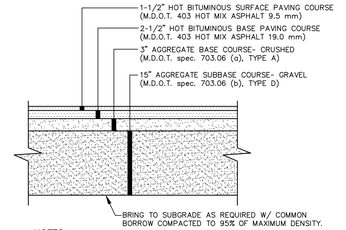
TYPICAL TIPDOWN CURB INSTALLATION
NOT TO SCALE



CONCRETE SLIPFORM CURB SECTION
NOT TO SCALE

NOTES:
1. CONCRETE SHALL BE 4,500 PSI COMPRESSIVE, 500 PSI FLEXURAL, 3/4" AGGREGATE, WITH 6% (±1%) AIR ENTRAINMENT.
2. PROVIDE CONTRACTION CONTROL JOINTS PER CONTROL JOINT DETAIL.
3. PROVIDE FULL DEPTH EXCAVATION OF FROST SUSCEPTIBLE MATERIALS AND SUBSEQUENT REPLACEMENT WITH A NON-FROST SUSCEPTIBLE COMPACTED STRUCTURAL FILL. REFER TO GEOTECHNICAL REPORT.

CONCRETE SIDEWALK SECTION
NOT TO SCALE



NOTES:
1. PAVEMENT SUBGRADES SHOULD BE DENSIFIED WITH 3 TO 5 PASSES OF A VIBRATORY ROLLER. THE BASE AND SUBBASE MATERIALS SHOULD BE COMPACTED TO AT LEAST 95% OF THEIR MAXIMUM DRY DENSITY AS DETERMINED BY ASTM D-1557.
2. HOT MIX ASPHALT PAVEMENT SHOULD BE COMPACTED TO 92% TO 97% OF 1'S THEORETICAL MAXIMUM DENSITY AS DETERMINED BY ASTM D-2041. A TACK COAT SHOULD BE USED BETWEEN SUCCESSIVE LIFTS OF BITUMINOUS PAVEMENT.

TYP. PAVED PARKING LOT SECTION
NOT TO SCALE

CRAIG BURGESS, P.E. #12638

STATE OF MAINE — CRAIG A. BURGESS No. 12638 — REGISTERED PROFESSIONAL ENGINEER — FINAL 10/10/18

DESIGNED	CHECKED
WTC	WTC

C	WTC	07-10-18	RESUBMIT TO CITY
B	WTC	06-21-18	REVISED PER NDEP COMMENTS
A	WTC	02-01-18	ISSUED FOR CITY SITE PLAN REVIEW
REV.	BY:	DATE:	STATUS:

THIS PLAN SHALL NOT BE MODIFIED WITHOUT WRITTEN PERMISSION FROM SEBAGO TECHNICS, INC. AND 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 A
South Portland, ME 04106
Tel: 207-200-2100

DETAILS
OF:
PORTLAND TRANSPORTATION CENTER
THOMPSON'S POINT CONNECTOR
PORTLAND, MAINE

FOR:
LANGDON STREET REAL ESTATE, INC.
7 LANGDON STREET
CONCORD, NH 03301

PROJECT NO.	SCALE
99607	NTS

SHEET 19 OF 21

99607D.dwg, 1AB.02

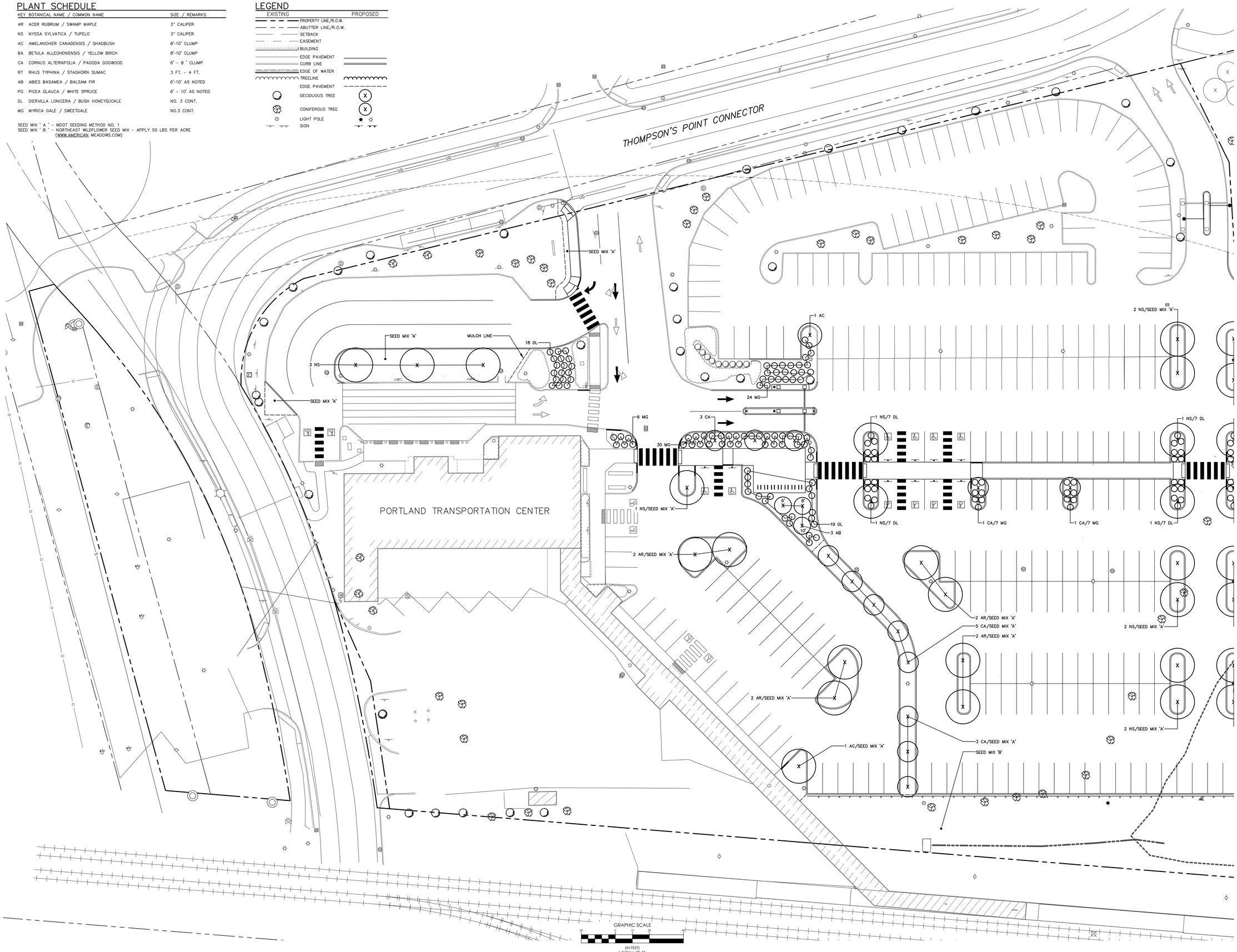
PLANT SCHEDULE

KEY	BOTANICAL NAME / COMMON NAME	SIZE / REMARKS
AR	ACER RUBRUM / SWAMP MAPLE	3" CALIPER
NS	NYSSA SYLVATICA / TUPELO	3" CALIPER
AC	AMELANCHIER CANADENSIS / SHADBUSH	8'-10' CLUMP
BA	BETULA ALLEGHENIENSIS / YELLOW BIRCH	8'-10' CLUMP
CA	CORNUS ALTERNIFOLIA / PAGODA DOGWOOD	6' - 8 ' CLUMP
RT	RHUS TYPHINA / STAGHORN SUMAC	3 FT. - 4 FT.
AB	ABIES BASAMEA / BALSAM FIR	6'-10' AS NOTED
PG	PICEA GLAUCA / WHITE SPRUCE	6' - 10' AS NOTED
DL	DIERVILLA LONICERA / BUSH HONEYSUCKLE	NO. 3 CONT.
MG	MYRICA GALE / SWEETGALE	NO.3 CONT.

SEED MIX ' A ' - MDOT SEEDING METHOD NO. 1
SEED MIX ' B ' - NORTHEAST WILDFLOWER SEED MIX - APPLY 50 LBS PER ACRE
(WWW.AMERICAN MEADOWS.COM)

LEGEND

EXISTING		PROPOSED
	PROPERTY LINE/R.O.W.	
	ABUTTER LINE/R.O.W.	
	SETBACK	
	EASEMENT	
	BUILDING	
	EDGE PAVEMENT	
	CURB LINE	
	EDGE OF WATER	
	TREELINE	
	EDGE PAVEMENT	
	DECIDUOUS TREE	
	CONIFEROUS TREE	
	LIGHT POLE	
	SIGN	



WILLIAM T. CONWAY RLA 108

REGISTERED LANDSCAPE ARCHITECT WILLIAM T. CONWAY STATE OF MAINE 07/10/19

DESIGNED	CHECKED
WTC	WTC

REV.	BY:	DATE:	STATUS:
B	WTC	07-10-18	RESUBMIT TO CITY
A	WTC	02-01-18	ISSUED FOR CITY SITE PLAN REVIEW

THIS PLAN SHALL NOT BE MODIFIED WITHOUT WRITTEN PERMISSION FROM SEBAGO TECHNICS, INC., ANY ALTERATIONS, AUTHORIZED OR OTHERWISE, SHALL BE AT THE USER'S SOLE RISK AND WITHOUT LIABILITY TO SEBAGO TECHNICS, INC.

SEBAGO TECHNICS
WWW.SEBAGOTECHNICS.COM
75 John Roberts Rd. Suite A
South Portland, ME 04106
Tel. 207-200-2100
250 Goddard Rd.
Lewiston, ME 04240
Tel. 207-783-5656

LANDSCAPE PLAN - PART A
OF:
PORTLAND TRANSPORTATION CENTER
THOMPSON'S POINT CONNECTOR
PORTLAND, MAINE
FOR:
LANGDON STREET REAL ESTATE, INC.
7 LANGDON STREET
CONCORD, NH 03301

PROJECT NO.	SCALE
99607	1" = 20'

SHEET 15 OF 21

99607Land_TAB1.1

PLANT SCHEDULE

KEY	BOTANICAL NAME / COMMON NAME	SIZE / REMARKS
AR	ACER RUBRUM / SWAMP MAPLE	3" CALIPER
NS	NYSSA SYLVATICA / TUPELO	3" CALIPER
AC	AMELANCHIER CANADENSIS / SHADBUSH	8'-10' CLUMP
BA	BETULA ALLEGHENIENSIS / YELLOW BIRCH	8'-10' CLUMP
CA	CORNUS ALTERNIFOLIA / PAGODA DOGWOOD	6' - 8 ' CLUMP
RT	RHUS TYPHINA / STAGHORN SUMAC	3 FT. - 4 FT.
AB	ABIES BASAMEA / BALSAM FIR	6'-10' AS NOTED
PG	PICEA GLAUCA / WHITE SPRUCE	6' - 10' AS NOTED
DL	DIERVILLA LONICERA / BUSH HONEYSUCKLE	NO. 3 CONT.
MG	MYRICA GALE / SWEETGALE	NO.3 CONT.

SEED MIX ' A ' - MDOT SEEDING METHOD NO. 1
SEED MIX ' B ' - NORTHEAST WILDFLOWER SEED MIX - APPLY 50 LBS PER ACRE
(WWW.AMERICAN MEADOWS.COM)

LEGEND

EXISTING		PROPOSED
	PROPERTY LINE/R.O.W.	
	ABUTTER LINE/R.O.W.	
	SETBACK	
	EASEMENT	
	BUILDING	
	EDGE PAVEMENT	
	CURB LINE	
	EDGE OF WATER	
	TREELINE	
	EDGE PAVEMENT	
	DECIDUOUS TREE	
	CONIFEROUS TREE	
	LIGHT POLE	
	SIGN	

FORE RIVER PARKWAY

I-295/CONGRESS STREET CONNECTOR

I-295 ON RAMP

2 AR/SEED MIX 'A'
1 NS/SEED MIX 'A'
1 BA/SEED MIX 'A'
2 BA/SEED MIX 'A'
2 NS/SEED MIX 'A'
1 NS/7 DL
1 AR/SEED MIX 'A'
SEED MIX 'B'

NOTE:
PERIMETER BUFFER PLANTINGS INSTALLED DURING PRELOAD PHASE

GRAPHIC SCALE
0 10 20 40
(IN FEET)
1 INCH = 20 FT.

WILLIAM T. CONWAY RLA 108
REGISTERED LANDSCAPE ARCHITECT
WILLIAM T. CONWAY
STATE OF MAINE
07/10/19

DESIGNED	CHECKED
WTC	WTC

REV.	BY:	DATE:	STATUS:
B	WTC	07-10-18	RESUBMIT TO CITY
A	WTC	02-01-18	ISSUED FOR CITY SITE PLAN REVIEW

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WWW.SEBAGOTECHNICS.COM
75 John Roberts Rd. Suite B
South Portland, ME 04106
Tel. 207-200-2100
250 Goddard Rd.
Lewiston, ME 04240
Tel. 207-783-9586

LANDSCAPE PLAN - PART B

OF
PORTLAND TRANSPORTATION CENTER
THOMPSON'S POINT CONNECTOR
PORTLAND, MAINE

FOR:
LANGDON STREET REAL ESTATE, INC.
7 LANGDON STREET
CONCORD, NH 03301

PROJECT NO.	SCALE
99607	1" = 20'

SHEET 16 OF 21

99607Landscape_1ABLL2

PLANT SCHEDULE

KEY	BOTANICAL NAME / COMMON NAME	SIZE / REMARKS
AR	ACER RUBRUM / SWAMP MAPLE	3" CALIPER
NS	NYSSA SYLVATICA / TUPELO	3" CALIPER
AC	AMELANCHIER CANADENSIS / SHADBUSH	8'-10' CLUMP
BA	BETULA ALLEGHENIENSIS / YELLOW BIRCH	8'-10' CLUMP
CA	CORNUS ALTERNIFOLIA / PAGODA DOGWOOD	6' - 8 ' CLUMP
RT	RHUS TYPHINA / STAGHORN SUMAC	3 FT. - 4 FT.
AB	ABIES BASAMEA / BALSAM FIR	6'-10' AS NOTED
PG	PICEA GLAUCA / WHITE SPRUCE	6' - 10' AS NOTED
DL	DIERVILLA LONICERA / BUSH HONEYSUCKLE	NO. 3 CONT.
MG	MYRICA GALE / SWEETGALE	NO.3 CONT.

SEED MIX ' A ' - MDOT SEEDING METHOD NO. 1
SEED MIX ' B ' - NORTHEAST WILDFLOWER SEED MIX - APPLY 50 LBS PER ACRE
(WWW.AMERICAN MEADOWS.COM)

LEGEND

EXISTING		PROPOSED
	PROPERTY LINE/R.O.W.	
	ABUTTER LINE/R.O.W.	
	SETBACK	
	EASEMENT	
	BUILDING	
	EDGE PAVEMENT	
	CURB LINE	
	EDGE OF WATER	
	TREELINE	
	EDGE PAVEMENT	
	DECIDUOUS TREE	
	CONIFEROUS TREE	
	LIGHT POLE	
	SIGN	

FORE RIVER PARKWAY

I-295/CONGRESS STREET CONNECTOR

I-295 ON RAMP

GRAPHIC SCALE
20 0 10 20 40
(IN FEET)
1 INCH = 20 FT.

WILLIAM T. CONWAY RLA 108
REGISTERED LANDSCAPE ARCHITECT
WILLIAM T. CONWAY
STATE OF MAINE
07/10/19

DESIGNED	CHECKED
WTC	WTC

REV.	BY:	DATE:
B	WTC	07-10-18
A	WTC	02-01-18

REV.: BY: DATE: STATUS:
B WTC 07-10-18 RESUBMIT TO CITY
A WTC 02-01-18 ISSUED FOR CITY SITE PLAN REVIEW

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WWW.SEBAGOTECHNICS.COM
75 John Roberts Rd. Suite A
South Portland, ME 04106
Tel. 207-200-2100
250 Goddard Rd.
Lewiston, ME 04240
Tel. 207-782-5656

PRELOAD LANDSCAPE PLAN
OF:
PORTLAND TRANSPORTATION CENTER
THOMPSON'S POINT CONNECTOR
PORTLAND, MAINE
FOR:
LANGDON STREET REAL ESTATE, INC.
7 LANGDON STREET
CONCORD, NH 03301

PROJECT NO.	SCALE
99607	1" = 20'

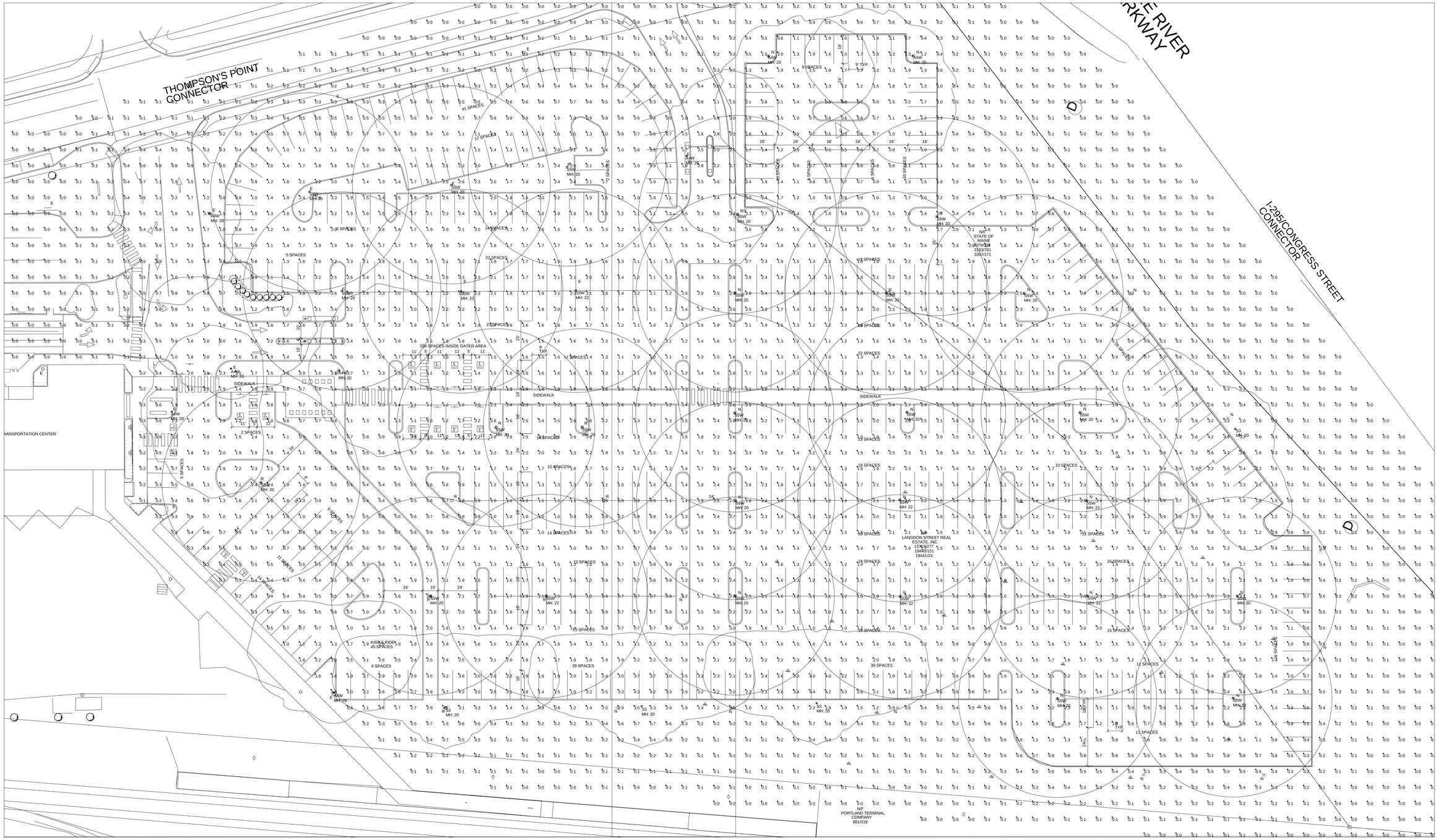
SHEET 17 OF 21

99607L-PRELOAD.dwg, TAB:PRELOAD 'L'

Calculation Summary					
Label	**Avg**	**Max**	**Min**	**Avg/Min**	**Max/Min**
SITE	0.98	4.9	0.0	N.A.	N.A.
NEW	1.56	4.9	0.3	5.2	16.3

Luminaire Schedule (note fixture catalogue numbers are not complete)						
Type	**Symbol**	**Qty**	**Lum. Lumens**	**LLF**	**Lum. Watts**	**Description**
S5W		28	12057	0.900	108	VPS-48L-110-4K7-5W
S3		4	12275	0.900	108	VPS-48L-110-4K7-3
A4W		8	7490	0.900	65	VPS-36L-65-4K7-4W

NOTES:
1) EXACT MOUNTING DETAILS TO BE DETERMINED AT JOBSITE BY OTHERS.
2) CALCULATIONS MAY or MAY NOT SHOW THE EFFECT OF SHADOWING CAUSED BY BUILDINGS AND OBJECTS WITHIN THE CALCULATED SPACE OR IN THE SITE AREA.
3) READINGS SHOWN ARE INITIAL HORIZONTAL FOOTCANDLES ON A FLAT SITE WITHOUT REFLECTIONS OR OBSTRUCTIONS UNLESS OTHERWISE INDICATED.
4) THIS CALCULATION IS BASED ON LIMITED INFORMATION SUPPLIED BY OTHERS TO SWANEY LIGHTING ASSOCIATES AND STANDARD ASSUMPTIONS OF THE SPACE AND/OR SITE.
5) CONFORMANCE TO CODES AND OTHER LOCAL REQUIREMENTS AS DETERMINED BY THE AHJ ARE THE RESPONSIBILITY OF THE OWNER AND/OR THE OWNER'S REPRESENTATIVE.
6) THIS LAYOUT DRAWING MUST BE COORDINATED WITH THE SITE LOCATION FOR CORRECT FIXTURE ORIENTATION.
7) DOCUMENTS PRINTED OR PLOTTED FROM ELECTRONIC FILES MAY APPEAR AT OTHER THAN THE DESIRED OR ASSUMED GRAPHIC SCALES. IT IS THE RESPONSIBILITY OF THE RECIPIENT TO VERIFY THAT THE PRINTED OR PLOTTED-TO-SCALE DRAWING IS PRINTED TO SCALE.



PLAN VIEW

PORTLAND TRANSPORTATION CENTER
PORTLAND, ME
SITE LIGHTING LAYOUT

prelim site 37110.AGI

GENERATED BY SWANEY LIGHTING, SCARBOROUGH ME - 207-883-7100 - swaneylighting.com

GENERATED FOR: SEBAGO TECH

SCALE NOT TO SCALE

Page 1 of 1

Date:1/22/2018

SWANEY LIGHTING ASSOCIATES, INC.

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VIPER S OPTICS STRIKE

SMALL VIPER LUMINAIRE

Cat.#	
Job	Type

BEACON design . performance . technology

Approvals

SPECIFICATIONS

Intended Use:

The Beacon Viper luminaire is available with a wide choice of different LED Wattage configurations and optical distributions designed to replace HID lighting up to 400W MH or HPS.

Construction:

- Manufactured with die cast aluminum.
- Coated with a polyester finish that meets ASTM B117 corrosion test requirements and ASTM D522 cracking and loss of adhesion test requirements.
- External hardware is corrosion resistant.
- One piece optical cartridge system consisting of an LED engine, LED lamps, optics, gasket and stainless steel bezel.
- Cartridge is held together with internal brass standoffs soldered to the board so that it can be field replaced as a one piece optical system.
- Two-piece silicone and micro-cellular polyurethane foam gasket ensures a weather-proof seal around each individual LED.

Electrical:

- 100V through 277V, 50 Hz to 60 Hz (UNV), or 347V or 480V input.
- Power factor is ≥.90 at full load.
- Dimming drivers are standard, but must contact factory to request wiring leads for purpose of external dimming controls.
- Component-to-component wiring within the luminaire may carry no more than 80% of rated load and is certified by UL for use at 600VAC at 90°C or higher.
- Plug disconnects are certified by UL for use at 600 VAC, 13A or higher. 13A rating applies to primary (AC) side only.
- Fixture electrical compartment shall contain all LED driver components and shall be provided with a push-button terminal block for AC power connections.
- Surge protection - 20kA.
- Optional 7-pin ANSI C136.41-2013 twist-lock photo control receptacle available. Compatible with ANSI C136.41 external wireless control devices.
- Lifeshield™ Circuit - protects luminaire from excessive temperature. The device shall activate at a specific, factory-preset temperature, and progressively reduce power over a finite temperature range. Operation shall be smooth and undetectable to the eye. Thermal circuit is designed to "fail on", allowing the luminaire to revert to full power in the event of an interruption of its power supply, or faulty wiring connection to the drivers. The device shall be able to co-exist with other 0-10V control devices (occupancy sensors, external dimmers, etc.).

Controls/Options:

- Available with an optional passive infrared (PIR) motion sensor capable of detecting motion 360° around the luminaire. When no motion is detected for the specified time, the Motion Response system reduces the wattage to factory preset level, reducing the light level accordingly. When motion is detected by the PIR sensor, the luminaire returns to full wattage and full light output. Please contact Beacon Products if project requirements vary from standard configuration.
- Available with Energeni for optional set dimming, timed dimming with simple delay, or timed dimming based on time of night (see www.beaconproducts.com/products/energeni).
- In addition, Viper can be specified with **SiteSync™** wireless control system for reduction in energy and maintenance costs while optimizing light quality 24/7. For more details, see ordering information or visit: www.hubbelllighting.com/sitesync

Installation:

- Mounting options for horizontal arm, vertical tenon or traditional arm mounting available. Mounting hardware included.

Finish:

- IFS polyester powder-coat electrostatically applied and thermocured. IFS finish consists of a five stage pretreatment regimen with a polymer primer sealer and top coated with a thermoset super TGIC polyester powder coat finish.
- The finish meets the AAMA 2604 performance specification which includes passing a 3000 hour salt spray test for corrosion resistance and resists cracking or loss of adhesion per ASTM D522 and resists surface impacts of up to 160 inch-pounds.

Certifications/Ratings:

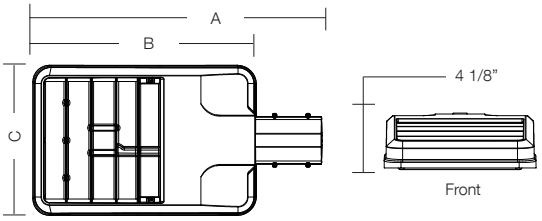
- DesignLights Consortium (DLC) qualified, consult DLC website for more details: http://www.designlights.org/QPL
- Certified to UL 1598, UL 8750 and CSA C22.2 No.250.0
- IDA approved
- This product is approved by the Florida Fish and Wildlife Conservation Commission. Separate spec available at: http://www.beaconproducts.com/products/vipersmall

Warranty:

Five year limited warranty for more information visit: www.hubbelllighting.com/resources/warranty

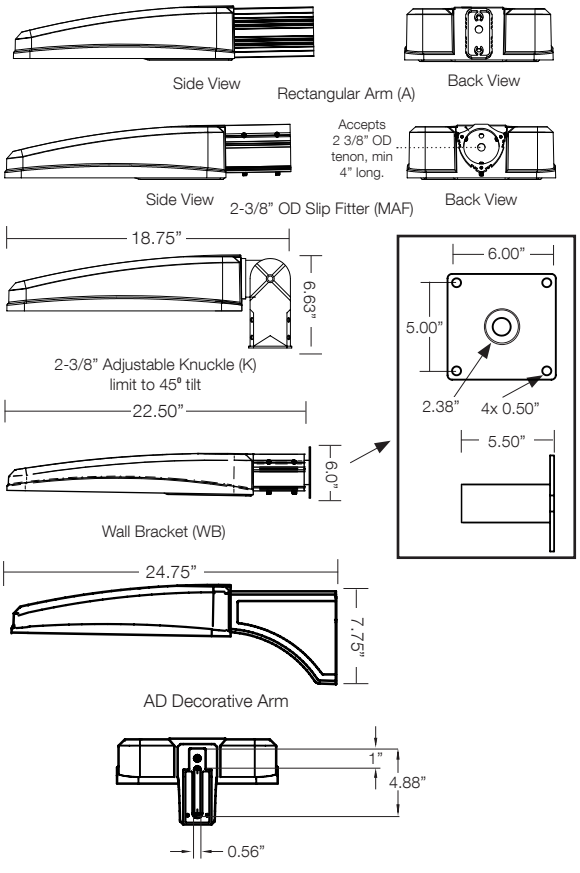
PRODUCT IMAGE(S)

DIMENSIONS



A	B	C	Weight:	EPA
21.75" (552 mm)	16.75" (425 mm)	11.25" (286 mm)	15.0 lbs (6.8 kg)	.67 ft²

MOUNTING OPTIONS



CERTIFICATIONS/LISTINGS

C SA US

ida

DLC QPL LISTED

*3000K and warmer CCTs only

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HUBBELL Lighting

ORDERING INFORMATION ORDERING EXAMPLE: VPS/24L-55/4K7/4W/UNV/A/DBT/7PR-TL/GENI-04/BC

VPS										

SERIES
VPS Viper

LED ENGINE
24L-55 55W, LED array
36L-65 65W, LED array
36L-80 80W, LED array
48L-110 110W, LED array
60L-136 136W, LED array

CCT/CRI[7]
3K7 3000K, 70 CRI
4K7 4000K, 70 CRI
5K7 5000K, 70 CRI

ROTATION
Leave blank for no rotation
L[5] Optic rotation left
R[5] Optic rotation right

VOLTAGE
UNV 120-277V
120 120V
208 208V
240 240V
277 277V
347 347V
480 480V

COLOR
DBT Dark Bronze Textured
BMT Black Matte Textured
PS Platinum Silver Smooth
WHT White Textured
CC Custom Color (RAL#)

OPTIONS
F Fusing
BSP Bird Spikes
BC Backlight control (limited to Type 4W only)

DISTRIBUTION
FR Type 1/Front Row
2 Type 2
3 Type 3
4 Type 4
4W Type 4 Wide
5QM Type 5QM
5R Type 5R (rectangular)
5W Type 5W (round wide)

MOUNTING
A Rectangular Arm (formerly RA) for square or round pole
MAF Mast Arm Fitter (formerly SF2) for 2-3/8" OD horizontal arm
K Knuckle (formerly PK2) limit to 45° tilt or 2-3/8" OD horizontal arm or vertical tenon
WB Wall Bracket
AD Universal Arm for square pole
AD3 Universal Arm for 2.4"-4.1" round pole
AD4 Universal Arm for 4.2" -5.3" round pole
AD5 Universal Arm for 5.5" -5.9" round pole
AD6 Universal Arm for 6.0"-6.5" round pole

HOUSE SIDE SHIELD ACCESSORIES
HSS/VP-S/90-FB/XXX 90° shield front or back
HSS/VP-S/90-LR/XXX 90° shield left or right
HSS/VP-S/270-FB/XXX 270° shield front or back
HSS/VP-S/270-LR/XXX 270° shield left or right
HSS/VP-S/360/XXX Full shield

(Replace XXX with notation for desired finish color)
(Refer to page 5 for shield images)

MOUNTING ACCESSORIES
VPL-AD-RPA3 2.4"-4.1" Round Pole Adapter for AD arm
VPL-AD-RPA4 4.2"-5.3" Round Pole Adapter for AD arm
VPL-AD-RPA5 5.5"-5.9" Round Pole Adapter for AD arm
VPL-AD-RPA6 6.0"-6.5" Round Pole Adapter for AD arm

CONTROL OPTIONS
7PR 7-Pin Receptacle only (shorting cap, photo control, or wireless control provided by others)
7PR-SC 7-Pin Receptacle w/Shorting Cap
7PR-TL 7-Pin Receptacle w/Twist Lock photo control
SCP/_F[1,2,6] Programmable Occupancy Sensor w/ daylight control (120-277 volts only)
GENI-XX[3] ENERGENI
SWP[1,4] SiteSync Pre-Commission
SWPM[1,2,4] SiteSync Pre-Comm w/ Sensor

PRECOMMISSIONED SITESYNC ORDERING INFORMATION: When ordering a fixture with the SiteSync lighting control option, additional information will be required to complete the order. The SiteSync Commissioning Form or alternate schedule information must be completed. This form includes Project location, Group information, and Operating schedules. For more detailed information please visit www.hubbell-automation.com/products/sitesync/ or contact Hubbell Lighting tech support at (800) 345-4928.

SiteSync fixtures with Motion control (SWPM) require the mounting height of the fixture for selection of the lens.

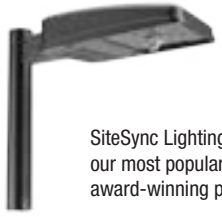
Examples: VPS/24L-55/4K7/3/UNV/A/DBT/SWP/ SiteSync only
VPS/24L-55/4K7/3/UNV/A/DBT/SWPM-40F/ SiteSync with Motion Control

[1] Not available with other wireless control or sensor options
[2] Specify mounting height; 8=8' or less, 40=9' to 40'
[3] Specify routine setting code (example GENI-04). See ENERGENI brochure and instructions for setting table and options. Not available with sensor or SiteSync options.
[4] Specify group and zone at time of order. See www.hubbelllighting.com/sitesync for further details. Order at least one SiteSync interface Accessory SWUSB or SWTAB. Each option contains SiteSync License, GUI, and Bridge Node
[5] Only available with 1A, 2, 3, 4, 4W and 5R distributions
[6] Order at least one SCP-REMOTE per project location to program and control
[7] This product is approved by the Florida Fish and Wildlife Conservation Commission. Separate spec available at: http://cdn.beaconproducts.com/content/products/specs/specs_files/Viper_Small_LED_turtle_spec_sheet.pdf

Accessories and Services (Ordered Separately)

Catalog Number	Description
SWUSB*	SiteSync interface software loaded on USB flash drive for use with owner supplied PC (Windows based only). Includes SiteSync license, software and USB radio bridge node
SWTAB*	Windows tablet and SiteSync interface software. Includes tablet with preloaded software, SiteSync license and USB radio bridge node.
SWBRG	SiteSync USB radio bridge node only. Order if a replacement is required or if an extra bridge node is requested.
SCP-REMOTE	Remote Control for SCP/_F option. Order at least one per project to program and control

* When ordering SiteSync at least one of these two interface options must be ordered per project.
+ If needed, an additional Bridge Node can be ordered.



SiteSync Lighting Control is available from our most popular brands in a broad range of award-winning product families.

Hubbell Control Solutions - Accessories (sold separately)

Catalog Number	Description	HCS System
NXOFM-1R1D-UNV	On-fixture Module (7-pin), On / Off / Dim, Daylight Sensor with HubbNET Radio and Bluetooth® Radio, 120-480VAC	NX Distributed Intelligence™
WIR-RME-L	On-fixture Module (7-pin or 5-pin), On / Off / Dim, Daylight Sensor with wiSCAPE Radio, 110-480VAC	wiSCAPE™ Lighting Control

For additional information related to these accessories please visit www.hubbellcontrolsolutions.com. Options provided for use with integrated sensor, please view specification sheet ordering information table for details.

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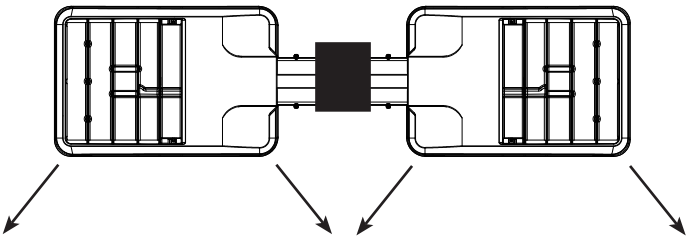
LEFT ROTATED OPTIC **RIGHT ROTATED OPTIC**



PERFORMANCE DATA

				5K (5000K nominal, 70 CRI)					4K (4000K nominal, 70 CRI)					3K (3000K nominal, 70 CRI)				
# LED'S	DRIVE CURRENT (MILLIAMPS)	SYSTEM WATTS	DISTRIBUTION TYPE	LUMENS	LPW[1]	B	U	G	LUMENS	LPW[1]	B	U	G	LUMENS	LPW[1]	B	U	G
24	700 mA	55W	FR	6357	118	1	0	1	6486	120	1	0	1	5804	107	1	0	1
			2	6132	114	1	0	1	6257	116	1	0	2	5599	104	1	0	1
			3	6015	111	1	0	2	6137	114	1	0	2	5492	102	1	0	2
			4	5921	110	1	0	2	6034	112	1	0	2	5400	100	1	0	2
			4W	5406	100	1	0	2	6041	112	1	0	2	5406	100	1	0	2
			5QM	6022	112	2	0	1	6145	114	2	0	1	5499	102	2	0	1
			5R	6063	112	3	0	3	6187	115	3	0	3	5536	103	3	0	3
			5W	5908	109	3	0	1	6028	112	3	0	1	5908	102	3	0	1
36	560 mA	65W	FR	7864	121	1	0	1	8041	124	1	0	1	7189	111	1	0	1
			2	7586	117	1	0	2	7757	119	1	0	2	6934	107	1	0	2
			3	7441	114	1	0	2	7609	117	1	0	2	6802	105	1	0	2
			4	7317	110	1	0	2	7482	112	1	0	2	6688	100	1	0	2
			4W	7325	113	1	0	2	7490	115	1	0	2	6696	103	1	0	2
			5QM	7450	115	3	0	1	7618	117	3	0	1	6810	105	3	0	1
			5R	7501	115	3	0	3	7670	118	3	0	3	6857	105	3	0	3
			5W	7309	112	3	0	2	7473	115	3	0	2	6681	103	3	0	1
36	700 mA	80W	FR	9535	118	1	0	1	9730	120	1	0	1	8706	107	1	0	1
			2	9197	114	1	0	2	9385	116	1	0	2	8398	104	1	0	2
			3	9022	111	1	0	2	9206	114	1	0	2	8238	102	1	0	2
			4	8871	110	1	0	2	9052	112	1	0	2	8100	100	1	0	2
			4W	8881	110	1	0	3	9062	112	1	0	3	8109	100	1	0	2
			5QM	9033	112	3	0	1	9217	114	3	0	1	8248	102	3	0	1
			5R	9095	112	3	0	3	9280	115	3	0	3	8304	103	3	0	3
			5W	8861	109	3	0	2	9043	112	3	0	2	8092	100	3	0	2
48	700 mA	110W	FR	12713	118	1	0	1	12973	120	2	0	1	11608	107	1	0	1
			2	12263	114	2	0	2	12513	116	2	0	2	11197	104	2	0	2
			3	12029	111	2	0	2	12275	114	2	0	2	10984	102	1	0	2
			4	11828	110	1	0	3	12069	112	1	0	3	10800	100	1	0	2
			4W	11841	110	5	0	5	12083	112	2	0	3	11841	110	1	0	3
			5QM	12044	112	3	0	2	12290	114	3	0	2	10997	102	3	0	1
			5R	12126	112	3	0	3	12374	115	3	0	3	11072	103	3	0	3
			5W	11825	109	4	0	2	12057	112	4	0	2	10789	100	4	0	2
60	700 mA	136W	FR	15891	117	2	0	2	16216	120	2	0	2	14511	107	2	0	1
			2	15329	113	2	0	2	15642	116	2	0	2	13997	103	2	0	2
			3	15037	111	2	0	3	15344	113	2	0	3	13730	101	2	0	3
			4	14784	109	1	0	3	15086	111	1	0	3	13500	100	1	0	3
			4W	14802	109	2	0	3	15104	112	2	0	3	13515	100	2	0	3
			5QM	15055	111	3	0	2	15362	114	3	0	2	13747	102	3	0	2
			5R	15158	112	4	0	4	15469	114	4	0	4	13841	102	4	0	4
			5W	14781	109	4	0	2	15083	111	4	0	2	13495	100	4	0	2

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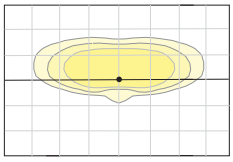
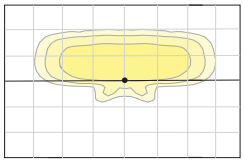
PHOTOMETRICS

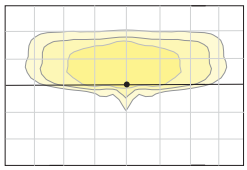
Type FR - Front Row/Auto Optic



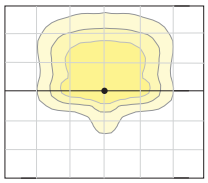
Type 2



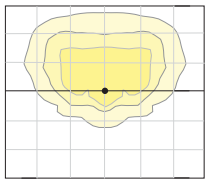
Type 3



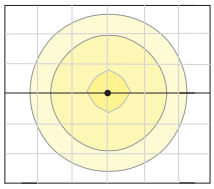
Type 4



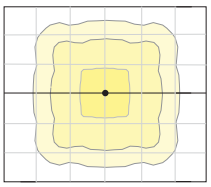
Type 4W



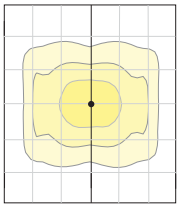
Type 5W



Type 5QM



Type 5R



[1]Lumen values are from photometric tests performed in accordance with IESNA LM-79-08. Data is considered to be representative of the configurations shown. Actual performance may differ as a result of end-use environment and application.

ELECTRICAL DATA

# OF LEDS	NUMBER OF DRIVERS	DRIVE CURRENT (mA)	INPUT VOLTAGE (V)	SYSTEM POWER (w)	CURRENT (Amps)
24	2	700 mA	120	55	0.5
			277		0.2
			347		0.2
			480		0.1
36	1	560 mA	120	65	0.65
			277		0.28
			347		0.22
			480		0.16
		700 mA	120	80	0.7
			277		0.3
			347		0.2
			480		0.2
48	1	700 mA	120	110	0.9
			277		0.4
			347		0.3
			480		0.2
60	1	700 mA	120	136	1.1
			277		0.5
			347		0.4
			480		0.3

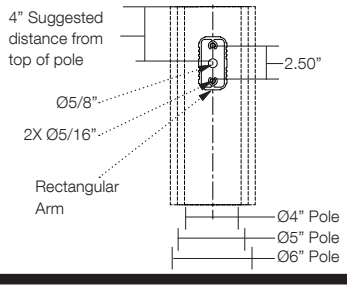
PROJECTED LUMEN MAINTENANCE

AMBIENT TEMP.	0	25,000	50,000	[1]TM-21-11 60,000	100,000	Calculated L70 (HOURS)
25°C / 77°C	1.00	0.97	0.95	0.95	0.92	>377,000

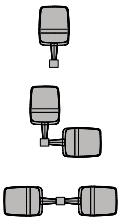
[1] Projected per IESNA TM-21-11
Data references the extrapolated performance projections for the base model in a 25°C ambient, based on 10,000 hours of LED testing per IESNA LM-80-08.

DRILL PATTERN

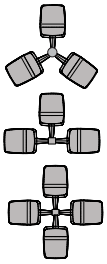
RECTANGULAR ARM (A)
Compatible with Pole drill pattern B3



EPA



Config.	EPA
1	.67
2 @ 90°	1.06
2 @ 180°	1.34



Config.	EPA
3 @ 120°	1.68
3 @ 90°	1.73
4 @ 90°	2.12

TENON TOP POLE BRACKET ACCESSORIES (Order Separately)

(2 3/8" OD tenon)

Catalog Number	Description
SETA2-XX[1,2]	Square tenon adapter (4 at 90 degrees)
RETA2-XX[1,3]	Round tenon adapter (4 at 90 degrees)
TETA2-XX[1,2]	Hexagonal tenon adapter (3 at 120 degrees)

1 Replace XX with color choice, eg.: DB for Dark Bronze
2 Only for use with AD mounting option
3 Only for use with AD3 mounting option

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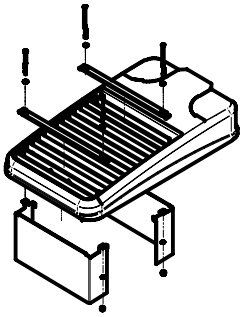
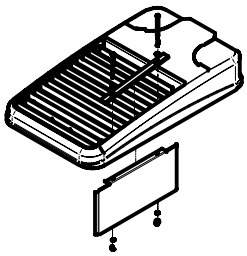
HUBBELL Lighting

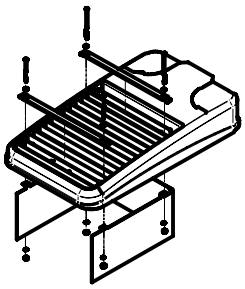
HOUSE SIDE SHIELD FIELD INSTALL ACCESSORIES



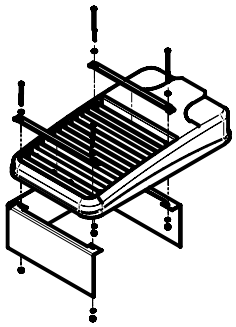
HSS/VP-S/90-FB/XXX
90° shield front or back
(2 shields shown)



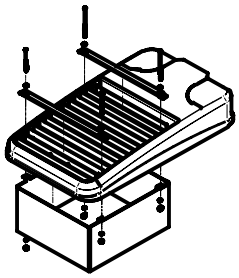
HSS/VP-S/90-LR/XXX
90° shield left or right
(1 shield shown in left orientation)



HSS/VP-S/270-FB/XXX
270° shield front or back
(1 shield shown in back orientation)

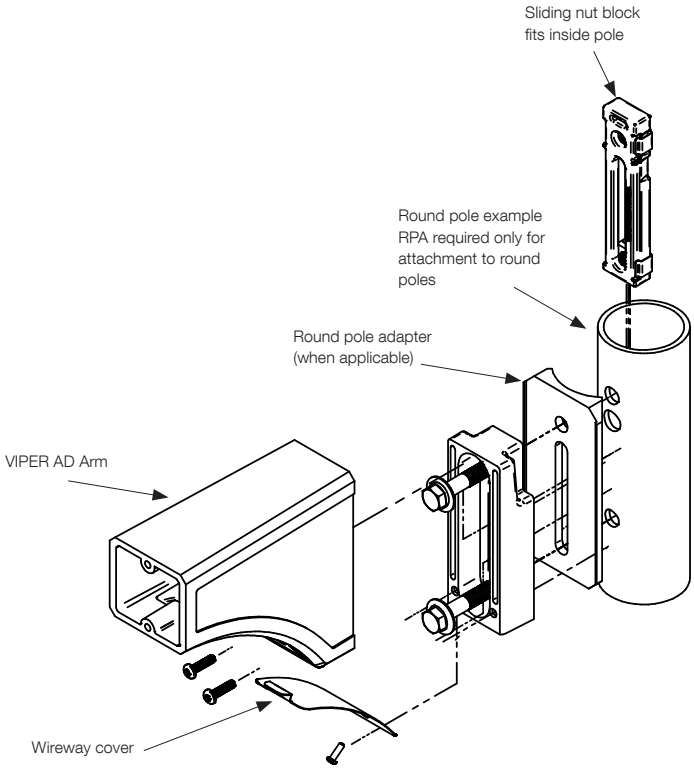


HSS/VP-S/270-LR/XXX
270° shield left or right
(1 shield shown in right orientation)

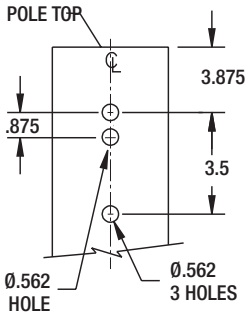


HSS/VP-S/360/XXX
Full shield (1 shield shown)

AD ARM MOUNTING INSTRUCTIONS



DECORATIVE ARM (AD)
Compatible with pole drill pattern S2



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HUBBELL Lighting

BORING LOG SUMMARY TABLE

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		DEPTH (FT.)	ELEV (FT.)	
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BgC2	BELGRADE	B	MODERATELY WELL DRAINED
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Gp	GRAVEL PITS	–	VERY POORLY DRAINED
Tm	TIDAL MARSH	–	
WmB	WINDSOR LOAMY SAND, 0-8% SLOPES	A	VERY WELL DRAINED
W	WATER	–	

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CRAIG BURGESS, P.E. #12638

STATE OF MAINE
CRAIG A. BURGESS
No. 12638
REGISTERED PROFESSIONAL ENGINEER
06/21/19

DESIGNED	CHECKED
WTC	WTC

REV.	BY:	DATE:	STATUS:
B	WTC	06-21-18	REVISED PER NDEP COMMENTS
A	WTC	02-01-18	ISSUED FOR CITY SITE PLAN REVIEW

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PRELOAD DEVELOPMENT DRAINAGE PLAN
OF:
PORTLAND TRANSPORTATION CENTER
THOMPSON'S POINT CONNECTOR
PORTLAND, MAINE
FOR:
LANGDON STREET REAL ESTATE, INC.
7 LANGDON STREET
CONCORD, NH 03301

PROJECT NO.	SCALE
99607	1" = 40'

SHEET 2 OF 3

99607SWP-POST - PRELOAD.dwg, TAB:SWP-POST PRELOAD OFFSITE

LEGEND

- WATERSHED BOUNDARY
- TIME OF CONCENTRATION (B, C)
- REACH
- 10S — WATERSHED LABEL
- 10R — REACH
- SP1 — STUDY POINT
- 11P — STORMWATER TREATMENT/DETENTION POND
- SOILS BOUNDARY

Table 1: MDEP GENERAL STANDARD CALCULATIONS: Portland Transportation Center, Portland, Maine

AREA ID	WATERSHED SIZE (S.F.)	EXISTING IMPERVIOUS AREA (S.F.)	NEW IMPERVIOUS AREA (S.F.)	EXISTING LANDSCAPED AREA (S.F.)	NEW LANDSCAPED AREA (S.F.)	DEVELOPED AREA (S.F.)	UNDEVELOPED AREAS (S.F.)	TREATMENT PROVIDED?	IMPERVIOUS AREA TREATED* (S.F.)	LANDSCAPED AREA TREATED* (S.F.)	DEVELOPED AREA TREATED* (S.F.)	TREATMENT BMP
1S	28,835	23,704	0	2,853	2,278	28,835	0	YES	23,704	5,131	28,835	SSF-1
2S	27,182	17,707	6,306	1,336	1,833	27,182	0	YES	24,013	3,169	27,182	SSF-1
3S	15,213	12,202	0	1,350	1,661	15,213	0	YES	12,202	3,011	15,213	SSF-1
4S	28,840	27,938	0	902	0	28,840	0	YES	27,938	902	28,840	SSF-1
5S	49,425	40,584	66	8,446	329	49,425	0	YES	40,650	3,693	44,343	SSF-1
6S	15,879	0	12,186	0	3,693	15,879	0	YES	12,186	3,693	15,879	SSF-1
7S	7,643	0	7,066	0	577	7,643	0	YES	7,066	577	7,643	SSF-1
8S	7,438	2,242	122	0	5,074	7,438	0	NO	0	0	0	None
9S	12,873	0	12,563	0	310	12,873	0	YES	12,563	310	12,873	SSF-1
10S	16,424	0	15,649	0	775	16,424	0	YES	15,649	775	16,424	SSF-1
11S	14,521	0	13,900	0	621	14,521	0	YES	13,900	621	14,521	SSF-1
12S	9,667	0	9,667	0	0	9,667	0	YES	9,667	0	9,667	SSF-1
13S	12,123	0	10,776	0	1,347	12,123	0	YES	10,776	1,347	12,123	SSF-1
14S	8,897	0	8,240	0	657	8,897	0	YES	8,240	657	8,897	SSF-1
15S	30,398	0	28,392	0	2,006	30,398	0	YES	28,392	2,006	30,398	SSF-1
16S	91,275	892	0	0	0	892	90,383	NO	0	0	0	None
17S**	34,419	25,344	0	9,075	0	34,419	0	NO	0	0	0	None
SUM	411,052	150,613	124,933	23,962	21,161	320,669	90,383	-	246,946	25,892	272,838	-

Designations: SSF= Subsurface Sand Filter

*TOTAL IMPERVIOUS AREA (Ac.)	250,202	*TOTAL DEVELOPED AREA (Ac.)	286,250
TOTAL IMPERVIOUS AREA RECEIVING TREATMENT (Ac.)	246,946	TOTAL DEV. AREA RECEIVING TREATMENT (Ac.)	272,838
% OF IMPERVIOUS AREA RECEIVING TREATMENT	98.7%	% OF DEV. AREA RECEIVING TREATMENT	95.3%

*INCLUDES EXISTING IMPERVIOUS AND DEVELOPED AREAS THAT ARE CURRENTLY RECEIVING TREATEMENT

**INCLUDES EXISTING IMPERVIOUS AND DEVELOPED AREAS THAT ARE NOT CURRENTLY RECEIVING TREATEMENT AND WILL NOT RECEIVE TREATMENT IN POST DEVELOPMENT

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GRAPHIC SCALE
0 30 60 120
(IN FEET)
1 INCH = 60 FT.

CRAIG BURGESS, P.E. #12838

STATE OF MAINE — CRAIG A. BURGESS — 12838 — REGISTERED PROFESSIONAL ENGINEER — 06/21/19

DESIGNED	CHECKED
WTC	WTC

REV.	BY:	DATE:	STATUS:
B	WTC	06-21-18	REVISED PER MDEP COMMENTS
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POST DEVELOPMENT DRAINAGE PLAN OF PORTLAND TRANSPORTATION CENTER

THOMPSON'S POINT CONNECTOR
PORTLAND, MAINE

FOR:
LANGDON STREET REAL ESTATE, INC.
7 LANGDON STREET
CONCORD, NH 03301

PROJECT NO.	SCALE
99607	1" = 60'

SHEET 3 OF 3

99607SWP-POST.dwg, TAB:SWP-POST Offsite

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CRAIG BURGESS, P.E. #12838

STATE OF MAINE
CRAIG A. BURGESS
No. 12838
REGISTERED PROFESSIONAL ENGINEER
06/21/19

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WTC	WTC

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OF
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PORTLAND, MAINE
FOR:
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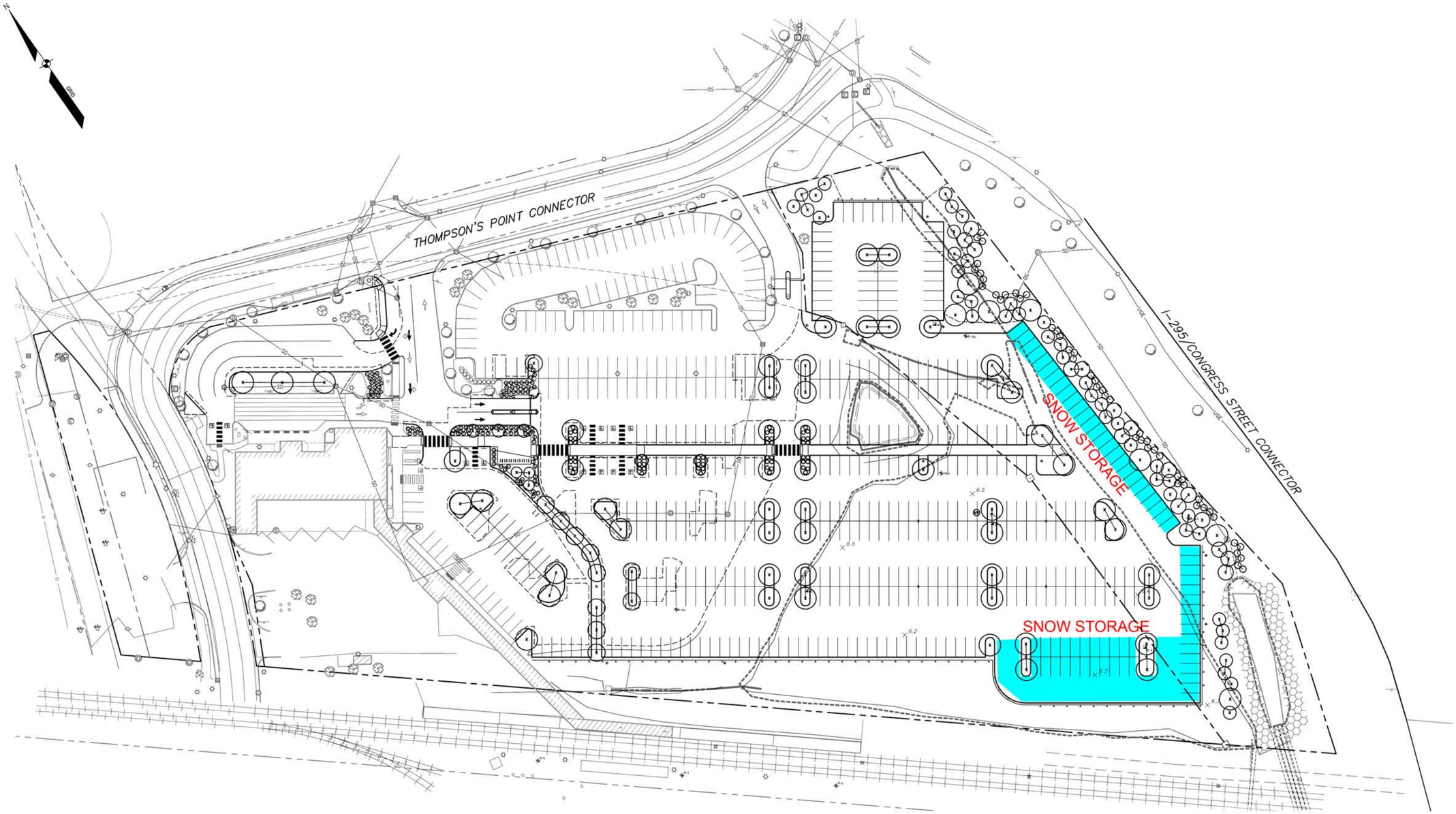
PROJECT NO.	SCALE
99607	1" = 60'

SHEET 1 OF 2

99607-SWP-PRE.dwg, TAB:SWP-PRE Offsite



NOTE : SNOW STORAGE AREAS ARE PLANNED TO BE LOCATED IN THE PARKING SPACES MOST DISTANT FROM THE TERMINAL BUILDING. TRANSIT RIDERSHIP IS DECREASED DURING WINTER MONTHS , THEREFORE , THE LOSS OF THESE PARKING SPACES IS ACCEPTABLE . SNOW STORAGE AREAS ARE ALSO DESIGNATED TO AVOID DAMAGE TO THE PERIMETER LANDSCAPE BUFFERING AND INTERIOR TREE ISLANDS.

GRAPHIC SCALE
(IN FEET)
1 INCH = 40 FT.

WILLIAM T. CONWAY RLA 105

DESIGNED	CHECKED
WTC	WTC

REV.	BY	DATE	STATUS
REV.	BY	DATE	STATUS

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LANDSCAPE PLAN
OF
PORTLAND TRANSPORTION CENTER
THOMPSON'S POINT CONNECTOR
PORTLAND, MAINE
FOR:
LANGDON STREET REAL ESTATE, INC.
7 LANGDON STREET
CONCORD, NH 03301

PROJECT NO.	SCALE
99607	1"=40'

SHEET - OF -

Memorandum
Planning and Urban Development Department
Planning Division

To: Chair Dundon and Members of the Portland Planning Board
From: Jean Fraser, Planner
Date: June 13, 2018
Re: Level III Subdivision: Capisic Meadows 8 Lot Subdivision
130 Bancroft Street

Project # PL000092-2018
WB Group, Inc, Applicant

Meeting Date: June 17th, 2018

I. INTRODUCTION

Northeast Civil Solutions, Inc, on behalf of WB Group, Inc., has submitted a Level III Subdivision application for an 8 lot subdivision that comprises the applicants lot and house, and adds 7 new lots within the adjacent wooded area to the south west.

The site is 2.9 acres in area and located in the R3 residential zone. The proposals include a new street to be constructed to City standards, with a sidewalk on one side, and a new detention basin on the western boundary that would connect with an existing drainage easement to Capisic Street.

The project involves the filling of 10,741 sq ft of forested freshwater wetlands that are in pockets throughout the site, and the project has obtained a Tier 1 NRPA Permit from the MDEP that approves the wetland fill (Attachment H).

The Planning Board is requested to review the application under Portland's Subdivision ordinance.

A total of 164 notices of this Workshop were sent to neighbors and interested parties within 500 feet, and the legal notice appeared in the July 6th and 9th, 2018 editions of the *Portland Press-Herald*. A Neighborhood meeting was held on June 19, 2018 and attended by 21 neighbors (see notes in Attachment K) . The Planning office has received 13 public comments representing 12 neighbors, of which 9 are objections and 3 in support (PC1- PC 13). Those objecting cite the loss of wetland and wooded areas, potential disruption to the local water drainage pattern, concerns about the impacts and future maintenance of the open stormwater detention basin, and the intrusion of traffic and noise.

Applicant: WB Group, Inc (Joshua Wagner, owner)
Consultants: Northeast Civil Solutions (Michael Skolnick)

II. REQUIRED REVIEWS AND WAIVER REQUESTS

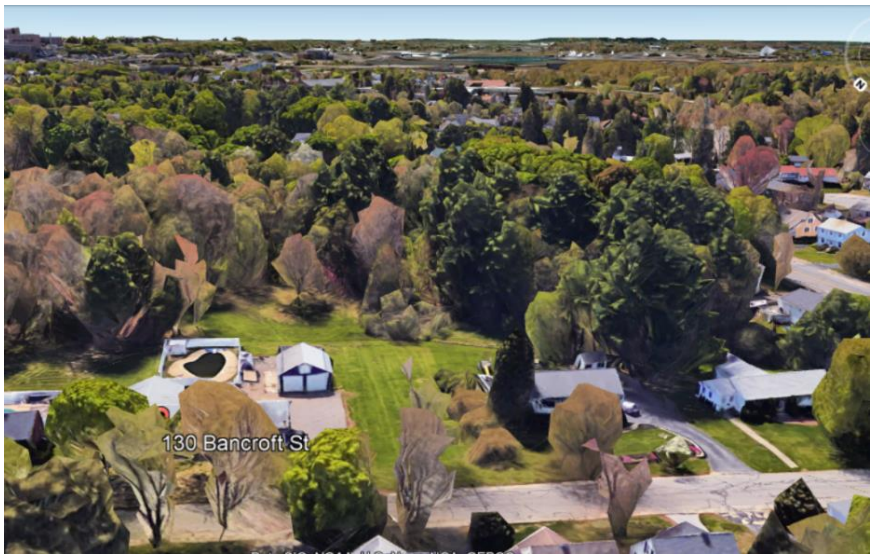
Review	***Applicable Standards***
Subdivision – creation of 7 new lots combined with an existing lot (total 8)	*Section 14-497*
Waiver Requests	***Applicable Standards***
Sidewalk Waiver requested to allow for one sidewalk to be located on the south side of the proposed new street. Staff Recommendation: The waiver is supported in principle, but it is not clear which side of the street the sidewalk should be located. The applicant is requested to provide further comparison information regarding the wetland impacts and impervious surface area of each option so that a final determination can be made. (Att. 1)	*Section 14-498 8a* requires that sidewalks be constructed on each side of each street in accordance with article III of Chapter 25.

III. PROJECT DATA

Existing Zoning	R3 Residential		
Existing Use	One single family lot and undeveloped woodlands		
Proposed Use	Eight single-family lots, including the existing lot owned by the applicant		
Parcel Size	117,258 sq ft		
	Existing	*Proposed*	*Net Change*
Wetland Area	Not submitted - shown on boundary survey Plan 2	Not submitted – shown on plans	(11,318 sq ft per Stormwater Report) (10,741 sq ft per NRPA approval)
Impervious Surface Area	12,459 sq ft	39,466 sq ft	27,007 sq ft
Building Footprint	0 SF	0 SF (Buildings are not proposed at this time)	0 SF
Number of Residential Units	1	7 New Lots	+7 Lots
Estimated Cost of Project	Awaiting Cost Estimate		

IV. EXISTING CONDITIONS

The proposed site is just under 3 acres and accessed from Bancroft Street between two existing homes. The site widens out to the southwest, going back about 400+ feet from Bancroft Street. There are existing homes along all of the boundaries, though not all are in close proximity.

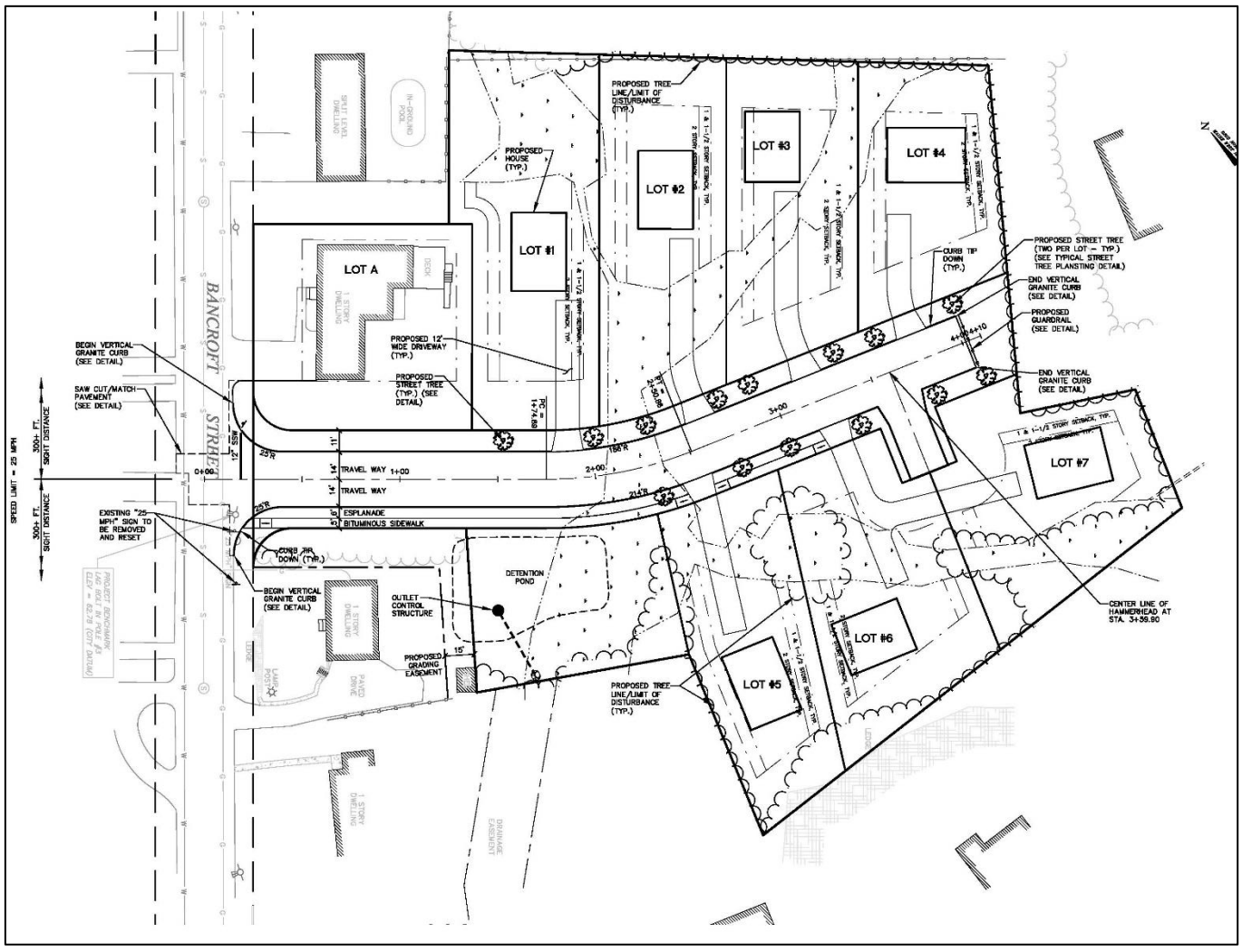


Bancroft Street is a relatively quiet street linking Capisic Street with Brighton Avenue. The new access for the 7 new back land lots would enter Bancroft Street immediately behind the 25mph sign in the photo right.

V. PROPOSED DEVELOPMENT

The applicant proposes a new street to be called Benjamin Way, and 7 new single family house lots and one lot for the detention basin as shown in the draft Subdivision Plat (Plan 3) and Site Plan (Plan 4 and below). The street (with one sidewalk), stormwater system, and street trees would be constructed by the applicant. Street lights do not appear to have been included.

It is not known whether blasting will be required to construct the stormwater system and new street. The City has a comprehensive Blasting ordinance that would need to be followed in that case; it requires surveys prior to the blasting work and other measures to ensure there is no impact on nearby properties. A condition on any approval would require this ordinance to be followed.



VI ZONING ANALYSIS

The proposed subdivision is located in the R3 residential zone and the lots all meet the dimensional standards of that zone. Staff have consulted with the Zoning Administrator to confirm that all of the lots meet the lot width requirement of 65 feet.

For the final submissions the applicant should include full zoning information on the plat and site plan, listing both the required and the proposed dimensions.

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

1. *Will Not Result in Undue Water and Air Pollution (Section 14-497 (a) 1), and Will Not Result in Undue Soil Erosion (Section 14-497 (a) 4)*
   The proposal does not appear to raise any concerns regarding this standard.

2. *Sufficient Water Available (Section 14-497 (a) 2 and 3)*
   The applicant has provided a letter from the Portland Water District confirming the district's ability to serve the proposed project.

3. *Will Not Cause Unreasonable Traffic Congestion (Section 14-497 (a) 5)*
   The Traffic Engineering reviewer has confirmed that the project is not expected to create unacceptable safety of traffic mobility issues (Attachment 1). The waiver request to provide one sidewalk is supported in principle, subject to further information as noted under "Waivers" above.

4. *Will Provide for Adequate Sanitary Sewer and Stormwater Disposal (Section 14-497 (a) 6), and Will Not Cause an Unreasonable Burden on Municipal Solid Waste and Sewage (Section 14-497 (a) 7)*
   The applicant has submitted a wastewater capacity application to the Department of Public Works requesting confirmation of adequate sewer capacity and the confirmation is awaited. Since the proposed street will be built to City standards and accepted by the City Council, solid waste and snow removal will then be handled by the City.

   Under Section 5 of the City of Portland Technical Manual, a Level III development project is required to submit a stormwater management plan pursuant to the regulations of MaineDEP Chapter 500 Stormwater Management Rules, including conformance with the Basic, General, and Flooding Standards. The City's Peer Engineering Reviewer has reviewed the submitted Stormwater report (Attachment I) and provided detailed comments (Attachment 1); the applicant has responded to the comments (Attachment N.) although the plans do not reflect all of the updates. The Peer Engineer Lauren Swett recently met with the applicant and reviewed the further information in Attachment N; Ms Swett concludes (Attachment 3):

   - *The Applicant has provided additional information with regards to maintenance of the stormwater systems proposed throughout the site. They have noted that the Homeowners Association will be responsible for the maintenance, and HOA documents will be provided for review. Please note that a Stormwater Maintenance Agreement with the City of Portland will also be required.*
   - *The Applicant has received their DEP wetland permit, and they have worked with the Army Corps on design changes to ensure their approval. The Applicant has noted that these design changes include upsizing of many of the culverts on site, and these changes impact the HydroCAD. The HyrdroCAD has not yet been uploaded to Eplan, but I will review that material when it is provided after the Workshop. I don't anticipate any issues as the pipes capacity will increase.*

- *The existing drainage easement was discussed as part of the meeting on July 10, and that Applicant noted that they would do further research into that easement, and provide additional information. They have addressed this in their July 11 response to comments, and note that per the City's request, they will be cleaning out this area. Following the workshop, additional information should be provided on the grading and drainage plan to show the extent of clearing in this area.*

  In general, the Applicant has been responsive to comments, and they are providing for adequate management of stormwater from their site, and from off-site areas within the project area.

The City's records indicate that the 30 foot drainage easement out to Capisic Street is not a City easement, so further clarification/information is required to confirm that the applicant has rights to alter or use this easement as proposed and described further in Attachment N.

The issue of future responsibility for the various elements of the stormwater system (pipes on private property, detention pond and drainage channel) has not been fully clarified. The applicant is not going to be constructing the individual homes, and has not set out the mechanism by which a HomeOwners Association would be established and funded to undertake the substantial maintenance that will be required in the future. The draft Subdivision Plat (Plan 3) does not show the stormwater system nor address this question. Further information regarding the mechanism for creating a Home Owners Association, and a revised plat, should be part of the final submissions to clarify this issue.

5. *Scenic Beauty, Natural, Historic, Habitat and other Resources (Section 14-497 (a) 8)*
   The proposed additional 7 lots would be located on undeveloped land consisting of woodland and freshwater forested wetland. Although the applicant has indicated at the neighborhood Meeting (Attachment K) that significant trees would be retained, staff recommend that for the final plan review a tree survey be undertaken to locate the trees over 10 dbh, and a landscape and treesave plan be prepared for inclusion in the final submission.

6. *Comprehensive Plan (Section 14-497 (a) 9)*
   The proposal in conformance with the housing policies of the adopted Comprehensive Plan.

7. *Financial Capability (Section 14-497 (a) 10)*
   he applicant has submitted a letter from Bath Savings Institution indicating the applicant has the financial capability to finance the project.

8. *Wetland and Groundwater Impacts, Flood-Prone Area*
   The applicant intends to fill 11,318 sf of wetlands as noted in the Stormwater Report, and has received a Tier I NRPA permit from MDEP for 10,741 of wetland fill (Attachment H.). These figures, and some of the impervious surface impact figures, are not consistent in different parts of the submission and the final submissions should confirm the final numbers and that the proposals are within the Tier 1 approval. The percentage of the total existing wetland to be filled has not been clarified in the submissions, but the layout of the project appears to have minimized the impacts.

   The applicant submitted a Wetland Report (Attachment G) which does not appear complete. It refers to a MDEP Determination that the site does not contain a stream, and that determination and the delineator's wetland plan should be submitted, along with calculations of areas.

XIII NEXT STEPS (PRIOR TO FINAL PLAN SUBMISSION) TO INCLUDE:

1. Submit final Subdivision Plat that clarifies stormwater management system location and responsibilities and includes all dimensions (eg lot frontage);
2. Submit documentation as to the rights and responsibilities in relation to the existing drainage easement being upgraded and utilized to drain the detention pond;
3. Clarify the mechanism (HomeOwners Association) that will ensure future maintenance of the stormwater system;
4. Submit further comparison information to help determine the preferred location for the sidewalk;
5. Submit a Landscape Plan to include treesaves based on a tree survey;
6. Submit copy of the MDEP determination that there is not a stream on the site;
7. Clarify regarding street lighting;
8. Provide final figures for existing and proposed areas of wetlands and impervious surfaces, and complete zoning assessment;
9. Address the staff review, Memo and Planning Board comments.

Attachments to Memorandum

1. Traffic Review Comments
2. Preliminary Peer Engineer and Fire Review Comments
3. Update to Peer Engineering Review Comments
4. City Arborist comments (not received at time of Memo completion)

Public Comment

PC1 Peter Carpenter 6-5-18

PC2 Douglas Babkirk 6-5-18

PC3 Jeff Emerson 6-7-18

PC4 Doug Babkirk 6-7-18

PC5 Jacqueline Harkins 6-8-18

PC6 Oliver and Ellen Griswold 6-8-18

PC7 Judy Gailen 6-13-18

PC8 Ken & Kari Doiran 6-13-18

PC9 Sarah Delisle 6-14-18

PC10 Estelle Heureux 7-6-18

PC11 Caleb Oconnell 7-9-18

PC12 Diane Herrick 7-10-18

PC13 Jacqueline Harkins 7-3-18

Applicant's Submittal

A. Cover Letter
B. Agent Authorization
C. Right, Title and Interest
D. Financial Capacity
E. Technical Ability
F. Traffic Evaluation

G. Wetland Report
H. DEP Wetland Fill Approval and application
I. Stormwater Management Report incl Insp & Main
J. Utility Letters
K. Neighborhood Meeting info & Notes
L. Construction Management Plan
M. Sidewalk Waiver Request
N. Response to comments 7.11.18

Plans

1. Cover Page
2. Boundary Survey
3. Subdivision Plat
4. Site Plan- Layout
5. Grading Plan
6. Utility Plan
7. Erosion Control
8. Erosion Control notes & details
9. Details (6 sheets)
10. Road Profile
11. Pre-Development Drainage
12. Post-Development Drainage

Portland Maine Yes. Google's good here.

Jean Fraser <jf@portlandmaine.gov>

Bancroft Subdivision - Preliminary Traffic Comments

1 message

Tom Errico <thomas.errico@tylin.com> Wed, Jul 11, 2018 at 4:20 PM
To: Jean Fraser <jf@portlandmaine.gov>
Cc: Keith Gray <kgray@portlandmaine.gov>, Jeremiah Bartlett <JBartlett@portlandmaine.gov>, Bruce Hyman <bhyman@portlandmaine.gov>, "Jeff Tarling (JST@portlandmaine.gov)" <JST@portlandmaine.gov>

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

- The applicant has conducted a traffic assessment and I find the conclusions to be acceptable. The project is not expected to create unacceptable safety or traffic mobility issues.

- The applicant is requesting a waiver for the provision of sidewalks on both sides of the proposed subdivision road. I support the waiver given impact to wetlands and landscape resources and that a reasonable alternative exists (the proposed sidewalk). It is not clear which side of the street the sidewalk should be located. The applicant should provide comparison information, particularly wetland impacts, in making a decision on sidewalk location.

If you have any questions, please contact me.

Best regards,

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

"One Vision, One Company"

PLAN CORRECTIONS REPORT PL-000092-2018
FOR CITY OF PORTLAND

PLAN ADDRESS: 130 Bancroft St
Portland, ME 04102

PARCEL: 193 E026001

APPLICATION DATE: 05/02/2018

SQUARE FEET: 0.00

DESCRIPTION: 8 Lot Subdivision

EXPIRATION DATE:

VALUATION: $0.00

CONTACTS	Name	Company	Address
Agent/Representative	Michael Skolnick	Northeast Civil Solutions	381 Payne Road Scarborough, ME 04074

Corrections Required

City Arborist — Jeff Tarling

Civil Engineering - Third Party Reviewer — Lauren Swett

v.1.00 - Not Resolved

Correction: General
The Applicant has submitted a copy of the NRPA Application to the DEP for proposed wetland fill.
Corrective Action: Copies of all final permit approvals should be forwarded to the City upon receipt.

Correction: General
The stormwater inspection and maintenance plan should include provisions for the requirements of Chapter 32 of the City of Portland Code of Ordinances, as well as inspection and maintenance requirements for the proposed Filterra Units and Detention Pond.
Corrective Action: Update the stormwater inspection and maintenance plan.

Correction: General
The Applicant has stated that the lot impervious areas were included in the HydroCAD model, however the narrative report indicates that there will be 0.62-acres of new impervious area and the model indicates that there will be only 0.48-acres of new impervious area.
Corrective Action: Clarify the amount of impervious surface that has been modeled, and confirm that it includes all impervious surface anticipated to drain to the pond.

Correction: General
Note that the standard detail for Sidewalk Ramp Detectable Warning Panels was revised in October 2017. The acceptable material is now uncoated cast iron.
Corrective Action: Please revise the detail.

Correction: General
The Grading and Drainage Plan indicates that SD-7 will be a 15-inch pipe, but the HydroCAD model indicates that it is 18-inches. The dimensions of the emergency spillway are also inconsistent between the plans and the model.
Corrective Action: The Applicant should clarify and ensure that the drawings and the model are consistent.

Correction: General
Proposed details include a “Type B Underdrain Installation Detail – Alternative A” that shows underdrain along the roadside edge under curbing; however, the proposed grading and drainage plan does not show locations or discharge points for proposed underdrain.
Corrective Action: Clarify the use of underdrain on the site.

Correction: General
A construction management plan has not been provided.
Corrective Action: Provide a construction management plan using the City’s template which is available online http://www.portlandmaine.gov/DocumentCenter/View/18030

Correction: General
All piping installation within the proposed roadway is required to be in conformance with the City’s Technical Manual, Section 2 Sanitary Sewer and Stormdrain. This includes material types and installation. Note that the City of Portland requires HDPE stormdrain pipe to be ADS HP triple-wall pipe. Refer to figure II-12 for the typical pipe trench installation.
Corrective Action: Update the plans and details to be in conformance with the City’s standards.

Correction: General
We have reviewed the Grading and Drainage Plan, and there are a few areas where the grading is not detailed enough to show that water will not be directed towards the building foundations. Specifically on Lots 5, 6, and 7. Additional spot grades are also recommended in the area between Lots 2 and 3, the area in front of Lot 4 and the area adjacent to the retaining wall at the edge of the detention pond to clearly define grading such that ponding will not occur.
Corrective Action: Provide updated Grading and Drainage Plan.

Correction: General

Filterra units are proposed for installation within the future City Right Of Way. The Applicant should discuss the maintenance of these systems with the City of Portland Department of Public works to determine if they will be maintained by the City or if maintenance will be required by the owners. In addition, a system of culverts extends through the site, both over private property and the City Right Of Way, to a stormwater pond that is located on private property. Responsibility of maintenance of all stormwater systems should be clearly established, and Stormwater Maintenance Agreements are required in conformance with the City's Chapter 32.

Corrective Action: Provide Stormwater Maintenance Agreements.

Fire	Robert Thompson
Planning	Jean Fraser
Public Works Engineering	Keith Gray
Public Works Water Resources Engineering	Doug Roncarati
Traffic - Third Party Reviewer	Tom Errico
Transportation/Planning	Bruce Hyman
Zoning	Pool Zoning

Conditions Required

Fire: Sprinkler One- and Two-Family

General Condition

All homes will be required to be sprinklered.

Life Safety: Fire Dept Access

General Condition

Fire Department access to all homes is acceptable.

General Condition

A 30 x 30 turnaround is required at the dead end of the road.

Life Safety: General

General Condition

The fire hydrant at the end of the road must be removed. No fire hydrant is required for this project.

Portland Maine | Yes. Google's good here.

Jean Fraser <jf@portlandmaine.gov>

Bancroft Street

1 message

Lauren Swett <lswett@woodardcurran.com> Fri, Jul 13, 2018 at 7:11 AM
To: Jean Fraser <jf@portlandmaine.gov>
Cc: Keith Gray <kgray@portlandmaine.gov>

Hi Jean,

I've taken a quick look at the additional information that the Applicant uploaded yesterday. Based on what they've provided, the meeting that we had on July 10, and the public comments I have reviewed, I have the following comments:

- The Applicant has provided additional information with regards to maintenance of the stormwater systems proposed throughout the site. They have noted that the Homeowners Association will be responsible for the maintenance, and HOA documents will be provided for review. Please note that a Stormwater Maintenance Agreement with the City of Portland will also be required.
- The Applicant has received their DEP wetland permit, and they have worked with the Army Corps on design changes to ensure their approval. The Applicant has noted that these design changes include upsizing of many of the culverts on site, and these changes impact the HydroCAD. The HyrdroCAD has not yet been uploaded to Eplan, but I will review that material when it is provided after the Workshop. I don't anticipate any issues as the pipes capacity will increase.
- The existing drainage easement was discussed as part of the meeting on July 10, and that Applicant noted that they would do further research into that easement, and provide additional information. They have addressed this in their July 11 response to comments, and note that per the City's request, they will be cleaning out this area. Following the workshop, additional information should be provided on the grading and drainage plan to show the extent of clearing in this area.

In general, the Applicant has been responsive to comments, and they are providing for adequate management of stormwater from their site, and from off-site areas within the project area.

If you have any questions, please let me know. I started to mark some of my comments as resolved on Energov, but I will wait until after the Workshop when they provide their updated HydroCAD and complete updated plan set.

Thanks,

Lauren

Lauren Swett, P.E.*

Technical Manager

Woodard & Curran

41 Hutchins Drive

Portland, Maine 04102

SURVEYING ENGINEERING LAND PLANNING

Northeast Civil Solutions

INCORPORATED

www.northeastcivilsolutions.com

41041
April 30, 2018

City of Portland, Planning and Development
389 Congress Street
Portland, Maine 04101

RE: Level III Subdivision Review – Preliminary Submission (130-144 Bancroft Street)
WB Group, Inc. – Capisic Meadows – 8 Lot Subdivision

To whom it may concern;

On behalf of WB Group Inc., Northeast Civil Solutions, Inc.(NCS) is pleased to submit the attached application and associated materials for Preliminary Review review by staff and the Planning Board for a proposed 7 lot residential subdivision located off of Bancroft Street. The proposed development will feature 7 new single family residential lots. The developer will construct the proposed road, stormwater facilities and associated grading for the entirety of the residential subdivision. The developer does not intend on building the individual houses.

The proposed subdivision will be located at properties identified as 130 & 144 Bancroft Street. The property is comprised of approximately 2.9 acres of land, mostly forested land (with the exception of lawn, patio and pool area of an existing single family dwelling which will be removed). The land has been fully surveyed, has been delineated for wetlands. Currently zoned Residential 3 (R-3), the proposed residential subdivision is an allowed use in the area pursuant to municipal review for subdivision and site plan.

The development will be accessed by a single paved road and feature a road, Benjamin Way, intended to be accepted as a city street. The proposed access road will feature vertical curbing on both sides with a sidewalk extending down northerly side (please see waiver request for duel sidewalks). All utilities will be extended from Bancroft Street down the proposed right-of-way (ROW) to service the proposed subdivision (please see attached ability to serve letters). A fire hydrant will be placed at the end of the proposed ROW servicing the entirety of the subdivision; meanwhile the street will be built to city standards allowing for compatible for emergency vehicle access. Stormwater from the proposed roadway will be collected and treated with the use of two stormwater Filterra units. Additional site runoff will be directed to a detention pond for peak control. The detention pond will be located near the front portion of the lot. The proposed project will also require a Tier I wetland dill permit from the DEP for 11,318 SF of wetland fill or wetland impacts.

Each of the proposed subdivision lots will provide off-street parking to service the single family residential dwellings via a paved driveway. Runoff will be directed to the proposed ponds via an open stormwater system which will be implemented throughout the development. Please see the attached Stormwater Report for further details.

WB Group, Inc. and NCS will conduct a neighborhood meeting as required for all applicable abutters to the property, at which we fully explained the proposed project to those in attendance. The impact to the surrounding residents will be minimal (there is no intention at this time for any vehicular connection to Redlon Park road), and most of the other properties in the vicinity are either previously existing residentially develop or undeveloped. Traffic counts have already been completed, and a traffic report will be included with all other submission materials for Planning Board review in the near future. The proposed development is constant with the city's master plan.

Having already met with City staff, NCS would like to meet with the Planning Board to discuss this project in somewhat greater detail and solicit comments from Board members. Ideally, we propose to meet with the Planning Board during the course of this spring/summer for preliminary and final project approval, with the intent to begin construction in the upon approval. We look forward to presenting this project to the Board.

Please contact us if you have any questions or comments. Thank you.

Sincerely,
Northeast Civil Solutions, Inc.

Michael Skolnick
Land Use Regulatory Specialist

CC: Tony Panciocco, P.E., NCS
Joshua Wagner, Owner, WB Group, Inc.

Portland, Maine Yes. Life's good here.

Planning & Urban Development Department

LEVEL II and LEVEL III APPLICATION SUBMISSION CHECKLIST

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

Please confirm by electronically checking the boxes to the left

Tab 1 – General Application Documents

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

LEVEL II AND LEVEL III SITE PLAN STANDARDS AND SUBMISSION CHECKLIST

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

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

Tab 2 - TRANSPORTATION

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

Tab 3 - ENVIRONMENTAL AND LANDSCAPE FEATURES

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

Tab 4 - ENVIRONMENTAL AND STORMWATER

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

Tab 5 - PUBLIC INFRASTRUCTURE AND SAFETY

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

Tab 6 - SITE DESIGN

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

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

Level II and Level III Site Plan Checklist

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

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

Must be in compliance with Technical Manual, Section 13

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

☑ Existing Conditions

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

☑ Proposed Site Plan

- Ground floor area, and grade elevations for all buildings

☑ Access, Circulation, and Parking

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

☑ Site Considerations

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

☑ **UTILITY PLAN** including:

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

☑ **GRADING and DRAINAGE PLAN** including:

- Existing grades and drainage
- Proposed grades
- Proposed stormwater management meeting Technical Manual (Section 5) standards
- Location and proposed alteration of a water course
- Preservation or alteration of wetlands

☑ **EROSION CONTROL**

- Must be in compliance with Technical Manual, Section 5

☐ **LANDSCAPE PLAN** including:

- Existing vegetation to be preserved and preservation measures
- Proposed landscaping and buffers
- Planting schedule

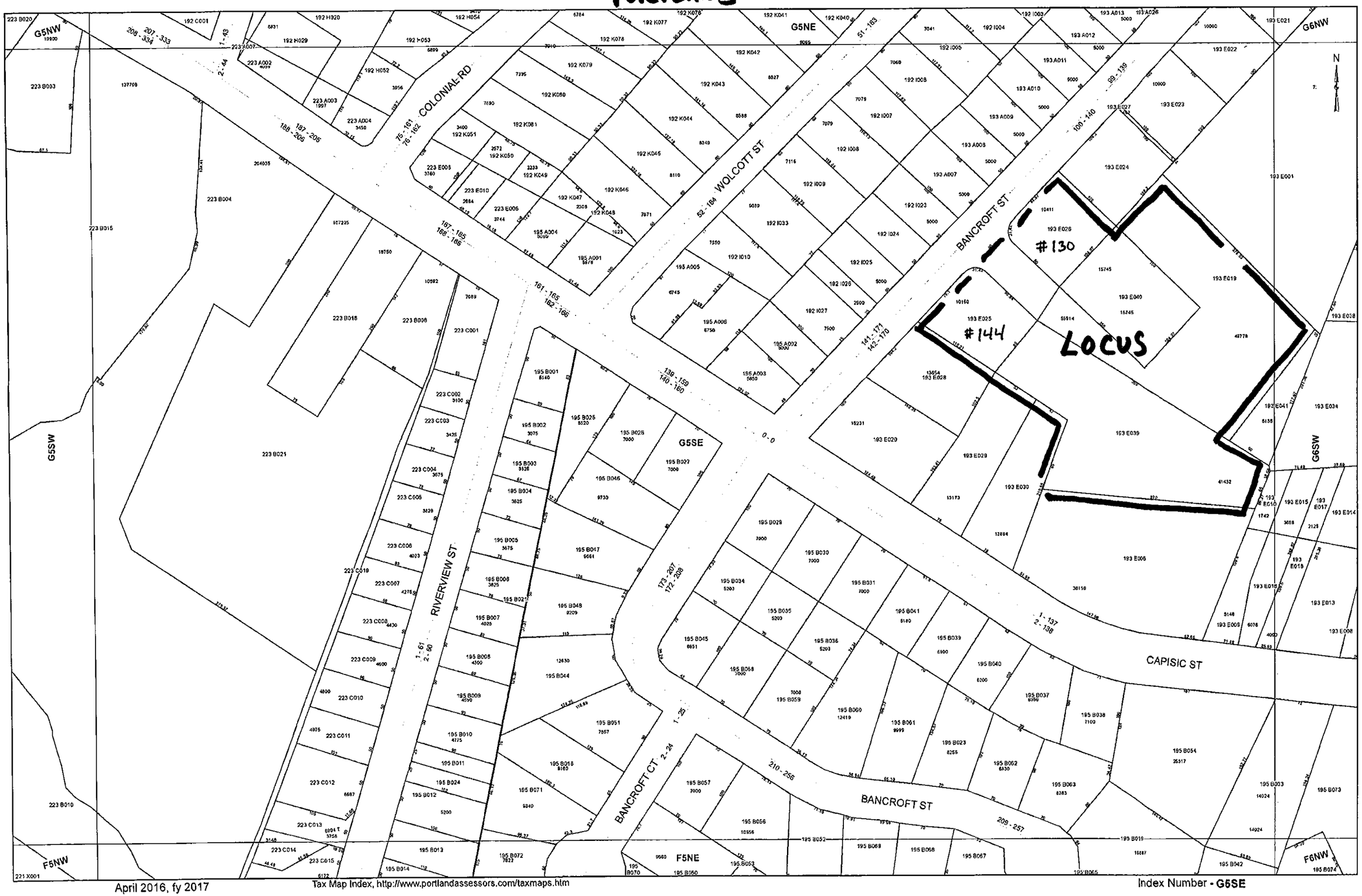
☑ **RECORDING PLAT**, if applicable

- IF SUBDIVISION: Must be in compliance with requirements of Section 14-496 (b)

☐ **ARCHITECTURAL PLANS & RENDERINGS** including:

- Exterior building elevations, color renderings, illustrations of all sides
- Location and dimensions of all existing & proposed HVAC & mechanical equipment, all proposed screening
- Provide context drawings, if applicable (Design Manual, page 1)
- Floor plans

PORTLAND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LOCUS
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G5NE
G5SW
G5SE
G6NW
G6SW
F5NW
F5NE
F6NW
N

January 15, 2018

To Whom It May Concern:

I, Josh Wagner, authorize Northeast Civil Solutions, Inc. to sign any and all applications, permit requests, and other paperwork in conjunction with obtaining final municipal and state approvals for the project located at 130 & 144 Bancroft Street in Portland, Maine.

Signature

Josh Wagner, Land Owner

Date 1/16/18

Mike Skolnick

Subject: FW: Capisic Meadows - intent to sell to WB Group Inc.

From: Josh Wagner [mailto:joshwagner4545@yahoo.com]
Sent: Monday, April 09, 2018 7:23 AM
To: Jim Fisher
Subject: Capisic Meadows - intent to sell to WB Group Inc.

To whom it may concern,

I Joshua Wagner intend to transfer the necessary land need for a 7 lot development off Bancroft St. to WB Group Inc.

Joshua Wagner
207.831.4545

Mike Skolnick

Subject: FW: FW: Pool and Deck - Doiron

----- Forwarded Message -----
From: Doiron, Ken <kdoiron@ptc.com>
To: Josh Wagner <joshwagner4545@yahoo.com>
Sent: Sunday, April 8, 2018, 8:15:03 PM EDT
Subject: FW: Pool and Deck - Doiron

Kenneth and Kari Doiron have the intent to sell a portion of our land to WB Group Inc. defined by the attached plans created by Northeast Civil Solutions with Final Purchase and Sale Agreement defining boundary lines and grading upon City of Portland approval with no major design plan changes.

Regards,

Ken Doiron

Mobile: 1 (207) 400-6086

QUITCLAIM DEED with COVENANT (LONG FORM)

KNOW ALL BY THESE PRESENTS,

THAT WE **EDWARD C. BROOKS**, and **ROSE MARIE BROOKS**, both of Portland, Cumberland County, Maine in consideration of ONE DOLLAR and other valuable consideration paid by **KARI A. DOIRON** and **KENNETH J. DOIRON**, both of Lebanon, York County, Maine, and whose mailing address is 247 Smith Road, Lebanon ME 04027, the receipt whereof we do hereby acknowledge, do hereby REMISE, RELEASE and FOREVER QUITCLAIM unto Kari A. Doiron and Kenneth J. Doiron, as JOINT TENANTS and not as tenants-in-common, their heirs and assigns forever, the land and buildings in Portland, Cumberland County, Maine, more fully described on Exhibit A attached to this instrument.

TO HAVE AND TO HOLD the aforegranted and bargained premises, with all the privileges and appurtenances thereof, to Kari A. Doiron and Kenneth J. Doiron, as joint tenants and not as tenants-in-common, their heirs and assigns, to them and their use and behoof forever.

AND WE DO COVENANT with the Grantees, their heirs and assigns, that we and our heirs shall and will warrant and defend the same to Kari A. Doiron and Kenneth J. Doiron, their heirs and assigns forever, against the lawful claims and demands of all persons claiming by, through, or under us.

IN WITNESS WHEREOF, Edward C. Brooks and Rose Marie Brooks have hereunto set their hands and seals this March 30, 2012.

SIGNED, SEALED AND DELIVERED
IN PRESENCE OF:

(Witness)

(Witness)

Edward C. Brooks
EDWARD C. BROOKS

Rose Marie Brooks
ROSE MARIE BROOKS

STATE OF MAINE
CUMBERLAND, ss.

March 30, 2012

Then personally appeared Edward C. Brooks and Rose Marie Brooks acknowledged the foregoing instrument to be their free act and deed.

Before me: Carly Smith
Notary Public/Attorney at Law

CARLY R. SMITH
ATTORNEY AT LAW, STATE OF MAINE
AUTHORIZED TO TAKE ACKNOWLEDGEMENTS
PURSUANT TO 4 MRSA SEC 1056

NOTARY PRINT NAME: Carly Smith

EXHIBIT A

Property Location: 144 Bancroft Street, Portland, Cumberland County, Maine

Municipal Assessor's Map 193 Block E Lot 39

A certain lot or parcel of land with any improvements thereon, located in Portland, Cumberland County, Maine, adjacent to the parcel first above described and being more particularly bounded and described as follows:

Beginning at an iron pin found at the southeasterly corner of land now or formerly owned by Edward C. Brooks and Rose M. Brooks (formerly premises owned by Richard P. Masters et ux.; reference is made to deed recorded at Book 3855, Page 86 of the Cumberland County Registry of Deeds);

Thence in a southeasterly direction along land now or formerly of Stuart B. Herrick, Jr., a distance of 350 feet, more or less, to an iron pin found at the southerly corner of Parcel 3 as shown on Plan of Property made for Stuart B. Herrick. Jr., Bancroft Street, Portland, Maine dated July 31, 1986 drawn by R. P. Titcomb Associates, Inc.;

Thence South 38° 44' 24" West a distance of 65.00 feet to a point and land now or formerly of Vincent L. Devlin (Book 3725, Page 18):

Thence North 67° 44' 05" West along land now or formerly of said Devlin a distance of 272.00 feel to a point and land now or formerly of James T. King, et ux. (Book 6437, Page 38);

Thence North 37° 54' 38" East along land now or formerly of said King a distance of 65.00 feet to an iron pin found;

Thence North 37° 54' 36" East along land now or formerly of said King a distance of 35.14 feet to an iron pin found;

Thence North 39° 49' 28" West a distance of 110.00 feet to the southwesterly corner of said land now or formerly of Edward C. Brooks and Rose M. Brooks;

Thence North 56° 33' 16" East along the southerly side of said Brooks land a distance of 84.47 feet to the point of beginning.

Meaning and intending to convey, and hereby conveying, the same premises described in the Quitclaim Deed without Covenant of Stuart B. Herrick, Jr. to Edward C. Brooks and Rose Marie Brooks, dated November 23, 1997, and recorded in the Cumberland County Registry of Deeds, Book 13465 Page 155.

Received
Recorded Register of Deeds
Apr 02,2012 09:12:56A
Cumberland County
Pamela E. Lovley

DEED OF SALE BY PERSONAL REPRESENTATIVE

KNOW ALL MEN BY THESE PRESENTS

THAT, **DANIEL W. BOUTIN** of Portland, County of Cumberland, State of Maine, duly appointed and acting personal representative of the Estate of Stuart B. Herrick, Jr., deceased (testate), as shown by the probate records of the County of Cumberland, Maine, Docket No. 2008-0252, by the power conferred by the Probate Code, and every other power, for consideration paid, grants to **JOSHUA WAGNER** of Portland, County of Cumberland, State of Maine, whose mailing address is 130 Bancroft Street, Portland, Maine 04102, the real property in Portland, County of Cumberland, State of Maine, described on Exhibit A attached hereto.

MAINE REAL ESTATE TAX PAID

WITNESS my hand and sale this 23rd day of August, 2010.

Signed, Sealed and Delivered
in presence of

Mary A. Kiene

Estate of Stuart B Herrick, Jr

DWB

Daniel W. Boutin
Personal Representative

STATE OF MAINE
CUMBERLAND, SS. August 23, 2010

Then personally appeared the above-named Daniel W. Boutin in his said capacity and acknowledged the foregoing instrument to be his free act and deed.

Before me,

Mary A. Kiene

Notary Public/~~Attorney-at-Law~~
MARY A KIENE

EXHIBIT A

A certain lot or parcel of land located on the southeasterly side of Bancroft Street in the City of Portland, County of Cumberland, and State of Maine; said lot being bounded and described as follows:

Beginning at a point located at the southerly corner of land now or formerly of Thomas R. Lussier and Melody M. Lussier as described in a deed recorded in the Cumberland County Registry of Deeds in Book 13795, Page 93. Thence:

1) N 60° 18' 30" E by said land of Lussier a distance of Eighty-Eight and 83/100 (88.83) feet to a point located at the westerly corner of land now or formerly of Chabad Lubavitch of Maine, Inc. as described in a deed recorded in said Registry in Book 21417, Page 198.

2) S 28° 05' 18" E by said land of Chabad Lubavitch of Maine , Inc. a distance of Two Hundred Eighty-Six and 03/100 (286.03) feet to a point located on the northwesterly sideline of land now or formerly of Richard Marino as described in a deed recorded in said Registry in Book 22771, Page 251.

3) S 38° 44' 24" W by said land of Marino a distance of One Hundred Seventy-Seven and 67/100 (177.67) feet to a 5/8" reinforcing rod with identification cap number 2271 set at the easterly corner of land now or formerly of Edward C. Brooks and Rose Marie Brooks as described in a deed recorded in said Registry in Book 13465, Page 155.

4) N 41° 20' 13" W by said land of Brooks a distance of Three Hundred Forty-Nine and 59/100 (349.59) feet to a point located at the easterly corner of other land of said Brooks as described in a deed recorded in said Registry in Book 6741, Page 39.

5) N 29° 41' 30" W by said other land of Brooks a distance of Eighty-Eight and 84/100 (88.84) feet to a 5/8" reinforcing rod with identification cap number 2271 set at a point of curvature.

6) Northwesterly, westerly and southwesterly by said land of Brooks along a tangential curve to the left an arc distance of Thirty-One and 42/100 (31.42) feet to a 5/8" reinforcing rod with identification cap number 2271 set on the southeasterly sideline of Bancroft Street; said curve having a radius of Twenty (20.00) feet.

7) N 60° 18' 30" E by said Bancroft Street a distance of Ninety and 00/100 (90.00) feet to a rail road spike set on the northwesterly sideline of land now or formerly of Dianne Herrick as described in a deed recorded in said Registry in Book 4560, Page 246. Said land being shown as Parcel 1 on a plan entitled "Estate of Stuart B. Herrick, Jr." by Titcomb Associates dated August 13, 2008 and revised February 25, 2009.

8) Southwesterly, southerly and southeasterly, by said land of Herrick, along a non-tangential curve to the left a distance of Thirty-One and 42/100 (31.42) feet to a 5/8" reinforcing rod with identification cap number 2271 set; said curve having a radius of Twenty and 00/100 (20.00) feet and a chord bearing S 15° 18' 30" W over a distance of Twenty-Eight and 28/100 (28.28) feet.

9) S 29° 41' 30" E by said land of Herrick and by other land of said Herrick as described in a deed recorded in said Registry in Book 6305, Page 307, being shown as Parcel 2 on said plan, a distance of Two Hundred Thirty and 00/100 (230.00) feet to a 5/8" reinforcing rod with identification cap number 2271 set.

10) N 60° 18' 30" E by said land of Herrick a distance of One Hundred Four and 97/100 (104.97) feet to a 5/8" reinforcing rod with identification cap number 2271 set.

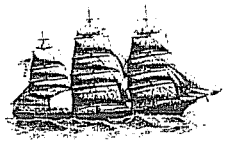
11) N 29° 41' 30" W by said land of Herrick a distance of One Hundred Fifty and 00/100 (150.00) feet to the point of beginning.

Said parcel contains 55, 914 square feet (1.28 acres) and being a portion of land now or formerly of the heirs of Stuart B. Herrick, Jr. as described in a deed recorded in said Registry in Book 6258, Page 53.

Meaning and intending to convey Parcel 3 as described in Plan of Property of Bancroft Street, said plan dated 8/13/2008 and prepared by Titcomb Associates, and recorded on 7/14/2010 in Plan Book 210, Page 220 of the Cumberland County Registry of Deeds. Said parcel being a portion of the land described in a deed from Robert J. Cheney to Stuart B. Herrick, Jr., dated August 24, 1983 and recorded in Book 6258, Page 53 of the Cumberland County Registry of Deeds. Reference is also made to a corrective deed from Cheney Realty Co. to Stuart B. Herrick, Jr., dated November 18, 1986 and recorded in Book 7509, Page 292 of said registry of deeds. Stuart B. Herrick, Jr. died on February 7, 2008. Daniel W. Boutin, Esq. was appointed as the Personal Representative of the Estate of Stuart B. Herrick., Jr. by the Cumberland County Register of Probate on March 7, 2008.

Also conveying another strip of land as shown on the City of Portland's Assessor's Map as Lot 193-E-27.

Received
Recorded Register of Deeds
Aug 27,2010 11:45:03A
Cumberland County
Pamela E. Lovley



Benj. F. Packard

Bath Savings Institution

Since 1852

April 11, 2018

City of Portland
Planning Division
389 Congress Street
Portland, ME 04101

Re: WB Group

To whom it may concern:

Bath Savings is aware of the Wagner Subdivision that WB Group is proposing and the cost infrastructure cost of approximately $270,000. Based on Joshua Wagner and WB Group's existing deposit relationship with Bath Savings, I can verify Joshua Wagner and WB Group have sufficient funds available at this time and the financial capacity to complete the proposed project.

Please let me know if you have any questions.

Sincerely,

Brian C. Desjardins
Vice President/Commercial Lender

105 Front Street, PO Box 548, Bath, Maine 04530
Tel. 207-442-7711 Fax 207-442-9137
1-800-447-4559
MEMBER FDIC

List of Consultants

Northeast Civil Solutions, Inc. – Engineering, Surveying and Land Planning
381 Payne Road
Scarborough, ME 04074

Longview Partners, LLC – Wetland Delineation
6 Second Street
Buxton, Maine 04093

Traffic Solutions – Traffic Analysis
235 Bancroft Street
Portland, ME 04102

Traffic Solutions
William J. Bray, P.E.
235 Bancroft Street
Portland, ME 04102
(207) 774-3603
(207) 400-6890 mobile
trafficsolutions@maine.rr.com

April 2, 2018

Traffic Assessment

For Proposed

Bancroft Street Subdivision

Portland, Maine

INTRODUCTION

Josh Wagner is proposing to subdivide a 2.93-acre parcel of property located at 130/144 Bancroft Street creating a total of seven single-family house lots. Access to the property is provided with construction of a "*new*" dead-end street intersecting Bancroft Street adjacent to the existing Wagner home. The proposed subdivision street will be constructed to City standards and, with completion, the City will be petitioned for acceptance of the street.

This document determines daily and peak hour trip generation of the proposed project for both peak commuter time periods, examines current roadway safety trends in the general vicinity of the proposed project, and reviews vehicle sight distance.

SITE TRAFFIC

Site Trip Generation: Daily and peak hour trip generation was determined for the proposed project based upon trip tables presented in the ninth edition of the Institute of Transportation Engineers (ITE) "**TRIP GENERATION**" handbook. The ITE publication provides numerous land use categories and the average volume of trips generated by each category.

The following trip rate was used to calculate trip generation for the proposed project:

Land Use #210 – Single-Family Detached Housing

Weekday	= 9.52 trips per dwelling unit
AM Peak Hour	= 0.75 trips per dwelling unit
PM Peak Hour	= 1.00 trips per dwelling unit

Accordingly, the proposed 7 single-family homes can be expected to generate a total of 67 trips during a typical weekday; 5 trips in the morning peak hour and 7 trips in the evening peak hour.

Site Trip Distribution: The Institute of Transportation Engineers handbook also provides the following directional distribution rates for a single-family house lot:

AM Peak Hour	= 25% enter site and 75% exit site
PM Peak Hour	= 63% enter site and 37% exit site

Based upon the noted directional distribution patterns, 1 trip during the morning peak hour and 4 trips in the evening peak hour will enter the site and the remaining trips (4 AM trip and 3 PM trips) will exit.

EXISTING SAFETY CONDITIONS

The Maine Department of Transportation's (MaineDOT) Accident Records Section provided the latest three-year (2014 through 2016) crash data for the 0.29 mile section of Bancroft Street between Capisic Street and Rockland Avenue.

2014 -2016 Traffic Accident Summary

Location	Total Crashes	Critical Rate Factor
1. Capisic Street @ Bancroft Street	2	0.60
2. Bancroft Street btw. Capisic Street and Rockland Avenue	1	0.54

The MaineDOT considers any roadway intersection or segment a high crash location if both of the following criteria are met:

- ***8 or more accidents***
- ***A Critical Rate Factor greater than 1.00***

As the data presented in the table shows, the incidence of traffic crashes is very low; well below MaineDOT's threshold criteria for identification of a high crash location.

SIGHT DISTANCE

The Maine Department of Transportation's Highway Entrance and Driveway Rules require the following sight distances for a non-mobility roadway:

Sight Distance Standards

Speed Limit	Sight Distance
25 mph	200 feet
30	250
35	305
40	360
45	425
50	495
55	570

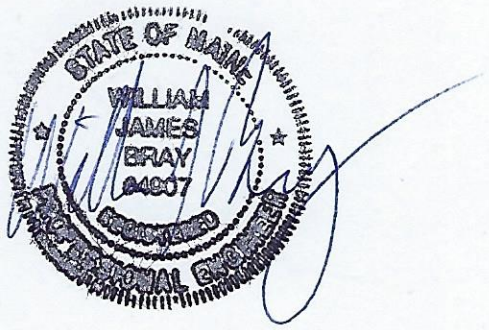
Bancroft Street is currently posted with a regulatory speed limit of 25 mph, which requires an unobstructed sightline of 200 feet. Field measurements determined for both directions of travel exceed 350-feet, a distance well in excess of the required design standards.

CONCLUSIONS

- The residential subdivision project can be expected to generate **67** daily trips; five (**5**) trips in the morning peak hour and **7** trips during the afternoon peak commuter hour.

- The Maine Department of Transportation's most recent three-year (2014 to 2016) accident safety audit completed for the section of Bancroft Street between Capisic Street and Rockland Avenue shows a total of 3 crashes have occurred over the 0.29-mile section of Bancroft Street.

- Vehicle sightlines measured in both directions from the proposed subdivision road onto Bancroft Street meet and exceed, by a considerable margin, the non-mobility highway sight distance standard for a posted speed limit of 25mph.



DEFAULT TITLE FROM MAP DOCUMENT

The Maine Department of Transportation provides this publication for information only. Reliance upon this information is at user risk. It is subject to revision and may be incomplete depending upon changing conditions. The Department assumes no liability if injuries or damages result from this information. This map is not intended to support emergency dispatch.

0.08 Miles

1 inch = 0.06 miles

Date: 3/26/2018
Time: 9:38:48 AM

Maine Department Of Transportation - Traffic Engineering, Crash Records Section

Crash Summary Report

Report Selections and Input Parameters

REPORT SELECTIONS

☑ **Crash Summary I** ☐ **Section Detail** ☑ **Crash Summary II** ☐ **1320 Public** ☐ **1320 Private** ☐ **1320 Summary**

REPORT DESCRIPTION

Bancroft St in Portland

REPORT PARAMETERS

Year 2014, Start Month 1 through Year 2016 End Month: 12

Route: **0560033**	Start Node: **12971**	Start Offset: **0**	☐ **Exclude First Node**
	End Node: **12972**	End Offset: **0**	☐ **Exclude Last Node**

Maine Department Of Transportation - Traffic Engineering, Crash Records Section

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
12971	0560033 - 0.16	Int of BANCROFT ST, CAPISIC ST	2	2	0	0	0	1	1	50.0	2.713	0.25	0.42	0.00
												Statewide Crash Rate:	0.14	
12972	0560033 - 0.45	0503385 POR,BANCROFT ST,ROCKLAND AVE.	2	0	0	0	0	0	0	0.0	0.141	0.00	0.44	0.00
												Statewide Crash Rate:	0.14	
Study Years: 3.00		**NODE TOTALS:**		2	0	0	0	1	1	50.0	2.854	0.23	0.41	0.57

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
12971	12972	187581	0 - 0.29	0560033 - 0.16	0.29	2	1	0	0	0	0	1	0.0	0.00042	787.28	1454.15	0.00
Int of BANCROFT ST, CAPISIC ST				RD INV 05 60033											Statewide Crash Rate: 400.79		
Study Years: 3.00				**Section Totals:**	0.29		1	0	0	0	0	1	0.0	0.00042	787.28	1454.12	0.54
				Grand Totals:	0.29		3	0	0	0	1	2	33.3	0.00042	2361.83	1715.94	1.38

LONGVIEW PARTNERS, LLC

ENVIRONMENTAL PERMITTING SPECIALISTS

Wetland Summary Report

Prepared for

Northeast Civil Solutions

130 Bancroft Street

Portland, Maine

January, 2018

6 Second Street
Buxton, Maine
207-693-8799

WETLAND SUMMARY

prepared for Northeast Civil Solutions
130 Bancroft Street
Portland, Maine

Longview Partners, LLC was contracted in late fall of 2016 to identify and flag wetlands on the subject property. Alpha-numeric flags were placed on-site, generally at intervals of 30'-50' along wetlands identified, for location by survey onto the base plan by Northeast Civil Solutions.

Wetlands were identified using the 'three-parameter' approach outlined in the U.S. Army Corps of Engineers, Wetland Delineation Manual Version 1987 (with Regional Supplements). Criteria must be met for all three parameters of hydrophytic vegetation, hydric soils, and hydrology in one location in order for an area to be included as wetlands.

The majority of the wetlands on-site consist of forested, freshwater wetlands that occur in narrow, "fingered' swales within the gently rolling landscape. These enter the subject property from the abutting properties to the southeast and east, and contain areas of runoff that concentrate at the lowest elevations of the swales. Lowest portions of the wetland swales then drain into the ditchline system created at the rear of the existing single family dwelling, lawn and swimming pool that pre-exists the redevelopment of the site.

No vernal pool habitat was observed on the project site, and Maine Dept. of Environmental Protection (MDEP) staff visited the site and found no streams within the property. (see Field Determination Form by Audie Arbo, 8/23/16).

Per MDEP, Natural Resources Protection Act standards, no setbacks are generally required the wetlands on the subject property.

STATE OF MAINE
DEPARTMENT OF ENVIRONMENTAL PROTECTION
17 STATE HOUSE STATION AUGUSTA, MAINE 04333-0017

DEPARTMENT ORDER

IN THE MATTER OF

JOSH WAGNER	) NATURAL RESOURCES PROTECTION ACT
Portland, Cumberland County	) FRESHWATER WETLAND ALTERATION
BANCROFT SUBDIVISION AND ROAD	) WATER QUALITY CERTIFICATION
L-27901-TC-A-N (approval)	) FINDINGS OF FACT AND ORDER

Project Description: The applicant proposes to fill 10,741 square feet of forested freshwater wetlands to construct an eight-lot residential subdivision that will include an access road, driveways, and a detention pond for stormwater as shown on a set of plans, the first of which is titled "Wetland Impacts," prepared by Northeast Civil Solutions, and dated May 3, 2018. The applicant has avoided and minimized wetland impacts to the greatest extent practicable by proposing 2H:1V fill side slopes within wetland areas, crossing wetland areas at the narrowest locations and by installing no less than four culverts under driveways and the access road to maintain wetland hydrological connectivity. According to the Department's Geographic Information System (GIS), there are no mapped essential or significant wildlife habitats associated with the project site. The Stormwater Management Law application required for this project will be reviewed under municipal review authority by the City of Portland. The proposed project is located off Bancroft Street in City of Portland.

Permit for:	[X]	Tier 1
DEP Decision:	[X]	Approved [ ] Denied (see attached letter)
CORPS Action:	[X]	The Corps has been notified of your application. The following are subject to Federal screening: (1) projects with previously authorized or unauthorized work, in combination with a Tier 1 permit for a single and complete project, which total more than 15,000 square feet of altered area; (2) projects with multiple state permits and/or state exemptions which apply to a single and complete project that total more than 15, 000 square feet of altered area; and (3) projects that may impact a vernal pool, as determined by the State of Maine or the Corps. If your activity is listed above, *Corps approval is required for your project*. For information regarding the status of your application contact the Corps' Maine Project Office at (207) 623-8367.

Standard Conditions:

1) If construction or operation of the activity is not begun within four (4) years from the date signed, this permit shall lapse and the applicant shall reapply to the Department for a new permit. This permit is transferable only with prior approval from the Department. If the activity is associated with a larger project, starting any aspect of that project constitutes start of construction.
2) The project shall be completed according to the plans in the application. Any change in the project plans must be reviewed and approved by the Department.
3) Properly installed erosion control measures shall be installed prior to beginning the project, and all disturbed soil should be stabilized immediately upon project completion.

4) A copy of this approval will be sent to the City of Portland. Department approval of your activity does not supersede or substitute the need for any necessary local approvals.

THIS APPROVAL DOES NOT CONSTITUTE OR SUBSTITUTE FOR ANY OTHER REQUIRED STATE, FEDERAL OR LOCAL APPROVALS NOR DOES IT VERIFY COMPLIANCE WITH ANY APPLICABLE SHORELAND ZONING ORDINANCES.

DONE AND DATED IN AUGUSTA, MAINE, THIS 28TH DAY OF JUNE, 2018.

DEPARTMENT OF ENVIRONMENTAL PROTECTION

BY: _____
For: Paul Mercer, Commissioner

Filed
JUN 29 2018
State of Maine
Board of Environmental Protection

PLEASE NOTE THE ATTACHED SHEET FOR GUIDANCE ON APPEAL PROCEDURES.

JH/L27901AN/ATS#83116

Natural Resources Protection Act (NRPA)
Standard Conditions

THE FOLLOWING STANDARD CONDITIONS SHALL APPLY TO ALL PERMITS GRANTED UNDER THE NATURAL RESOURCES PROTECTION ACT, 38 M.R.S. § 480-A ET SEQ., UNLESS OTHERWISE SPECIFICALLY STATED IN THE PERMIT.

A. Approval of Variations From Plans. The granting of this permit is dependent upon and limited to the proposals and plans contained in the application and supporting documents submitted and affirmed to by the applicant. Any variation from these plans, proposals, and supporting documents is subject to review and approval prior to implementation.

B. Compliance With All Applicable Laws. The applicant shall secure and comply with all applicable federal, state, and local licenses, permits, authorizations, conditions, agreements, and orders prior to or during construction and operation, as appropriate.

C. Erosion Control. The applicant shall take all necessary measures to ensure that his activities or those of his agents do not result in measurable erosion of soils on the site during the construction and operation of the project covered by this Approval.

D. Compliance With Conditions. Should the project be found, at any time, not to be in compliance with any of the Conditions of this Approval, or should the applicant construct or operate this development in any way other the specified in the Application or Supporting Documents, as modified by the Conditions of this Approval, then the terms of this Approval shall be considered to have been violated.

E. Time frame for approvals. If construction or operation of the activity is not begun within four years, this permit shall lapse and the applicant shall reapply to the Board for a new permit. The applicant may not begin construction or operation of the activity until a new permit is granted. Reapplications for permits may include information submitted in the initial application by reference. This approval, if construction is begun within the four-year time frame, is valid for seven years. If construction is not completed within the seven-year time frame, the applicant must reapply for, and receive, approval prior to continuing construction.

F. No Construction Equipment Below High Water. No construction equipment used in the undertaking of an approved activity is allowed below the mean high water line unless otherwise specified by this permit.

G. Permit Included In Contract Bids. A copy of this permit must be included in or attached to all contract bid specifications for the approved activity.

H. Permit Shown To Contractor. Work done by a contractor pursuant to this permit shall not begin before the contractor has been shown by the applicant a copy of this permit.

STATE OF MAINE
DEPARTMENT OF ENVIRONMENTAL PROTECTION
17 STATE HOUSE STATION, AUGUSTA, MAINE 04333

Erosion Control for Homeowners

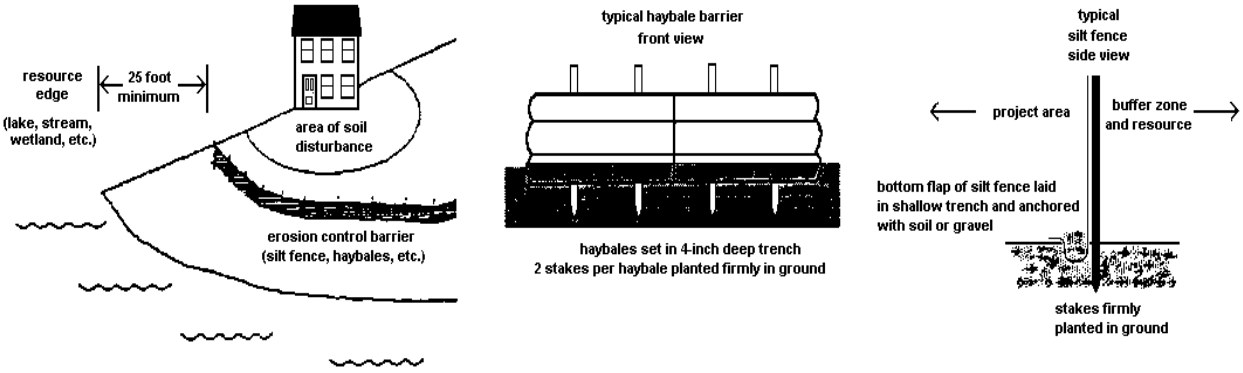
Before Construction

1. If you have hired a contractor, make sure you discuss your permit with them. Talk about what measures they plan to take to control erosion. Everybody involved should understand what the resource is, and where it is located. Most people can identify the edge of a lake or river. However, the edges of wetlands are often not so obvious. Your contractor may be the person actually pushing dirt around, but you are both responsible for complying with the permit.

2. Call around to find where erosion control materials are available. Chances are your contractor has these materials already on hand. You probably will need silt fence, hay bales, wooden stakes, grass seed (or conservation mix), and perhaps filter fabric. Places to check for these items include farm & feed supply stores, garden & lawn suppliers, and landscaping companies. It is not always easy to find hay or straw during late winter and early spring. It also may be more expensive during those times of year. Plan ahead -- buy a supply early and keep it under a tarp.

3. Before any soil is disturbed, make sure an erosion control barrier has been installed. The barrier can be either a silt fence, a row of staked hay bales, or both. Use the drawings below as a guide for correct installation and placement. The barrier should be placed as close as possible to the soil-disturbance activity.

4. If a contractor is installing the erosion control barrier, double check it as a precaution. Erosion control barriers should be installed "on the contour", meaning at the same level or elevation across the land slope, whenever possible. This keeps stormwater from flowing to the lowest point along the barrier where it can build up and overflow or destroy the barrier.



During Construction

1. Use lots of hay or straw mulch on disturbed soil. The idea behind mulch is to prevent rain from striking the soil directly. It is the force of raindrops hitting the bare ground that makes the soil begin to move downslope with the runoff water, and cause erosion. More than 90% of erosion is prevented by keeping the soil covered.

2. Inspect your erosion control barriers frequently. This is especially important after a rainfall. If there is muddy water leaving the project site, then your erosion controls are not working as intended. You or your contractor then need to figure out what can be done to prevent more soil from getting past the barrier.

3. Keep your erosion control barrier up and maintained until you get a good and healthy growth of grass and the area is permanently stabilized.

After Construction

1. After your project is finished, seed the area. Note that all ground covers are not equal. For example, a mix of creeping red fescue and Kentucky bluegrass is a good choice for lawns and other high-maintenance areas. But this same seed mix is a poor selection for stabilizing a road shoulder or a cut bank that you don't intend to mow. Your contractor may have experience with different seed mixes, or you might contact a seed supplier for advice.

2. Do not spread grass seed after September 15. There is the likelihood that germinating seedlings could be killed by a frost before they have a chance to become established. Instead, mulch the area with a thick layer of hay or straw. In the spring, rake off the mulch and then seed the area. Don't forget to mulch again to hold in moisture and prevent the seed from washing away or being eaten by birds or other animals.

3. Keep your erosion control barrier up and maintained until you get a good and healthy growth of grass and the area is permanently stabilized.

Why Control Erosion?

To Protect Water Quality

When soil erodes into protected resources such as streams, rivers, wetlands, and lakes, it has many bad effects. Eroding soil particles carry phosphorus to the water. An excess of phosphorus can lead to explosions of algae growth in lakes and ponds called blooms. The water will look green and can have green slime in it. If you are near a lake or pond, this is not pleasant for swimming, and when the soil settles out on the bottom, it smothers fish eggs and small animals eaten by fish. There many other effects as well, which are all bad.

To Protect the Soil

It has taken thousands of years for our soil to develop. It usefulness is evident all around us, from sustaining forests and growing our garden vegetables, to even treating our septic wastewater! We cannot afford to waste this valuable resource.

To Save Money ($$)

Replacing topsoil or gravel washed off your property can be expensive. You end up paying twice because State and local governments wind up spending your tax dollars to dig out ditches and storm drains that have become choked with sediment from soil erosion.

DEP INFORMATION SHEET

Appealing a Department Licensing Decision

Dated: March 2012 **Contact: (207) 287-2811**

SUMMARY

There are two methods available to an aggrieved person seeking to appeal a licensing decision made by the Department of Environmental Protection's ("DEP") Commissioner: (1) in an administrative process before the Board of Environmental Protection ("Board"); or (2) in a judicial process before Maine's Superior Court. An aggrieved person seeking review of a licensing decision over which the Board had original jurisdiction may seek judicial review in Maine's Superior Court.

A judicial appeal of final action by the Commissioner or the Board regarding an application for an expedited wind energy development (35-A M.R.S.A. § 3451(4)) or a general permit for an offshore wind energy demonstration project (38 M.R.S.A. § 480-HH(1)) or a general permit for a tidal energy demonstration project (38 M.R.S.A. § 636-A) must be taken to the Supreme Judicial Court sitting as the Law Court.

This INFORMATION SHEET, in conjunction with a review of the statutory and regulatory provisions referred to herein, can help a person to understand his or her rights and obligations in filing an administrative or judicial appeal.

I. ADMINISTRATIVE APPEALS TO THE BOARD

LEGAL REFERENCES

The laws concerning the DEP's *Organization and Powers*, 38 M.R.S.A. §§ 341-D(4) & 346, the *Maine Administrative Procedure Act*, 5 M.R.S.A. § 11001, and the DEP's *Rules Concerning the Processing of Applications and Other Administrative Matters* ("Chapter 2"), 06-096 CMR 2 (April 1, 2003).

HOW LONG YOU HAVE TO SUBMIT AN APPEAL TO THE BOARD

The Board must receive a written appeal within 30 days of the date on which the Commissioner's decision was filed with the Board. Appeals filed after 30 calendar days of the date on which the Commissioner's decision was filed with the Board will be rejected.

HOW TO SUBMIT AN APPEAL TO THE BOARD

Signed original appeal documents must be sent to: Chair, Board of Environmental Protection, c/o Department of Environmental Protection, 17 State House Station, Augusta, ME 04333-0017; faxes are acceptable for purposes of meeting the deadline when followed by the Board's receipt of mailed original documents within five (5) working days. Receipt on a particular day must be by 5:00 PM at DEP's offices in Augusta; materials received after 5:00 PM are not considered received until the following day. The person appealing a licensing decision must also send the DEP's Commissioner a copy of the appeal documents and if the person appealing is not the applicant in the license proceeding at issue the applicant must also be sent a copy of the appeal documents. All of the information listed in the next section must be submitted at the time the appeal is filed. Only the extraordinary circumstances described at the end of that section will justify evidence not in the DEP's record at the time of decision being added to the record for consideration by the Board as part of an appeal.

WHAT YOUR APPEAL PAPERWORK MUST CONTAIN

Appeal materials must contain the following information at the time submitted:

1. *Aggrieved Status*. The appeal must explain how the person filing the appeal has standing to maintain an appeal. This requires an explanation of how the person filing the appeal may suffer a particularized injury as a result of the Commissioner's decision.
2. *The findings, conclusions or conditions objected to or believed to be in error*. Specific references and facts regarding the appellant's issues with the decision must be provided in the notice of appeal.
3. *The basis of the objections or challenge*. If possible, specific regulations, statutes or other facts should be referenced. This may include citing omissions of relevant requirements, and errors believed to have been made in interpretations, conclusions, and relevant requirements.
4. *The remedy sought.* This can range from reversal of the Commissioner's decision on the license or permit to changes in specific permit conditions.
5. *All the matters to be contested*. The Board will limit its consideration to those arguments specifically raised in the written notice of appeal.
6. *Request for hearing.* The Board will hear presentations on appeals at its regularly scheduled meetings, unless a public hearing on the appeal is requested and granted. A request for public hearing on an appeal must be filed as part of the notice of appeal.
7. *New or additional evidence to be offered.* The Board may allow new or additional evidence, referred to as supplemental evidence, to be considered by the Board in an appeal only when the evidence is relevant and material and that the person seeking to add information to the record can show due diligence in bringing the evidence to the DEP's attention at the earliest possible time in the licensing process or that the evidence itself is newly discovered and could not have been presented earlier in the process. Specific requirements for additional evidence are found in Chapter 2.

OTHER CONSIDERATIONS IN APPEALING A DECISION TO THE BOARD

1. *Be familiar with all relevant material in the DEP record.* A license application file is public information, subject to any applicable statutory exceptions, made easily accessible by DEP. Upon request, the DEP will make the material available during normal working hours, provide space to review the file, and provide opportunity for photocopying materials. There is a charge for copies or copying services.
2. *Be familiar with the regulations and laws under which the application was processed, and the procedural rules governing your appeal.* DEP staff will provide this information on request and answer questions regarding applicable requirements.
3. *The filing of an appeal does not operate as a stay to any decision.* If a license has been granted and it has been appealed the license normally remains in effect pending the processing of the appeal. A license holder may proceed with a project pending the outcome of an appeal but the license holder runs the risk of the decision being reversed or modified as a result of the appeal.

WHAT TO EXPECT ONCE YOU FILE A TIMELY APPEAL WITH THE BOARD

The Board will formally acknowledge receipt of an appeal, including the name of the DEP project manager assigned to the specific appeal. The notice of appeal, any materials accepted by the Board Chair as supplementary evidence, and any materials submitted in response to the appeal will be sent to Board members with a recommendation from DEP staff. Persons filing appeals and interested persons are notified in advance of the date set for Board consideration of an appeal or request for public hearing. With or without holding a public hearing, the Board may affirm, amend, or reverse a Commissioner decision or remand the matter to the Commissioner for further proceedings. The Board will notify the appellant, a license holder, and interested persons of its decision.

II. JUDICIAL APPEALS

Maine law generally allows aggrieved persons to appeal final Commissioner or Board licensing decisions to Maine's Superior Court, see 38 M.R.S.A. § 346(1); 06-096 CMR 2; 5 M.R.S.A. § 11001; & M.R. Civ. P 80C. A party's appeal must be filed with the Superior Court within 30 days of receipt of notice of the Board's or the Commissioner's decision. For any other person, an appeal must be filed within 40 days of the date the decision was rendered. Failure to file a timely appeal will result in the Board's or the Commissioner's decision becoming final.

An appeal to court of a license decision regarding an expedited wind energy development, a general permit for an offshore wind energy demonstration project, or a general permit for a tidal energy demonstration project may only be taken directly to the Maine Supreme Judicial Court. See 38 M.R.S.A. § 346(4).

Maine's Administrative Procedure Act, DEP statutes governing a particular matter, and the Maine Rules of Civil Procedure must be consulted for the substantive and procedural details applicable to judicial appeals.

ADDITIONAL INFORMATION

If you have questions or need additional information on the appeal process, for administrative appeals contact the Board's Executive Analyst at (207) 287-2452 or for judicial appeals contact the court clerk's office in which your appeal will be filed.

Note: The DEP provides this INFORMATION SHEET for general guidance only; it is not intended for use as a legal reference. Maine law governs an appellant's rights.

APPLICATION FOR A NATURAL RESOURCES PROTECTION ACT PERMIT

➔PLEASE TYPE OR PRINT IN *BLACK INK ONLY*

1. Name of Applicant:	WB Group, Inc - Josh Wagner	**5.Name of Agent:**	Northeast Civil Solutions, Inc.
2. Applicant's Mailing Address:	130 Bancroft Street Portland, ME 04101	**6. Agent's Mailing Address:**	381 Payne Road Scarborough, Me 04074
3. Applicant's Daytime Phone #:	207-831-4345	**7. Agent's Daytime Phone #:**	207-883-1000
4. Applicant's Email Address: Required from *either* applicant or agent:	JoshWagner4545 @Yahoo.com	**8.Agent's E-mail Address:**	Mike.Skolnick @NortheastCivilSolutions.com

9. Location of Activity: (Nearest Road, Street, Rt.#)	130 Bancroft Street	**10. Town:**	Portland	**11. County:**	Cumberland

12. Type of Resource: (Check all that apply)	❑ River, stream or brook ❑ Great Pond ❑ Coastal Wetland ☒ Freshwater Wetland ❑ Wetland Special Significance ❑ Significant Wildlife Habitat ❑ Fragile Mountain	**13. Name of Resource:**	Forested Wetland
		14. Amount of Impact: (Sq.Ft.)	**Fill:** 10,741 **Dredging/Veg Removal/Other:**

15. Type of Wetland: (Check all that apply)	☒ Forested ❑ Scrub Shrub ❑ Emergent ❑ Wet Meadow ❑ Peatland ❑ Open Water ❑ Other_____	**FOR FRESHWATER WETLANDS**		
		Tier 1	*Tier 2*	*Tier 3*
		❑ 0 - 4,999 sq ft. ❑ 5,000-9,999 sq ft ☒ 10,000-14,999 sq ft	❑ 15,000 – 43,560 sq. ft.	❑ > 43,560 sq. ft. or ❑ smaller than 43,560 sq. ft., not eligible for Tier 1

16. Brief Activity Description	Proposed 8 lot subdivision / right-of-way w/ associated wetland fill

17. Size of Lot or Parcel & UTM Locations:	❑ _____square feet, or ☒ 2.93 acres	UTM Northing: 4835348	UTM Easting: 395081

18. Title, Right or Interest:	☒ own ❑ lease ❑ purchase option ❑ written agreement

19. Deed Reference Numbers:	Book#: 28027 Page: 29467, 27668, 268, 255, 230	**20. Map and Lot Numbers:**	Map #: 193 - E	Lot #: 19, 25, 26, 39 & 40	
21. DEP Staff Previously Contacted:	Jen Harris	**22. Part of a larger project:**	❑ Yes ☒ No	**After-the-Fact:**	❑ Yes ☒ No

23. Resubmission of Application?	❑ Yes➔ ☒ No	**If yes, previous application #**	N/A	**Previous project manager:**	N/A
24. Written Notice of Violation?	❑ Yes ➔ ☒ No	**If yes, name of DEP enforcement staff involved:**	N/A	**25. Previous Wetland Alteration:**	❑ Yes ☒ No

26. Detailed Directions to the Project Site:	See Attached Directions

27. TIER 1	**TIER 2/3 AND INDIVIDUAL PERMITS**	
☒ Title, right or interest documentation ☒ Topographic Map ☒ Narrative Project Description ☒ Plan or Drawing (8 1/2" x 11") ☒ Photos of Area ☒ Statement of Avoidance & Minimization ☒ Statement/Copy of cover letter to MHPC	❑ Title, right or interest documentation ❑ Topographic Map ❑ Copy of Public Notice/Public Information Meeting Documentation ❑ Wetlands Delineation Report (Attachment 1) that contains the Information listed under Site Conditions ❑ Alternatives Analysis (Attachment 2) including description of how wetland impacts were Avoided/Minimized	❑ Erosion Control/Construction Plan ❑ Functional Assessment (Attachment 3), if required ❑ Compensation Plan (Attachment 4), if required ❑ Appendix A and others, if required ❑ Statement/Copy of cover letter to MHPC ❑ Description of Previously Mined Peatland, if required

28. FEES Amount Enclosed:	$150

CERTIFICATIONS AND SIGNATURES LOCATED ON PAGE 2

IMPORTANT: IF THE SIGNATURE BELOW IS NOT THE APPLICANT'S SIGNATURE, ATTACH LETTER OF AGENT AUTHORIZATION SIGNED BY THE APPLICANT.

By signing below the applicant (or authorized agent), certifies that he or she has read and understood the following :

DEP SIGNATORY REQUIREMENT

PRIVACY ACT STATEMENT

Authority: 33 USC 401, Section 10; 1413, Section 404. Principal Purpose: These laws require permits authorizing activities in or affecting navigable waters of the United States, the discharge of dredged or fill material into waters of the United States, and the transportation of dredged material for the purpose of dumping it into ocean waters. Disclosure: Disclosure of requested information is voluntary. If information is not provided, however, the permit application cannot be processed nor a permit be issued.

CORPS SIGNATORY REQUIREMENT

USC Section 1001 provides that: Whoever, in any manner within the jurisdiction of any department or agency of the United States knowingly and willfully falsifies, conceals, or covers up any trick, scheme, or disguises a material fact or makes any false, fictitious or fraudulent statements or representations or makes or uses any false writing or document knowing same to contain any false, fictitious or fraudulent statements or entry shall be fines not more than $10,000 or imprisoned not more than five years or both. I authorize the Corps to enter the property that is subject to this application, at reasonable hours, including buildings, structures or conveyances on the property, to determine the accuracy of any information provided herein.

DEP SIGNATORY REQUIREMENT

"I certify under penalty of law that I have personally examined the information submitted in this document and all attachments thereto and that, based on my inquiry of those individuals immediately responsible for obtaining the information, I believe the information is true, accurate, and complete. I authorize the Department to enter the property that is the subject of this application, at reasonable hours, including buildings, structures or conveyances on the property, to determine the accuracy of any information provided herein. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment.

Further, I hereby authorize the DEP to send me an electronically signed decision on the license I am applying for with this application by emailing the decision to the address located on the front page of this application (see #4 for the applicant and #8 for the agent)."

SIGNATURE OF AGENT/APPLICANT Date: 5-3-18

Signature of Agent Date: 5-3-18

NOTE: Any changes in activity plans must be submitted to the DEP and the Corps in writing and must be approved by both agencies prior to implementation. Failure to do so may result in enforcement action and/or the removal of the unapproved changes to the activity.

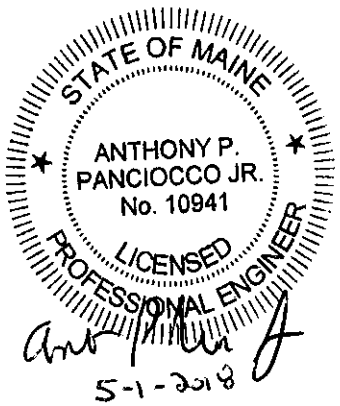
(yellow)

CAPISIC MEADOWS SUBDIVISION
BANCROFT STREET
PORTLAND, MAINE

STORMWATER MANAGEMENT REPORT
MAY 2018

Prepared for:

WB Group, Inc.
130 Bancroft Street
Portland, ME 04101



Northeast Civil Solutions, Inc.
381 Payne Road
Scarborough, ME 04074

Project # 41041

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APPENDICES

Appendix A HydroCAD Output: Pre-Development Condition
Appendix B HydroCAD Output: Post-Development Condition
Appendix C Stormwater Quality Calculations
Appendix D Maintenance Plan and Log
Appendix E Filterra Sizing Calculations
Appendix F Fema Firm Map
Appendix G Capisic Brook Watershed Map

1) PROJECT DESCRIPTION

This Stormwater Management Report has been prepared for WB Group, Inc., to present the stormwater runoff results for a proposed 7 lot residential subdivision located off Bancroft Street in Portland. The properties are identified on the City of Portland Tax Assessor's Map 193, Block E, parcels 19, 25, 26, 39 & 40. The property occupies approximately 2.93 acres.

The site generally drains in a southwesterly direction to a drainage easement at the southerly edge of the property. Runoff is conveyed around residential properties to an open ended culvert inlet at the corner of Bancroft Street and Capisic Street. At this point runoff enters the drainage infrastructure in Capisic Street and is conveyed westerly down Capisic to a discharge point at Capisic Pond. Capisic Pond is tributary to the Fore River

There is a large offsite watershed to the east, which includes a portion of Redlon Park Subdivision that directs runoff onto the project property. The offsite runoff is conveyed across the subject property through drainage ways to the culvert inlet at the intersection of Capisic and Bancroft Streets.

The development of this site will require Maine Department of Environmental Protection (MDEP) Tier I wetland fill permit, for wetland fills in the amount of 11,318 S.F. Though this project is tributary to Capisic Pond it is not located in the Capisic Brook Watershed, as such this project is not located in an Urban Impaired Stream Watershed. See attached Capisic Brook Watershed Management Plan map with our project identified.

The development of the site will result in the following:

Proposed new impervious area (on previously vegetated surface)	= 0.62 acres
Proposed developed area	= 2.27 acres

2) STORMWATER NARRATIVE

2.1 SITE LOCATION

The project site is located at 130 Bancroft Street in Portland. The project has frontage on Bancroft Street and a new road access will be provided from Bancroft Street. The property is currently mostly lawn area, and woodlands.

2.2 RECEIVING WATERS

Runoff from the project drains southwesterly across the property to an open culvert inlet. Runoff is then conveyed within the drainage infrastructure in Capisic Street to Capisic Pond. Capisic Pond is tributary to the Fore River.

2.3 HISTORIC FLOODING

The project site is not located with a floodplain as indicated on the Flood Insurance Rate Maps for the City of Portland Maine, Panel 12 of 17, Community panel number 230051 0012 C dated December 8, 1998 and Panel 13 of 17, Community panel number 230051 0013 B dated July 17, 1986.

2.4 METHODOLOGY AND MODELING ASSUMPTIONS

Runoff and routing calculations have been performed for the watershed areas affected by the proposed development. Times of concentration and runoff curve number calculations Service (NRCS) Technical Release 55, (TR-55). Time of concentration calculations have been amended where the values given by the TR-55 method is less than six minutes. In these cases a standard minimum value of six minutes has been used to keep this parameter within the acceptable working range of the model. Each Tc path and corresponding length and slope is identified in the pre and post development drainage area plan. The TR-20 based HydroCAD (version 10.0) modeling software has been utilized to perform the complex runoff and routing calculations.

Design rainfall has been modeled using the SCS Type III hydrograph for 24-hour duration storm events. The rainfall depth for each return period is taken from the Stormwater Management for Maine: Best Management Practices, Appendix H. The rainfall depth values utilized in the stormwater model are indicated in the table below.

24-Hour Rainfall Depths for Cumberland County			
Stormwater Management for Maine: Best Management Practices Appendix H			
Frequency	2-Year	10-Year	25-Year
Rainfall Depth	3.1	4.6	5.8

2.5 SOILS

Soil types in the area of the project were identified using the NRCS Web Soil Survey. The curve numbers (CN) utilized in this analysis relate to the ground cover that was observed on the site. Soils identified on the site (or within close proximity) are identified in the Table below. These soil boundaries have been identified on the Pre and Post Development Watershed Maps. Additionally, onsite wetland areas were modeled as Hydrologic Soil group D soils.

Soil Types	Symbol	HSG
Belgrade very fine sandy loam, 0%-8% slopes	BgB	B
Hollis fine sandy loam, 3%-8% slopes	HrB	D
Walpole fine sandy loam	Wa	A/D
Windsor loamy sand, 0%-8% slopes	WmB	A

2.6 PERMITTING REQUIREMENTS

The City of Portland Technical Manual Section 5 Stormwater Management Plans for New Development states that, "Except as provided in below, the following development proposals shall submit a stormwater management plan pursuant to the regulations of Maine DEP Chapter 500 Stormwater Management Rules, including General and Flooding standards": Since this project is a subdivision that will create more than 1,000 square feet of new impervious area and will create more than 10,000 square feet of new non-impervious developed area it will be required to provide a stormwater management plan.

As this project will not create one or more acres of new impervious surface area, review by the MDEP under the Stormwater Management Law, Stormwater Permit is not required. As such the project will be required to meet the MDEP's (Chapter 500 Stormwater Management Rules), Basic Standards.

The project will require a Tier I NRPA wetland fill permit for wetland impacts in the amount of 11,318 square feet.

Basic Standards: The basic standards require that grading and other construction activities on the site do not impede or otherwise alter drainage ways to create an unreasonable adverse impact on a protected natural resource. The basic standards will be met by the implementation of an Erosion and Sedimentation Control Plan addressing erosion and sediment during construction and post-construction stabilization of the site.

The Erosion and Sedimentation Control Plan was developed following Best Management Practice (BMP) guidelines and has been placed directly on the design plans for reference during construction.

General Standards: The general standards consist of Best Management Practice (BMP) standards. The BMP standards require a project's stormwater management system to include treatment measures that will mitigate the increased frequency and duration of channel erosive flows due to runoff from smaller storms, provide for effective treatment of pollutants in stormwater, and mitigate potential temperature impacts. This must be achieved by using one or more MDEP approved methods to control runoff from no less than 95% of the proposed impervious area and no less than 80% of the proposed developed area associated with a project.

The project will meet the linear portion requirement of MDEP Chapter 500 which states," For a linear portion of a project, treatment may be reduced to no less than 75% of the linear portion's impervious are and no less than 50% of the linear portion's developed area".

As this project will not create one acre or more of new impervious surface area, it will not be subject to MDEP Stormwater Permit Review. The project will be required to meet the Chapter 500 General and Flooding Standards per City of Portland Technical manual.

Flooding Standard: MDEP requires that projects which create 3 acres or more of impervious area and 20 acres or more of developed area or otherwise require review pursuant to the Site Location of Development Law must control the peak flow of runoff from the site to pre-development rates during the 2-year, 10-year and 25-year, 24-hour storms. As this project does not meet the above criteria, the Flooding Standard does not apply for MDEP approvals.

As part of the City of Portland's Technical manual the project will be required to meet the flooding standard.

2.7 PROPOSED BMPS

Two Filterra treatment units have been proposed at the low point of the proposed roadway to treat runoff from new roadway surface. The units will have an internal bypass to divert larger storms to an adjacent detention basin for flooding control. The Filterras have been sized in accordance with MDEP Chapter 500 rules.

The owner of the property is not intending to build the houses on this project and as such is not required to provide water quality treatment for the lot impervious areas. The lot impervious areas were included in the modeling to properly model runoff from the site.

2.8 PROJECT IMPACTS

The development of this project will result in the creation of approximately 0.62 acres of new impervious surface area and 2.27 acres of developed area.

Additionally, the project will result in approximately 11,318 square feet of wetland impacts as a result of the proposed roadway and lot grading.

3) STORMWATER QUANTITY ANALYSIS

3.1 PRE-DEVELOPMENT CONDITIONS

Under pre-development conditions the site is modeled with five Subcatchment areas (See Plan Set for Pre-Development Drainage Area Plan) three onsite Subcatchment areas and two offsite Subcatchment areas. The offsite areas direct offsite runoff onto the project property. The onsite and offsite Subcatchment areas drain to four points of analysis, Study Point 1, Study point 2, Study Point 3 and Study Point 4 . The onsite analysis encompasses approximately 13.78 acres.

3.2 POST- DEVELOPMENT CONDITIONS

Under the post-development condition the site area is further divided further into 8 subcatchment areas to allow for the effects of localized storage to be calculated. The runoff

from the subcatchment areas drains to the same four points of analysis, Study Point 1, Study Point 2, Study Point 3 and Study Point 4. The offsite analysis encompasses approximately 13.78 acres of drainage area. As such, a direct comparison can be made of the pre-development and post-development runoff values at each Study Point.

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. The Table below summarizes the results of the hydrologic analysis of the project under pre-development and post-development conditions.

3.3 STORMWATER QUANTITY SUMMARY

Stormwater Runoff Summary Table Pre-Development vs. Post-Development										
Study Point	**Total Watershed Area (Ac)**		**Avg. Weighted Curve No. (Cn)**		**Peak Rates of Runoff (cfs)**					
					2-Year		**10-Year**		**25-Year**	
	Pre	**Post**	**Pre**	**Post**	**Pre**	**Post**	**Pre**	**Post**	**Pre**	**Post**
SP-1	1.98	2.02	80	80	6.0	**3.4**	11.7	**6.8**	16.4	**8.4**
SP-2	2.99	2.95	64	71	6.7	**5.7**	15.0	**14.5**	22.9	**21.0**
SP-3	4.95	4.95	81	81	4.7	**4.7**	9.0	**9.0**	12.6	**12.6**
SP-4	3.86	3.86	55	55	0.2	**0.2**	1.6	**1.6**	3.3	**3.3**

4) STORMWATER QUALITY ANALYSIS

Water quality treatment is provided for runoff from the majority of the new Roadway areas associated with the project. Two proposed Filterra treatment units provide for 85% of the new roadway impervious area and 85% of the new developed area. The proposed treatment meets the Chapter 500 treatment requirements for the project site.

5) CONCLUSIONS

The runoff and routing calculations demonstrate that the development will result in a decrease in the peak rate of runoff at Study Points SP-1 and Study Point SP-2 during the 2-year, 10-year and 25-year storm events.

Study Point 3 and Study Point 4 remain unchanged from the pre to post development condition.

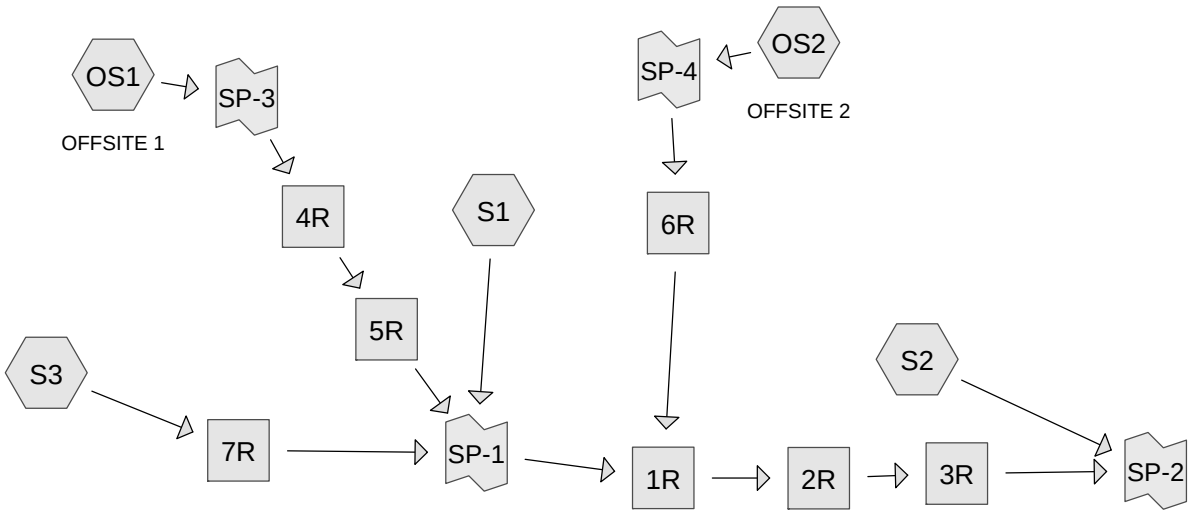
Stormwater runoff from this site will be treated to meet the MDEP Basic and General Standards for stormwater quality treatment for the project site. The project will provide treatment for 85% of the new roadway impervious areas and 85% of the new roadways developed area, meeting Chapter 500 Stormwater requirements.

The proposed project is designed to fit the topography and natural features of the site to the maximum extent practical. Stormwater runoff from the development will be captured, detained and treated in a series of BMPs and discharged to the same locations as the pre-development conditions.

An Erosion and Sedimentation Control Plan will be implemented to address erosion and sediment control during construction and the post-construction stabilization of the site. These construction requirements have been developed following BMP guidelines and have been place directly on the design plans for construction reference.

APPENDIX A

PRE-DEVELOPMENT HYDROCAD OUTPUT



Subcat Reach Pond Link

Routing Diagram for 41041 PRE
Prepared by Microsoft, Printed 4/30/2018
HydroCAD® 10.00-20 s/n 02173 © 2017 HydroCAD Software Solutions LLC

Summary for Subcatchment OS1: OFFSITE 1

Runoff = 4.7 cfs @ 12.40 hrs, Volume= 0.574 af, Depth= 1.39"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs
Type III 24-hr 2-YR Rainfall=3.10"

Area (ac)	CN	Description
0.943	98	Paved parking, HSG D
0.405	80	>75% Grass cover, Good, HSG D
3.603	77	Woods, Good, HSG D
4.951	81	Weighted Average
4.008		80.95% Pervious Area
0.943		19.05% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
11.7	75	0.0530	0.11		**Sheet Flow, A-B** Woods: Light underbrush n= 0.400 P2= 3.10"
1.2	81	0.0490	1.11		**Shallow Concentrated Flow, B-C** Woodland Kv= 5.0 fps
1.1	118	0.1180	1.72		**Shallow Concentrated Flow, C-D** Woodland Kv= 5.0 fps
13.6	483	0.0140	0.59		**Shallow Concentrated Flow, D-E** Woodland Kv= 5.0 fps
27.6	757	Total			

Summary for Subcatchment OS2: OFFSITE 2

Runoff = 0.2 cfs @ 12.66 hrs, Volume= 0.071 af, Depth= 0.22"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs
Type III 24-hr 2-YR Rainfall=3.10"

Area (ac)	CN	Description
0.582	98	Paved parking, HSG D
1.923	30	Woods, Good, HSG A
0.969	77	Woods, Good, HSG D
0.231	39	>75% Grass cover, Good, HSG A
0.157	80	>75% Grass cover, Good, HSG D
3.862	55	Weighted Average
3.280		84.93% Pervious Area
0.582		15.07% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
10.3	75	0.0730	0.12		**Sheet Flow, A-B** Woods: Light underbrush n= 0.400 P2= 3.10"
0.9	85	0.0940	1.53		**Shallow Concentrated Flow, B-C** Woodland Kv= 5.0 fps
15.3	544	0.0140	0.59		**Shallow Concentrated Flow, C-D** Woodland Kv= 5.0 fps
26.5	704	Total			

Summary for Subcatchment S1:

Runoff = 1.4 cfs @ 12.20 hrs, Volume= 0.133 af, Depth= 1.39"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs
Type III 24-hr 2-YR Rainfall=3.10"

Area (ac)	CN	Description
0.194	98	Paved parking, HSG D
0.010	39	>75% Grass cover, Good, HSG A
0.277	80	>75% Grass cover, Good, HSG D
0.668	77	Woods, Good, HSG D
1.149	81	Weighted Average
0.955		83.12% Pervious Area
0.194		16.88% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
10.0	75	0.0800	0.13		**Sheet Flow, A-B** Woods: Light underbrush n= 0.400 P2= 3.10"
3.0	117	0.0170	0.65		**Shallow Concentrated Flow, B-C** Woodland Kv= 5.0 fps
0.5	50	0.0200	1.84	5.76	**Trap/Vee/Rect Channel Flow, C-D** Bot.W=10.00' D=0.25' Z= 10.0 '/' Top.W=15.00' n= 0.040
0.7	121	0.0240	2.69	8.42	**Trap/Vee/Rect Channel Flow, D-E** Bot.W=10.00' D=0.25' Z= 10.0 '/' Top.W=15.00' n= 0.030
14.2	363	Total			

Summary for Subcatchment S2:

Runoff = 0.9 cfs @ 12.32 hrs, Volume= 0.128 af, Depth= 0.51"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs
Type III 24-hr 2-YR Rainfall=3.10"

	Area (ac)	CN	Description
*	0.108	98	Exposed Ledge, HSG A
	0.092	98	Paved parking, HSG D
	0.297	39	>75% Grass cover, Good, HSG A
	0.508	80	>75% Grass cover, Good, HSG D
	0.693	30	Woods, Good, HSG A
	1.295	77	Woods, Good, HSG D
	2.993	64	Weighted Average
	2.793		93.32% Pervious Area
	0.200		6.68% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
10.0	75	0.0800	0.13		**Sheet Flow, A-B** Woods: Light underbrush n= 0.400 P2= 3.10"
1.7	111	0.0450	1.06		**Shallow Concentrated Flow, B-C** Woodland Kv= 5.0 fps
1.0	128	0.0290	2.15	5.10	**Trap/Vee/Rect Channel Flow, C-D** Bot.W=7.00' D=0.25' Z= 10.0 '/' Top.W=12.00' n= 0.040
0.5	59	0.0160	1.90		**Shallow Concentrated Flow, D-E** Grassed Waterway Kv= 15.0 fps
3.4	184	0.0050	0.90	2.37	**Trap/Vee/Rect Channel Flow, E-F** Bot.W=8.00' D=0.25' Z= 10.0 '/' Top.W=13.00' n= 0.040
0.9	123	0.0080	2.40	7.79	**Trap/Vee/Rect Channel Flow, F-G** Bot.W=5.00' D=0.50' Z= 3.0 '/' Top.W=8.00' n= 0.030
17.5	680	Total			

Summary for Subcatchment S3:

Runoff = 0.9 cfs @ 12.22 hrs, Volume= 0.083 af, Depth= 1.20"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs
Type III 24-hr 2-YR Rainfall=3.10"

Area (ac)	CN	Description
0.159	80	>75% Grass cover, Good, HSG D
0.673	77	Woods, Good, HSG D
0.832	78	Weighted Average
0.832		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
11.7	75	0.0530	0.11		**Sheet Flow, A-B** Woods: Light underbrush n= 0.400 P2= 3.10"
2.4	121	0.0280	0.84		**Shallow Concentrated Flow, B-C** Woodland Kv= 5.0 fps
1.1	77	0.0064	1.20		**Shallow Concentrated Flow, C-D** Grassed Waterway Kv= 15.0 fps
15.2	273	Total			

Summary for Reach 1R:

Inflow Area = 10.794 ac, 15.93% Impervious, Inflow Depth = 0.96" for 2-YR event
Inflow = 6.0 cfs @ 12.44 hrs, Volume= 0.862 af
Outflow = 6.0 cfs @ 12.47 hrs, Volume= 0.862 af, Atten= 0%, Lag= 1.8 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs
Max. Velocity= 1.52 fps, Min. Travel Time= 1.1 min
Avg. Velocity = 0.51 fps, Avg. Travel Time= 3.2 min

Peak Storage= 388 cf @ 12.45 hrs
Average Depth at Peak Storage= 0.18'
Bank-Full Depth= 1.00' Flow Area= 30.0 sf, Capacity= 123.7 cfs

20.00' x 1.00' deep channel, n= 0.030
Side Slope Z-value= 10.0 '/' Top Width= 40.00'
Length= 98.0' Slope= 0.0102 '/'
Inlet Invert= 57.00', Outlet Invert= 56.00'

‡

Summary for Reach 2R:

Inflow Area = 10.794 ac, 15.93% Impervious, Inflow Depth = 0.96" for 2-YR event
Inflow = 6.0 cfs @ 12.47 hrs, Volume= 0.862 af
Outflow = 6.0 cfs @ 12.51 hrs, Volume= 0.862 af, Atten= 0%, Lag= 2.2 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs
Max. Velocity= 2.74 fps, Min. Travel Time= 1.2 min
Avg. Velocity = 0.98 fps, Avg. Travel Time= 3.5 min

Peak Storage= 447 cf @ 12.49 hrs
Average Depth at Peak Storage= 0.22'
Bank-Full Depth= 1.00' Flow Area= 18.0 sf, Capacity= 116.0 cfs

8.00' x 1.00' deep channel, n= 0.012 Concrete pipe, finished
Side Slope Z-value= 10.0 '/' Top Width= 28.00'
Length= 204.0' Slope= 0.0049 '/'
Inlet Invert= 56.00', Outlet Invert= 55.00'

‡

Summary for Reach 3R:

Inflow Area = 10.794 ac, 15.93% Impervious, Inflow Depth = 0.96" for 2-YR event
Inflow = 6.0 cfs @ 12.51 hrs, Volume= 0.862 af
Outflow = 6.0 cfs @ 12.53 hrs, Volume= 0.862 af, Atten= 0%, Lag= 1.2 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs
Max. Velocity= 2.35 fps, Min. Travel Time= 0.7 min
Avg. Velocity = 0.81 fps, Avg. Travel Time= 2.1 min

Peak Storage= 262 cf @ 12.52 hrs
Average Depth at Peak Storage= 0.41'
Bank-Full Depth= 1.00' Flow Area= 8.0 sf, Capacity= 31.0 cfs

5.00' x 1.00' deep channel, n= 0.030
Side Slope Z-value= 3.0 '/' Top Width= 11.00'
Length= 103.0' Slope= 0.0097 '/'
Inlet Invert= 55.00', Outlet Invert= 54.00'

‡

Summary for Reach 4R:

Inflow Area = 4.951 ac, 19.05% Impervious, Inflow Depth = 1.39" for 2-YR event
Inflow = 4.7 cfs @ 12.40 hrs, Volume= 0.574 af
Outflow = 4.6 cfs @ 12.45 hrs, Volume= 0.574 af, Atten= 1%, Lag= 3.1 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs
Max. Velocity= 1.53 fps, Min. Travel Time= 1.7 min
Avg. Velocity = 0.51 fps, Avg. Travel Time= 5.2 min

Peak Storage= 488 cf @ 12.42 hrs
Average Depth at Peak Storage= 0.28'
Bank-Full Depth= 0.50' Flow Area= 6.5 sf, Capacity= 13.7 cfs

8.00' x 0.50' deep channel, n= 0.040
Side Slope Z-value= 10.0 '/' Top Width= 18.00'
Length= 160.0' Slope= 0.0125 '/'
Inlet Invert= 64.00', Outlet Invert= 62.00'

‡

Summary for Reach 5R:

Inflow Area = 4.951 ac, 19.05% Impervious, Inflow Depth = 1.39" for 2-YR event
Inflow = 4.6 cfs @ 12.45 hrs, Volume= 0.574 af
Outflow = 4.6 cfs @ 12.49 hrs, Volume= 0.574 af, Atten= 1%, Lag= 2.2 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs
Max. Velocity= 1.55 fps, Min. Travel Time= 1.3 min
Avg. Velocity = 0.49 fps, Avg. Travel Time= 4.2 min

Peak Storage= 368 cf @ 12.46 hrs
Average Depth at Peak Storage= 0.07'
Bank-Full Depth= 0.50' Flow Area= 22.5 sf, Capacity= 117.9 cfs

40.00' x 0.50' deep channel, n= 0.030 Earth, grassed & winding
Side Slope Z-value= 10.0 '/' Top Width= 50.00'
Length= 123.0' Slope= 0.0325 '/'
Inlet Invert= 62.00', Outlet Invert= 58.00'

‡

Summary for Reach 6R:

Inflow Area = 3.862 ac, 15.07% Impervious, Inflow Depth = 0.22" for 2-YR event
Inflow = 0.2 cfs @ 12.66 hrs, Volume= 0.071 af
Outflow = 0.2 cfs @ 12.88 hrs, Volume= 0.071 af, Atten= 5%, Lag= 13.4 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs
Max. Velocity= 0.63 fps, Min. Travel Time= 7.5 min
Avg. Velocity = 0.35 fps, Avg. Travel Time= 13.4 min

Peak Storage= 106 cf @ 12.76 hrs
Average Depth at Peak Storage= 0.05'
Bank-Full Depth= 1.00' Flow Area= 11.0 sf, Capacity= 45.5 cfs

8.00' x 1.00' deep channel, n= 0.040
Side Slope Z-value= 3.0 '/' Top Width= 14.00'
Length= 283.0' Slope= 0.0177 '/'
Inlet Invert= 63.00', Outlet Invert= 58.00'

‡

Summary for Reach 7R:

Inflow Area = 0.832 ac, 0.00% Impervious, Inflow Depth = 1.20" for 2-YR event
Inflow = 0.9 cfs @ 12.22 hrs, Volume= 0.083 af
Outflow = 0.8 cfs @ 12.27 hrs, Volume= 0.083 af, Atten= 2%, Lag= 3.1 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs
Max. Velocity= 0.99 fps, Min. Travel Time= 1.7 min
Avg. Velocity = 0.31 fps, Avg. Travel Time= 5.5 min

Peak Storage= 87 cf @ 12.24 hrs
Average Depth at Peak Storage= 0.04'
Bank-Full Depth= 0.25' Flow Area= 6.3 sf, Capacity= 18.7 cfs

20.00' x 0.25' deep channel, n= 0.030 Short grass
Side Slope Z-value= 20.0 '/' Top Width= 30.00'
Length= 102.0' Slope= 0.0294 '/'
Inlet Invert= 60.00', Outlet Invert= 57.00'

‡

Summary for Link SP-1:

Inflow Area = 6.932 ac, 16.40% Impervious, Inflow Depth = 1.37" for 2-YR event
Inflow = 6.0 cfs @ 12.44 hrs, Volume= 0.790 af
Primary = 6.0 cfs @ 12.44 hrs, Volume= 0.790 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs

Summary for Link SP-2:

Inflow Area = 13.787 ac, 13.92% Impervious, Inflow Depth = 0.86" for 2-YR event
Inflow = 6.7 cfs @ 12.51 hrs, Volume= 0.990 af
Primary = 6.7 cfs @ 12.51 hrs, Volume= 0.990 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs

Summary for Link SP-3:

Inflow Area = 4.951 ac, 19.05% Impervious, Inflow Depth = 1.39" for 2-YR event
Inflow = 4.7 cfs @ 12.40 hrs, Volume= 0.574 af
Primary = 4.7 cfs @ 12.40 hrs, Volume= 0.574 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs

Summary for Link SP-4:

Inflow Area = 3.862 ac, 15.07% Impervious, Inflow Depth = 0.22" for 2-YR event
Inflow = 0.2 cfs @ 12.66 hrs, Volume= 0.071 af
Primary = 0.2 cfs @ 12.66 hrs, Volume= 0.071 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs

Summary for Subcatchment OS1: OFFSITE 1

Runoff = 9.0 cfs @ 12.38 hrs, Volume= 1.087 af, Depth= 2.63"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs
Type III 24-hr 10-YR Rainfall=4.60"

Area (ac)	CN	Description
0.943	98	Paved parking, HSG D
0.405	80	>75% Grass cover, Good, HSG D
3.603	77	Woods, Good, HSG D
4.951	81	Weighted Average
4.008		80.95% Pervious Area
0.943		19.05% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
11.7	75	0.0530	0.11		**Sheet Flow, A-B** Woods: Light underbrush n= 0.400 P2= 3.10"
1.2	81	0.0490	1.11		**Shallow Concentrated Flow, B-C** Woodland Kv= 5.0 fps
1.1	118	0.1180	1.72		**Shallow Concentrated Flow, C-D** Woodland Kv= 5.0 fps
13.6	483	0.0140	0.59		**Shallow Concentrated Flow, D-E** Woodland Kv= 5.0 fps
27.6	757	Total			

Summary for Subcatchment OS2: OFFSITE 2

Runoff = 1.6 cfs @ 12.47 hrs, Volume= 0.254 af, Depth= 0.79"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs
Type III 24-hr 10-YR Rainfall=4.60"

Area (ac)	CN	Description
0.582	98	Paved parking, HSG D
1.923	30	Woods, Good, HSG A
0.969	77	Woods, Good, HSG D
0.231	39	>75% Grass cover, Good, HSG A
0.157	80	>75% Grass cover, Good, HSG D
3.862	55	Weighted Average
3.280		84.93% Pervious Area
0.582		15.07% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
10.3	75	0.0730	0.12		**Sheet Flow, A-B** Woods: Light underbrush n= 0.400 P2= 3.10"
0.9	85	0.0940	1.53		**Shallow Concentrated Flow, B-C** Woodland Kv= 5.0 fps
15.3	544	0.0140	0.59		**Shallow Concentrated Flow, C-D** Woodland Kv= 5.0 fps
26.5	704	Total			

Summary for Subcatchment S1:

Runoff = 2.7 cfs @ 12.20 hrs, Volume= 0.252 af, Depth= 2.63"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs
Type III 24-hr 10-YR Rainfall=4.60"

Area (ac)	CN	Description
0.194	98	Paved parking, HSG D
0.010	39	>75% Grass cover, Good, HSG A
0.277	80	>75% Grass cover, Good, HSG D
0.668	77	Woods, Good, HSG D
1.149	81	Weighted Average
0.955		83.12% Pervious Area
0.194		16.88% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
10.0	75	0.0800	0.13		**Sheet Flow, A-B** Woods: Light underbrush n= 0.400 P2= 3.10"
3.0	117	0.0170	0.65		**Shallow Concentrated Flow, B-C** Woodland Kv= 5.0 fps
0.5	50	0.0200	1.84	5.76	**Trap/Vee/Rect Channel Flow, C-D** Bot.W=10.00' D=0.25' Z= 10.0 '/' Top.W=15.00' n= 0.040
0.7	121	0.0240	2.69	8.42	**Trap/Vee/Rect Channel Flow, D-E** Bot.W=10.00' D=0.25' Z= 10.0 '/' Top.W=15.00' n= 0.030
14.2	363	Total			

Summary for Subcatchment S2:

Runoff = 3.0 cfs @ 12.27 hrs, Volume= 0.331 af, Depth= 1.33"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs
Type III 24-hr 10-YR Rainfall=4.60"

	Area (ac)	CN	Description
*	0.108	98	Exposed Ledge, HSG A
	0.092	98	Paved parking, HSG D
	0.297	39	>75% Grass cover, Good, HSG A
	0.508	80	>75% Grass cover, Good, HSG D
	0.693	30	Woods, Good, HSG A
	1.295	77	Woods, Good, HSG D
	2.993	64	Weighted Average
	2.793		93.32% Pervious Area
	0.200		6.68% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
10.0	75	0.0800	0.13		**Sheet Flow, A-B** Woods: Light underbrush n= 0.400 P2= 3.10"
1.7	111	0.0450	1.06		**Shallow Concentrated Flow, B-C** Woodland Kv= 5.0 fps
1.0	128	0.0290	2.15	5.10	**Trap/Vee/Rect Channel Flow, C-D** Bot.W=7.00' D=0.25' Z= 10.0 '/' Top.W=12.00' n= 0.040
0.5	59	0.0160	1.90		**Shallow Concentrated Flow, D-E** Grassed Waterway Kv= 15.0 fps
3.4	184	0.0050	0.90	2.37	**Trap/Vee/Rect Channel Flow, E-F** Bot.W=8.00' D=0.25' Z= 10.0 '/' Top.W=13.00' n= 0.040
0.9	123	0.0080	2.40	7.79	**Trap/Vee/Rect Channel Flow, F-G** Bot.W=5.00' D=0.50' Z= 3.0 '/' Top.W=8.00' n= 0.030
17.5	680	Total			

Summary for Subcatchment S3:

Runoff = 1.7 cfs @ 12.21 hrs, Volume= 0.165 af, Depth= 2.38"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs
Type III 24-hr 10-YR Rainfall=4.60"

Area (ac)	CN	Description
0.159	80	>75% Grass cover, Good, HSG D
0.673	77	Woods, Good, HSG D
0.832	78	Weighted Average
0.832		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
11.7	75	0.0530	0.11		**Sheet Flow, A-B** Woods: Light underbrush n= 0.400 P2= 3.10"
2.4	121	0.0280	0.84		**Shallow Concentrated Flow, B-C** Woodland Kv= 5.0 fps
1.1	77	0.0064	1.20		**Shallow Concentrated Flow, C-D** Grassed Waterway Kv= 15.0 fps
15.2	273	Total			

Summary for Reach 1R:

Inflow Area = 10.794 ac, 15.93% Impervious, Inflow Depth = 1.95" for 10-YR event
Inflow = 12.9 cfs @ 12.43 hrs, Volume= 1.758 af
Outflow = 12.9 cfs @ 12.46 hrs, Volume= 1.758 af, Atten= 0%, Lag= 1.4 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs
Max. Velocity= 2.00 fps, Min. Travel Time= 0.8 min
Avg. Velocity = 0.63 fps, Avg. Travel Time= 2.6 min

Peak Storage= 634 cf @ 12.44 hrs
Average Depth at Peak Storage= 0.28'
Bank-Full Depth= 1.00' Flow Area= 30.0 sf, Capacity= 123.7 cfs

20.00' x 1.00' deep channel, n= 0.030
Side Slope Z-value= 10.0 '/' Top Width= 40.00'
Length= 98.0' Slope= 0.0102 '/'
Inlet Invert= 57.00', Outlet Invert= 56.00'

‡

Summary for Reach 2R:

Inflow Area = 10.794 ac, 15.93% Impervious, Inflow Depth = 1.95" for 10-YR event
Inflow = 12.9 cfs @ 12.46 hrs, Volume= 1.758 af
Outflow = 12.8 cfs @ 12.49 hrs, Volume= 1.758 af, Atten= 0%, Lag= 1.7 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs
Max. Velocity= 3.47 fps, Min. Travel Time= 1.0 min
Avg. Velocity = 1.19 fps, Avg. Travel Time= 2.9 min

Peak Storage= 756 cf @ 12.47 hrs
Average Depth at Peak Storage= 0.33'
Bank-Full Depth= 1.00' Flow Area= 18.0 sf, Capacity= 116.0 cfs

8.00' x 1.00' deep channel, n= 0.012 Concrete pipe, finished
Side Slope Z-value= 10.0 '/' Top Width= 28.00'
Length= 204.0' Slope= 0.0049 '/'
Inlet Invert= 56.00', Outlet Invert= 55.00'

‡

Summary for Reach 3R:

Inflow Area = 10.794 ac, 15.93% Impervious, Inflow Depth = 1.95" for 10-YR event
Inflow = 12.8 cfs @ 12.49 hrs, Volume= 1.758 af
Outflow = 12.8 cfs @ 12.50 hrs, Volume= 1.758 af, Atten= 0%, Lag= 1.0 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs
Max. Velocity= 2.99 fps, Min. Travel Time= 0.6 min
Avg. Velocity = 0.99 fps, Avg. Travel Time= 1.7 min

Peak Storage= 442 cf @ 12.49 hrs
Average Depth at Peak Storage= 0.62'
Bank-Full Depth= 1.00' Flow Area= 8.0 sf, Capacity= 31.0 cfs

5.00' x 1.00' deep channel, n= 0.030
Side Slope Z-value= 3.0 '/' Top Width= 11.00'
Length= 103.0' Slope= 0.0097 '/'
Inlet Invert= 55.00', Outlet Invert= 54.00'

‡

Summary for Reach 4R:

Inflow Area = 4.951 ac, 19.05% Impervious, Inflow Depth = 2.63" for 10-YR event
Inflow = 9.0 cfs @ 12.38 hrs, Volume= 1.087 af
Outflow = 8.9 cfs @ 12.43 hrs, Volume= 1.087 af, Atten= 1%, Lag= 2.5 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs
Max. Velocity= 1.86 fps, Min. Travel Time= 1.4 min
Avg. Velocity = 0.61 fps, Avg. Travel Time= 4.4 min

Peak Storage= 770 cf @ 12.40 hrs
Average Depth at Peak Storage= 0.40'
Bank-Full Depth= 0.50' Flow Area= 6.5 sf, Capacity= 13.7 cfs

8.00' x 0.50' deep channel, n= 0.040
Side Slope Z-value= 10.0 '/' Top Width= 18.00'
Length= 160.0' Slope= 0.0125 '/'
Inlet Invert= 64.00', Outlet Invert= 62.00'

‡

Summary for Reach 5R:

Inflow Area = 4.951 ac, 19.05% Impervious, Inflow Depth = 2.63" for 10-YR event
Inflow = 8.9 cfs @ 12.43 hrs, Volume= 1.087 af
Outflow = 8.9 cfs @ 12.46 hrs, Volume= 1.087 af, Atten= 0%, Lag= 1.8 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs
Max. Velocity= 2.00 fps, Min. Travel Time= 1.0 min
Avg. Velocity = 0.59 fps, Avg. Travel Time= 3.5 min

Peak Storage= 548 cf @ 12.44 hrs
Average Depth at Peak Storage= 0.11'
Bank-Full Depth= 0.50' Flow Area= 22.5 sf, Capacity= 117.9 cfs

40.00' x 0.50' deep channel, n= 0.030 Earth, grassed & winding
Side Slope Z-value= 10.0 '/' Top Width= 50.00'
Length= 123.0' Slope= 0.0325 '/'
Inlet Invert= 62.00', Outlet Invert= 58.00'

‡

Summary for Reach 6R:

Inflow Area = 3.862 ac, 15.07% Impervious, Inflow Depth = 0.79" for 10-YR event
Inflow = 1.6 cfs @ 12.47 hrs, Volume= 0.254 af
Outflow = 1.6 cfs @ 12.57 hrs, Volume= 0.254 af, Atten= 1%, Lag= 6.2 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs
Max. Velocity= 1.31 fps, Min. Travel Time= 3.6 min
Avg. Velocity = 0.52 fps, Avg. Travel Time= 9.1 min

Peak Storage= 345 cf @ 12.51 hrs
Average Depth at Peak Storage= 0.14'
Bank-Full Depth= 1.00' Flow Area= 11.0 sf, Capacity= 45.5 cfs

8.00' x 1.00' deep channel, n= 0.040
Side Slope Z-value= 3.0 '/' Top Width= 14.00'
Length= 283.0' Slope= 0.0177 '/'
Inlet Invert= 63.00', Outlet Invert= 58.00'

‡

Summary for Reach 7R:

Inflow Area = 0.832 ac, 0.00% Impervious, Inflow Depth = 2.38" for 10-YR event
Inflow = 1.7 cfs @ 12.21 hrs, Volume= 0.165 af
Outflow = 1.7 cfs @ 12.25 hrs, Volume= 0.165 af, Atten= 2%, Lag= 2.4 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs
Max. Velocity= 1.29 fps, Min. Travel Time= 1.3 min
Avg. Velocity = 0.38 fps, Avg. Travel Time= 4.5 min

Peak Storage= 136 cf @ 12.23 hrs
Average Depth at Peak Storage= 0.06'
Bank-Full Depth= 0.25' Flow Area= 6.3 sf, Capacity= 18.7 cfs

20.00' x 0.25' deep channel, n= 0.030 Short grass
Side Slope Z-value= 20.0 '/' Top Width= 30.00'
Length= 102.0' Slope= 0.0294 '/'
Inlet Invert= 60.00', Outlet Invert= 57.00'

‡

Summary for Link SP-1:

Inflow Area = 6.932 ac, 16.40% Impervious, Inflow Depth = 2.60" for 10-YR event
Inflow = 11.7 cfs @ 12.40 hrs, Volume= 1.504 af
Primary = 11.7 cfs @ 12.40 hrs, Volume= 1.504 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs

Summary for Link SP-2:

Inflow Area = 13.787 ac, 13.92% Impervious, Inflow Depth = 1.82" for 10-YR event
Inflow = 15.0 cfs @ 12.47 hrs, Volume= 2.089 af
Primary = 15.0 cfs @ 12.47 hrs, Volume= 2.089 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs

Summary for Link SP-3:

Inflow Area = 4.951 ac, 19.05% Impervious, Inflow Depth = 2.63" for 10-YR event
Inflow = 9.0 cfs @ 12.38 hrs, Volume= 1.087 af
Primary = 9.0 cfs @ 12.38 hrs, Volume= 1.087 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs

Summary for Link SP-4:

Inflow Area = 3.862 ac, 15.07% Impervious, Inflow Depth = 0.79" for 10-YR event
Inflow = 1.6 cfs @ 12.47 hrs, Volume= 0.254 af
Primary = 1.6 cfs @ 12.47 hrs, Volume= 0.254 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs

Summary for Subcatchment OS1: OFFSITE 1

Runoff = 12.6 cfs @ 12.38 hrs, Volume= 1.527 af, Depth= 3.70"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs
Type III 24-hr 25-YR Rainfall=5.80"

Area (ac)	CN	Description
0.943	98	Paved parking, HSG D
0.405	80	>75% Grass cover, Good, HSG D
3.603	77	Woods, Good, HSG D
4.951	81	Weighted Average
4.008		80.95% Pervious Area
0.943		19.05% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
11.7	75	0.0530	0.11		**Sheet Flow, A-B** Woods: Light underbrush n= 0.400 P2= 3.10"
1.2	81	0.0490	1.11		**Shallow Concentrated Flow, B-C** Woodland Kv= 5.0 fps
1.1	118	0.1180	1.72		**Shallow Concentrated Flow, C-D** Woodland Kv= 5.0 fps
13.6	483	0.0140	0.59		**Shallow Concentrated Flow, D-E** Woodland Kv= 5.0 fps
27.6	757	Total			

Summary for Subcatchment OS2: OFFSITE 2

Runoff = 3.3 cfs @ 12.43 hrs, Volume= 0.452 af, Depth= 1.40"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs
Type III 24-hr 25-YR Rainfall=5.80"

Area (ac)	CN	Description
0.582	98	Paved parking, HSG D
1.923	30	Woods, Good, HSG A
0.969	77	Woods, Good, HSG D
0.231	39	>75% Grass cover, Good, HSG A
0.157	80	>75% Grass cover, Good, HSG D
3.862	55	Weighted Average
3.280		84.93% Pervious Area
0.582		15.07% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
10.3	75	0.0730	0.12		**Sheet Flow, A-B** Woods: Light underbrush n= 0.400 P2= 3.10"
0.9	85	0.0940	1.53		**Shallow Concentrated Flow, B-C** Woodland Kv= 5.0 fps
15.3	544	0.0140	0.59		**Shallow Concentrated Flow, C-D** Woodland Kv= 5.0 fps
26.5	704	Total			

Summary for Subcatchment S1:

Runoff = 3.8 cfs @ 12.20 hrs, Volume= 0.354 af, Depth= 3.70"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs
Type III 24-hr 25-YR Rainfall=5.80"

Area (ac)	CN	Description
0.194	98	Paved parking, HSG D
0.010	39	>75% Grass cover, Good, HSG A
0.277	80	>75% Grass cover, Good, HSG D
0.668	77	Woods, Good, HSG D
1.149	81	Weighted Average
0.955		83.12% Pervious Area
0.194		16.88% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
10.0	75	0.0800	0.13		**Sheet Flow, A-B** Woods: Light underbrush n= 0.400 P2= 3.10"
3.0	117	0.0170	0.65		**Shallow Concentrated Flow, B-C** Woodland Kv= 5.0 fps
0.5	50	0.0200	1.84	5.76	**Trap/Vee/Rect Channel Flow, C-D** Bot.W=10.00' D=0.25' Z= 10.0 '/' Top.W=15.00' n= 0.040
0.7	121	0.0240	2.69	8.42	**Trap/Vee/Rect Channel Flow, D-E** Bot.W=10.00' D=0.25' Z= 10.0 '/' Top.W=15.00' n= 0.030
14.2	363	Total			

Summary for Subcatchment S2:

Runoff = 5.1 cfs @ 12.26 hrs, Volume= 0.529 af, Depth= 2.12"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs
Type III 24-hr 25-YR Rainfall=5.80"

	Area (ac)	CN	Description
*	0.108	98	Exposed Ledge, HSG A
	0.092	98	Paved parking, HSG D
	0.297	39	>75% Grass cover, Good, HSG A
	0.508	80	>75% Grass cover, Good, HSG D
	0.693	30	Woods, Good, HSG A
	1.295	77	Woods, Good, HSG D
	2.993	64	Weighted Average
	2.793		93.32% Pervious Area
	0.200		6.68% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
10.0	75	0.0800	0.13		**Sheet Flow, A-B** Woods: Light underbrush n= 0.400 P2= 3.10"
1.7	111	0.0450	1.06		**Shallow Concentrated Flow, B-C** Woodland Kv= 5.0 fps
1.0	128	0.0290	2.15	5.10	**Trap/Vee/Rect Channel Flow, C-D** Bot.W=7.00' D=0.25' Z= 10.0 '/' Top.W=12.00' n= 0.040
0.5	59	0.0160	1.90		**Shallow Concentrated Flow, D-E** Grassed Waterway Kv= 15.0 fps
3.4	184	0.0050	0.90	2.37	**Trap/Vee/Rect Channel Flow, E-F** Bot.W=8.00' D=0.25' Z= 10.0 '/' Top.W=13.00' n= 0.040
0.9	123	0.0080	2.40	7.79	**Trap/Vee/Rect Channel Flow, F-G** Bot.W=5.00' D=0.50' Z= 3.0 '/' Top.W=8.00' n= 0.030
17.5	680	Total			

Summary for Subcatchment S3:

Runoff = 2.5 cfs @ 12.21 hrs, Volume= 0.236 af, Depth= 3.40"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs
Type III 24-hr 25-YR Rainfall=5.80"

Area (ac)	CN	Description
0.159	80	>75% Grass cover, Good, HSG D
0.673	77	Woods, Good, HSG D
0.832	78	Weighted Average
0.832		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
11.7	75	0.0530	0.11		**Sheet Flow, A-B** Woods: Light underbrush n= 0.400 P2= 3.10"
2.4	121	0.0280	0.84		**Shallow Concentrated Flow, B-C** Woodland Kv= 5.0 fps
1.1	77	0.0064	1.20		**Shallow Concentrated Flow, C-D** Grassed Waterway Kv= 15.0 fps
15.2	273	Total			

Summary for Reach 1R:

Inflow Area = 10.794 ac, 15.93% Impervious, Inflow Depth = 2.86" for 25-YR event
Inflow = 19.4 cfs @ 12.42 hrs, Volume= 2.570 af
Outflow = 19.4 cfs @ 12.44 hrs, Volume= 2.570 af, Atten= 0%, Lag= 1.2 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs
Max. Velocity= 2.29 fps, Min. Travel Time= 0.7 min
Avg. Velocity = 0.70 fps, Avg. Travel Time= 2.3 min

Peak Storage= 829 cf @ 12.42 hrs
Average Depth at Peak Storage= 0.36'
Bank-Full Depth= 1.00' Flow Area= 30.0 sf, Capacity= 123.7 cfs

20.00' x 1.00' deep channel, n= 0.030
Side Slope Z-value= 10.0 '/' Top Width= 40.00'
Length= 98.0' Slope= 0.0102 '/'
Inlet Invert= 57.00', Outlet Invert= 56.00'

‡

Summary for Reach 2R:

Inflow Area = 10.794 ac, 15.93% Impervious, Inflow Depth = 2.86" for 25-YR event
Inflow = 19.4 cfs @ 12.44 hrs, Volume= 2.570 af
Outflow = 19.3 cfs @ 12.46 hrs, Volume= 2.570 af, Atten= 0%, Lag= 1.5 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs
Max. Velocity= 3.92 fps, Min. Travel Time= 0.9 min
Avg. Velocity = 1.32 fps, Avg. Travel Time= 2.6 min

Peak Storage= 1,006 cf @ 12.45 hrs
Average Depth at Peak Storage= 0.41'
Bank-Full Depth= 1.00' Flow Area= 18.0 sf, Capacity= 116.0 cfs

8.00' x 1.00' deep channel, n= 0.012 Concrete pipe, finished
Side Slope Z-value= 10.0 '/' Top Width= 28.00'
Length= 204.0' Slope= 0.0049 '/'
Inlet Invert= 56.00', Outlet Invert= 55.00'

‡

Summary for Reach 3R:

Inflow Area = 10.794 ac, 15.93% Impervious, Inflow Depth = 2.86" for 25-YR event
Inflow = 19.3 cfs @ 12.46 hrs, Volume= 2.570 af
Outflow = 19.2 cfs @ 12.48 hrs, Volume= 2.570 af, Atten= 0%, Lag= 0.9 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs
Max. Velocity= 3.38 fps, Min. Travel Time= 0.5 min
Avg. Velocity = 1.10 fps, Avg. Travel Time= 1.6 min

Peak Storage= 588 cf @ 12.47 hrs
Average Depth at Peak Storage= 0.78'
Bank-Full Depth= 1.00' Flow Area= 8.0 sf, Capacity= 31.0 cfs

5.00' x 1.00' deep channel, n= 0.030
Side Slope Z-value= 3.0 '/' Top Width= 11.00'
Length= 103.0' Slope= 0.0097 '/'
Inlet Invert= 55.00', Outlet Invert= 54.00'

‡

Summary for Reach 4R:

Inflow Area = 4.951 ac, 19.05% Impervious, Inflow Depth = 3.70" for 25-YR event
Inflow = 12.6 cfs @ 12.38 hrs, Volume= 1.527 af
Outflow = 12.5 cfs @ 12.42 hrs, Volume= 1.527 af, Atten= 1%, Lag= 2.4 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs
Max. Velocity= 2.05 fps, Min. Travel Time= 1.3 min
Avg. Velocity = 0.67 fps, Avg. Travel Time= 4.0 min

Peak Storage= 978 cf @ 12.39 hrs
Average Depth at Peak Storage= 0.48'
Bank-Full Depth= 0.50' Flow Area= 6.5 sf, Capacity= 13.7 cfs

8.00' x 0.50' deep channel, n= 0.040
Side Slope Z-value= 10.0 '/' Top Width= 18.00'
Length= 160.0' Slope= 0.0125 '/'
Inlet Invert= 64.00', Outlet Invert= 62.00'

‡

Summary for Reach 5R:

Inflow Area = 4.951 ac, 19.05% Impervious, Inflow Depth = 3.70" for 25-YR event
Inflow = 12.5 cfs @ 12.42 hrs, Volume= 1.527 af
Outflow = 12.4 cfs @ 12.44 hrs, Volume= 1.527 af, Atten= 1%, Lag= 1.6 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs
Max. Velocity= 2.27 fps, Min. Travel Time= 0.9 min
Avg. Velocity = 0.65 fps, Avg. Travel Time= 3.2 min

Peak Storage= 674 cf @ 12.43 hrs
Average Depth at Peak Storage= 0.13'
Bank-Full Depth= 0.50' Flow Area= 22.5 sf, Capacity= 117.9 cfs

40.00' x 0.50' deep channel, n= 0.030 Earth, grassed & winding
Side Slope Z-value= 10.0 '/' Top Width= 50.00'
Length= 123.0' Slope= 0.0325 '/'
Inlet Invert= 62.00', Outlet Invert= 58.00'

‡

Summary for Reach 6R:

Inflow Area = 3.862 ac, 15.07% Impervious, Inflow Depth = 1.40" for 25-YR event
Inflow = 3.3 cfs @ 12.43 hrs, Volume= 0.452 af
Outflow = 3.3 cfs @ 12.51 hrs, Volume= 0.452 af, Atten= 1%, Lag= 4.7 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs
Max. Velocity= 1.71 fps, Min. Travel Time= 2.8 min
Avg. Velocity = 0.61 fps, Avg. Travel Time= 7.7 min

Peak Storage= 544 cf @ 12.46 hrs
Average Depth at Peak Storage= 0.22'
Bank-Full Depth= 1.00' Flow Area= 11.0 sf, Capacity= 45.5 cfs

8.00' x 1.00' deep channel, n= 0.040
Side Slope Z-value= 3.0 '/' Top Width= 14.00'
Length= 283.0' Slope= 0.0177 '/'
Inlet Invert= 63.00', Outlet Invert= 58.00'

‡

Summary for Reach 7R:

Inflow Area = 0.832 ac, 0.00% Impervious, Inflow Depth = 3.40" for 25-YR event
Inflow = 2.5 cfs @ 12.21 hrs, Volume= 0.236 af
Outflow = 2.4 cfs @ 12.25 hrs, Volume= 0.236 af, Atten= 2%, Lag= 2.1 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs
Max. Velocity= 1.47 fps, Min. Travel Time= 1.2 min
Avg. Velocity = 0.42 fps, Avg. Travel Time= 4.1 min

Peak Storage= 171 cf @ 12.22 hrs
Average Depth at Peak Storage= 0.08'
Bank-Full Depth= 0.25' Flow Area= 6.3 sf, Capacity= 18.7 cfs

20.00' x 0.25' deep channel, n= 0.030 Short grass
Side Slope Z-value= 20.0 '/' Top Width= 30.00'
Length= 102.0' Slope= 0.0294 '/'
Inlet Invert= 60.00', Outlet Invert= 57.00'

‡

Summary for Link SP-1:

Inflow Area = 6.932 ac, 16.40% Impervious, Inflow Depth = 3.67" for 25-YR event
Inflow = 16.4 cfs @ 12.39 hrs, Volume= 2.118 af
Primary = 16.4 cfs @ 12.39 hrs, Volume= 2.118 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs

Summary for Link SP-2:

Inflow Area = 13.787 ac, 13.92% Impervious, Inflow Depth = 2.70" for 25-YR event
Inflow = 22.9 cfs @ 12.44 hrs, Volume= 3.099 af
Primary = 22.9 cfs @ 12.44 hrs, Volume= 3.099 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs

Summary for Link SP-3:

Inflow Area = 4.951 ac, 19.05% Impervious, Inflow Depth = 3.70" for 25-YR event
Inflow = 12.6 cfs @ 12.38 hrs, Volume= 1.527 af
Primary = 12.6 cfs @ 12.38 hrs, Volume= 1.527 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs

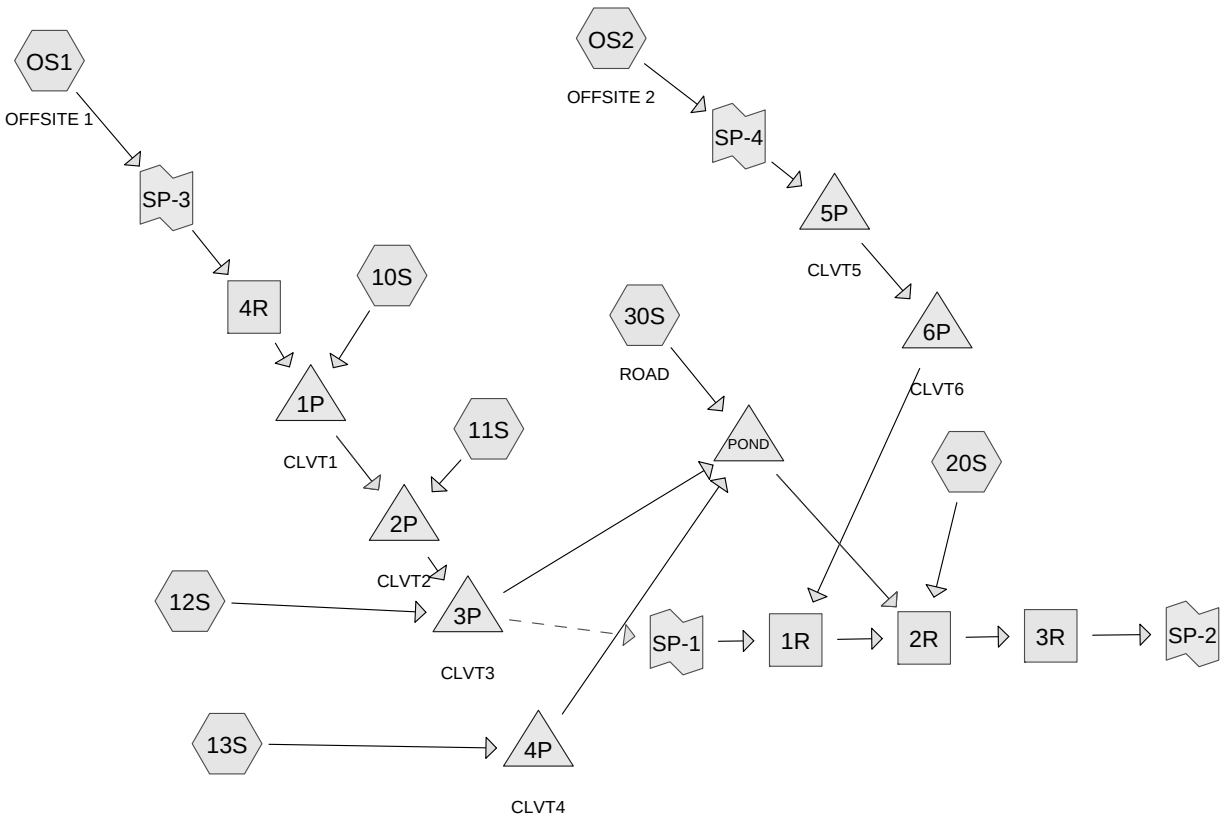
Summary for Link SP-4:

Inflow Area = 3.862 ac, 15.07% Impervious, Inflow Depth = 1.40" for 25-YR event
Inflow = 3.3 cfs @ 12.43 hrs, Volume= 0.452 af
Primary = 3.3 cfs @ 12.43 hrs, Volume= 0.452 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs

APPENDIX B

POST DEVELOPMENT HYDROCAD OUTPUT



Subcat Reach Pond Link

Routing Diagram for 41041 POST
Prepared by Microsoft, Printed 4/30/2018
HydroCAD® 10.00-20 s/n 02173 © 2017 HydroCAD Software Solutions LLC

Summary for Subcatchment 10S:

Runoff = 1.0 cfs @ 12.10 hrs, Volume= 0.073 af, Depth= 1.39"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs
Type III 24-hr 2-YR Rainfall=3.10"

Area (ac)	CN	Description
0.066	98	Paved parking, HSG D
0.256	77	Woods, Good, HSG D
0.310	80	>75% Grass cover, Good, HSG D
0.632	81	Weighted Average
0.566		89.56% Pervious Area
0.066		10.44% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					**Direct Entry,**

Summary for Subcatchment 11S:

Runoff = 0.3 cfs @ 12.09 hrs, Volume= 0.021 af, Depth= 1.67"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs
Type III 24-hr 2-YR Rainfall=3.10"

Area (ac)	CN	Description
0.042	98	Paved parking, HSG D
0.109	80	>75% Grass cover, Good, HSG D
0.151	85	Weighted Average
0.109		72.19% Pervious Area
0.042		27.81% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					**Direct Entry,**

Summary for Subcatchment 12S:

Runoff = 1.0 cfs @ 12.22 hrs, Volume= 0.101 af, Depth= 1.26"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs
Type III 24-hr 2-YR Rainfall=3.10"

Area (sf)	CN	Description
1,699	98	Paved parking, HSG D
19,994	80	>75% Grass cover, Good, HSG D
20,038	77	Woods, Good, HSG D
41,731	79	Weighted Average
40,032		95.93% Pervious Area
1,699		4.07% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
11.7	75	0.0530	0.11		**Sheet Flow, A-B** Woods: Light underbrush n= 0.400 P2= 3.10"
2.4	121	0.0280	0.84		**Shallow Concentrated Flow, B-C** Woodland Kv= 5.0 fps
1.1	77	0.0064	1.20		**Shallow Concentrated Flow, C-D** Grassed Waterway Kv= 15.0 fps
15.2	273	Total			

Summary for Subcatchment 13S:

Runoff = 0.4 cfs @ 12.10 hrs, Volume= 0.028 af, Depth= 1.20"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs
Type III 24-hr 2-YR Rainfall=3.10"

Area (ac)	CN	Description
0.007	98	Paved parking, HSG A
0.060	98	Paved parking, HSG D
0.043	39	>75% Grass cover, Good, HSG A
0.172	80	>75% Grass cover, Good, HSG D
0.282	78	Weighted Average
0.215		76.24% Pervious Area
0.067		23.76% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					**Direct Entry,**

Summary for Subcatchment 20S:

Runoff = 1.2 cfs @ 12.27 hrs, Volume= 0.139 af, Depth= 0.72"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs
Type III 24-hr 2-YR Rainfall=3.10"

	Area (ac)	CN	Description
*	0.065	98	Existing Impervious, HSG D
*	0.108	98	Exposed Ledge, HSG A
	0.025	98	Paved parking, HSG A
	0.105	98	Paved parking, HSG D
	0.064	39	>75% Grass cover, Good, HSG A
	0.908	80	>75% Grass cover, Good, HSG D
	0.555	30	Woods, Good, HSG A
	0.468	77	Woods, Good, HSG D
	2.298	69	Weighted Average
	1.995		86.81% Pervious Area
	0.303		13.19% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
10.0	75	0.0800	0.13		**Sheet Flow, A-B** Woods: Light underbrush n= 0.400 P2= 3.10"
0.5	103	0.0480	3.29		**Shallow Concentrated Flow, B-C** Grassed Waterway Kv= 15.0 fps
0.1	39	0.0250	10.18	17.99	**Pipe Channel, C-D** 18.0" Round Area= 1.8 sf Perim= 4.7' r= 0.38' n= 0.012
1.6	59	0.0160	0.63		**Shallow Concentrated Flow, D-E** Woodland Kv= 5.0 fps
0.0	33	0.0300	11.15	19.71	**Pipe Channel, E-F** 18.0" Round Area= 1.8 sf Perim= 4.7' r= 0.38' n= 0.012
0.3	69	0.0290	4.57	14.84	**Trap/Vee/Rect Channel Flow, F-G** Bot.W=5.00' D=0.50' Z= 3.0 '/' Top.W=8.00' n= 0.030 Earth, grassed & winding
3.4	184	0.0050	0.90	2.37	**Trap/Vee/Rect Channel Flow, G-H** Bot.W=8.00' D=0.25' Z= 10.0 '/' Top.W=13.00' n= 0.040
0.9	123	0.0080	2.40	7.79	**Trap/Vee/Rect Channel Flow, H-I** Bot.W=5.00' D=0.50' Z= 3.0 '/' Top.W=8.00' n= 0.030
16.8	685	Total			

Summary for Subcatchment 30S: ROAD

Runoff = 1.0 cfs @ 12.10 hrs, Volume= 0.076 af, Depth= 1.39"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs
Type III 24-hr 2-YR Rainfall=3.10"

	Area (sf)	CN	Description
	6,229	98	Paved parking, HSG A
	7,937	98	Paved parking, HSG D
*	1,181	98	Existing Impervious
	6,215	39	>75% Grass cover, Good, HSG A
	6,882	80	>75% Grass cover, Good, HSG D
	28,444	81	Weighted Average
	13,097		46.04% Pervious Area
	15,347		53.96% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					**Direct Entry,**

Summary for Subcatchment OS1: OFFSITE 1

Runoff = 4.7 cfs @ 12.40 hrs, Volume= 0.574 af, Depth= 1.39"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs
Type III 24-hr 2-YR Rainfall=3.10"

Area (ac)	CN	Description
0.943	98	Paved parking, HSG D
0.405	80	>75% Grass cover, Good, HSG D
3.603	77	Woods, Good, HSG D
4.951	81	Weighted Average
4.008		80.95% Pervious Area
0.943		19.05% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
11.7	75	0.0530	0.11		**Sheet Flow, A-B** Woods: Light underbrush n= 0.400 P2= 3.10"
1.2	81	0.0490	1.11		**Shallow Concentrated Flow, B-C** Woodland Kv= 5.0 fps
1.1	118	0.1180	1.72		**Shallow Concentrated Flow, C-D** Woodland Kv= 5.0 fps
13.6	483	0.0140	0.59		**Shallow Concentrated Flow, D-E** Woodland Kv= 5.0 fps
27.6	757	Total			

Summary for Subcatchment OS2: OFFSITE 2

Runoff = 0.2 cfs @ 12.66 hrs, Volume= 0.071 af, Depth= 0.22"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs
Type III 24-hr 2-YR Rainfall=3.10"

Area (ac)	CN	Description
0.582	98	Paved parking, HSG D
1.923	30	Woods, Good, HSG A
0.969	77	Woods, Good, HSG D
0.231	39	>75% Grass cover, Good, HSG A
0.157	80	>75% Grass cover, Good, HSG D
3.862	55	Weighted Average
3.280		84.93% Pervious Area
0.582		15.07% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
10.3	75	0.0730	0.12		**Sheet Flow, A-B** Woods: Light underbrush n= 0.400 P2= 3.10"
0.9	85	0.0940	1.53		**Shallow Concentrated Flow, B-C** Woodland Kv= 5.0 fps
15.3	544	0.0140	0.59		**Shallow Concentrated Flow, C-D** Woodland Kv= 5.0 fps
26.5	704	Total			

Summary for Reach 1R:

Inflow Area = 3.862 ac, 15.07% Impervious, Inflow Depth = 1.54" for 2-YR event
Inflow = 3.6 cfs @ 12.57 hrs, Volume= 0.494 af
Outflow = 3.6 cfs @ 12.58 hrs, Volume= 0.494 af, Atten= 0%, Lag= 0.7 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs
Max. Velocity= 1.25 fps, Min. Travel Time= 1.3 min
Avg. Velocity = 0.39 fps, Avg. Travel Time= 4.2 min

Peak Storage= 278 cf @ 12.58 hrs
Average Depth at Peak Storage= 0.13'
Bank-Full Depth= 1.00' Flow Area= 30.0 sf, Capacity= 123.7 cfs

20.00' x 1.00' deep channel, n= 0.030
Side Slope Z-value= 10.0 '/' Top Width= 40.00'
Length= 98.0' Slope= 0.0102 '/'
Inlet Invert= 57.00', Outlet Invert= 56.00'

‡

Summary for Reach 2R:

Inflow Area = 13.787 ac, 17.37% Impervious, Inflow Depth = 0.94" for 2-YR event
Inflow = 5.7 cfs @ 12.55 hrs, Volume= 1.081 af
Outflow = 5.7 cfs @ 12.56 hrs, Volume= 1.081 af, Atten= 0%, Lag= 0.8 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs
Max. Velocity= 2.69 fps, Min. Travel Time= 1.3 min
Avg. Velocity = 0.72 fps, Avg. Travel Time= 4.7 min

Peak Storage= 430 cf @ 12.56 hrs
Average Depth at Peak Storage= 0.21'
Bank-Full Depth= 1.00' Flow Area= 18.0 sf, Capacity= 116.0 cfs

8.00' x 1.00' deep channel, n= 0.012 Concrete pipe, finished
Side Slope Z-value= 10.0 '/' Top Width= 28.00'
Length= 204.0' Slope= 0.0049 '/'
Inlet Invert= 56.00', Outlet Invert= 55.00'

‡

Summary for Reach 3R:

Inflow Area = 13.787 ac, 17.37% Impervious, Inflow Depth = 0.94" for 2-YR event
Inflow = 5.7 cfs @ 12.56 hrs, Volume= 1.081 af
Outflow = 5.7 cfs @ 12.57 hrs, Volume= 1.081 af, Atten= 0%, Lag= 0.5 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs
Max. Velocity= 2.31 fps, Min. Travel Time= 0.7 min
Avg. Velocity = 0.55 fps, Avg. Travel Time= 3.1 min

Peak Storage= 253 cf @ 12.57 hrs
Average Depth at Peak Storage= 0.40'
Bank-Full Depth= 1.00' Flow Area= 8.0 sf, Capacity= 31.0 cfs

5.00' x 1.00' deep channel, n= 0.030
Side Slope Z-value= 3.0 '/' Top Width= 11.00'
Length= 103.0' Slope= 0.0097 '/'
Inlet Invert= 55.00', Outlet Invert= 54.00'

‡

Summary for Reach 4R:

Inflow Area = 4.951 ac, 19.05% Impervious, Inflow Depth = 1.39" for 2-YR event
Inflow = 4.7 cfs @ 12.40 hrs, Volume= 0.574 af
Outflow = 4.7 cfs @ 12.42 hrs, Volume= 0.574 af, Atten= 0%, Lag= 1.2 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs
Max. Velocity= 1.53 fps, Min. Travel Time= 1.7 min
Avg. Velocity = 0.51 fps, Avg. Travel Time= 5.2 min

Peak Storage= 488 cf @ 12.42 hrs
Average Depth at Peak Storage= 0.28'
Bank-Full Depth= 0.50' Flow Area= 6.5 sf, Capacity= 13.7 cfs

8.00' x 0.50' deep channel, n= 0.040
Side Slope Z-value= 10.0 '/' Top Width= 18.00'
Length= 160.0' Slope= 0.0125 '/'
Inlet Invert= 64.00', Outlet Invert= 64.00'

‡

Summary for Pond 1P: CLVT1

Inflow Area = 5.583 ac, 18.07% Impervious, Inflow Depth = 1.39" for 2-YR event
Inflow = 5.0 cfs @ 12.40 hrs, Volume= 0.647 af
Outflow = 5.0 cfs @ 12.41 hrs, Volume= 0.647 af, Atten= 0%, Lag= 0.4 min
Primary = 5.0 cfs @ 12.41 hrs, Volume= 0.647 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs
Peak Elev= 61.65' @ 12.41 hrs Surf.Area= 186 sf Storage= 153 cf
Flood Elev= 64.10' Surf.Area= 4,565 sf Storage= 4,337 cf

Plug-Flow detention time= 1.4 min calculated for 0.646 af (100% of inflow)
Center-of-Mass det. time= 0.9 min (862.7 - 861.8)

Volume	Invert	Avail.Storage	Storage Description
#1	60.00'	4,337 cf	**Custom Stage Data (Prismatic)**Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
60.00	34	0	0
61.00	92	63	63
62.00	237	165	228
63.00	1,708	973	1,200
64.00	4,565	3,137	4,337

Device	Routing	Invert	Outlet Devices
#1	Primary	60.50'	**24.0" Round Culvert** L= 51.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 60.50' / 60.20' S= 0.0059 '/' Cc= 0.900 n= 0.012, Flow Area= 3.14 sf

Primary OutFlow Max=5.0 cfs @ 12.41 hrs HW=61.65' TW=60.91' (Dynamic Tailwater)
1=Culvert (Barrel Controls 5.0 cfs @ 3.87 fps)

Summary for Pond 2P: CLVT2

Inflow Area = 5.734 ac, 18.33% Impervious, Inflow Depth = 1.40" for 2-YR event
Inflow = 5.1 cfs @ 12.41 hrs, Volume= 0.668 af
Outflow = 5.0 cfs @ 12.46 hrs, Volume= 0.667 af, Atten= 2%, Lag= 3.0 min
Primary = 5.0 cfs @ 12.46 hrs, Volume= 0.667 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs
Peak Elev= 60.92' @ 12.46 hrs Surf.Area= 1,317 sf Storage= 710 cf
Flood Elev= 62.10' Surf.Area= 1,750 sf Storage= 2,405 cf

Plug-Flow detention time= 3.5 min calculated for 0.667 af (100% of inflow)
Center-of-Mass det. time= 2.0 min (863.6 - 861.6)

Volume	Invert	Avail.Storage	Storage Description
#1	59.00'	2,405 cf	**Custom Stage Data (Prismatic)**Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
59.00	28	0	0
60.00	94	61	61
61.00	1,422	758	819
62.00	1,750	1,586	2,405

Device	Routing	Invert	Outlet Devices
#1	Primary	59.75'	**24.0" Round Culvert** L= 45.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 59.75' / 59.50' S= 0.0056 '/' Cc= 0.900 n= 0.012, Flow Area= 3.14 sf

Primary OutFlow Max=5.0 cfs @ 12.46 hrs HW=60.92' TW=58.50' (Dynamic Tailwater)
1=Culvert (Barrel Controls 5.0 cfs @ 3.79 fps)

Summary for Pond 3P: CLVT3

Inflow Area = 6.692 ac, 16.29% Impervious, Inflow Depth = 1.38" for 2-YR event
Inflow = 5.7 cfs @ 12.43 hrs, Volume= 0.767 af
Outflow = 5.7 cfs @ 12.43 hrs, Volume= 0.767 af, Atten= 0%, Lag= 0.0 min
Primary = 2.7 cfs @ 12.36 hrs, Volume= 0.345 af
Secondary = 3.4 cfs @ 12.55 hrs, Volume= 0.423 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs
Peak Elev= 58.51' @ 12.55 hrs Surf.Area= 94 sf Storage= 1 cf
Flood Elev= 60.10' Surf.Area= 1,755 sf Storage= 1,813 cf

Plug-Flow detention time= (not calculated: outflow precedes inflow)
Center-of-Mass det. time= 0.0 min (862.6 - 862.6)

Volume	Invert	Avail.Storage	Storage Description
#1	58.50'	1,813 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
58.50	66	0	0
59.00	1,225	323	323
60.00	1,755	1,490	1,813

Device	Routing	Invert	Outlet Devices
#1	Primary	57.50'	**18.0" Round Culvert SD-4** L= 85.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 57.50' / 57.00' S= 0.0059 '/' Cc= 0.900 n= 0.012, Flow Area= 1.77 sf
#2	Secondary	57.50'	**18.0" Round Culvert SD-5** L= 72.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 57.50' / 57.00' S= 0.0069 '/' Cc= 0.900 n= 0.012, Flow Area= 1.77 sf

Primary OutFlow Max=2.9 cfs @ 12.36 hrs HW=58.50' TW=57.96' (Dynamic Tailwater)
↑—**1=Culvert SD-4** (Outlet Controls 2.9 cfs @ 3.29 fps)

Secondary OutFlow Max=3.4 cfs @ 12.55 hrs HW=58.51' TW=0.00' (Dynamic Tailwater)
↑—**2=Culvert SD-5** (Inlet Controls 3.4 cfs @ 2.70 fps)

Summary for Pond 4P: CLVT4

Inflow Area = 0.282 ac, 23.76% Impervious, Inflow Depth = 1.20" for 2-YR event
Inflow = 0.4 cfs @ 12.10 hrs, Volume= 0.028 af
Outflow = 0.3 cfs @ 12.14 hrs, Volume= 0.028 af, Atten= 11%, Lag= 2.8 min
Primary = 0.3 cfs @ 12.14 hrs, Volume= 0.028 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs
Peak Elev= 58.40' @ 12.79 hrs Surf.Area= 476 sf Storage= 109 cf
Flood Elev= 60.10' Surf.Area= 3,087 sf Storage= 2,672 cf

Plug-Flow detention time= 8.3 min calculated for 0.028 af (100% of inflow)
Center-of-Mass det. time= 8.4 min (859.4 - 850.9)

Volume	Invert	Avail.Storage	Storage Description
#1	58.00'	2,672 cf	**Custom Stage Data (Prismatic)**Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
58.00	74	0	0
59.00	1,091	583	583
60.00	3,087	2,089	2,672

Device	Routing	Invert	Outlet Devices
#1	Primary	58.00'	**15.0" Round Culvert** L= 80.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 58.00' / 57.50' S= 0.0063 '/' Cc= 0.900 n= 0.012, Flow Area= 1.23 sf

Primary OutFlow Max=0.3 cfs @ 12.14 hrs HW=58.30' TW=57.20' (Dynamic Tailwater)
↑—**1=Culvert** (Inlet Controls 0.3 cfs @ 1.47 fps)

Summary for Pond 5P: CLVT5

Inflow Area = 3.862 ac, 15.07% Impervious, Inflow Depth = 0.22" for 2-YR event
Inflow = 0.2 cfs @ 12.66 hrs, Volume= 0.071 af
Outflow = 0.2 cfs @ 12.72 hrs, Volume= 0.071 af, Atten= 2%, Lag= 3.5 min
Primary = 0.2 cfs @ 12.72 hrs, Volume= 0.071 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs
Peak Elev= 61.24' @ 12.72 hrs Surf.Area= 371 sf Storage= 59 cf
Flood Elev= 63.50' Surf.Area= 3,428 sf Storage= 2,935 cf

Plug-Flow detention time= 6.2 min calculated for 0.071 af (100% of inflow)
Center-of-Mass det. time= 5.6 min (986.9 - 981.3)

Volume	Invert	Avail.Storage	Storage Description
#1	61.00'	2,935 cf	**Custom Stage Data (Prismatic)**Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
61.00	119	0	0
62.00	1,161	640	640
63.00	3,428	2,295	2,935

Device	Routing	Invert	Outlet Devices
#1	Primary	61.00'	**18.0" Round Culvert** L= 39.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 61.00' / 60.50' S= 0.0128 '/' Cc= 0.900 n= 0.012, Flow Area= 1.77 sf

Primary OutFlow Max=0.2 cfs @ 12.72 hrs HW=61.24' TW=59.25' (Dynamic Tailwater)
1=Culvert (Inlet Controls 0.2 cfs @ 1.32 fps)

Summary for Pond 6P: CLVT6

Inflow Area = 3.862 ac, 15.07% Impervious, Inflow Depth = 0.22" for 2-YR event
Inflow = 0.2 cfs @ 12.72 hrs, Volume= 0.071 af
Outflow = 0.2 cfs @ 12.79 hrs, Volume= 0.071 af, Atten= 3%, Lag= 4.3 min
Primary = 0.2 cfs @ 12.79 hrs, Volume= 0.071 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs
Peak Elev= 59.25' @ 12.79 hrs Surf.Area= 394 sf Storage= 69 cf
Flood Elev= 62.00' Surf.Area= 3,749 sf Storage= 5,819 cf

Plug-Flow detention time= 6.8 min calculated for 0.071 af (100% of inflow)
Center-of-Mass det. time= 6.9 min (993.8 - 986.9)

Volume	Invert	Avail.Storage	Storage Description
#1	59.00'	5,819 cf	**Custom Stage Data (Prismatic)**Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
59.00	154	0	0
60.00	1,105	630	630
61.00	2,762	1,934	2,563
62.00	3,749	3,256	5,819

Device	Routing	Invert	Outlet Devices
#1	Primary	59.00'	**15.0" Round Culvert** L= 33.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 59.00' / 58.00' S= 0.0303 '/' Cc= 0.900 n= 0.012, Flow Area= 1.23 sf

Primary OutFlow Max=0.2 cfs @ 12.79 hrs HW=59.25' TW=57.11' (Dynamic Tailwater)
1=Culvert (Inlet Controls 0.2 cfs @ 1.35 fps)

Summary for Pond POND:

Inflow Area = 7.627 ac, 19.79% Impervious, Inflow Depth = 0.71" for 2-YR event
Inflow = 3.3 cfs @ 12.34 hrs, Volume= 0.448 af
Outflow = 1.4 cfs @ 12.66 hrs, Volume= 0.448 af, Atten= 59%, Lag= 19.1 min
Primary = 1.4 cfs @ 12.66 hrs, Volume= 0.448 af
Secondary = 0.0 cfs @ 0.00 hrs, Volume= 0.000 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs
Peak Elev= 58.41' @ 12.66 hrs Surf.Area= 2,691 sf Storage= 4,730 cf

Plug-Flow detention time= 40.6 min calculated for 0.448 af (100% of inflow)
Center-of-Mass det. time= 40.7 min (907.9 - 867.2)

Volume	Invert	Avail.Storage	Storage Description
#1	56.00'	10,585 cf	**Custom Stage Data (Prismatic)**Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
56.00	1,307	0	0
57.00	1,829	1,568	1,568
58.00	2,423	2,126	3,694
59.00	3,084	2,754	6,448
60.20	3,812	4,138	10,585

Device	Routing	Invert	Outlet Devices
#1	Primary	56.00'	**15.0" Round Culvert** L= 35.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 56.00' / 55.50' S= 0.0143 '/' Cc= 0.900 n= 0.012, Flow Area= 1.23 sf
#2	Secondary	59.20'	**8.0' long x 6.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 3.50 4.00 4.50 5.00 5.50 Coef. (English) 2.37 2.51 2.70 2.68 2.68 2.67 2.65 2.65 2.65 2.65 2.66 2.66 2.67 2.69 2.72 2.76 2.83
#3	Device 1	56.00'	**6.0" Vert. Orifice/Grate** C= 0.600
#4	Device 1	58.60'	**4.0' long Sharp-Crested Rectangular Weir** 2 End Contraction(s)

Primary OutFlow Max=1.4 cfs @ 12.66 hrs HW=58.40' TW=56.20' (Dynamic Tailwater)
└**1=Culvert** (Passes 1.4 cfs of 6.2 cfs potential flow)
  ├**3=Orifice/Grate** (Orifice Controls 1.4 cfs @ 7.07 fps)
  └**4=Sharp-Crested Rectangular Weir** (Controls 0.0 cfs)

Secondary OutFlow Max=0.0 cfs @ 0.00 hrs HW=56.00' TW=56.00' (Dynamic Tailwater)
└**2=Broad-Crested Rectangular Weir** (Controls 0.0 cfs)

Summary for Link SP-1:

Inflow	=	3.4 cfs @	12.55 hrs,	Volume=	0.423 af
Primary	=	3.4 cfs @	12.55 hrs,	Volume=	0.423 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs

Summary for Link SP-2:

Inflow Area = 13.787 ac, 17.37% Impervious, Inflow Depth = 0.94" for 2-YR event
Inflow = 5.7 cfs @ 12.57 hrs, Volume= 1.081 af
Primary = 5.7 cfs @ 12.57 hrs, Volume= 1.081 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs

Summary for Link SP-3:

Inflow Area = 4.951 ac, 19.05% Impervious, Inflow Depth = 1.39" for 2-YR event
Inflow = 4.7 cfs @ 12.40 hrs, Volume= 0.574 af
Primary = 4.7 cfs @ 12.40 hrs, Volume= 0.574 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs

Summary for Link SP-4:

Inflow Area = 3.862 ac, 15.07% Impervious, Inflow Depth = 0.22" for 2-YR event
Inflow = 0.2 cfs @ 12.66 hrs, Volume= 0.071 af
Primary = 0.2 cfs @ 12.66 hrs, Volume= 0.071 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs

Summary for Subcatchment 10S:

Runoff = 1.9 cfs @ 12.09 hrs, Volume= 0.139 af, Depth= 2.63"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs
Type III 24-hr 10-YR Rainfall=4.60"

Area (ac)	CN	Description
0.066	98	Paved parking, HSG D
0.256	77	Woods, Good, HSG D
0.310	80	>75% Grass cover, Good, HSG D
0.632	81	Weighted Average
0.566		89.56% Pervious Area
0.066		10.44% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					**Direct Entry,**

Summary for Subcatchment 11S:

Runoff = 0.5 cfs @ 12.09 hrs, Volume= 0.038 af, Depth= 3.00"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs
Type III 24-hr 10-YR Rainfall=4.60"

Area (ac)	CN	Description
0.042	98	Paved parking, HSG D
0.109	80	>75% Grass cover, Good, HSG D
0.151	85	Weighted Average
0.109		72.19% Pervious Area
0.042		27.81% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					**Direct Entry,**

Summary for Subcatchment 12S:

Runoff = 2.1 cfs @ 12.21 hrs, Volume= 0.196 af, Depth= 2.46"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs
Type III 24-hr 10-YR Rainfall=4.60"

Area (sf)	CN	Description
1,699	98	Paved parking, HSG D
19,994	80	>75% Grass cover, Good, HSG D
20,038	77	Woods, Good, HSG D
41,731	79	Weighted Average
40,032		95.93% Pervious Area
1,699		4.07% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
11.7	75	0.0530	0.11		**Sheet Flow, A-B** Woods: Light underbrush n= 0.400 P2= 3.10"
2.4	121	0.0280	0.84		**Shallow Concentrated Flow, B-C** Woodland Kv= 5.0 fps
1.1	77	0.0064	1.20		**Shallow Concentrated Flow, C-D** Grassed Waterway Kv= 15.0 fps
15.2	273	Total			

Summary for Subcatchment 13S:

Runoff = 0.8 cfs @ 12.09 hrs, Volume= 0.056 af, Depth= 2.38"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs
Type III 24-hr 10-YR Rainfall=4.60"

Area (ac)	CN	Description
0.007	98	Paved parking, HSG A
0.060	98	Paved parking, HSG D
0.043	39	>75% Grass cover, Good, HSG A
0.172	80	>75% Grass cover, Good, HSG D
0.282	78	Weighted Average
0.215		76.24% Pervious Area
0.067		23.76% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					**Direct Entry,**

Summary for Subcatchment 20S:

Runoff = 3.1 cfs @ 12.25 hrs, Volume= 0.320 af, Depth= 1.67"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs
Type III 24-hr 10-YR Rainfall=4.60"

	Area (ac)	CN	Description
*	0.065	98	Existing Impervious, HSG D
*	0.108	98	Exposed Ledge, HSG A
	0.025	98	Paved parking, HSG A
	0.105	98	Paved parking, HSG D
	0.064	39	>75% Grass cover, Good, HSG A
	0.908	80	>75% Grass cover, Good, HSG D
	0.555	30	Woods, Good, HSG A
	0.468	77	Woods, Good, HSG D
	2.298	69	Weighted Average
	1.995		86.81% Pervious Area
	0.303		13.19% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
10.0	75	0.0800	0.13		**Sheet Flow, A-B** Woods: Light underbrush n= 0.400 P2= 3.10"
0.5	103	0.0480	3.29		**Shallow Concentrated Flow, B-C** Grassed Waterway Kv= 15.0 fps
0.1	39	0.0250	10.18	17.99	**Pipe Channel, C-D** 18.0" Round Area= 1.8 sf Perim= 4.7' r= 0.38' n= 0.012
1.6	59	0.0160	0.63		**Shallow Concentrated Flow, D-E** Woodland Kv= 5.0 fps
0.0	33	0.0300	11.15	19.71	**Pipe Channel, E-F** 18.0" Round Area= 1.8 sf Perim= 4.7' r= 0.38' n= 0.012
0.3	69	0.0290	4.57	14.84	**Trap/Vee/Rect Channel Flow, F-G** Bot.W=5.00' D=0.50' Z= 3.0 '/' Top.W=8.00' n= 0.030 Earth, grassed & winding
3.4	184	0.0050	0.90	2.37	**Trap/Vee/Rect Channel Flow, G-H** Bot.W=8.00' D=0.25' Z= 10.0 '/' Top.W=13.00' n= 0.040
0.9	123	0.0080	2.40	7.79	**Trap/Vee/Rect Channel Flow, H-I** Bot.W=5.00' D=0.50' Z= 3.0 '/' Top.W=8.00' n= 0.030
16.8	685	Total			

Summary for Subcatchment 30S: ROAD

Runoff = 2.0 cfs @ 12.09 hrs, Volume= 0.143 af, Depth= 2.63"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs
Type III 24-hr 10-YR Rainfall=4.60"

	Area (sf)	CN	Description
	6,229	98	Paved parking, HSG A
	7,937	98	Paved parking, HSG D
*	1,181	98	Existing Impervious
	6,215	39	>75% Grass cover, Good, HSG A
	6,882	80	>75% Grass cover, Good, HSG D
	28,444	81	Weighted Average
	13,097		46.04% Pervious Area
	15,347		53.96% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					**Direct Entry,**

Summary for Subcatchment OS1: OFFSITE 1

Runoff = 9.0 cfs @ 12.38 hrs, Volume= 1.087 af, Depth= 2.63"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs
Type III 24-hr 10-YR Rainfall=4.60"

Area (ac)	CN	Description
0.943	98	Paved parking, HSG D
0.405	80	>75% Grass cover, Good, HSG D
3.603	77	Woods, Good, HSG D
4.951	81	Weighted Average
4.008		80.95% Pervious Area
0.943		19.05% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
11.7	75	0.0530	0.11		**Sheet Flow, A-B** Woods: Light underbrush n= 0.400 P2= 3.10"
1.2	81	0.0490	1.11		**Shallow Concentrated Flow, B-C** Woodland Kv= 5.0 fps
1.1	118	0.1180	1.72		**Shallow Concentrated Flow, C-D** Woodland Kv= 5.0 fps
13.6	483	0.0140	0.59		**Shallow Concentrated Flow, D-E** Woodland Kv= 5.0 fps
27.6	757	Total			

Summary for Subcatchment OS2: OFFSITE 2

Runoff = 1.6 cfs @ 12.47 hrs, Volume= 0.254 af, Depth= 0.79"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs
Type III 24-hr 10-YR Rainfall=4.60"

Area (ac)	CN	Description
0.582	98	Paved parking, HSG D
1.923	30	Woods, Good, HSG A
0.969	77	Woods, Good, HSG D
0.231	39	>75% Grass cover, Good, HSG A
0.157	80	>75% Grass cover, Good, HSG D
3.862	55	Weighted Average
3.280		84.93% Pervious Area
0.582		15.07% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
10.3	75	0.0730	0.12		**Sheet Flow, A-B** Woods: Light underbrush n= 0.400 P2= 3.10"
0.9	85	0.0940	1.53		**Shallow Concentrated Flow, B-C** Woodland Kv= 5.0 fps
15.3	544	0.0140	0.59		**Shallow Concentrated Flow, C-D** Woodland Kv= 5.0 fps
26.5	704	Total			

Summary for Reach 1R:

Inflow Area = 3.862 ac, 15.07% Impervious, Inflow Depth = 3.53" for 10-YR event
Inflow = 8.3 cfs @ 12.52 hrs, Volume= 1.135 af
Outflow = 8.3 cfs @ 12.53 hrs, Volume= 1.135 af, Atten= 0%, Lag= 0.6 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs
Max. Velocity= 1.70 fps, Min. Travel Time= 1.0 min
Avg. Velocity = 0.48 fps, Avg. Travel Time= 3.4 min

Peak Storage= 475 cf @ 12.53 hrs
Average Depth at Peak Storage= 0.22'
Bank-Full Depth= 1.00' Flow Area= 30.0 sf, Capacity= 123.7 cfs

20.00' x 1.00' deep channel, n= 0.030
Side Slope Z-value= 10.0 '/' Top Width= 40.00'
Length= 98.0' Slope= 0.0102 '/'
Inlet Invert= 57.00', Outlet Invert= 56.00'

‡

Summary for Reach 2R:

Inflow Area = 13.787 ac, 17.37% Impervious, Inflow Depth = 1.94" for 10-YR event
Inflow = 14.5 cfs @ 12.48 hrs, Volume= 2.231 af
Outflow = 14.5 cfs @ 12.49 hrs, Volume= 2.231 af, Atten= 0%, Lag= 0.6 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs
Max. Velocity= 3.60 fps, Min. Travel Time= 0.9 min
Avg. Velocity = 0.85 fps, Avg. Travel Time= 4.0 min

Peak Storage= 821 cf @ 12.49 hrs
Average Depth at Peak Storage= 0.35'
Bank-Full Depth= 1.00' Flow Area= 18.0 sf, Capacity= 116.0 cfs

8.00' x 1.00' deep channel, n= 0.012 Concrete pipe, finished
Side Slope Z-value= 10.0 '/' Top Width= 28.00'
Length= 204.0' Slope= 0.0049 '/'
Inlet Invert= 56.00', Outlet Invert= 55.00'

‡

Summary for Reach 3R:

Inflow Area = 13.787 ac, 17.37% Impervious, Inflow Depth = 1.94" for 10-YR event
Inflow = 14.5 cfs @ 12.49 hrs, Volume= 2.231 af
Outflow = 14.5 cfs @ 12.49 hrs, Volume= 2.231 af, Atten= 0%, Lag= 0.3 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs
Max. Velocity= 3.10 fps, Min. Travel Time= 0.6 min
Avg. Velocity = 0.66 fps, Avg. Travel Time= 2.6 min

Peak Storage= 481 cf @ 12.49 hrs
Average Depth at Peak Storage= 0.67'
Bank-Full Depth= 1.00' Flow Area= 8.0 sf, Capacity= 31.0 cfs

5.00' x 1.00' deep channel, n= 0.030
Side Slope Z-value= 3.0 '/' Top Width= 11.00'
Length= 103.0' Slope= 0.0097 '/'
Inlet Invert= 55.00', Outlet Invert= 54.00'

‡

Summary for Reach 4R:

Inflow Area = 4.951 ac, 19.05% Impervious, Inflow Depth = 2.63" for 10-YR event
Inflow = 9.0 cfs @ 12.38 hrs, Volume= 1.087 af
Outflow = 8.9 cfs @ 12.40 hrs, Volume= 1.087 af, Atten= 0%, Lag= 1.1 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs
Max. Velocity= 1.86 fps, Min. Travel Time= 1.4 min
Avg. Velocity = 0.61 fps, Avg. Travel Time= 4.4 min

Peak Storage= 770 cf @ 12.40 hrs
Average Depth at Peak Storage= 0.40'
Bank-Full Depth= 0.50' Flow Area= 6.5 sf, Capacity= 13.7 cfs

8.00' x 0.50' deep channel, n= 0.040
Side Slope Z-value= 10.0 '/' Top Width= 18.00'
Length= 160.0' Slope= 0.0125 '/'
Inlet Invert= 64.00', Outlet Invert= 62.00'

‡

Summary for Pond 1P: CLVT1

Inflow Area = 5.583 ac, 18.07% Impervious, Inflow Depth = 2.63" for 10-YR event
Inflow = 9.6 cfs @ 12.39 hrs, Volume= 1.226 af
Outflow = 9.6 cfs @ 12.40 hrs, Volume= 1.225 af, Atten= 0%, Lag= 0.8 min
Primary = 9.6 cfs @ 12.40 hrs, Volume= 1.225 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs
Peak Elev= 62.22' @ 12.42 hrs Surf.Area= 564 sf Storage= 316 cf
Flood Elev= 64.10' Surf.Area= 4,565 sf Storage= 4,337 cf

Plug-Flow detention time= 1.8 min calculated for 1.225 af (100% of inflow)
Center-of-Mass det. time= 0.8 min (843.5 - 842.8)

Volume	Invert	Avail.Storage	Storage Description
#1	60.00'	4,337 cf	**Custom Stage Data (Prismatic)**Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
60.00	34	0	0
61.00	92	63	63
62.00	237	165	228
63.00	1,708	973	1,200
64.00	4,565	3,137	4,337

Device	Routing	Invert	Outlet Devices
#1	Primary	60.50'	**24.0" Round Culvert** L= 51.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 60.50' / 60.20' S= 0.0059 '/' Cc= 0.900 n= 0.012, Flow Area= 3.14 sf

Primary OutFlow Max=9.4 cfs @ 12.40 hrs HW=62.22' TW=61.47' (Dynamic Tailwater)
1=Culvert (Inlet Controls 9.4 cfs @ 3.28 fps)

Summary for Pond 2P: CLVT2

Inflow Area = 5.734 ac, 18.33% Impervious, Inflow Depth = 2.64" for 10-YR event
Inflow = 9.8 cfs @ 12.40 hrs, Volume= 1.263 af
Outflow = 9.6 cfs @ 12.45 hrs, Volume= 1.262 af, Atten= 2%, Lag= 3.1 min
Primary = 9.6 cfs @ 12.45 hrs, Volume= 1.262 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs
Peak Elev= 61.49' @ 12.45 hrs Surf.Area= 1,584 sf Storage= 1,562 cf
Flood Elev= 62.10' Surf.Area= 1,750 sf Storage= 2,405 cf

Plug-Flow detention time= 2.5 min calculated for 1.261 af (100% of inflow)
Center-of-Mass det. time= 2.1 min (844.6 - 842.6)

Volume	Invert	Avail.Storage	Storage Description
#1	59.00'	2,405 cf	**Custom Stage Data (Prismatic)**Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
59.00	28	0	0
60.00	94	61	61
61.00	1,422	758	819
62.00	1,750	1,586	2,405

Device	Routing	Invert	Outlet Devices
#1	Primary	59.75'	**24.0" Round Culvert** L= 45.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 59.75' / 59.50' S= 0.0056 '/' Cc= 0.900 n= 0.012, Flow Area= 3.14 sf

Primary OutFlow Max=9.6 cfs @ 12.45 hrs HW=61.49' TW=59.26' (Dynamic Tailwater)
1=Culvert (Barrel Controls 9.6 cfs @ 4.39 fps)

Summary for Pond 3P: CLVT3

Inflow Area = 6.692 ac, 16.29% Impervious, Inflow Depth = 2.62" for 10-YR event
Inflow = 10.8 cfs @ 12.42 hrs, Volume= 1.459 af
Outflow = 10.6 cfs @ 12.47 hrs, Volume= 1.459 af, Atten= 2%, Lag= 2.8 min
Primary = 3.8 cfs @ 12.46 hrs, Volume= 0.577 af
Secondary = 6.8 cfs @ 12.49 hrs, Volume= 0.881 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs
Peak Elev= 59.27' @ 12.49 hrs Surf.Area= 1,367 sf Storage= 671 cf
Flood Elev= 60.10' Surf.Area= 1,755 sf Storage= 1,813 cf

Plug-Flow detention time= (not calculated: outflow precedes inflow)
Center-of-Mass det. time= 0.3 min (843.9 - 843.6)

Volume	Invert	Avail.Storage	Storage Description
#1	58.50'	1,813 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
58.50	66	0	0
59.00	1,225	323	323
60.00	1,755	1,490	1,813

Device	Routing	Invert	Outlet Devices
#1	Primary	57.50'	**18.0" Round Culvert SD-4** L= 85.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 57.50' / 57.00' S= 0.0059 '/' Cc= 0.900 n= 0.012, Flow Area= 1.77 sf
#2	Secondary	57.50'	**18.0" Round Culvert SD-5** L= 72.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 57.50' / 57.00' S= 0.0069 '/' Cc= 0.900 n= 0.012, Flow Area= 1.77 sf

Primary OutFlow Max=3.7 cfs @ 12.46 hrs HW=59.26' TW=58.95' (Dynamic Tailwater)
↑—**1=Culvert SD-4** (Inlet Controls 3.7 cfs @ 2.11 fps)

Secondary OutFlow Max=6.8 cfs @ 12.49 hrs HW=59.27' TW=0.00' (Dynamic Tailwater)
↑—**2=Culvert SD-5** (Inlet Controls 6.8 cfs @ 3.83 fps)

Summary for Pond 4P: CLVT4

Inflow Area = 0.282 ac, 23.76% Impervious, Inflow Depth = 2.38" for 10-YR event
Inflow = 0.8 cfs @ 12.09 hrs, Volume= 0.056 af
Outflow = 0.7 cfs @ 12.12 hrs, Volume= 0.056 af, Atten= 14%, Lag= 1.5 min
Primary = 0.7 cfs @ 12.12 hrs, Volume= 0.056 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs
Peak Elev= 58.94' @ 12.63 hrs Surf.Area= 1,026 sf Storage= 515 cf
Flood Elev= 60.10' Surf.Area= 3,087 sf Storage= 2,672 cf

Plug-Flow detention time= 13.3 min calculated for 0.056 af (100% of inflow)
Center-of-Mass det. time= 13.3 min (844.2 - 830.9)

Volume	Invert	Avail.Storage	Storage Description
#1	58.00'	2,672 cf	**Custom Stage Data (Prismatic)**Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
58.00	74	0	0
59.00	1,091	583	583
60.00	3,087	2,089	2,672

Device	Routing	Invert	Outlet Devices
#1	Primary	58.00'	**15.0" Round Culvert** L= 80.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 58.00' / 57.50' S= 0.0063 '/' Cc= 0.900 n= 0.012, Flow Area= 1.23 sf

Primary OutFlow Max=0.5 cfs @ 12.12 hrs HW=58.43' TW=58.14' (Dynamic Tailwater)
1=Culvert (Outlet Controls 0.5 cfs @ 1.94 fps)

Summary for Pond 5P: CLVT5

Inflow Area = 3.862 ac, 15.07% Impervious, Inflow Depth = 0.79" for 10-YR event
Inflow = 1.6 cfs @ 12.47 hrs, Volume= 0.254 af
Outflow = 1.6 cfs @ 12.53 hrs, Volume= 0.254 af, Atten= 2%, Lag= 3.3 min
Primary = 1.6 cfs @ 12.53 hrs, Volume= 0.254 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs
Peak Elev= 61.65' @ 12.53 hrs Surf.Area= 795 sf Storage= 297 cf
Flood Elev= 63.50' Surf.Area= 3,428 sf Storage= 2,935 cf

Plug-Flow detention time= 4.6 min calculated for 0.254 af (100% of inflow)
Center-of-Mass det. time= 3.9 min (924.0 - 920.1)

Volume	Invert	Avail.Storage	Storage Description
#1	61.00'	2,935 cf	**Custom Stage Data (Prismatic)**Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
61.00	119	0	0
62.00	1,161	640	640
63.00	3,428	2,295	2,935

Device	Routing	Invert	Outlet Devices
#1	Primary	61.00'	**18.0" Round Culvert** L= 39.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 61.00' / 60.50' S= 0.0128 '/' Cc= 0.900 n= 0.012, Flow Area= 1.77 sf

Primary OutFlow Max=1.6 cfs @ 12.53 hrs HW=61.65' TW=59.68' (Dynamic Tailwater)
1=Culvert (Inlet Controls 1.6 cfs @ 2.16 fps)

Summary for Pond 6P: CLVT6

Inflow Area = 3.862 ac, 15.07% Impervious, Inflow Depth = 0.79" for 10-YR event
Inflow = 1.6 cfs @ 12.53 hrs, Volume= 0.254 af
Outflow = 1.6 cfs @ 12.59 hrs, Volume= 0.254 af, Atten= 2%, Lag= 3.9 min
Primary = 1.6 cfs @ 12.59 hrs, Volume= 0.254 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs
Peak Elev= 59.69' @ 12.59 hrs Surf.Area= 810 sf Storage= 333 cf
Flood Elev= 62.00' Surf.Area= 3,749 sf Storage= 5,819 cf

Plug-Flow detention time= 4.6 min calculated for 0.253 af (100% of inflow)
Center-of-Mass det. time= 4.7 min (928.7 - 924.0)

Volume	Invert	Avail.Storage	Storage Description
#1	59.00'	5,819 cf	**Custom Stage Data (Prismatic)**Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
59.00	154	0	0
60.00	1,105	630	630
61.00	2,762	1,934	2,563
62.00	3,749	3,256	5,819

Device	Routing	Invert	Outlet Devices
#1	Primary	59.00'	**15.0" Round Culvert** L= 33.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 59.00' / 58.00' S= 0.0303 '/' Cc= 0.900 n= 0.012, Flow Area= 1.23 sf

Primary OutFlow Max=1.5 cfs @ 12.59 hrs HW=59.69' TW=57.22' (Dynamic Tailwater)
1=Culvert (Inlet Controls 1.5 cfs @ 2.23 fps)

Summary for Pond POND:

Inflow Area = 7.627 ac, 19.79% Impervious, Inflow Depth = 1.22" for 10-YR event
Inflow = 6.0 cfs @ 12.12 hrs, Volume= 0.776 af
Outflow = 4.3 cfs @ 12.50 hrs, Volume= 0.776 af, Atten= 29%, Lag= 22.7 min
Primary = 4.3 cfs @ 12.50 hrs, Volume= 0.776 af
Secondary = 0.0 cfs @ 0.00 hrs, Volume= 0.000 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs
Peak Elev= 58.96' @ 12.50 hrs Surf.Area= 3,055 sf Storage= 6,315 cf

Plug-Flow detention time= 36.6 min calculated for 0.775 af (100% of inflow)
Center-of-Mass det. time= 36.8 min (891.6 - 854.8)

Volume	Invert	Avail.Storage	Storage Description
#1	56.00'	10,585 cf	**Custom Stage Data (Prismatic)**Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
56.00	1,307	0	0
57.00	1,829	1,568	1,568
58.00	2,423	2,126	3,694
59.00	3,084	2,754	6,448
60.20	3,812	4,138	10,585

Device	Routing	Invert	Outlet Devices
#1	Primary	56.00'	**15.0" Round Culvert** L= 35.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 56.00' / 55.50' S= 0.0143 '/' Cc= 0.900 n= 0.012, Flow Area= 1.23 sf
#2	Secondary	59.20'	**8.0' long x 6.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 3.50 4.00 4.50 5.00 5.50 Coef. (English) 2.37 2.51 2.70 2.68 2.68 2.67 2.65 2.65 2.65 2.65 2.66 2.66 2.67 2.69 2.72 2.76 2.83
#3	Device 1	56.00'	**6.0" Vert. Orifice/Grate** C= 0.600
#4	Device 1	58.60'	**4.0' long Sharp-Crested Rectangular Weir** 2 End Contraction(s)

Primary OutFlow Max=4.3 cfs @ 12.50 hrs HW=58.96' TW=56.35' (Dynamic Tailwater)
└**1=Culvert** (Passes 4.3 cfs of 7.1 cfs potential flow)
  ├**3=Orifice/Grate** (Orifice Controls 1.5 cfs @ 7.77 fps)
  └**4=Sharp-Crested Rectangular Weir** (Weir Controls 2.7 cfs @ 1.95 fps)

Secondary OutFlow Max=0.0 cfs @ 0.00 hrs HW=56.00' TW=56.00' (Dynamic Tailwater)
└**2=Broad-Crested Rectangular Weir** (Controls 0.0 cfs)

Summary for Link SP-1:

Inflow	=	6.8 cfs @	12.49 hrs,	Volume=	0.881 af
Primary	=	6.8 cfs @	12.49 hrs,	Volume=	0.881 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs

Summary for Link SP-2:

Inflow Area = 13.787 ac, 17.37% Impervious, Inflow Depth = 1.94" for 10-YR event
Inflow = 14.5 cfs @ 12.49 hrs, Volume= 2.231 af
Primary = 14.5 cfs @ 12.49 hrs, Volume= 2.231 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs

Summary for Link SP-3:

Inflow Area = 4.951 ac, 19.05% Impervious, Inflow Depth = 2.63" for 10-YR event
Inflow = 9.0 cfs @ 12.38 hrs, Volume= 1.087 af
Primary = 9.0 cfs @ 12.38 hrs, Volume= 1.087 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs

Summary for Link SP-4:

Inflow Area = 3.862 ac, 15.07% Impervious, Inflow Depth = 0.79" for 10-YR event
Inflow = 1.6 cfs @ 12.47 hrs, Volume= 0.254 af
Primary = 1.6 cfs @ 12.47 hrs, Volume= 0.254 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs

Summary for Subcatchment 10S:

Runoff = 2.7 cfs @ 12.09 hrs, Volume= 0.195 af, Depth= 3.70"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs
Type III 24-hr 25-YR Rainfall=5.80"

Area (ac)	CN	Description
0.066	98	Paved parking, HSG D
0.256	77	Woods, Good, HSG D
0.310	80	>75% Grass cover, Good, HSG D
0.632	81	Weighted Average
0.566		89.56% Pervious Area
0.066		10.44% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					**Direct Entry,**

Summary for Subcatchment 11S:

Runoff = 0.7 cfs @ 12.09 hrs, Volume= 0.052 af, Depth= 4.11"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs
Type III 24-hr 25-YR Rainfall=5.80"

Area (ac)	CN	Description
0.042	98	Paved parking, HSG D
0.109	80	>75% Grass cover, Good, HSG D
0.151	85	Weighted Average
0.109		72.19% Pervious Area
0.042		27.81% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					**Direct Entry,**

Summary for Subcatchment 12S:

Runoff = 2.9 cfs @ 12.21 hrs, Volume= 0.280 af, Depth= 3.50"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs
Type III 24-hr 25-YR Rainfall=5.80"

Area (sf)	CN	Description
1,699	98	Paved parking, HSG D
19,994	80	>75% Grass cover, Good, HSG D
20,038	77	Woods, Good, HSG D
41,731	79	Weighted Average
40,032		95.93% Pervious Area
1,699		4.07% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
11.7	75	0.0530	0.11		**Sheet Flow, A-B** Woods: Light underbrush n= 0.400 P2= 3.10"
2.4	121	0.0280	0.84		**Shallow Concentrated Flow, B-C** Woodland Kv= 5.0 fps
1.1	77	0.0064	1.20		**Shallow Concentrated Flow, C-D** Grassed Waterway Kv= 15.0 fps
15.2	273	Total			

Summary for Subcatchment 13S:

Runoff = 1.1 cfs @ 12.09 hrs, Volume= 0.080 af, Depth= 3.40"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs
Type III 24-hr 25-YR Rainfall=5.80"

Area (ac)	CN	Description
0.007	98	Paved parking, HSG A
0.060	98	Paved parking, HSG D
0.043	39	>75% Grass cover, Good, HSG A
0.172	80	>75% Grass cover, Good, HSG D
0.282	78	Weighted Average
0.215		76.24% Pervious Area
0.067		23.76% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					**Direct Entry,**

Summary for Subcatchment 20S:

Runoff = 4.9 cfs @ 12.24 hrs, Volume= 0.490 af, Depth= 2.56"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs
Type III 24-hr 25-YR Rainfall=5.80"

	Area (ac)	CN	Description
*	0.065	98	Existing Impervious, HSG D
*	0.108	98	Exposed Ledge, HSG A
	0.025	98	Paved parking, HSG A
	0.105	98	Paved parking, HSG D
	0.064	39	>75% Grass cover, Good, HSG A
	0.908	80	>75% Grass cover, Good, HSG D
	0.555	30	Woods, Good, HSG A
	0.468	77	Woods, Good, HSG D
	2.298	69	Weighted Average
	1.995		86.81% Pervious Area
	0.303		13.19% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
10.0	75	0.0800	0.13		**Sheet Flow, A-B** Woods: Light underbrush n= 0.400 P2= 3.10"
0.5	103	0.0480	3.29		**Shallow Concentrated Flow, B-C** Grassed Waterway Kv= 15.0 fps
0.1	39	0.0250	10.18	17.99	**Pipe Channel, C-D** 18.0" Round Area= 1.8 sf Perim= 4.7' r= 0.38' n= 0.012
1.6	59	0.0160	0.63		**Shallow Concentrated Flow, D-E** Woodland Kv= 5.0 fps
0.0	33	0.0300	11.15	19.71	**Pipe Channel, E-F** 18.0" Round Area= 1.8 sf Perim= 4.7' r= 0.38' n= 0.012
0.3	69	0.0290	4.57	14.84	**Trap/Vee/Rect Channel Flow, F-G** Bot.W=5.00' D=0.50' Z= 3.0 '/' Top.W=8.00' n= 0.030 Earth, grassed & winding
3.4	184	0.0050	0.90	2.37	**Trap/Vee/Rect Channel Flow, G-H** Bot.W=8.00' D=0.25' Z= 10.0 '/' Top.W=13.00' n= 0.040
0.9	123	0.0080	2.40	7.79	**Trap/Vee/Rect Channel Flow, H-I** Bot.W=5.00' D=0.50' Z= 3.0 '/' Top.W=8.00' n= 0.030
16.8	685	Total			

Summary for Subcatchment 30S: ROAD

Runoff = 2.8 cfs @ 12.09 hrs, Volume= 0.201 af, Depth= 3.70"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs
Type III 24-hr 25-YR Rainfall=5.80"

	Area (sf)	CN	Description
	6,229	98	Paved parking, HSG A
	7,937	98	Paved parking, HSG D
*	1,181	98	Existing Impervious
	6,215	39	>75% Grass cover, Good, HSG A
	6,882	80	>75% Grass cover, Good, HSG D
	28,444	81	Weighted Average
	13,097		46.04% Pervious Area
	15,347		53.96% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					**Direct Entry,**

Summary for Subcatchment OS1: OFFSITE 1

Runoff = 12.6 cfs @ 12.38 hrs, Volume= 1.527 af, Depth= 3.70"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs
Type III 24-hr 25-YR Rainfall=5.80"

Area (ac)	CN	Description
0.943	98	Paved parking, HSG D
0.405	80	>75% Grass cover, Good, HSG D
3.603	77	Woods, Good, HSG D
4.951	81	Weighted Average
4.008		80.95% Pervious Area
0.943		19.05% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
11.7	75	0.0530	0.11		**Sheet Flow, A-B** Woods: Light underbrush n= 0.400 P2= 3.10"
1.2	81	0.0490	1.11		**Shallow Concentrated Flow, B-C** Woodland Kv= 5.0 fps
1.1	118	0.1180	1.72		**Shallow Concentrated Flow, C-D** Woodland Kv= 5.0 fps
13.6	483	0.0140	0.59		**Shallow Concentrated Flow, D-E** Woodland Kv= 5.0 fps
27.6	757	Total			

Summary for Subcatchment OS2: OFFSITE 2

Runoff = 3.3 cfs @ 12.43 hrs, Volume= 0.452 af, Depth= 1.40"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs
Type III 24-hr 25-YR Rainfall=5.80"

Area (ac)	CN	Description
0.582	98	Paved parking, HSG D
1.923	30	Woods, Good, HSG A
0.969	77	Woods, Good, HSG D
0.231	39	>75% Grass cover, Good, HSG A
0.157	80	>75% Grass cover, Good, HSG D
3.862	55	Weighted Average
3.280		84.93% Pervious Area
0.582		15.07% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
10.3	75	0.0730	0.12		**Sheet Flow, A-B** Woods: Light underbrush n= 0.400 P2= 3.10"
0.9	85	0.0940	1.53		**Shallow Concentrated Flow, B-C** Woodland Kv= 5.0 fps
15.3	544	0.0140	0.59		**Shallow Concentrated Flow, C-D** Woodland Kv= 5.0 fps
26.5	704	Total			

Summary for Reach 1R:

Inflow Area = 3.862 ac, 15.07% Impervious, Inflow Depth = 5.22" for 25-YR event
Inflow = 11.5 cfs @ 12.54 hrs, Volume= 1.680 af
Outflow = 11.5 cfs @ 12.55 hrs, Volume= 1.680 af, Atten= 0%, Lag= 0.5 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs
Max. Velocity= 1.92 fps, Min. Travel Time= 0.9 min
Avg. Velocity = 0.53 fps, Avg. Travel Time= 3.1 min

Peak Storage= 589 cf @ 12.55 hrs
Average Depth at Peak Storage= 0.27'
Bank-Full Depth= 1.00' Flow Area= 30.0 sf, Capacity= 123.7 cfs

20.00' x 1.00' deep channel, n= 0.030
Side Slope Z-value= 10.0 '/' Top Width= 40.00'
Length= 98.0' Slope= 0.0102 '/'
Inlet Invert= 57.00', Outlet Invert= 56.00'

‡

Summary for Reach 2R:

Inflow Area = 13.787 ac, 17.37% Impervious, Inflow Depth = 2.85" for 25-YR event
Inflow = 21.0 cfs @ 12.46 hrs, Volume= 3.275 af
Outflow = 21.0 cfs @ 12.47 hrs, Volume= 3.275 af, Atten= 0%, Lag= 0.7 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs
Max. Velocity= 4.02 fps, Min. Travel Time= 0.8 min
Avg. Velocity = 0.93 fps, Avg. Travel Time= 3.7 min

Peak Storage= 1,067 cf @ 12.47 hrs
Average Depth at Peak Storage= 0.43'
Bank-Full Depth= 1.00' Flow Area= 18.0 sf, Capacity= 116.0 cfs

8.00' x 1.00' deep channel, n= 0.012 Concrete pipe, finished
Side Slope Z-value= 10.0 '/' Top Width= 28.00'
Length= 204.0' Slope= 0.0049 '/'
Inlet Invert= 56.00', Outlet Invert= 55.00'

‡

Summary for Reach 3R:

Inflow Area = 13.787 ac, 17.37% Impervious, Inflow Depth = 2.85" for 25-YR event
Inflow = 21.0 cfs @ 12.47 hrs, Volume= 3.275 af
Outflow = 21.0 cfs @ 12.47 hrs, Volume= 3.275 af, Atten= 0%, Lag= 0.2 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs
Max. Velocity= 3.46 fps, Min. Travel Time= 0.5 min
Avg. Velocity = 0.73 fps, Avg. Travel Time= 2.3 min

Peak Storage= 625 cf @ 12.47 hrs
Average Depth at Peak Storage= 0.82'
Bank-Full Depth= 1.00' Flow Area= 8.0 sf, Capacity= 31.0 cfs

5.00' x 1.00' deep channel, n= 0.030
Side Slope Z-value= 3.0 '/' Top Width= 11.00'
Length= 103.0' Slope= 0.0097 '/'
Inlet Invert= 55.00', Outlet Invert= 54.00'

‡

Summary for Reach 4R:

Inflow Area = 4.951 ac, 19.05% Impervious, Inflow Depth = 3.70" for 25-YR event
Inflow = 12.6 cfs @ 12.38 hrs, Volume= 1.527 af
Outflow = 12.5 cfs @ 12.39 hrs, Volume= 1.527 af, Atten= 0%, Lag= 1.0 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs
Max. Velocity= 2.05 fps, Min. Travel Time= 1.3 min
Avg. Velocity = 0.67 fps, Avg. Travel Time= 4.0 min

Peak Storage= 978 cf @ 12.39 hrs
Average Depth at Peak Storage= 0.48'
Bank-Full Depth= 0.50' Flow Area= 6.5 sf, Capacity= 13.7 cfs

8.00' x 0.50' deep channel, n= 0.040
Side Slope Z-value= 10.0 '/' Top Width= 18.00'
Length= 160.0' Slope= 0.0125 '/'
Inlet Invert= 64.00', Outlet Invert= 62.00'

‡

Summary for Pond 1P: CLVT1

Inflow Area = 5.583 ac, 18.07% Impervious, Inflow Depth = 3.70" for 25-YR event
Inflow = 13.5 cfs @ 12.38 hrs, Volume= 1.722 af
Outflow = 12.6 cfs @ 12.45 hrs, Volume= 1.722 af, Atten= 6%, Lag= 4.0 min
Primary = 12.6 cfs @ 12.45 hrs, Volume= 1.722 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs
Peak Elev= 62.95' @ 12.48 hrs Surf.Area= 1,638 sf Storage= 1,120 cf
Flood Elev= 64.10' Surf.Area= 4,565 sf Storage= 4,337 cf

Plug-Flow detention time= 1.1 min calculated for 1.720 af (100% of inflow)
Center-of-Mass det. time= 0.9 min (833.7 - 832.8)

Volume	Invert	Avail.Storage	Storage Description
#1	60.00'	4,337 cf	**Custom Stage Data (Prismatic)**Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
60.00	34	0	0
61.00	92	63	63
62.00	237	165	228
63.00	1,708	973	1,200
64.00	4,565	3,137	4,337

Device	Routing	Invert	Outlet Devices
#1	Primary	60.50'	**24.0" Round Culvert** L= 51.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 60.50' / 60.20' S= 0.0059 '/' Cc= 0.900 n= 0.012, Flow Area= 3.14 sf

Primary OutFlow Max=12.4 cfs @ 12.45 hrs HW=62.93' TW=61.86' (Dynamic Tailwater)
1=Culvert (Inlet Controls 12.4 cfs @ 3.94 fps)

Summary for Pond 2P: CLVT2

Inflow Area = 5.734 ac, 18.33% Impervious, Inflow Depth = 3.71" for 25-YR event
Inflow = 12.8 cfs @ 12.44 hrs, Volume= 1.774 af
Outflow = 12.6 cfs @ 12.49 hrs, Volume= 1.773 af, Atten= 1%, Lag= 3.2 min
Primary = 12.6 cfs @ 12.49 hrs, Volume= 1.773 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs
Peak Elev= 61.87' @ 12.49 hrs Surf.Area= 1,709 sf Storage= 2,187 cf
Flood Elev= 62.10' Surf.Area= 1,750 sf Storage= 2,405 cf

Plug-Flow detention time= 3.2 min calculated for 1.773 af (100% of inflow)
Center-of-Mass det. time= 2.2 min (834.9 - 832.8)

Volume	Invert	Avail.Storage	Storage Description
#1	59.00'	2,405 cf	**Custom Stage Data (Prismatic)**Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
59.00	28	0	0
60.00	94	61	61
61.00	1,422	758	819
62.00	1,750	1,586	2,405

Device	Routing	Invert	Outlet Devices
#1	Primary	59.75'	**24.0" Round Culvert** L= 45.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 59.75' / 59.50' S= 0.0056 '/' Cc= 0.900 n= 0.012, Flow Area= 3.14 sf

Primary OutFlow Max=12.6 cfs @ 12.49 hrs HW=61.87' TW=59.83' (Dynamic Tailwater)
1=Culvert (Barrel Controls 12.6 cfs @ 4.71 fps)

Summary for Pond 3P: CLVT3

Inflow Area = 6.692 ac, 16.29% Impervious, Inflow Depth = 3.68" for 25-YR event
Inflow = 14.3 cfs @ 12.44 hrs, Volume= 2.052 af
Outflow = 14.1 cfs @ 12.51 hrs, Volume= 2.052 af, Atten= 2%, Lag= 4.1 min
Primary = 5.6 cfs @ 12.50 hrs, Volume= 0.824 af
Secondary = 8.4 cfs @ 12.51 hrs, Volume= 1.228 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs
Peak Elev= 59.83' @ 12.51 hrs Surf.Area= 1,665 sf Storage= 1,521 cf
Flood Elev= 60.10' Surf.Area= 1,755 sf Storage= 1,813 cf

Plug-Flow detention time= (not calculated: outflow precedes inflow)
Center-of-Mass det. time= 0.6 min (834.4 - 833.8)

Volume	Invert	Avail.Storage	Storage Description
#1	58.50'	1,813 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
58.50	66	0	0
59.00	1,225	323	323
60.00	1,755	1,490	1,813

Device	Routing	Invert	Outlet Devices
#1	Primary	57.50'	**18.0" Round Culvert SD-4** L= 85.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 57.50' / 57.00' S= 0.0059 '/' Cc= 0.900 n= 0.012, Flow Area= 1.77 sf
#2	Secondary	57.50'	**18.0" Round Culvert SD-5** L= 72.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 57.50' / 57.00' S= 0.0069 '/' Cc= 0.900 n= 0.012, Flow Area= 1.77 sf

Primary OutFlow Max=5.6 cfs @ 12.50 hrs HW=59.83' TW=59.13' (Dynamic Tailwater)
↑—**1=Culvert SD-4** (Inlet Controls 5.6 cfs @ 3.17 fps)

Secondary OutFlow Max=8.4 cfs @ 12.51 hrs HW=59.83' TW=0.00' (Dynamic Tailwater)
↑—**2=Culvert SD-5** (Inlet Controls 8.4 cfs @ 4.77 fps)

Summary for Pond 4P: CLVT4

Inflow Area = 0.282 ac, 23.76% Impervious, Inflow Depth = 3.40" for 25-YR event
Inflow = 1.1 cfs @ 12.09 hrs, Volume= 0.080 af
Outflow = 0.7 cfs @ 12.08 hrs, Volume= 0.080 af, Atten= 37%, Lag= 0.0 min
Primary = 0.7 cfs @ 12.08 hrs, Volume= 0.080 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs
Peak Elev= 59.14' @ 12.54 hrs Surf.Area= 1,362 sf Storage= 749 cf
Flood Elev= 60.10' Surf.Area= 3,087 sf Storage= 2,672 cf

Plug-Flow detention time= 16.0 min calculated for 0.080 af (100% of inflow)
Center-of-Mass det. time= 15.3 min (835.9 - 820.6)

Volume	Invert	Avail.Storage	Storage Description
#1	58.00'	2,672 cf	**Custom Stage Data (Prismatic)**Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
58.00	74	0	0
59.00	1,091	583	583
60.00	3,087	2,089	2,672

Device	Routing	Invert	Outlet Devices
#1	Primary	58.00'	**15.0" Round Culvert** L= 80.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 58.00' / 57.50' S= 0.0063 '/' Cc= 0.900 n= 0.012, Flow Area= 1.23 sf

Primary OutFlow Max=0.0 cfs @ 12.08 hrs HW=58.53' TW=58.59' (Dynamic Tailwater)
↑—**1=Culvert** (Controls 0.0 cfs)

Summary for Pond 5P: CLVT5

Inflow Area = 3.862 ac, 15.07% Impervious, Inflow Depth = 1.40" for 25-YR event
Inflow = 3.3 cfs @ 12.43 hrs, Volume= 0.452 af
Outflow = 3.2 cfs @ 12.49 hrs, Volume= 0.452 af, Atten= 2%, Lag= 3.7 min
Primary = 3.2 cfs @ 12.49 hrs, Volume= 0.452 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs
Peak Elev= 61.98' @ 12.49 hrs Surf.Area= 1,137 sf Storage= 613 cf
Flood Elev= 63.50' Surf.Area= 3,428 sf Storage= 2,935 cf

Plug-Flow detention time= 3.6 min calculated for 0.451 af (100% of inflow)
Center-of-Mass det. time= 3.6 min (902.3 - 898.8)

Volume	Invert	Avail.Storage	Storage Description
#1	61.00'	2,935 cf	**Custom Stage Data (Prismatic)**Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
61.00	119	0	0
62.00	1,161	640	640
63.00	3,428	2,295	2,935

Device	Routing	Invert	Outlet Devices
#1	Primary	61.00'	**18.0" Round Culvert** L= 39.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 61.00' / 60.50' S= 0.0128 '/' Cc= 0.900 n= 0.012, Flow Area= 1.77 sf

Primary OutFlow Max=3.2 cfs @ 12.49 hrs HW=61.98' TW=60.04' (Dynamic Tailwater)
1=Culvert (Inlet Controls 3.2 cfs @ 2.65 fps)

Summary for Pond 6P: CLVT6

Inflow Area = 3.862 ac, 15.07% Impervious, Inflow Depth = 1.40" for 25-YR event
Inflow = 3.2 cfs @ 12.49 hrs, Volume= 0.452 af
Outflow = 3.1 cfs @ 12.57 hrs, Volume= 0.452 af, Atten= 4%, Lag= 4.8 min
Primary = 3.1 cfs @ 12.57 hrs, Volume= 0.452 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs
Peak Elev= 60.07' @ 12.57 hrs Surf.Area= 1,225 sf Storage= 714 cf
Flood Elev= 62.00' Surf.Area= 3,749 sf Storage= 5,819 cf

Plug-Flow detention time= 4.7 min calculated for 0.452 af (100% of inflow)
Center-of-Mass det. time= 4.2 min (906.6 - 902.3)

Volume	Invert	Avail.Storage	Storage Description
#1	59.00'	5,819 cf	**Custom Stage Data (Prismatic)**Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
59.00	154	0	0
60.00	1,105	630	630
61.00	2,762	1,934	2,563
62.00	3,749	3,256	5,819

Device	Routing	Invert	Outlet Devices
#1	Primary	59.00'	**15.0" Round Culvert** L= 33.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 59.00' / 58.00' S= 0.0303 '/' Cc= 0.900 n= 0.012, Flow Area= 1.23 sf

Primary OutFlow Max=3.1 cfs @ 12.57 hrs HW=60.07' TW=57.26' (Dynamic Tailwater)
1=Culvert (Inlet Controls 3.1 cfs @ 2.78 fps)

Summary for Pond POND:

Inflow Area = 7.627 ac, 19.79% Impervious, Inflow Depth = 1.74" for 25-YR event
Inflow = 6.9 cfs @ 12.09 hrs, Volume= 1.106 af
Outflow = 6.5 cfs @ 12.49 hrs, Volume= 1.105 af, Atten= 6%, Lag= 23.9 min
Primary = 6.5 cfs @ 12.49 hrs, Volume= 1.105 af
Secondary = 0.0 cfs @ 0.00 hrs, Volume= 0.000 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs
Peak Elev= 59.13' @ 12.49 hrs Surf.Area= 3,165 sf Storage= 6,863 cf

Plug-Flow detention time= 32.5 min calculated for 1.104 af (100% of inflow)
Center-of-Mass det. time= 32.8 min (874.3 - 841.6)

Volume	Invert	Avail.Storage	Storage Description
#1	56.00'	10,585 cf	**Custom Stage Data (Prismatic)**Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
56.00	1,307	0	0
57.00	1,829	1,568	1,568
58.00	2,423	2,126	3,694
59.00	3,084	2,754	6,448
60.20	3,812	4,138	10,585

Device	Routing	Invert	Outlet Devices
#1	Primary	56.00'	**15.0" Round Culvert** L= 35.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 56.00' / 55.50' S= 0.0143 '/' Cc= 0.900 n= 0.012, Flow Area= 1.23 sf
#2	Secondary	59.20'	**8.0' long x 6.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 3.50 4.00 4.50 5.00 5.50 Coef. (English) 2.37 2.51 2.70 2.68 2.68 2.67 2.65 2.65 2.65 2.65 2.66 2.66 2.67 2.69 2.72 2.76 2.83
#3	Device 1	56.00'	**6.0" Vert. Orifice/Grate** C= 0.600
#4	Device 1	58.60'	**4.0' long Sharp-Crested Rectangular Weir** 2 End Contraction(s)

Primary OutFlow Max=6.5 cfs @ 12.49 hrs HW=59.13' TW=56.43' (Dynamic Tailwater)
└**1=Culvert** (Passes 6.5 cfs of 7.4 cfs potential flow)
  ├**3=Orifice/Grate** (Orifice Controls 1.6 cfs @ 7.92 fps)
  └**4=Sharp-Crested Rectangular Weir** (Weir Controls 4.9 cfs @ 2.39 fps)

Secondary OutFlow Max=0.0 cfs @ 0.00 hrs HW=56.00' TW=56.00' (Dynamic Tailwater)
└**2=Broad-Crested Rectangular Weir** (Controls 0.0 cfs)

Summary for Link SP-1:

Inflow	=	8.4 cfs @	12.51 hrs, Volume=	1.228 af
Primary	=	8.4 cfs @	12.51 hrs, Volume=	1.228 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs

Summary for Link SP-2:

Inflow Area = 13.787 ac, 17.37% Impervious, Inflow Depth = 2.85" for 25-YR event
Inflow = 21.0 cfs @ 12.47 hrs, Volume= 3.275 af
Primary = 21.0 cfs @ 12.47 hrs, Volume= 3.275 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs

Summary for Link SP-3:

Inflow Area = 4.951 ac, 19.05% Impervious, Inflow Depth = 3.70" for 25-YR event
Inflow = 12.6 cfs @ 12.38 hrs, Volume= 1.527 af
Primary = 12.6 cfs @ 12.38 hrs, Volume= 1.527 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs

Summary for Link SP-4:

Inflow Area = 3.862 ac, 15.07% Impervious, Inflow Depth = 1.40" for 25-YR event
Inflow = 3.3 cfs @ 12.43 hrs, Volume= 0.452 af
Primary = 3.3 cfs @ 12.43 hrs, Volume= 0.452 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs

APPENDIX C

STORMWATER QUALITY CALCULATIONS

Capisic Meadows
Project No. 41041

TABLE 1
MDEP WATER QUALITY VOLUME CALCULATIONS
IMPERVIOUS AREA / DEVELOPED AREA SUMMARY

Subcatchment ID	Description	Lot Impervious	Lot Undisturbed	Lot Developed	Start Station	End Station	Row Length (ft)	ROW Width (ft)	Road Paved Width (ft)	Walk Width (ft)	Esplande Width (ft)	ROW Impervious (ft)	ROW Landscaped (ft)	New Imp Area (s.f.)	Subtotals	New Developed Area	Subtotals
	STA 0+00 - 0+62.78				0	62.78	62.78	50	28	5	17	2072	1067	2072		3139	
	STA 0+62.78 - 4+02				62.78	402	339.22	50	28	5	17	11194	5767	11194		16961	
	Hammerhead											900	0	900		900	
														Subtotal	14166	Subtotal	21000

Total New Impervious Area =	**14,166**
Min Treatment Area (75%) =	**10,625**

Total New Developed Area =	**21,000**
Min Treatment Area (50%) =	**10,500**

Capisic Meadows
Project No. 41041

TABLE 2
CAPISIC MEADOWS
IMPERVIOUS AREA / DEVELOPED AREA
TREATMENT SUMMARY

Description	Lot Impervious	Lot Developed	ROW Impervious (ft)	ROW Landscaped (ft)	New imp area (S.F.)	Landscaped AREA (acre)	Receives Treatment (Yes/No)	IMP AREA TREATED	DEVELOPED AREA TREATED
STA 0+00 - 0+62.78			2071.74	1067.26	2072	1067	N	0	0
STA 0+62.78 - 4+02			11194.26	5766.74	11194	5767	YES	11194	16961
Hammerhead			900	0	900	0	YES	900	900
					14166	**6834**		**12094**	**17861**

TOTAL NEW IMPERVIOUS AREA	**14166**
TOTAL NEW IMPERVIOUS AREA REQUIRING TREATMENT	**10,625**
TOTAL NEW IMPERVIOUS ARE RECEIVING TREATMENT	**12094**
% OF NEW IMPERVIOUS AREA RECEIVING TREATMENT	**85%**

TOTAL NEW DEVELOPED AREA	**21000**
TOTAL NEW DEVELOPED AREA REQUIRING TREATMENT	**10,500**
TOTAL NEW DEVELOPED AREA RECEIVING TREATMENT	**17861**
% OF NEW DEVELOPED AREA RECEIVING TREATMENT	**85%**

APPENDIX D

MAINTENANCE PLAN AND LOG

41041

INSPECTION, MAINTENANCE, AND HOUSEKEEPING PLAN

Capisic Meadows Subdivision
Bancroft Street
Portland, Maine

Introduction

The following plan outlines the anticipated inspection and maintenance 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 this inspection and maintenance plan are provided as an overview of the anticipated practices to be used on this site. In some instances, additional measures may be required due to unexpected conditions. For additional detail on any of the erosion and sedimentation control measures or stormwater management devices to be utilized on this project, refer to the most recently revised edition of the "Maine Erosion and Sedimentation Control BMP" manual and/or the "Stormwater Management for Maine: Best Management Practices" manual as published by the Maine Department of Environmental Protection (MDEP).

During Construction

1. **Inspection:** During the construction process, it is the Contractor's responsibility to comply with the inspection and maintenance procedures outlined in this section. These responsibilities include inspecting disturbed and impervious areas, erosion control measures, materials storage areas that are exposed to precipitation, and locations where vehicles enter or exit the site. These areas shall be inspected at least once a week as well as before and after a storm event, and prior to completing permanent stabilization measures. A person with knowledge of erosion and stormwater control, including the standards and conditions in any applicable permits, shall conduct the inspections.

2. **Maintenance:** All measures shall be maintained in an effective operating condition until areas are permanently stabilized. If Best Management Practices (BMPs) need to be maintained or modified, additional BMPs are necessary, or other corrective action is needed, implementation must be completed within 7 calendar days and prior to any storm event (rainfall).

3. **Documentation:** A log summarizing the inspections and any corrective action taken must be maintained on-site. The log must include the name(s) and qualifications of the person

making the inspections, the date(s) of the inspections, and major observations about the operation and maintenance of erosion and sedimentation controls, material storage areas, and vehicle access points to the site. Major observations must include BMPs that need maintenance, BMPs that failed to operate as designed or proved inadequate for a particular location, and locations where additional BMPs are needed. For each BMP requiring maintenance, BMP needing replacement, and location needing additional BMPs, note in the log the corrective action taken and when it was taken. The log must be made accessible to the appropriate regulatory agency upon request. The permittee shall retain a copy of the log for a period of at least three years from the completion of permanent stabilization.

4. **Specific Inspection and Maintenance Tasks:** The following is a list of erosion control and stormwater management measures and the specific inspection and maintenance tasks to be performed during construction.

A. Sediment Barriers:

- Hay bale barriers, silt fences, and filter berms shall be inspected immediately after each rainfall and at least daily during prolonged rainfall.
- If the fabric on a silt fence or filter barrier should decompose or become ineffective prior to the end of the expected usable life and the barrier is still necessary, it shall be replaced.
- Sediment deposits should be removed after each storm event. They must be removed before deposits reach approximately one-half the height of the barrier.
- Filter berms shall be reshaped as needed.
- Any sediment deposits remaining in place after the silt fence or filter barrier is no longer required should be dressed to conform to the existing grade, prepared, and seeded.

B. 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 the requirements of this plan.

D. Stone Check Dams:

- Inspect the center of the dam to make sure it is lower than the edges. Erosion caused by high flows around the edges of the dam must be corrected.
- Sediment accumulation shall be removed prior to reaching half of the original design height.
- Areas beneath stone check dams must be seeded and mulched upon removal.

E. 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.

F. 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).

G. 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.

Stabilized Temporary Drainage Swales:

- Sediment accumulation in the swale shall be removed once the cross section

of the swale is reduced by 25%.

- The swales shall be inspected after rainfall events. Any evidence of sloughing of the side slopes or channel erosion shall be repaired and corrective action should be taken to prevent reoccurrence of the problem.
- In addition to the stabilized lining of the channel (i.e. erosion control blankets), stone check dams may be needed to further reduce channel velocity.

5. **Housekeeping:** The following general performance standards apply to the proposed project.

   A. Spill prevention: Controls must be used to prevent pollutants from being discharged from materials on-site, including storage practices to minimize exposure of the materials to stormwater, and appropriate spill prevention, containment, and response planning and implementation.

   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, it is the responsibility of the owner or assigned heirs to comply with the inspection and maintenance procedures outlined in this section. All

measures must be maintained in effective operating condition. A person with knowledge of erosion and stormwater control, including the standards and conditions in all applicable permits, shall conduct the inspections.

2. **Specific Inspection and Maintenance Tasks:** The following is a list of permanent erosion control and stormwater management measures and the inspection and maintenance tasks to be performed after construction.

A. Vegetated Areas:

- Inspect vegetated areas, particularly slopes and embankments, early in the growing season or after heavy rains to identify active or potential erosion problems.
- Replant bare areas or areas with sparse growth. Where rill erosion is evident, armor the area with an appropriate lining or divert the erosive flows to on-site areas able to withstand the concentrated flows.

B. Ditches, Swales, and Other Open Channels:

- Inspect ditches, swales and other open stormwater channels in the spring, in the late fall, and after heavy rains to remove any obstructions to flow. Remove accumulated sediments and debris, remove woody vegetative growth that could obstruct flow, and repair any erosion of the ditch lining.
- Vegetated ditches must be mowed at least annually or otherwise maintained to control the growth of woody vegetation and maintain flow capacity.
- Any woody vegetation growing through riprap linings must also be removed. Repair any slumping side slopes as soon as practicable.
- If the ditch has a riprap lining, replace riprap in areas where any underlying filter fabric or underdrain gravel is showing through the stone or where stones have dislodged.

C. 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.

D. 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.

- If the basin outlet is designed to trap floatable materials, then remove the floating debris and any floating oils (using oil-absorptive pads).

E. 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.

1. **Documentation:** A log summarizing the inspections and any corrective action taken must be maintained. The log must include the name(s) and qualifications of the person making the inspections, the date(s) of the inspections, and major observations about the operation and maintenance of controls. Major observations must include BMPs that need maintenance, BMPs that failed to operate as designed or proved inadequate for a particular location, and locations where additional BMPs are needed. For each BMP requiring maintenance, BMP needing replacement, and location needing additional BMPs, note in the log the corrective action taken and when it was taken. The log must be made accessible to the appropriate regulatory agency upon request. A sample "Stormwater Inspection and Maintenance Form" has been included as Attachment 1 of this Inspection, Maintenance, and Housekeeping Plan.

2. **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.

Capisic Meadows

BMP MAINTENANCE LOG PAGE____

BMP STRUCTURE	INSPECTOR (NAME)	WORK PERFORMED	DATE PERFORMED	COMMENTS
Filterra Units				
Catchbasin				
Vegetated Areas				
Sweep Roadway				
Grassed Swales				
Rip Rap				
Other				
Additional Comments:				

Operation & Maintenance (OM) Manual v01

filterra®

Bioretention Systems

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- Maintenance Checklist

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- *Example Filterra Project Maintenance Report Sheet*
- *Example Filterra Structure Maintenance Report Sheet*
- Filterra Warranty
- *Drawing FTST-2: Filterra Standard Configuration Detail*
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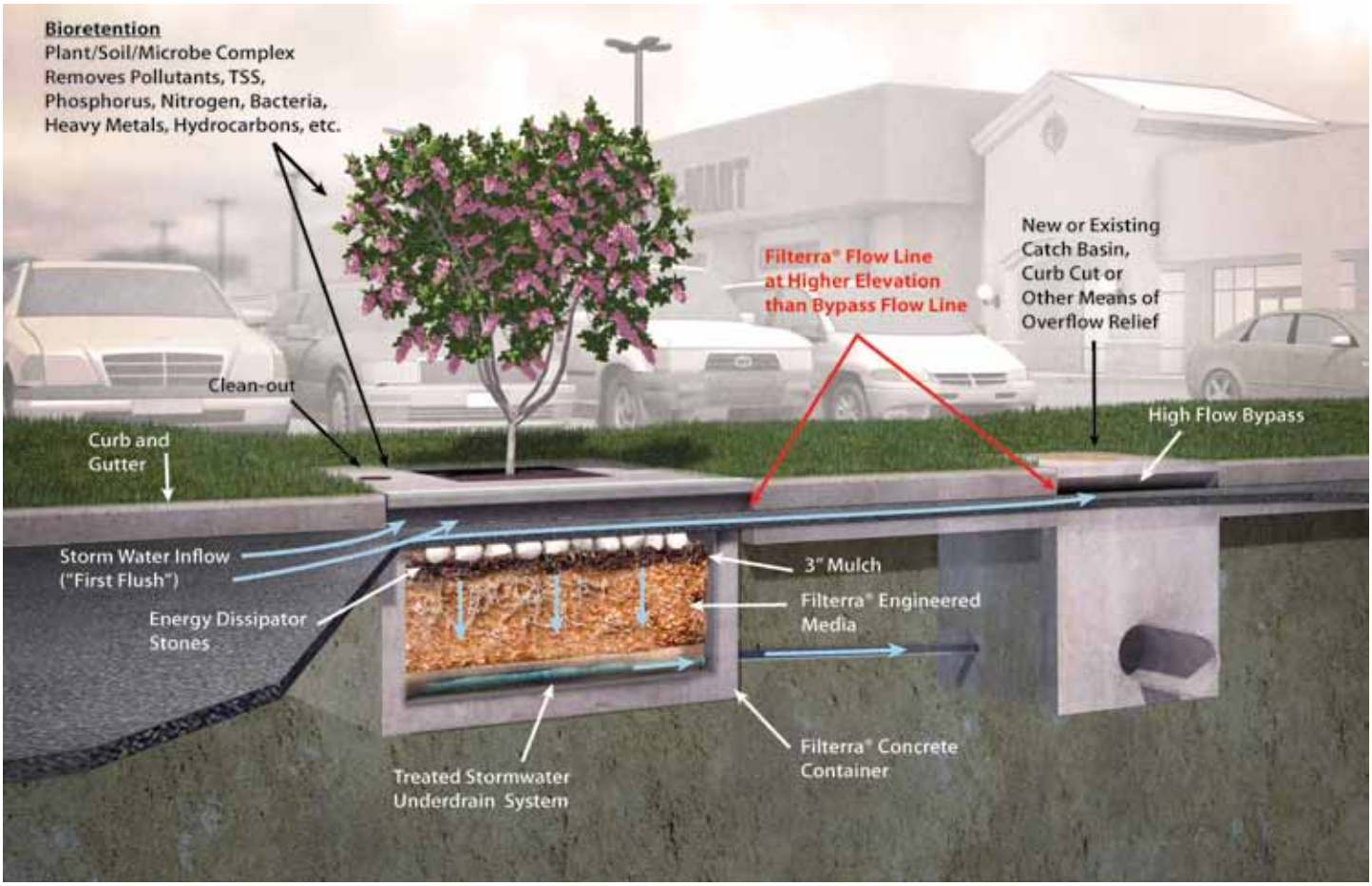
General Description

The following general specifications describe the general operations and maintenance requirements for the Contech Engineered Solutions LLC stormwater bioretention filtration system, the Filterra. The system utilizes physical, chemical and biological mechanisms of a soil, plant and microbe complex to remove pollutants typically found in urban stormwater runoff. The treatment system is a fully equipped, pre-constructed drop-in place unit designed for applications in the urban landscape to treat contaminated runoff.



Stormwater flows through a specially designed filter media mixture contained in a landscaped concrete container. The mixture immobilizes pollutants which are then decomposed, volatilized and incorporated into the biomass of the Filterra system's micro/macro fauna and flora. Stormwater runoff flows through the media and into an underdrain system at the bottom of the container, where the treated water is discharged. Higher flows bypass the Filterra to a downstream inlet or outfall. Maintenance is a simple, inexpensive and safe operation that does not require confined space access, pumping or vacuum equipment or specialized tools. Properly trained landscape personnel can effectively maintain Filterra Stormwater systems by following instructions in this manual.

Basic Operations

Filterra is a bioretention system in a concrete box. Contaminated stormwater runoff enters the filter box through the curb inlet spreading over the 3-inch layer of mulch on the surface of the filter media. As the water passes through the mulch layer, most of the larger sediment particles and heavy metals are removed through sedimentation and chemical reactions with the organic material in the mulch. Water passes through the soil media where the finer particles are removed and other chemical reactions take place to immobilize and capture pollutants in the soil media. The cleansed water passes into an underdrain and flows to a pipe system or other appropriate discharge point. Once the pollutants are in the soil, the bacteria begin to break down and metabolize the materials and the plants begin to uptake and metabolize the pollutants. Some pollutants such as heavy metals, which are chemically bound to organic particles in the mulch, are released over time as the organic matter decomposes to release the metals to the feeder roots of the plants and the cells of the bacteria in the soil where they remain and are recycled. Other pollutants such as phosphorus are chemically bound to the soil particles and released slowly back to the plants and bacteria and used in their metabolic processes. Nitrogen goes through a very complex variety of biochemical processes where it can ultimately end up in the plant/bacteria biomass, turned to nitrogen gas or dissolves back into the water column as nitrates depending on soil temperature, pH and the availability of oxygen. The pollutants ultimately are retained in the mulch, soil and biomass with some passing out of the system into the air or back into the water.

Design and Installation

Each project presents different scopes for the use of Filterra systems. To ensure the safe and specified function of the stormwater BMP, Contech reviews each application before supply. Information and help may be provided to the design engineer during the planning process. Correct Filterra box sizing (by rainfall region) is essential to predict pollutant removal rates for a given area. The engineer shall submit calculations for approval by the local jurisdiction. The contractor is responsible for the correct installation of Filterra units as shown in approved plans. A comprehensive installation manual is available at www.conteches.com.

Maintenance

Why Maintain?

All stormwater treatment systems require maintenance for effective operation. This necessity is often incorporated in your property's permitting process as a legally binding BMP maintenance agreement.

- Avoid legal challenges from your jurisdiction's maintenance enforcement program.
- Prolong the expected lifespan of your Filterra media.
- Avoid more costly media replacement.
- Help reduce pollutant loads leaving your property.

Simple maintenance of the Filterra is required to continue effective pollutant removal from stormwater runoff before discharge into downstream waters. This procedure will also extend the longevity of the living biofilter system. The unit will recycle and accumulate pollutants within the biomass, but is also subjected to other materials entering the throat. This may include trash, silt and leaves etc. which will be contained within the void below the top grate and above the mulch layer. Too much silt may inhibit the Filterra's® flow rate, which is the reason for site stabilization before activation. Regular replacement of the mulch stops accumulation of such sediment.

When to Maintain?

Contech includes a 1-year maintenance plan with each system purchase. Annual included maintenance consists of a maximum of two (2) scheduled visits. Additional maintenance may be necessary depending on sediment and trash loading (by Owner or at additional cost). The start of the maintenance plan begins when the system is activated for full operation. Full operation is defined as the unit installed, curb and gutter and transitions in place and activation (by Supplier) when mulch and plant are added and temporary throat protection removed.

Activation cannot be carried out until the site is fully stabilized (full landscaping, grass cover, final paving and street sweeping completed). Maintenance visits are scheduled seasonally; the spring visit aims to clean up after winter loads including salts and sands while the fall visit helps the system by removing excessive leaf litter.

It has been found that in regions which receive between 30-50 inches of annual rainfall, (2) two visits are generally required; regions with less rainfall often only require (1) one visit per annum. Varying land uses can affect maintenance frequency; e.g. some fast food restaurants require more frequent trash removal. Contributing drainage areas which are subject to new development wherein the recommended erosion and sediment control measures have not been implemented may require additional maintenance visits.

Some sites may be subjected to extreme sediment or trash loads, requiring more frequent maintenance visits. This is the reason for detailed notes of maintenance actions per unit, helping the Supplier and Owner predict future maintenance frequencies, reflecting individual site conditions.

Owners must promptly notify the (maintenance) Supplier of any damage to the plant(s), which constitute(s) an integral part of the bioretention technology. Owners should also advise other landscape or maintenance contractors to leave all maintenance to the Supplier (i.e. no pruning or fertilizing).

Exclusion of Services

It is the responsibility of the owner to provide adequate irrigation when necessary to the plant of the Filterra system.

Clean up due to major contamination such as oils, chemicals, toxic spills, etc. will result in additional costs and are not covered under the Supplier maintenance contract. Should a major contamination event occur the Owner must block off the outlet pipe of the Filterra (where the cleaned runoff drains to, such as drop inlet) and block off the throat of the Filterra. The Supplier should be informed immediately.

Maintenance Visit Summary

Each maintenance visit consists of the following simple tasks (detailed instructions below).

1. Inspection of Filterra and surrounding area
2. Removal of tree grate and erosion control stones
3. Removal of debris, trash and mulch
4. Mulch replacement
5. Plant health evaluation and pruning or replacement as necessary
6. Clean area around Filterra
7. Complete paperwork

Maintenance Tools, Safety Equipment and Supplies

Ideal tools include: camera, bucket, shovel, broom, pruners, hoe/rake, and tape measure. Appropriate Personal Protective Equipment (PPE) should be used in accordance with local or company procedures. This may include impervious gloves where the type of trash is unknown, high visibility clothing and barricades when working in close proximity to traffic and also safety hats and shoes. A T-Bar or crowbar should be used for moving the tree grates (up to 170 lbs ea.). Most visits require minor trash removal and a full replacement of mulch. See below for actual number of bagged mulch that is required in each unit size. Mulch should be a double shredded, hardwood variety; do not use colored or dyed mulch. Some visits may require additional Filterra engineered soil media available from the Supplier.

Box Length	Box Width	Filter Surface Area (ft^2)	Volume at 3" (ft^3)	# of 2 ft^3 Mulch Bags
4	4	4	4	2
6	4	6	6	3
8	4	8	8	4
6	6	9	9	5
8	6	12	12	6
10	6	15	15	8
12	6	18	18	9
13	7	23	23	12

Maintenance Visit Procedure

Keep sufficient documentation of maintenance actions to predict location specific maintenance frequencies and needs. An example Maintenance Report is included in this manual.

1. Inspection of Filterra and surrounding area

- Record individual unit before maintenance with photograph (numbered). Record on Maintenance Report (see example in this document) the following:

Record on Maintenance Report the following:

Standing Water	yes | no
Damage to Box Structure	yes | no
Damage to Grate	yes | no
Is Bypass Clear	yes | no

If yes answered to any of these observations, record with close-up photograph (numbered).

2. Removal of tree grate and erosion control stones

- Remove cast iron grates for access into Filterra box.
- Dig out silt (if any) and mulch and remove trash & foreign items.

Record on Maintenance Report the following:

Silt/Clay	yes | no
Cups/ Bags	yes | no
Leaves	yes | no
# of Buckets Removed	_____

3. Removal of debris, trash and mulch

- After removal of mulch and debris, measure distance from the top of the Filterra engineered media soil to the bottom of the top slab. If this distance is greater than 12", add Filterra media (not top soil or other) to recharge to a 9" distance

Record on Maintenance Report the following:

Distance of Bottom of Top Slab (inches)	_____
# of Buckets of Media Added	_____

4. Mulch replacement

- Please see mulch specifications.
- Add double shredded mulch evenly across the entire unit to a depth of 3".
- Ensure correct repositioning of erosion control stones by the Filterra inlet to allow for entry of trash during a storm event.
- Replace Filterra grates correctly using appropriate lifting or moving tools, taking care not to damage the plant.

5. Plant health evaluation and pruning or replacement as necessary

- Examine the plant's health and replace if dead.
- Prune as necessary to encourage growth in the correct directions

Record on Maintenance Report the following:

Height above Grate	(Feet)
Width at Widest Point	(feet)
Health	alive | dead
Damage to Plant	yes | no
Plant Replaced	yes | no

6. Clean area around Filterra

- Clean area around unit and remove all refuse to be disposed of appropriately.

7. Complete paperwork

- Deliver Maintenance Report and photographs to appropriate location (normally Contech during maintenance contract period).
- Some jurisdictions may require submission of maintenance reports in accordance with approvals. It is the responsibility of the Owner to comply with local regulations.

Maintenance Checklist

Drainage System Failure	Problem	Conditions to Check	Condition that Should Exist	Actions
Inlet	Excessive sediment or trash accumulation.	Accumulated sediments or trash impair free flow of water into Filterra.	Inlet should be free of obstructions allowing free distributed flow of water into Filterra.	Sediments and/or trash should be removed.
Mulch Cover	Trash and floatable debris accumulation.	Excessive trash and/or debris accumulation.	Minimal trash or other debris on mulch cover.	Trash and debris should be removed and mulch cover raked level. Ensure bark nugget mulch is not used.
Mulch Cover	"Ponding" of water on mulch cover.	"Ponding" in unit could be indicative of clogging due to excessive fine sediment accumulation or spill of petroleum oils.	Stormwater should drain freely and evenly through mulch cover.	Recommend contact manufacturer and replace mulch as a minimum.
Vegetation	Plants not growing or in poor condition.	Soil/mulch too wet, evidence of spill. Incorrect plant selection. Pest infestation. Vandalism to plants.	Plants should be healthy and pest free.	Contact manufacturer for advice.
Vegetation	Plant growth excessive.	Plants should be appropriate to the species and location of Filterra.		Trim/prune plants in accordance with typical landscaping and safety needs.
Structure	Structure has visible cracks.	Cracks wider than 1/2 inch or evidence of soil particles entering the structure through the cracks.		Vault should be repaired.
Maintenance is ideally to be performed twice annually.				

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APPENDIX E

Filterra Sizing Calculations

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Phone: (866) 740-3318
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www.ContechES.com

Tony Panciocco
Northeast Civil Solutions, Inc.
381 Payne Road
Scarborough, ME 04074

April 25th, 2018

RE: Capisic Meadows Subdivision (Contech Reference No. 589,880)
Review of Filterra Design

Dear Mr. Panciocco:

The purpose of this letter is to document Contech Engineered Solutions' review of the plans and the proposed application of Filterra water quality units for the Capisic Meadows Subdivision project in Scarborough, ME.

Contech Engineered Solutions (Contech) has reviewed the Filterra design for this project. We believe the FTIBC Filterra configuration with internal bypass is an appropriate water quality solution for this site. The Filterra systems are approved for use by MEDEP as an alternate to the General Standards of the Stormwater Rules (Chapter 500) if designed, installed, and maintained in accordance with the provisions noted in the February 2, 2017 approval letter from the MEDEP.

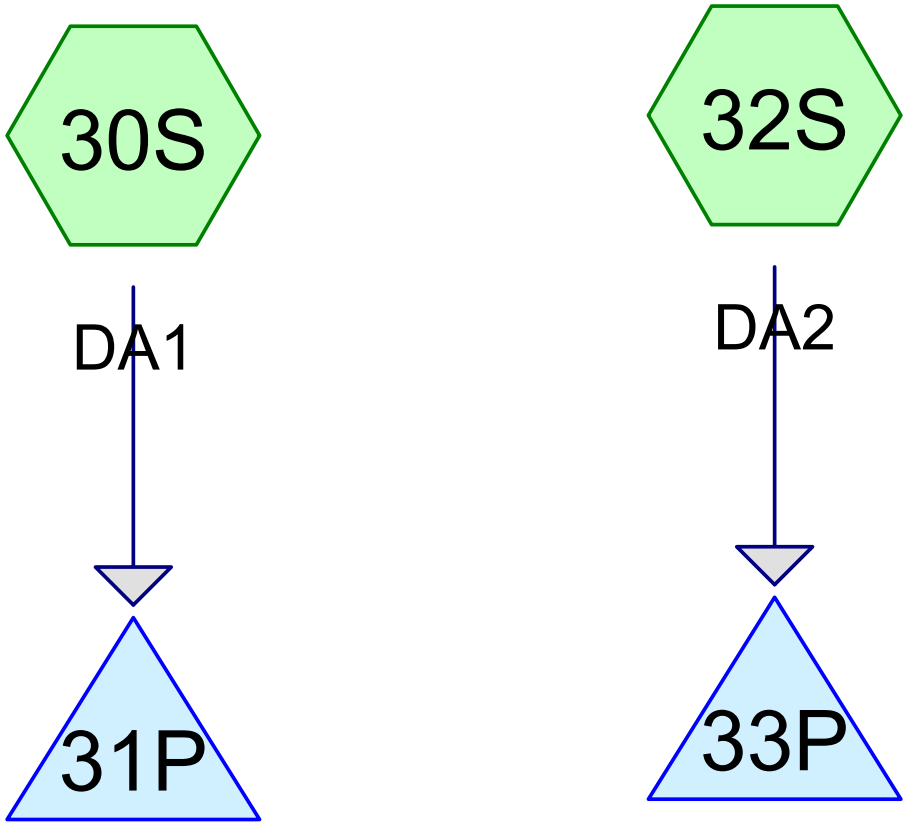
The engineer of record reports treatment drainage areas of 0.186 acres impervious and 0.156 acres landscaped, for each of two Filterra units. The two Filterra were designed in accordance with the sizing design guidelines to treat the runoff from the 0.95" storm over the entire contributing drainage area, including all pervious areas, prior to bypass. In order to adequately treat the generated run-off directed to each system, Contech recommends 6'x8' Filterra. The attached HydroCAD report is provided to support this size recommendation. The modeled peak elevation in the Filterra shows that at the approved 140"/hr hydraulic loading rate, the ponding in the Filterra will remain below the inside of the top slab (elevation 60.33' in the model) and be fully treated before bypass. The 25-year peak storm event was also modelled, and the HydroCAD report demonstrates that each of the Filterra's bypass capacities are suitable to convey the peak flow safely and keep the water surface elevation below the bottom of the system's top slab.

The configuration of the Filterra is acceptable. The system appears to be constructible and is located in order to facilitate maintenance activities. Our systems require periodic maintenance to continue operating properly. Given typical runoff pollutant loading rates, Contech recommends maintenance inspections on an annual basis. Based on the location of the system, we anticipate replacement of the mulch layer every 12 months for the system to continue to remove pollutants. Contech will be responsible for the first year of maintenance as included in the purchase of the Filterra unit; subsequent years of maintenance shall be performed by a third party at the owner's expense.

This system is expected to operate in accordance with Contech's design intent. Please feel free to contact me if you have any questions or concerns.

Sincerely,

Nicholas T. Busque
Stormwater Design Engineer
Contech Engineered Solutions, LLC.
(410) 609-6140
nbusque@conteches.com



Filterra 6x8/8x6

Filterra 6x8/8x6

Subcat Reach Pond Link

Routing Diagram for Filterra - 140inhr ME - Rainfall Type III Sizing - Fina

Prepared by Contech Engineered Solutions LLC, Printed 4/25/2018

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Summary for Subcatchment 30S: DA1

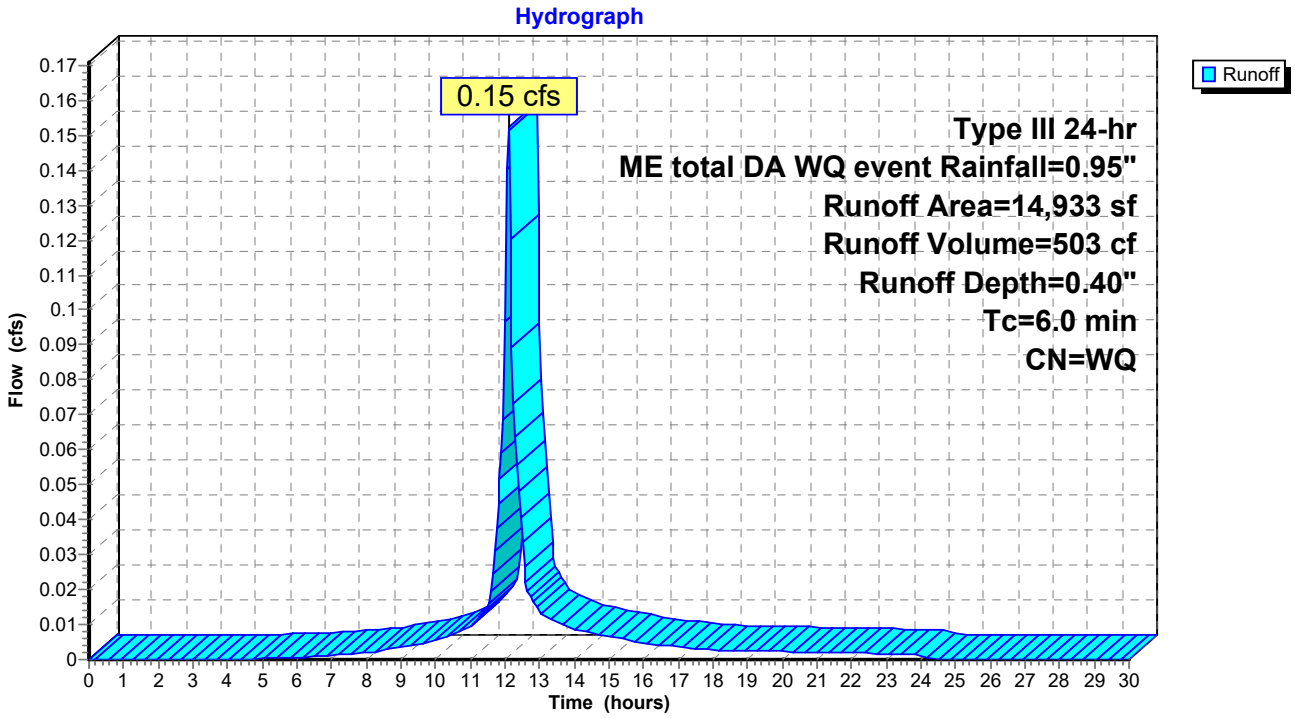
Runoff = 0.15 cfs @ 12.09 hrs, Volume= 503 cf, Depth= 0.40"

Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-30.00 hrs, dt= 0.05 hrs
Type III 24-hr ME total DA WQ event Rainfall=0.95"

	Area (sf)	CN	Description
*	8,116	98	impervious
	6,817	69	50-75% Grass cover, Fair, HSG B
	14,933		Weighted Average
	6,817	69	45.65% Pervious Area
	8,116	98	54.35% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					**Direct Entry,**

Subcatchment 30S: DA1



Hydrograph for Subcatchment 30S: DA1

Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)
0.00	0.00	0.00	0.00
0.50	0.00	0.00	0.00
1.00	0.01	0.00	0.00
1.50	0.01	0.00	0.00
2.00	0.02	0.00	0.00
2.50	0.02	0.00	0.00
3.00	0.03	0.00	0.00
3.50	0.03	0.00	0.00
4.00	0.04	0.00	0.00
4.50	0.05	0.00	0.00
5.00	0.05	0.00	0.00
5.50	0.06	0.00	0.00
6.00	0.07	0.00	0.00
6.50	0.08	0.00	0.00
7.00	0.09	0.00	0.00
7.50	0.10	0.00	0.00
8.00	0.11	0.00	0.00
8.50	0.12	0.00	0.00
9.00	0.14	0.00	0.00
9.50	0.16	0.00	0.00
10.00	0.18	0.00	0.01
10.50	0.21	0.00	0.01
11.00	0.24	0.00	0.01
11.50	0.28	0.00	0.02
12.00	0.47	0.01	**0.10**
12.50	0.67	0.05	**0.03**
13.00	0.71	0.06	0.01
13.50	0.74	0.07	0.01
14.00	0.77	0.08	0.01
14.50	0.79	0.09	0.01
15.00	0.81	0.09	0.01
15.50	0.83	0.10	0.01
16.00	0.84	0.11	0.00
16.50	0.85	0.11	0.00
17.00	0.86	0.11	0.00
17.50	0.87	0.12	0.00
18.00	0.88	0.12	0.00
18.50	0.89	0.12	0.00
19.00	0.90	0.13	0.00
19.50	0.90	0.13	0.00
20.00	0.91	0.13	0.00
20.50	0.92	0.14	0.00
21.00	0.92	0.14	0.00
21.50	0.93	0.14	0.00
22.00	0.93	0.14	0.00
22.50	0.94	0.15	0.00
23.00	0.94	0.15	0.00
23.50	0.95	0.15	0.00
24.00	**0.95**	**0.15**	0.00
24.50	0.95	0.15	0.00
25.00	0.95	0.15	0.00
25.50	0.95	0.15	0.00
26.00	0.95	0.15	0.00
26.50	0.95	0.15	0.00
27.00	0.95	0.15	0.00
27.50	0.95	0.15	0.00
28.00	0.95	0.15	0.00
28.50	0.95	0.15	0.00
29.00	0.95	0.15	0.00
29.50	0.95	0.15	0.00
30.00	0.95	0.15	0.00

Summary for Pond 31P: Filterra 6x8/8x6

Inflow Area = 14,933 sf, 54.35% Impervious, Inflow Depth = 0.40" for ME total DA WQ event event
Inflow = 0.15 cfs @ 12.09 hrs, Volume= 503 cf
Outflow = 0.15 cfs @ 12.09 hrs, Volume= 503 cf, Atten= 0%, Lag= 0.0 min
Primary = 0.15 cfs @ 12.09 hrs, Volume= 503 cf
Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0 cf

Routing by Stor-Ind method, Time Span= 0.00-30.00 hrs, dt= 0.05 hrs / 2
Peak Elev= 59.13' @ 12.09 hrs Surf.Area= 48 sf Storage= 0 cf

Plug-Flow detention time= 0.1 min calculated for 503 cf (100% of inflow)
Center-of-Mass det. time= 0.0 min (790.0 - 789.9)

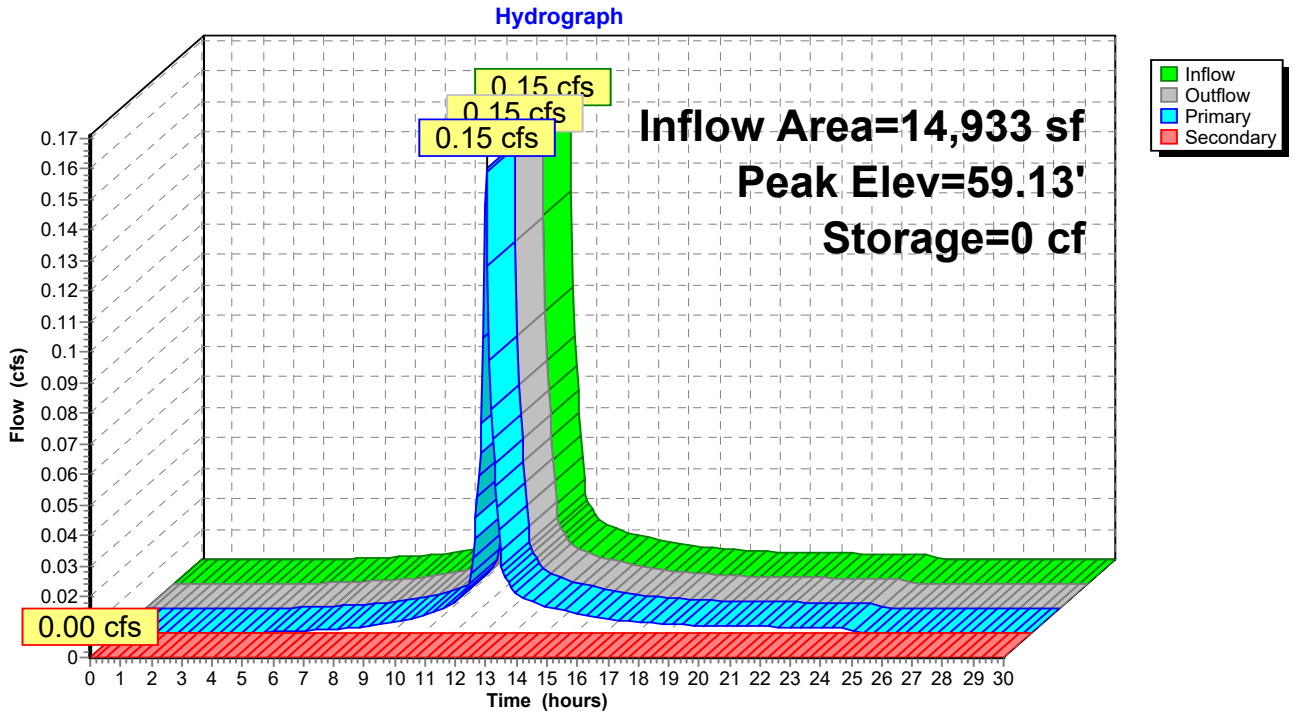
Volume	Invert	Avail.Storage	Storage Description
#1	59.12'	48 cf	**8.00'W x 6.00'L x 1.00'H Prismatoid**

Device	Routing	Invert	Outlet Devices
#1	Primary	59.12'	**140.000 in/hr Exfiltration over Surface area**
#2	Secondary	59.54'	**10.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=0.16 cfs @ 12.09 hrs HW=59.13' (Free Discharge)
└**1=Exfiltration** (Exfiltration Controls 0.16 cfs)

Secondary OutFlow Max=0.00 cfs @ 0.00 hrs HW=59.12' (Free Discharge)
└**2=Orifice/Grate** (Controls 0.00 cfs)

Pond 31P: Filterra 6x8/8x6



Hydrograph for Pond 31P: Filterra 6x8/8x6

Time (hours)	Inflow (cfs)	Storage (cubic-feet)	Elevation (feet)	Outflow (cfs)	Primary (cfs)	Secondary (cfs)
0.00	0.00	0	59.12	0.00	0.00	**0.00**
1.00	0.00	0	59.12	0.00	0.00	0.00
2.00	0.00	0	59.12	0.00	0.00	0.00
3.00	0.00	0	59.12	0.00	0.00	0.00
4.00	0.00	0	59.12	0.00	0.00	0.00
5.00	0.00	0	59.12	0.00	0.00	0.00
6.00	0.00	0	59.12	0.00	0.00	0.00
7.00	0.00	0	59.12	0.00	0.00	0.00
8.00	0.00	0	59.12	0.00	0.00	0.00
9.00	0.00	0	59.12	0.00	0.00	0.00
10.00	0.01	0	59.12	0.01	0.01	0.00
11.00	0.01	0	59.12	0.01	0.01	0.00
12.00	**0.10**	**0**	**59.13**	**0.10**	**0.10**	0.00
13.00	**0.01**	**0**	**59.12**	**0.01**	**0.01**	0.00
14.00	0.01	0	59.12	0.01	0.01	0.00
15.00	0.01	0	59.12	0.01	0.01	0.00
16.00	0.00	0	59.12	0.00	0.00	0.00
17.00	0.00	0	59.12	0.00	0.00	0.00
18.00	0.00	0	59.12	0.00	0.00	0.00
19.00	0.00	0	59.12	0.00	0.00	0.00
20.00	0.00	0	59.12	0.00	0.00	0.00
21.00	0.00	0	59.12	0.00	0.00	0.00
22.00	0.00	0	59.12	0.00	0.00	0.00
23.00	0.00	0	59.12	0.00	0.00	0.00
24.00	0.00	0	59.12	0.00	0.00	0.00
25.00	0.00	0	59.12	0.00	0.00	0.00
26.00	0.00	0	59.12	0.00	0.00	0.00
27.00	0.00	0	59.12	0.00	0.00	0.00
28.00	0.00	0	59.12	0.00	0.00	0.00
29.00	0.00	0	59.12	0.00	0.00	0.00
30.00	0.00	0	59.12	0.00	0.00	0.00

Summary for Subcatchment 30S: DA1

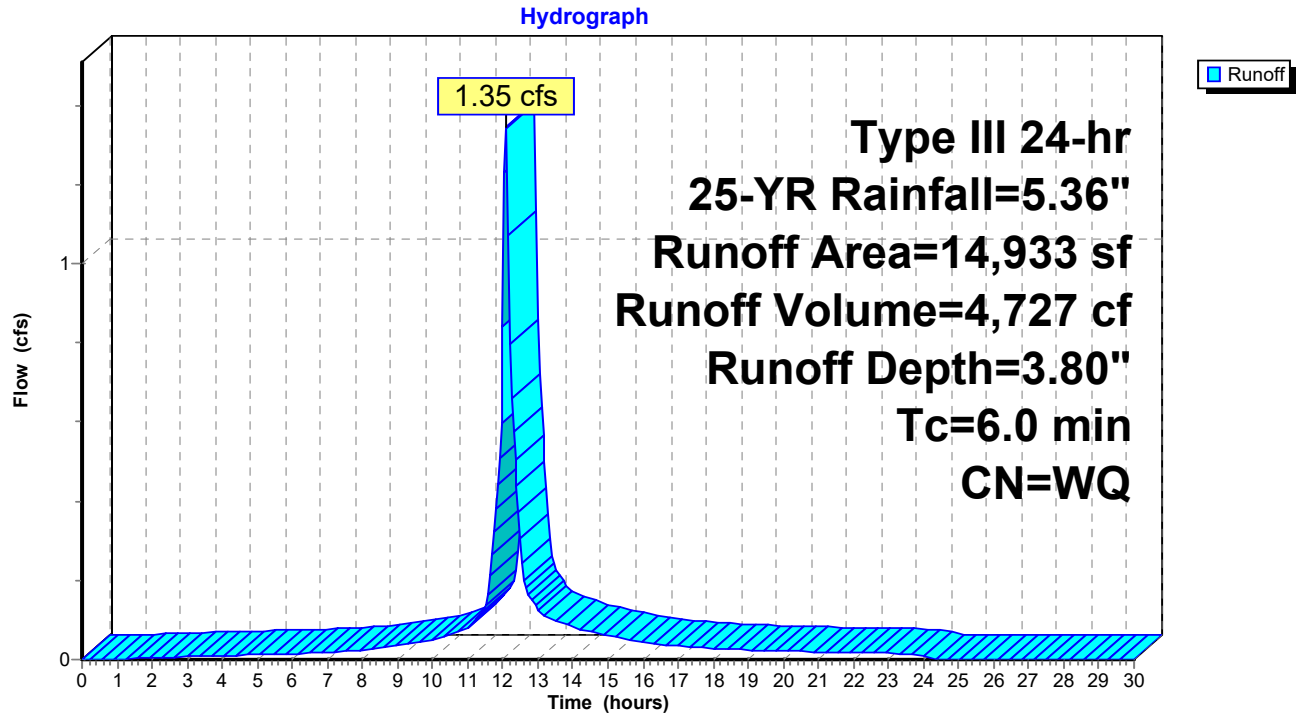
Runoff = 1.35 cfs @ 12.09 hrs, Volume= 4,727 cf, Depth= 3.80"

Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-30.00 hrs, dt= 0.05 hrs
Type III 24-hr 25-YR Rainfall=5.36"

	Area (sf)	CN	Description
*	8,116	98	impervious
	6,817	69	50-75% Grass cover, Fair, HSG B
	14,933		Weighted Average
	6,817	69	45.65% Pervious Area
	8,116	98	54.35% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					**Direct Entry,**

Subcatchment 30S: DA1



Hydrograph for Subcatchment 30S: DA1

Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)
0.00	0.00	0.00	0.00
0.50	0.03	0.00	0.00
1.00	0.05	0.00	0.00
1.50	0.08	0.00	0.00
2.00	0.11	0.00	0.00
2.50	0.14	0.00	0.01
3.00	0.16	0.00	0.01
3.50	0.20	0.00	0.01
4.00	0.23	0.00	0.01
4.50	0.27	0.00	0.01
5.00	0.30	0.00	0.01
5.50	0.34	0.00	0.01
6.00	0.39	0.00	0.01
6.50	0.43	0.00	0.02
7.00	0.49	0.01	0.02
7.50	0.54	0.02	0.02
8.00	0.61	0.03	0.02
8.50	0.69	0.05	0.03
9.00	0.78	0.08	0.03
9.50	0.89	0.13	0.04
10.00	1.01	0.18	0.05
10.50	1.16	0.25	0.06
11.00	1.34	0.35	0.08
11.50	1.60	0.51	0.13
12.00	2.68	1.32	**0.84**
12.50	3.76	2.25	**0.31**
13.00	4.02	2.48	0.13
13.50	4.20	2.64	0.10
14.00	4.35	2.77	0.08
14.50	4.47	2.88	0.07
15.00	4.58	2.98	0.06
15.50	4.67	3.07	0.05
16.00	4.75	3.14	0.04
16.50	4.82	3.20	0.04
17.00	4.87	3.25	0.03
17.50	4.93	3.30	0.03
18.00	4.97	3.34	0.03
18.50	5.02	3.38	0.02
19.00	5.06	3.42	0.02
19.50	5.09	3.45	0.02
20.00	5.13	3.49	0.02
20.50	5.16	3.52	0.02
21.00	5.20	3.55	0.02
21.50	5.23	3.58	0.02
22.00	5.26	3.61	0.02
22.50	5.28	3.63	0.02
23.00	5.31	3.66	0.02
23.50	5.34	3.68	0.02
24.00	**5.36**	**3.70**	0.01
24.50	5.36	3.70	0.00
25.00	5.36	3.70	0.00
25.50	5.36	3.70	0.00
26.00	5.36	3.70	0.00
26.50	5.36	3.70	0.00
27.00	5.36	3.70	0.00
27.50	5.36	3.70	0.00
28.00	5.36	3.70	0.00
28.50	5.36	3.70	0.00
29.00	5.36	3.70	0.00
29.50	5.36	3.70	0.00
30.00	5.36	3.70	0.00

Summary for Pond 31P: Filterra 6x8/8x6

Inflow Area = 14,933 sf, 54.35% Impervious, Inflow Depth = 3.80" for 25-YR event
Inflow = 1.35 cfs @ 12.09 hrs, Volume= 4,727 cf
Outflow = 1.34 cfs @ 12.09 hrs, Volume= 4,696 cf, Atten= 1%, Lag= 0.0 min
Primary = 0.16 cfs @ 11.60 hrs, Volume= 3,243 cf
Secondary = 1.18 cfs @ 12.09 hrs, Volume= 1,453 cf

Routing by Stor-Ind method, Time Span= 0.00-30.00 hrs, dt= 0.05 hrs / 2
Peak Elev= 59.81' @ 12.09 hrs Surf.Area= 48 sf Storage= 33 cf

Plug-Flow detention time= 4.8 min calculated for 4,688 cf (99% of inflow)
Center-of-Mass det. time= 0.5 min (774.0 - 773.5)

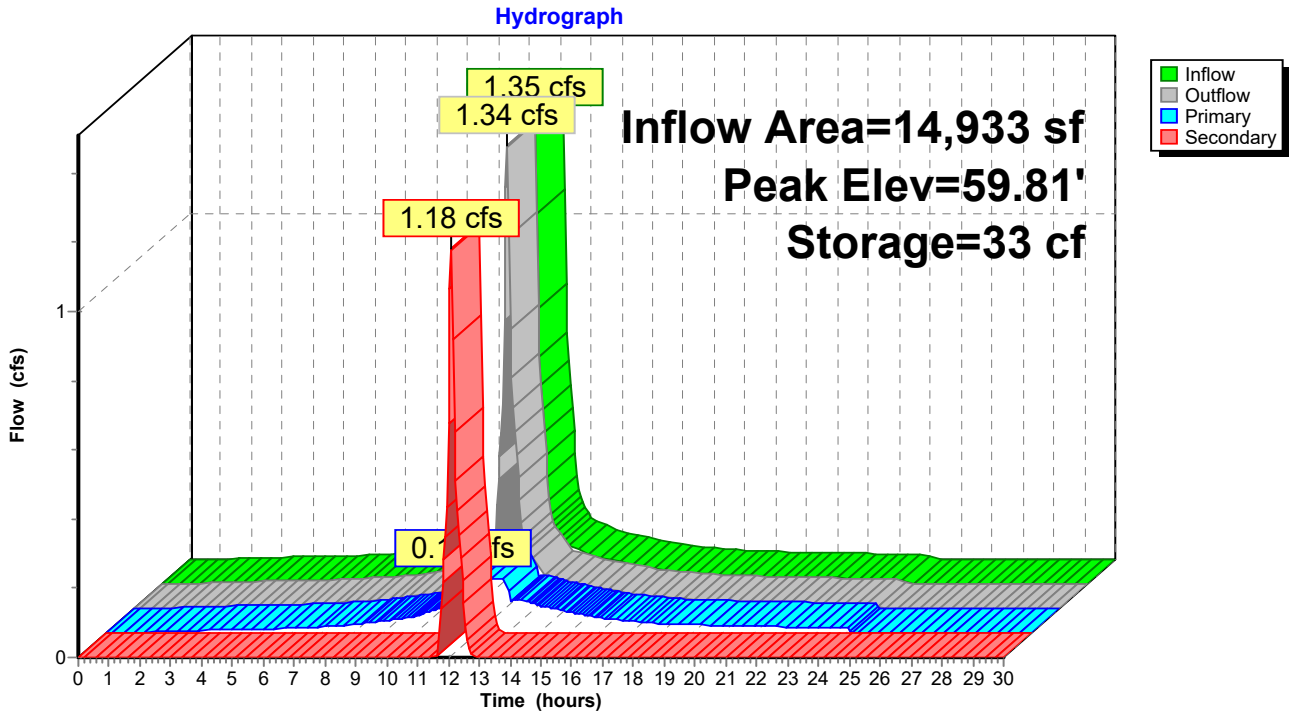
Volume	Invert	Avail.Storage	Storage Description
#1	59.12'	48 cf	**8.00'W x 6.00'L x 1.00'H Prismatoid**

Device	Routing	Invert	Outlet Devices
#1	Primary	59.12'	**140.000 in/hr Exfiltration over Surface area**
#2	Secondary	59.54'	**10.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=0.16 cfs @ 11.60 hrs HW=59.14' (Free Discharge)
└**1=Exfiltration** (Exfiltration Controls 0.16 cfs)

Secondary OutFlow Max=1.15 cfs @ 12.09 hrs HW=59.80' (Free Discharge)
└**2=Orifice/Grate** (Weir Controls 1.15 cfs @ 1.68 fps)

Pond 31P: Filterra 6x8/8x6



Hydrograph for Pond 31P: Filterra 6x8/8x6

Time (hours)	Inflow (cfs)	Storage (cubic-feet)	Elevation (feet)	Outflow (cfs)	Primary (cfs)	Secondary (cfs)
0.00	0.00	0	59.12	0.00	0.00	0.00
1.00	0.00	0	59.12	0.00	0.00	0.00
2.00	0.00	0	59.12	0.00	0.00	0.00
3.00	0.01	0	59.12	0.01	0.01	0.00
4.00	0.01	0	59.12	0.01	0.01	0.00
5.00	0.01	0	59.12	0.01	0.01	0.00
6.00	0.01	0	59.12	0.01	0.01	0.00
7.00	0.02	0	59.12	0.02	0.02	0.00
8.00	0.02	0	59.12	0.02	0.02	0.00
9.00	0.03	0	59.12	0.03	0.03	0.00
10.00	0.05	0	59.12	0.05	0.05	0.00
11.00	0.08	0	59.13	0.08	**0.08**	0.00
12.00	**0.84**	**29**	**59.72**	**0.83**	**0.16**	**0.68**
13.00	**0.13**	**9**	**59.31**	**0.16**	0.16	**0.00**
14.00	0.08	0	59.13	0.08	0.08	0.00
15.00	0.06	0	59.12	0.06	0.06	0.00
16.00	0.04	0	59.12	0.04	0.04	0.00
17.00	0.03	0	59.12	0.03	0.03	0.00
18.00	0.03	0	59.12	0.03	0.03	0.00
19.00	0.02	0	59.12	0.02	0.02	0.00
20.00	0.02	0	59.12	0.02	0.02	0.00
21.00	0.02	0	59.12	0.02	0.02	0.00
22.00	0.02	0	59.12	0.02	0.02	0.00
23.00	0.02	0	59.12	0.02	0.02	0.00
24.00	0.01	0	59.12	0.01	0.01	0.00
25.00	0.00	0	59.12	0.00	0.00	0.00
26.00	0.00	0	59.12	0.00	0.00	0.00
27.00	0.00	0	59.12	0.00	0.00	0.00
28.00	0.00	0	59.12	0.00	0.00	0.00
29.00	0.00	0	59.12	0.00	0.00	0.00
30.00	0.00	0	59.12	0.00	0.00	0.00

Summary for Subcatchment 32S: DA2

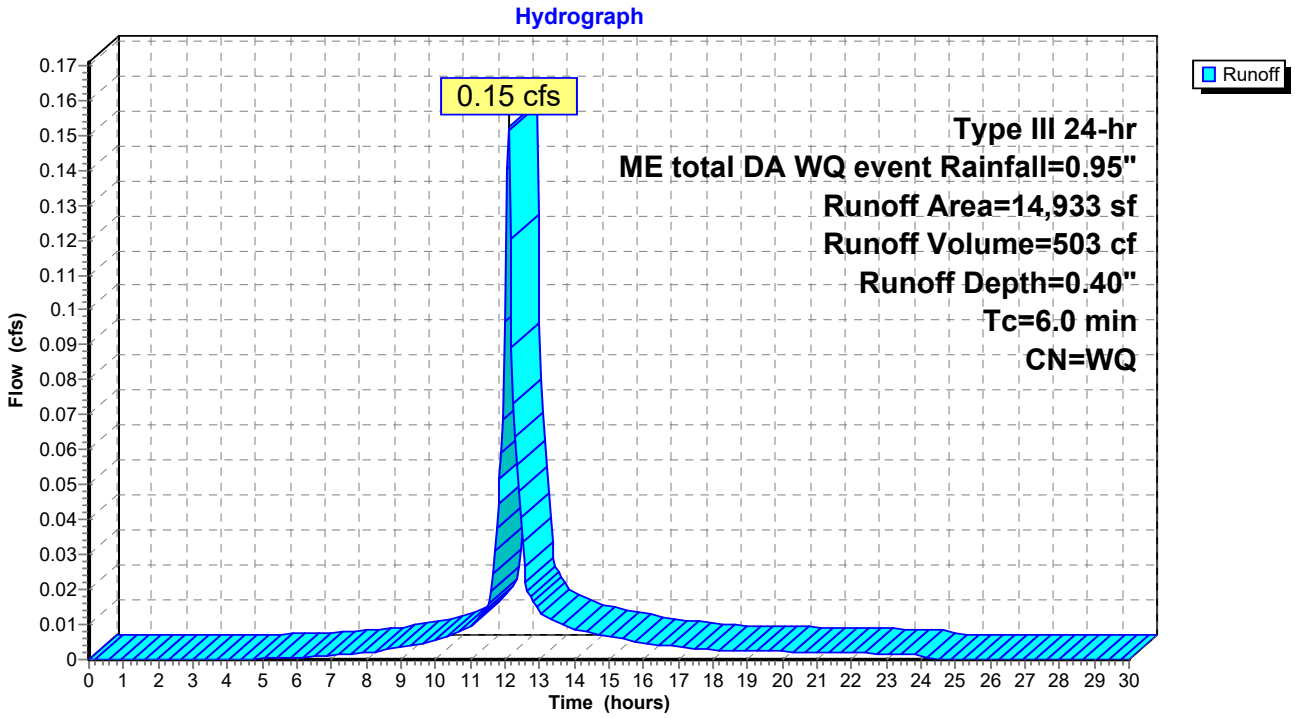
Runoff = 0.15 cfs @ 12.09 hrs, Volume= 503 cf, Depth= 0.40"

Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-30.00 hrs, dt= 0.05 hrs
Type III 24-hr ME total DA WQ event Rainfall=0.95"

	Area (sf)	CN	Description
*	8,116	98	impervious
	6,817	69	50-75% Grass cover, Fair, HSG B
	14,933		Weighted Average
	6,817	69	45.65% Pervious Area
	8,116	98	54.35% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					**Direct Entry,**

Subcatchment 32S: DA2



Hydrograph for Subcatchment 32S: DA2

Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)
0.00	0.00	0.00	0.00
0.50	0.00	0.00	0.00
1.00	0.01	0.00	0.00
1.50	0.01	0.00	0.00
2.00	0.02	0.00	0.00
2.50	0.02	0.00	0.00
3.00	0.03	0.00	0.00
3.50	0.03	0.00	0.00
4.00	0.04	0.00	0.00
4.50	0.05	0.00	0.00
5.00	0.05	0.00	0.00
5.50	0.06	0.00	0.00
6.00	0.07	0.00	0.00
6.50	0.08	0.00	0.00
7.00	0.09	0.00	0.00
7.50	0.10	0.00	0.00
8.00	0.11	0.00	0.00
8.50	0.12	0.00	0.00
9.00	0.14	0.00	0.00
9.50	0.16	0.00	0.00
10.00	0.18	0.00	0.01
10.50	0.21	0.00	0.01
11.00	0.24	0.00	0.01
11.50	0.28	0.00	0.02
12.00	0.47	0.01	**0.10**
12.50	0.67	0.05	**0.03**
13.00	0.71	0.06	0.01
13.50	0.74	0.07	0.01
14.00	0.77	0.08	0.01
14.50	0.79	0.09	0.01
15.00	0.81	0.09	0.01
15.50	0.83	0.10	0.01
16.00	0.84	0.11	0.00
16.50	0.85	0.11	0.00
17.00	0.86	0.11	0.00
17.50	0.87	0.12	0.00
18.00	0.88	0.12	0.00
18.50	0.89	0.12	0.00
19.00	0.90	0.13	0.00
19.50	0.90	0.13	0.00
20.00	0.91	0.13	0.00
20.50	0.92	0.14	0.00
21.00	0.92	0.14	0.00
21.50	0.93	0.14	0.00
22.00	0.93	0.14	0.00
22.50	0.94	0.15	0.00
23.00	0.94	0.15	0.00
23.50	0.95	0.15	0.00
24.00	**0.95**	**0.15**	0.00
24.50	0.95	0.15	0.00
25.00	0.95	0.15	0.00
25.50	0.95	0.15	0.00
26.00	0.95	0.15	0.00
26.50	0.95	0.15	0.00
27.00	0.95	0.15	0.00
27.50	0.95	0.15	0.00
28.00	0.95	0.15	0.00
28.50	0.95	0.15	0.00
29.00	0.95	0.15	0.00
29.50	0.95	0.15	0.00
30.00	0.95	0.15	0.00

Summary for Pond 33P: Filterra 6x8/8x6

Inflow Area = 14,933 sf, 54.35% Impervious, Inflow Depth = 0.40" for ME total DA WQ event event
Inflow = 0.15 cfs @ 12.09 hrs, Volume= 503 cf
Outflow = 0.15 cfs @ 12.09 hrs, Volume= 503 cf, Atten= 0%, Lag= 0.0 min
Primary = 0.15 cfs @ 12.09 hrs, Volume= 503 cf
Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0 cf

Routing by Stor-Ind method, Time Span= 0.00-30.00 hrs, dt= 0.05 hrs / 2
Peak Elev= 59.13' @ 12.09 hrs Surf.Area= 48 sf Storage= 0 cf

Plug-Flow detention time= 0.1 min calculated for 503 cf (100% of inflow)
Center-of-Mass det. time= 0.0 min (790.0 - 789.9)

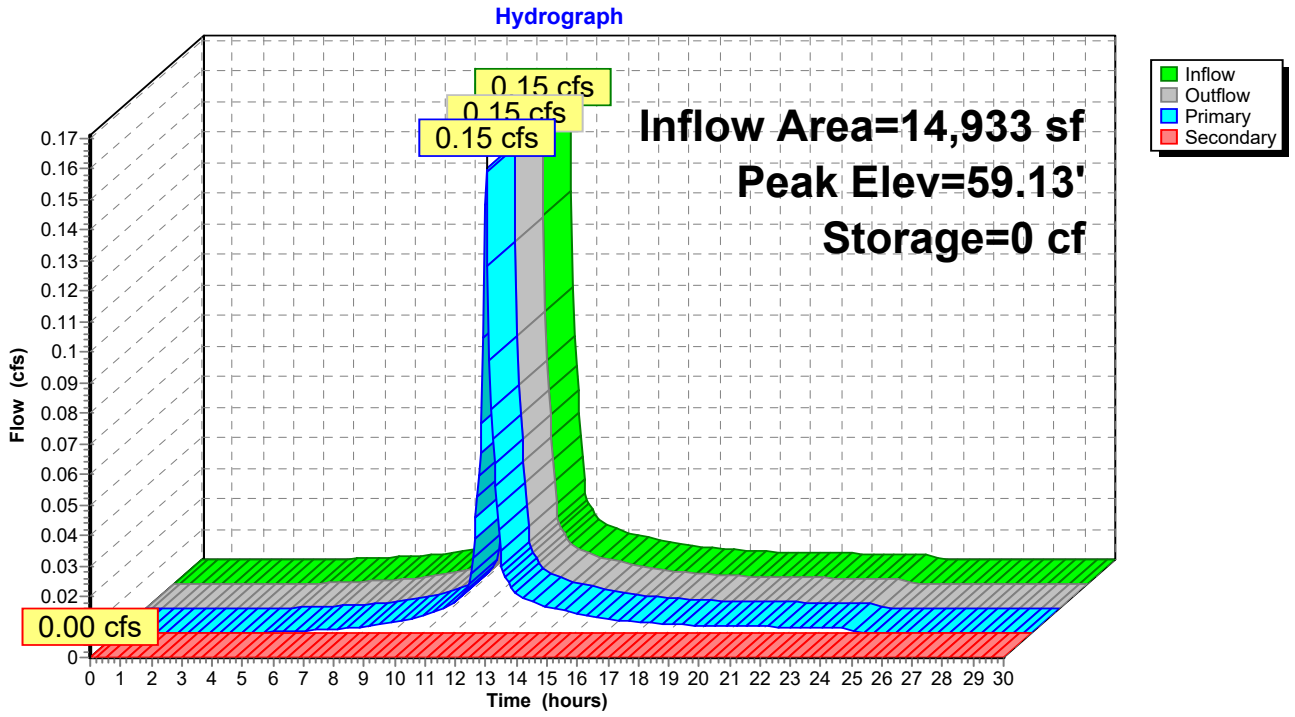
Volume	Invert	Avail.Storage	Storage Description
#1	59.12'	48 cf	**8.00'W x 6.00'L x 1.00'H Prismatoid**

Device	Routing	Invert	Outlet Devices
#1	Primary	59.12'	**140.000 in/hr Exfiltration over Surface area**
#2	Secondary	59.54'	**10.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=0.16 cfs @ 12.09 hrs HW=59.13' (Free Discharge)
└**1=Exfiltration** (Exfiltration Controls 0.16 cfs)

Secondary OutFlow Max=0.00 cfs @ 0.00 hrs HW=59.12' (Free Discharge)
└**2=Orifice/Grate** (Controls 0.00 cfs)

Pond 33P: Filterra 6x8/8x6



Hydrograph for Pond 33P: Filterra 6x8/8x6

Time (hours)	Inflow (cfs)	Storage (cubic-feet)	Elevation (feet)	Outflow (cfs)	Primary (cfs)	Secondary (cfs)
0.00	0.00	0	59.12	0.00	0.00	**0.00**
1.00	0.00	0	59.12	0.00	0.00	0.00
2.00	0.00	0	59.12	0.00	0.00	0.00
3.00	0.00	0	59.12	0.00	0.00	0.00
4.00	0.00	0	59.12	0.00	0.00	0.00
5.00	0.00	0	59.12	0.00	0.00	0.00
6.00	0.00	0	59.12	0.00	0.00	0.00
7.00	0.00	0	59.12	0.00	0.00	0.00
8.00	0.00	0	59.12	0.00	0.00	0.00
9.00	0.00	0	59.12	0.00	0.00	0.00
10.00	0.01	0	59.12	0.01	0.01	0.00
11.00	0.01	0	59.12	0.01	0.01	0.00
12.00	**0.10**	**0**	**59.13**	**0.10**	**0.10**	0.00
13.00	**0.01**	**0**	**59.12**	**0.01**	**0.01**	0.00
14.00	0.01	0	59.12	0.01	0.01	0.00
15.00	0.01	0	59.12	0.01	0.01	0.00
16.00	0.00	0	59.12	0.00	0.00	0.00
17.00	0.00	0	59.12	0.00	0.00	0.00
18.00	0.00	0	59.12	0.00	0.00	0.00
19.00	0.00	0	59.12	0.00	0.00	0.00
20.00	0.00	0	59.12	0.00	0.00	0.00
21.00	0.00	0	59.12	0.00	0.00	0.00
22.00	0.00	0	59.12	0.00	0.00	0.00
23.00	0.00	0	59.12	0.00	0.00	0.00
24.00	0.00	0	59.12	0.00	0.00	0.00
25.00	0.00	0	59.12	0.00	0.00	0.00
26.00	0.00	0	59.12	0.00	0.00	0.00
27.00	0.00	0	59.12	0.00	0.00	0.00
28.00	0.00	0	59.12	0.00	0.00	0.00
29.00	0.00	0	59.12	0.00	0.00	0.00
30.00	0.00	0	59.12	0.00	0.00	0.00

Summary for Subcatchment 32S: DA2

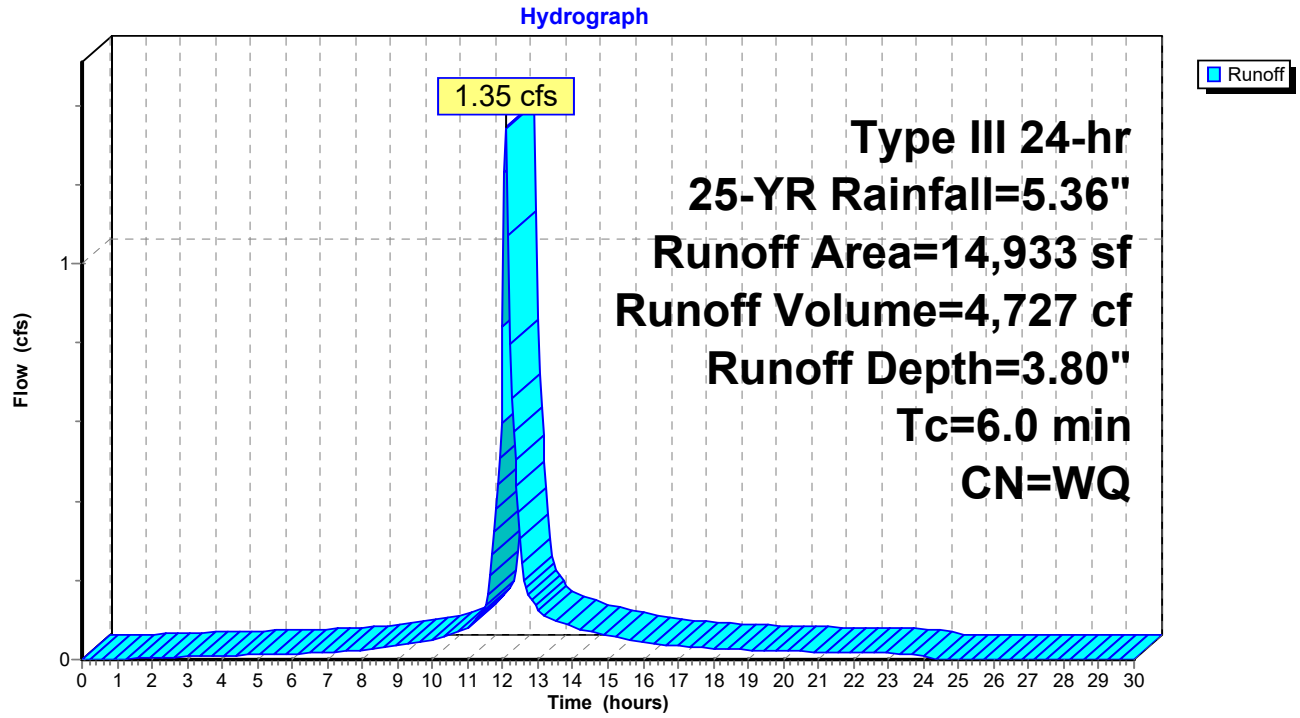
Runoff = 1.35 cfs @ 12.09 hrs, Volume= 4,727 cf, Depth= 3.80"

Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-30.00 hrs, dt= 0.05 hrs
Type III 24-hr 25-YR Rainfall=5.36"

	Area (sf)	CN	Description
*	8,116	98	impervious
	6,817	69	50-75% Grass cover, Fair, HSG B
	14,933		Weighted Average
	6,817	69	45.65% Pervious Area
	8,116	98	54.35% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					**Direct Entry,**

Subcatchment 32S: DA2



Hydrograph for Subcatchment 32S: DA2

Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)
0.00	0.00	0.00	0.00
0.50	0.03	0.00	0.00
1.00	0.05	0.00	0.00
1.50	0.08	0.00	0.00
2.00	0.11	0.00	0.00
2.50	0.14	0.00	0.01
3.00	0.16	0.00	0.01
3.50	0.20	0.00	0.01
4.00	0.23	0.00	0.01
4.50	0.27	0.00	0.01
5.00	0.30	0.00	0.01
5.50	0.34	0.00	0.01
6.00	0.39	0.00	0.01
6.50	0.43	0.00	0.02
7.00	0.49	0.01	0.02
7.50	0.54	0.02	0.02
8.00	0.61	0.03	0.02
8.50	0.69	0.05	0.03
9.00	0.78	0.08	0.03
9.50	0.89	0.13	0.04
10.00	1.01	0.18	0.05
10.50	1.16	0.25	0.06
11.00	1.34	0.35	0.08
11.50	1.60	0.51	0.13
12.00	2.68	1.32	**0.84**
12.50	3.76	2.25	**0.31**
13.00	4.02	2.48	0.13
13.50	4.20	2.64	0.10
14.00	4.35	2.77	0.08
14.50	4.47	2.88	0.07
15.00	4.58	2.98	0.06
15.50	4.67	3.07	0.05
16.00	4.75	3.14	0.04
16.50	4.82	3.20	0.04
17.00	4.87	3.25	0.03
17.50	4.93	3.30	0.03
18.00	4.97	3.34	0.03
18.50	5.02	3.38	0.02
19.00	5.06	3.42	0.02
19.50	5.09	3.45	0.02
20.00	5.13	3.49	0.02
20.50	5.16	3.52	0.02
21.00	5.20	3.55	0.02
21.50	5.23	3.58	0.02
22.00	5.26	3.61	0.02
22.50	5.28	3.63	0.02
23.00	5.31	3.66	0.02
23.50	5.34	3.68	0.02
24.00	**5.36**	**3.70**	0.01
24.50	5.36	3.70	0.00
25.00	5.36	3.70	0.00
25.50	5.36	3.70	0.00
26.00	5.36	3.70	0.00
26.50	5.36	3.70	0.00
27.00	5.36	3.70	0.00
27.50	5.36	3.70	0.00
28.00	5.36	3.70	0.00
28.50	5.36	3.70	0.00
29.00	5.36	3.70	0.00
29.50	5.36	3.70	0.00
30.00	5.36	3.70	0.00

Summary for Pond 33P: Filterra 6x8/8x6

Inflow Area = 14,933 sf, 54.35% Impervious, Inflow Depth = 3.80" for 25-YR event
Inflow = 1.35 cfs @ 12.09 hrs, Volume= 4,727 cf
Outflow = 1.34 cfs @ 12.09 hrs, Volume= 4,696 cf, Atten= 1%, Lag= 0.0 min
Primary = 0.16 cfs @ 11.60 hrs, Volume= 3,243 cf
Secondary = 1.18 cfs @ 12.09 hrs, Volume= 1,453 cf

Routing by Stor-Ind method, Time Span= 0.00-30.00 hrs, dt= 0.05 hrs / 2
Peak Elev= 59.81' @ 12.09 hrs Surf.Area= 48 sf Storage= 33 cf

Plug-Flow detention time= 4.8 min calculated for 4,688 cf (99% of inflow)
Center-of-Mass det. time= 0.5 min (774.0 - 773.5)

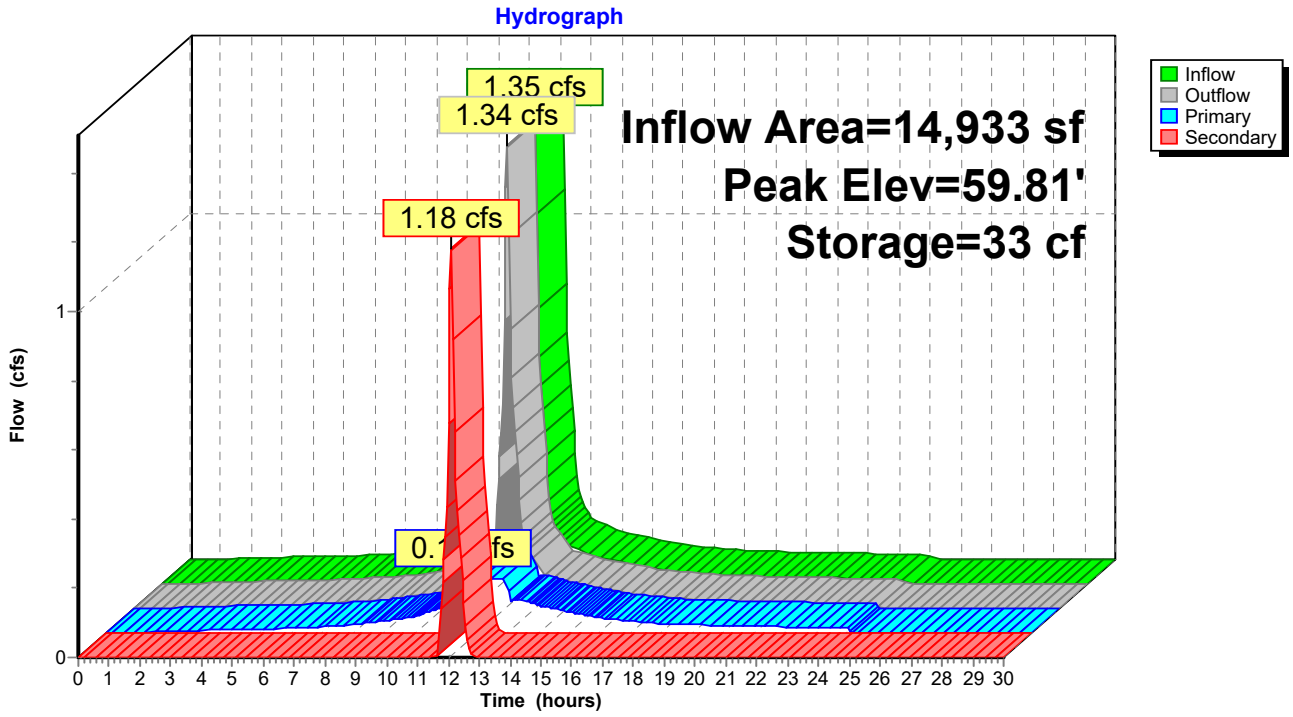
Volume	Invert	Avail.Storage	Storage Description
#1	59.12'	48 cf	**8.00'W x 6.00'L x 1.00'H Prismatoid**

Device	Routing	Invert	Outlet Devices
#1	Primary	59.12'	**140.000 in/hr Exfiltration over Surface area**
#2	Secondary	59.54'	**10.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=0.16 cfs @ 11.60 hrs HW=59.14' (Free Discharge)
└**1=Exfiltration** (Exfiltration Controls 0.16 cfs)

Secondary OutFlow Max=1.15 cfs @ 12.09 hrs HW=59.80' (Free Discharge)
└**2=Orifice/Grate** (Weir Controls 1.15 cfs @ 1.68 fps)

Pond 33P: Filterra 6x8/8x6

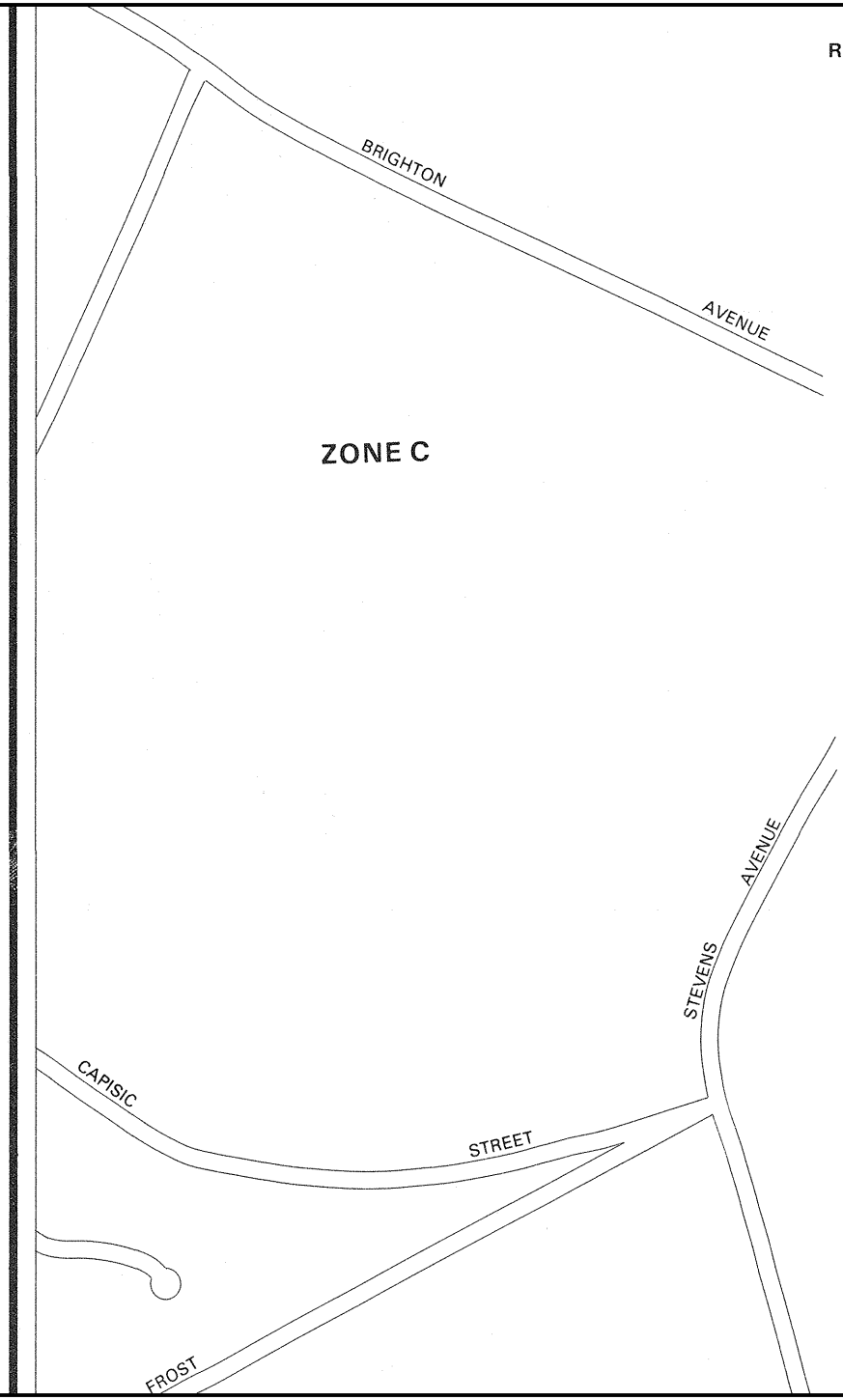


Hydrograph for Pond 33P: Filterra 6x8/8x6

Time (hours)	Inflow (cfs)	Storage (cubic-feet)	Elevation (feet)	Outflow (cfs)	Primary (cfs)	Secondary (cfs)
0.00	0.00	0	59.12	0.00	0.00	0.00
1.00	0.00	0	59.12	0.00	0.00	0.00
2.00	0.00	0	59.12	0.00	0.00	0.00
3.00	0.01	0	59.12	0.01	0.01	0.00
4.00	0.01	0	59.12	0.01	0.01	0.00
5.00	0.01	0	59.12	0.01	0.01	0.00
6.00	0.01	0	59.12	0.01	0.01	0.00
7.00	0.02	0	59.12	0.02	0.02	0.00
8.00	0.02	0	59.12	0.02	0.02	0.00
9.00	0.03	0	59.12	0.03	0.03	0.00
10.00	0.05	0	59.12	0.05	0.05	0.00
11.00	0.08	0	59.13	0.08	**0.08**	0.00
12.00	**0.84**	**29**	**59.72**	**0.83**	**0.16**	**0.68**
13.00	**0.13**	**9**	**59.31**	**0.16**	0.16	**0.00**
14.00	0.08	0	59.13	0.08	0.08	0.00
15.00	0.06	0	59.12	0.06	0.06	0.00
16.00	0.04	0	59.12	0.04	0.04	0.00
17.00	0.03	0	59.12	0.03	0.03	0.00
18.00	0.03	0	59.12	0.03	0.03	0.00
19.00	0.02	0	59.12	0.02	0.02	0.00
20.00	0.02	0	59.12	0.02	0.02	0.00
21.00	0.02	0	59.12	0.02	0.02	0.00
22.00	0.02	0	59.12	0.02	0.02	0.00
23.00	0.02	0	59.12	0.02	0.02	0.00
24.00	0.01	0	59.12	0.01	0.01	0.00
25.00	0.00	0	59.12	0.00	0.00	0.00
26.00	0.00	0	59.12	0.00	0.00	0.00
27.00	0.00	0	59.12	0.00	0.00	0.00
28.00	0.00	0	59.12	0.00	0.00	0.00
29.00	0.00	0	59.12	0.00	0.00	0.00
30.00	0.00	0	59.12	0.00	0.00	0.00

APPENDIX F

Fema Firm Map



REFERENCE MARK	ELEVATION IN FT. (NGV
RM 28	56.00
RM 29	35.25
RM 30	25.36
RM 31	11.88
RM 32	9.89
RM 33	36.80
RM 34	22.81
RM 35	12.83
RM 36	28.34
RM 37	22.23
RM 38	15.56

APPROXIMATE SCALE

400 0 400 FEET

NATIONAL FLOOD INSURANCE PROGRAM

FIRM

FLOOD INSURANCE RATE MAP

CITY OF
PORTLAND, MAINE
CUMBERLAND COUNTY

PANEL 13 OF 17
(SEE MAP INDEX FOR PANELS NOT PRINTED)

COMMUNITY-PANEL NUMBER
230051 0013 B

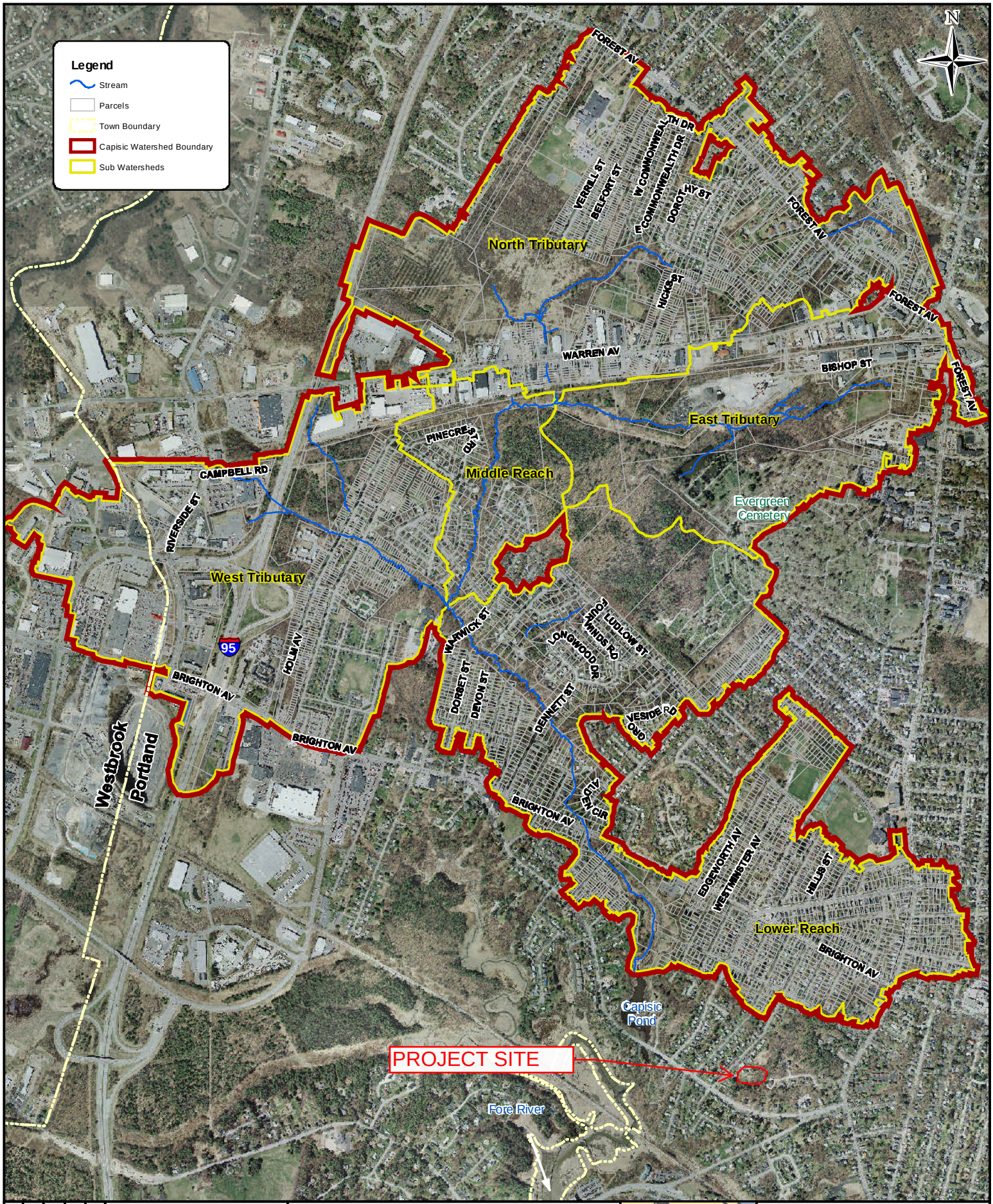
EFFECTIVE DATE:
JULY 17, 1986

Federal Emergency Management Agency

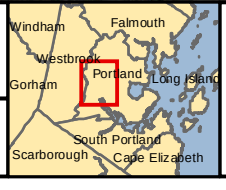
This is an official copy of a portion of the above referenced flood map. It was extracted using F-MIT On-Line. This map does not reflect changes or amendments which may have been made subsequent to the date on the title block. For the latest product information about National Flood Insurance Program flood maps check the FEMA Flood Map Store at www.msc.fema.gov

APPENDIX G

Capisic Brook Watershed Map



Scale: 1" = 1500'	Job # 203939	Date: Oct 2010	Checked By: ZH	Drawn By: ADF/JS	**Aerial Site Location**	**City of Portland - Capisic Brook Watershed Management Plan**	
					Figure 1	**Sources:** City of Portland, Maine Office of GIS, DEP, WC Doc: SiteLocation_Aerials.mxd	



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INSPECTION, MAINTENANCE, AND HOUSEKEEPING PLAN

Capisic Meadows Subdivision
Bancroft Street
Portland, Maine

Introduction

The following plan outlines the anticipated inspection and maintenance 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 this inspection and maintenance plan are provided as an overview of the anticipated practices to be used on this site. In some instances, additional measures may be required due to unexpected conditions. For additional detail on any of the erosion and sedimentation control measures or stormwater management devices to be utilized on this project, refer to the most recently revised edition of the "Maine Erosion and Sedimentation Control BMP" manual and/or the "Stormwater Management for Maine: Best Management Practices" manual as published by the Maine Department of Environmental Protection (MDEP). This is in compliance with the City of Portland Code of Ordinances, Chapter 32 Section 38 of the Post-construction stormwater management plan.

Inspections. The owner or operator of a BMP shall hire a qualified post-construction stormwater inspector to at least annually, inspect the BMPs, including but not limited to any parking areas, catch basins, drainage swales, detention basins and ponds, pipes and related structures, in accordance with all municipal and state inspection, cleaning and maintenance requirements of the approved postconstruction stormwater management plan.

Maintenance and repair. If the BMP requires maintenance, repair or replacement to function as intended by the approved post-construction stormwater management plan, the owner or operator of the BMP shall take corrective action(s) to address the deficiency or deficiencies as soon as possible after the deficiency is discovered and shall provide a record of the deficiency and corrective action(s) to the department of public works ("DPW") in the annual report.

Annual report. The owner or operator of a BMP or a qualified post-construction stormwater inspector hired by that person, shall, on or by June 30 of each year, provide a completed and signed certification to DPW in a form provided by DPW, certifying that the person has inspected the BMP(s) and that they are adequately maintained and functioning as intended by

the approved post-construction stormwater management plan, or that they require maintenance or repair, including the record of the deficiency and corrective action(s) taken.

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 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 years from the completion of permanent stabilization.

4. **Specific Inspection and Maintenance Tasks:** The following is a list of erosion control and stormwater management measures and the specific inspection and maintenance tasks to be performed during construction.

   A. Sediment Barriers:

   - Hay bale barriers, silt fences, and filter berms shall be inspected immediately after each rainfall and at least daily during prolonged rainfall.
   - If the fabric on a silt fence or filter barrier should decompose or become ineffective prior to the end of the expected usable life and the barrier is still necessary, it shall be replaced.
   - Sediment deposits should be removed after each storm event. They must be removed before deposits reach approximately one-half the height of the

barrier.

- Filter berms shall be reshaped as needed.
- Any sediment deposits remaining in place after the silt fence or filter barrier is no longer required should be dressed to conform to the existing grade, prepared, and seeded.

B. 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 the requirements of this plan.

D. Stone Check Dams:

- Inspect the center of the dam to make sure it is lower than the edges. Erosion caused by high flows around the edges of the dam must be corrected.
- Sediment accumulation shall be removed prior to reaching half of the original design height.
- Areas beneath stone check dams must be seeded and mulched upon removal.

E. 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.

F. 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).

G. 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.

Stabilized Temporary Drainage Swales:

- Sediment accumulation in the swale shall be removed once the cross section of the swale is reduced by 25%.
- The swales shall be inspected after rainfall events. Any evidence of sloughing of the side slopes or channel erosion shall be repaired and corrective action should be taken to prevent reoccurrence of the problem.
- In addition to the stabilized lining of the channel (i.e. erosion control blankets), stone check dams may be needed to further reduce channel velocity.

5. **Housekeeping:** The following general performance standards apply to the proposed project.

A. Spill prevention: Controls must be used to prevent pollutants from being discharged from materials on-site, including storage practices to minimize exposure of the materials to stormwater, and appropriate spill prevention, containment, and response planning and implementation.

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, it is the responsibility of the owner or assigned heirs to comply with the inspection and maintenance procedures outlined in this section. All measures must be maintained in effective operating condition. A person with knowledge of erosion and stormwater control, including the standards and conditions in all applicable permits, shall conduct the inspections.

2. **Specific Inspection and Maintenance Tasks:** The following is a list of permanent erosion control and stormwater management measures and the inspection and maintenance tasks to be performed after construction.

   A. Vegetated Areas:

   - Inspect vegetated areas, particularly slopes and embankments, early in the growing season or after heavy rains to identify active or potential erosion problems.
   - Replant bare areas or areas with sparse growth. Where rill erosion is evident, armor the area with an appropriate lining or divert the erosive flows to on-site areas able to withstand the concentrated flows.

   B. Ditches, Swales, and Other Open Channels:

   - Inspect ditches, swales and other open stormwater channels in the

spring, in the late fall, and after heavy rains to remove any obstructions to flow. Remove accumulated sediments and debris, remove woody vegetative growth that could obstruct flow, and repair any erosion of the ditch lining.

- Vegetated ditches must be mowed at least annually or otherwise maintained to control the growth of woody vegetation and maintain flow capacity.
- Any woody vegetation growing through riprap linings must also be removed. Repair any slumping side slopes as soon as practicable.
- If the ditch has a riprap lining, replace riprap in areas where any underlying filter fabric or underdrain gravel is showing through the stone or where stones have dislodged.

C. 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.

D. 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.
- If the basin outlet is designed to trap floatable materials, then remove the floating debris and any floating oils (using oil-absorptive pads).

E. 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.

F. Detention Pond

- The inlet and outlet of the basin should be checked periodically to ensure that flow structures are not blocked by debris. Inspections should be conducted monthly during wet weather conditions (March to November). Flow structures should be easily accessible for inspection

and the removal of debris blockage during storm conditions.

- Embankments should be maintained to preserve their integrity as impoundment structures, including: mowing, control of woody vegetation, rodent, and outlet maintenance and repair. Basins should be mowed no more than twice a year during the growing season to maintain maximum grass heights less than 12 inches. All accumulated trash and debris should be removed.
- Sediment should be removed from the pretreatment structure at least annually and from the basin when necessary.

G. Filterra Units

- See attached documents for inspection and maintenance requirements.

1. **Documentation:** A log summarizing the inspections and any corrective action taken must be maintained. The log must include the name(s) and qualifications of the person making the inspections, the date(s) of the inspections, and major observations about the operation and maintenance of controls. Major observations must include BMPs that need maintenance, BMPs that failed to operate as designed or proved inadequate for a particular location, and locations where additional BMPs are needed. For each BMP requiring maintenance, BMP needing replacement, and location needing additional BMPs, note in the log the corrective action taken and when it was taken. The log must be made accessible to the appropriate regulatory agency upon request. A sample "Stormwater Inspection and Maintenance Form" has been included as Attachment 1 of this Inspection, Maintenance, and Housekeeping Plan.

2. **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.

IBERDROLA USA

3/13/2018

Joshua Wagner
130 Bancroft St
Portland, Maine 04102

Sent via email

RE: Request for Letter of Ability to Serve for 130-144 Bancroft Street, Portland

Dear Mr. Wagner:

Thank you for contacting Central Maine Power Company (CMP) to inquire about the property located on Bancroft Street in Portland. The purpose of this communication is to acknowledge receipt of your March 8, 2018 email requesting ability to serve for the site referenced above.

Currently, CMP has the ability to serve this site with single phase. If you require polyphase service, a line extension will have to be completed. Also, as much lead time as you can reasonably provide to CMP before the project breaks ground is always very much appreciated.

New Service Milestones

- Call 1-800-565-3181 to establish a new account and an SAP work order. Please provide both of these to me.
- Submit Load information. Please complete this CMP spreadsheet using load information
- Submit the easement information worksheet. Please complete this CMP form and either email or fax back to us.
- Submit any electronic drawings (PDF (preferred) or DWG files) of the site layout and proposed electrical connections if you have them.
- Preliminary meetings with CMP Advisor and Engineer to determine details of job (I will need to schedule with your electrician/contractor-please let me know who this is)
- Field planner design appointment to cost out job and develop CMP Invoice.
- Submit invoice for payment.
- Easements signed and payment received.
- Job scheduled for completion after the electrical inspection has been received.

740 Main Street, Lewiston, ME 04240
Tel (207) 629-4552 office

This process can take several months, depending upon several factors including transformer delivery, potential substation upgrades, return of completed paperwork, and other customer jobs in the system that may be ahead of yours. In addition, contact with the other utilities, including telephone and cable, should be commenced as soon as practical. They may have additional work or charges in addition to the CMP work required to bring your project on line.

For your convenience, here is a link to the CMP Website which contains the Handbook with details regarding most service requirements:

www.cmpco.com/handbook

In the meantime, please contact me if you have any more questions. I can be reached at (207) 629-4552.

Thank you

Regards,

Jeff Lagueux
Central Maine Power Company

740 Main Street, Lewiston, ME 04240
Tel (207) 629-4552 office

An equal opportunity employer

March 2, 2018

Jim Fisher
Northeast Civil Solutions Inc.
381 Payne Road
Scarborough Maine 04074

Re: 130 Bancroft Street, Portland Maine

Dear Mr. Wagner:

Thank you for your interest in using natural gas for the above referenced project.

This is to confirm that natural gas can be made available from our distribution system to serve your proposed project.

Any improvements to the existing distribution system necessary to provide this service, as well as the design of the gas system in the project itself will be established as the overall design and scope of your project progresses.

All work necessary to provide service will be performed in accordance with the Maine Public Utilities Commission requirements.

If you have any further questions or require additional information, please contact me directly at (207) 541-2536 or harmon@unitil.com.

Sincerely,

Bridget Harmon
Business Development Representative
Unitil Corporation
(o) 207-541-2536 (f) 207-541-2586

Portland Water District

FROM SEBAGO LAKE TO CASCO BAY

March 15, 2018

Mike Skolnick
Northeast Civil Solutions
381 Payne Road
Scarborough, ME 04074

Re: Bancroft Street, PO
Ability to Serve with PWD Water

Dear Mr. Skolnick:

The Portland Water District has received your request for an Ability to Serve Determination for the noted site submitted on March 22, 2018. Based on the information provided per PWD marked up plans dated February 28, 2018, we can confirm that the District will be able to serve the proposed project as further described in this letter. **Please note that this letter constitutes approval of the water system as currently designed. Any changes affecting the approved water system will require further review and approval by PWD.**

Conditions of Service

The following conditions of service apply:

- The properties requesting water service do not have deeded frontage on a public way containing a public water main, which is a requirement for water service. In order to provide water service to this site, a main extension will be required within the private way to a point equal to the center of the last lot to be served. The District can confirm that the existing water system has the capacity to serve the additional seven single family house lots. As final design plans become available for the next construction phase please send a copy to the MEANS group for review. We will work with you or your representative to ensure that the design meets our current standards.

- **Water District approval of final water infrastructure plans will be required for the project prior to construction.**

Prior to construction, the owner or contractor will need to make an appointment to complete a service application form and pay all necessary fees. The appointment shall be requested through MEANS@pwd.org or by calling 207-774-5961 ext. 3199. Please allow (3) business days to process the service application paperwork. PWD will guide the applicant through the new development process during the appointment.

Existing Site Service

According to District records, the project site does not currently have existing water service.

Water System Characteristics

According to District records, there is a 12-inch diameter cast iron water main in Bancroft Street and a public fire hydrant located approximately 260 feet from the site. The most recent static pressure reading was 88 psi on May 19, 2017.

Public Fire Protection

The installation of new public hydrants to be accepted into the District water system will most likely be required. 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 data noted above indicates there should be adequate pressure and volume of water to serve the domestic water needs of your proposed project. Based on the high water pressure in this area, we recommend that you consider the installation of pressure reducing devices that comply with state plumbing codes.

Private Fire Protection Water Needs

You have indicated that this project will require water service to provide private fire protection to the site. Please note that the District does not guarantee any quantity of water or pressure through a fire protection service. Please share these results with your sprinkler system designer so that they can design the fire protection system to best fit the noted conditions. If the data is out of date or insufficient for their needs, please contact MEANS to request a hydrant flow test and we will work with you to get more complete data.

Should you disagree with this determination, you may request a review by the District's Internal Review Team. Your request for review must be in writing and state the reason for your disagreement with the determination. The request must be sent to MEANS@PWD.org or mailed to 225 Douglass Street, Portland Maine, 04104 c/o MEANS. The Internal Review Team will undertake review as requested within 2 weeks of receipt of a request for review.

If the District can be of further assistance in this matter, please let us know.

Sincerely,
Portland Water District

Robert A. Bartels, P.E.
Senior Project Engineer

SURVEYING ENGINEERING LAND PLANNING

Northeast Civil Solutions

INCORPORATED

www.northeastcivilsolutions.com

41041
May 31, 2018

Dear Neighbor:

Please join us for a neighborhood meeting to discuss our plans for a proposed 8 Lot Subdivision located at 130 Bancroft Street.

Meeting Location: 130 Bancroft Street
Meeting Date: June 19th, 2018
Meeting Time: 4:00pm

(The City code requires that property owners within 500 feet (1000 feet for proposed industrial subdivisions and industrial zone changes) of the proposed development and residents on an "interested parties list", be invited to participate in a neighborhood meeting. A sign-in sheet will be circulated and minutes of the meeting will be taken. Both the sign-in sheet and minutes will be submitted to the Planning Board.)

If you have any questions, please call Northeast Civil Solutions, Inc. @ 207-883-1000 or Joshua Wagner @ 207-831-4345.

Sincerely,
NORTHEAST CIVIL SOLUTIONS, INC.

Michael Skolnick
Land Use Regulatory Specialist

File: Joshua Wagner, Land Owner / Developer

Note:
Under Section 14-32(C) and 14-524(a)d of the City Code of Ordinances, an applicant for a Level III development, subdivision of over five lots/units, or zone change is required to hold a neighborhood meeting within 30 days of submitting a preliminary application or 21 days of submitting a final site plan application, if a preliminary plan was not submitted. The neighborhood meeting must be held at least seven days prior to the Planning Board public hearing on the proposal. Should you wish to offer additional comments on this proposed development, you may contact the Planning Division at 874-8721 or send written correspondence to the Planning and Urban Development Department, Planning Division, 4th Floor, 389 Congress Street Portland, ME 04101 or by email: to bab@portlandmaine.gov

130 Bancroft Street – Proposed 8 Lot Subdivision

June 19, 2018 @ 4:00pm

WELCOME AND PLEASE SIGN IN

NAME	ADDRESS	TELEPHONE	EMAIL
Carmen Bailey	143 Bancroft	761.3911	cbailey@preti.com
Oliver Griswold	38 Redlon Park	917-617-2103	owgriswo@gmail.com
Denis Noonen	64 Rockland Ave	2326210	denisn326x@gmail.com
THOMAS R. LUSSIER	126 BANCROFT ST.	761.3971	TLUSSIE1@MAINE.RR.COM
MELODY LUSSIER	126 BANCROFT	761-3971	
DAWN LELAND	119 Bancroft St.	207 459.8589	LelandDM@gmail.com
Connie Hughes	147 Bancroft	207 761.1787	
Steven McClelland	137 Bancroft St	781-738-8429	stevenmcc00@gmail.com
MARY DELOIS	125 BANCROFT	774-95-99	
Christopher Holt	135 Bancroft	956-3771	christopherTholt@gmail
Jeff Flom	115 CAPITOL ST,	207-332-8277	JEFF.KOMPAN@YAHOO.COM
Roger Gendron	118 Bancroft St	207-774-6830	
Jean E Gilpatrick	110 Bancroft St	207-775-1094	
Douglas Babkirk	55 Redlon Park	712-5140	doug.babkirk@maine.edu
Scott H. BERRY	36 Jones.	774-1904	
Sam Iler	95 Bancroft St	520 307 3482	
Jenn + Don Taylor	80 Bancroft St	879.2248	dandjtaylor@maine.rr.com
Joshua & Tamara Krieger	58 Redlon Park Rd	207-318-	Kriegertamara@yahoo.com
Jackie Harkins	154 Bancroft St.	207-780-8872	

SURVEYING ENGINEERING LAND PLANNING

Northeast Civil Solutions

INCORPORATED

www.northeastcivilsolutions.com

41041
June 19, 2018

City of Portland, Planning and Development
389 Congress Street
Portland, Maine 04101

RE: Level III Subdivision Review – 130 - 144 Bancroft Street – Neighborhood Meeting Minutes
WB Group, Inc. – Capisic Meadows – 8 Lot Subdivision

On Tuesday 19, 2018, members of the NCS team along with Josh Wagner met for a neighborhood meeting at 130 Bancroft Road to discuss the proposed 8 lot subdivision to be constructed off of Bancroft Street.

The following attendees were present:

NCS - Jim Fisher, Michael Skolnick, Brandon Binette
Owner - Josh Wagner (WB Group, Inc.)
Neighborhood Attendees - Please see attached sign in sheet

Please see the following questions which were presented by members of the neighborhood who attended the meeting in regards to the 8 lot subdivision proposed off Bancroft Street. NCS responses to the neighborhood concerns are written in **bold** below the aforementioned concerns.

Discussion Topics:

Concern: Neighbors are concerned about the runoff of water, for example: Redlon Park Road. Neighbors feel many problems were caused by Redlon not being designed properly. Will the work be done correctly?

Answer: The engineering work is reviewed multiple times by different groups (DEP, City Engineers). The design will only be accepted if the engineering is sufficient to control peak runoff in a major storm event and will not cause future issues, meanwhile eliminate increased runoff onto abutting properties from the proposed development.

Concern: Where is the sewer going to go?

Answer: The sewer will tie into existing facilities in the Bancroft Street Right-of-Way. The project has been reviewed by Portland Public Works and an ability to serve letter has been provided stating that the existing infrastructure has sufficient capacity to allow for the proposed sewer connection.

Concern: Will there be blasting? Will the blasting cause damage to surrounding houses? What can you do about the ground moving?

Answer: Blasting will be used if no other means work to remove the material. Any damage done to surrounding properties by blasting will be paid for by the company which is doing the blasting. The blasting will be completed by a licensed blasting contractor and anticipate pre-blast surveys will be required prior to blasting. Before all blasting shall occur surrounding properties will be inspected to ensure no damage will be caused due to such actions.

Concern: Will our basements flood due to the proposed construction?

Answer: John Wagner states, "I currently have water problems with my basement flooding." This engineering will mitigate some flooding issues and will help water move more fluently due to the proposed drainage design. The clearing of existing easement/drainage areas that have not been maintained will allow for the existing stormwater systems to work as designed, meanwhile reduce backup which in turn is causing flooding.

Concern: Who has to clean the existing drainage easement burdening the existing parcels on Bancroft Street?

Answer: The City shall be responsible for cleaning of existing stormwater drainage areas within the existing Bancroft Street subdivision; however as part of the proposed development, the drainage area will be cleared to ensure that all drainage is working properly and efficiently.

Concern: How can the surrounding property owners be sure that the design is done properly?

Answer: Inspections are completed throughout the constructions process, meanwhile an As-Built will be completed post-construction to ensure the stormwater facilities function as designed. Along with inspections and an As-Built, the project will be reviewed by third-party reviewers, the City's engineering department and the Maine DEP to ensure all design elements as following best management practices, meanwhile function as intended.

Concern: If water appears in my basement who will pay for the damages?

Answer: A review of each aspect of the development (engineering, construction, etc.) will be completed to determine who should be held liable for the negative effects of the project on the

abutting project. The party who is determined at fault will be liable for adverse effects on the aforementioned parcel.

Concern: Why are there going to be 7 new lots?

Answer: The proposed development could yield additional lots (more than 7) as per net residential density calculation, however John Wagner opted to move forward with an additional 7 lots for to both fit in with the character of the development, meanwhile minimize adverse effects to the surrounding area.

Concern: Will trees have to be cut down to allow this project to happen?

Answer: Yes, trees will have to be cut to allow for the proposed development. Only trees that are necessary to be cut per grading and stormwater design will be removed.

Concern: How do we know where the water will go after blasting?

Answer: Controlled blasting is done, to disturb as little of the earth as possible. The site will then be graded to control stormwater as designed.

Concern: Problems with a culvert in back of my yard. (Unknown man) Will this be fixed?

Answer: Any work completed in association with the proposed development will function as designed. If there are problems with culverts on an abutter's property not directly correlated with the proposed development, it is home owner's obligation to inform the City of something not working correctly.

Concern: Will road work be done at the corner of Bancroft Street and Capisic Street in coordination with the proposed project?

Answer: No work will be completed at that corner of Bancroft Street and Capisic Street.

Concern: John, would you still put this development in if you planned to still live at your current house on Bancroft for another 10…20 years?

Answer: "I would have done some sort of residential development behind my property, perhaps not to the extent of the proposed subdivision, however I purchased the land for economic gain and would have moved forward with some sort of development."

Construction Management Plan
General Template
WB Group, Inc.
Capisic Meadows 8 Lot Subdivision

A detailed construction management site plan will be prepared and submitted to City Staff for review once a contractor has been selected for the project. It is requested that this item be a Condition of Approval and submitted for City review prior to the issuance of a building permit or in advance of site work approval. The CMP will address the following Standards and Requirements:

The Capisic Meadows Construction Management Plan shall depict the overall planning, coordination, and control of a construction site, including phases as applicable, from beginning to completion. The City's goal for a construction management plan is to support a safe construction site and protect the public safety, accessibility (including preserving accessible pedestrian, bicycle, and vehicular modes of transport throughout the city), and welfare during construction. In addition, the construction management plan shall minimize construction impacts in their duration and magnitude to the surrounding area and develop an effective communication process for resolving concerns and conflicts.

The Construction Management Plan will be submitted as part of the Site Plan Review and it shall address the construction logistics for a project. The Construction Management Plan shall include the following submissions: 1) a construction management site plan, 2) a construction schedule (time frame); and 3) a written narrative addressing the categories below.

A. Construction Management Principles

The following narrative provides an overview of the construction management principles that the WB Group, Inc and its contractor has identified to minimize impacts from the construction, such as noise, vibrations, ground movement, truck traffic, and other construction related factors to the surrounding building and communities.

B. Development Review of Construction Management Plan

WB Group, Inc and its contractor shall submit a construction management plan that provides a comprehensive logistics and safety program for the construction project, which will be reviewed and approved as part of the site plan review process. The plan minimizing impacts to areas surrounding the building/construction site will be primary considerations in the process. The following details define the intended approach to the successful management of the project construction and the construction management plan will address the general conditions contained below.

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

Prior to scheduling a preconstruction meeting and the issuance of any city required permits, WB Group, Inc and its contractor shall meet all of the requirements contained in Section 14-530. Development review fees and post approval requirements and 14-532. General requirements and enforcement of Portland's Land Use Code.

Other permits, as applicable, include:

1. **Street Opening and Street Occupancy Permits:** Construction activity in the public right-of-way are controlled by Chapter 25 and sewer and stormwater system connections are controlled by Chapters 24 and 32 of the Land Use Code. All required permits shall be obtained through the Department of Public Works and the requests shall conform with the approved construction management plan.

2. **Blasting:** Blasting, if required, shall conform with all measures of Article VIII. Regulation of Explosives in the Land Use Code and Section 3.7 Standards for Blasting and Regulation of Explosives in Portland's Technical Manual.

3. **Building Code:** Employ the best practices, as applicable, of Chapter 33 Safeguards During Construction, from the 2009 International Building Code.

D. Construction Administration and Communication

WB Group, Inc and its contractor will work diligently to implement a communication strategy as outlined below. The communication strategy is intended to ensure that all construction operations are performed in accordance with all agreements, ordinances and special permits applicable to this project. The Construction Manager will work closely with adjacent abutters, businesses and all parties informed, as far in advance as possible, of scheduled work, particularly work anticipated to cause significant noise, vibrations, or dust.

The final construction management plan shall provide for the following:

1. Contact Person and contact information for the WB Group, Inc and its contractor and who is available 24 hours
2. Construction Signage posted on the site with Contact Information for Contractor
3. Describe any additional communication strategies
4. All construction site signage is temporary and shall be removed at project completion.

E. Construction Schedule

1. The contractor shall submit a schedule or time line for the construction project, including any Phasing.
2. Hours of Construction. Construction may occur during the daytime hours as defined in Section 17-18. Construction Activities for Building permit (Attachment 1) and Section 25-129. Noise, dust and debris (Attachment 2).
3. Extended Hours or Night Work: Pursuant to Section 17-18, this section not apply to emergency utility work or "Situations where the public works authority or the office of building inspections determines that the construction activity is of a unique character which cannot reasonably be completed or performed during the permitted hours and which is not of a recurring nature, provided that prior to engaging in such activity the contractor or his representatives gives notice of the time and scope of such proposed activity, the notice to be given in a manner approved by the public works authority."
4. Material Deliveries: Schedule and designated location for delivery of materials and boxed goods.

F. Security & Public Safety

1. The Construction Management Plan will depict all proposed fencing or other barriers and access gates (with knox locking devices) with the intent of separating pedestrian and vehicle circulation from the construction site.
2. Structures undergoing construction, alteration, or demolition operations, including those in underground locations, shall comply with NFPA 1 Chapter 16. *Safeguarding Construction, Alteration, and Demolition Operations.*
3. Fire Safety Program. An overall construction of demolition fire safety program shall be developed. Essential items to be emphasized include the following:
    - Good Housekeeping
    - On-site security
    - Installation of new fire protection systems as construction progresses
    - Preservation of existing systems during demolition
    - Organization and training of an on-site fire brigade
    - Development of a pre-fire plan with the local fire department
    - Rapid communication
    - Consideration of special hazards resulting rom previous occupancies
    - Protection of existing structures and equipment from exposure fires resulting from construction, alteration, and demolition operations
4. Blasting, if required, shall conform with all measures of Article VIII. Regulation of Explosives in the Land Use Code and Section 3.7 Standards for Blasting and Regulation of Explosives in Portland's Technical Manual.
5. Any proposed temporary security lighting shall be shown on CMP and all fixtures shall be full cutoffs.

G. Construction Permitting and Traffic Control Plans

1. Construction Activity in Public Streets: Construction activity in the public right-of-way is controlled by Chapter 25 Article VII of the City Code of Ordinances. Required licenses and permits, restrictions on activity, and fees & area are outlined in that Chapter. Rules and Regulations for Excavation Activity are available through the Street Opening Clerk at the Department of Public Works. At no time can construction activity including delivery vehicles close or block streets or affect public safety access without prior notice and approval of the Department of Public Works.

2. Sewer and Stormwater: Sewer and stormwater water system connections are controlled by Chapters 24 and 32 of the City Code of Ordinance. Required permits for new connections and/or abandonment of existing connections are available through the Street Opening Clerk at the Department of Public Works. Rules and Regulations for these utility systems are available through the City Engineer's office of the Department of Public Works and in Section II of the Technical Manual.

3. Traffic Control Plans: Construction activity that impacts the existing public street system must be controlled to protect the safety of the construction workers and all modes of the traveling public. Projects are required to submit a satisfactory 'maintenance of traffic" (MOT) plan prior to any site plan, subdivision, or street opening permit approval. MOT plans may be required for projects that have impacts on local streets.

Maintenance of Traffic (MOT) plans shall provide for the safe passage of the public through or along the construction work zone. On a case-by-case basis, applicants may be allowed to close a street and/or detour a mode of traffic when absolutely necessary for safety. MOT plans shall employ the appropriate techniques and devices as called for n the latest edition of the Manual on Uniform Traffic Control Devices (MUTCD). In addition:

- Construction speed signing may be used as needed to slow traffic
- Traffic Control signs shall not be placed where they are an obstruction to bicycles or pedestrians.
- In some situations, flaggers may be required.
- Police details may be required at lighted intersections and may be requested by the City's transportation engineer or his designee.

All existing modes of travel in work zone area shall be accommodated if impacted by the activity. The safe passage of pedestrians, bicyclists, transit providers, and motorists are of equal importance when planning out the work zone; no pre-existing travel mode may be eliminated without the express approval of the Department of Public Works. The MOT should also address on-street parking impacts, including deliveries and parking for adjoining businesses and property owners, analysis of roadway capacity or diversion capacity if street closure or change to roadway capacity is required, and coordination with other on-going or future construction or utility projects in the vicinity.

- Traffic control of bicycle and pedestrian facilities or routes through work zones shall be maintained until the bicycle and pedestrian facilities or routes are ready for safe operation. Traffic control will not be removed to allow auto travel at the expense of bicycle and pedestrians.
- Barrier systems utilized to separate the construction activity from the public street and /or sidewalk shall not inhibit sight distances, particularly for visibility of pedestrians and bicyclists.
- ADA compliance shall be maintained.

Use of public parking spaces or the blockage of any portion of sidewalk for the purpose of construction activity shall require an occupancy permit and appropriate fee as assessed by the Department of Public Works.

H. Site Management and Controls

The final Construction Management Plan will address maintaining the site in a safe condition and will include the following:

1. Regular trash and debris removal
2. Street cleaning and damage controls
3. Dust controls- The construction shall comply with Portland's requirements under Section 25-129 on Noise, dust and debris (Attachment 2).
4. Noise: The construction shall comply with Portland's requirements under Section 17-18 of the City Code (Attachment 1) and Section 25-129 on Noise, dust and debris Attachment 2).

5. Rodent Control will be provided, if applicable, by a professional exterminator and consistent with Chapter 22 of the City Code.
6. Snow Removal: Pursuant to Section 25-173 Contractors to ensure a safe means of travel within the work zone.
    1) Snow/ice removal or commence automatically from (1" of snow and up) or Ice
    2) Remove snow as needed within the work zone, including parking spaces & not to block any driveways or sight lines with the piles of snow.
    3) Clear all walks & ramps with the work zone
    4) Sand or Salt as needed
    5) Clear all basin or drainage to help snow melt
    6) This would include Monday-Friday Sat/Sunday/Holidays

I. Erosion Control and Preservation of Trees

1. The WB Group, Inc's selected contractor shall install all erosion and sedimentation controls as depicted on the approved erosion and sedimentation control plan prior to the pre-construction meeting for inspection by the City. The contractor shall regularly inspect the control measures, no less than weekly and after significant storm events, and maintain any installed temporary or permanent stormwater management systems in working order. The contractor shall document all inspection activities and corrective actions and be prepared to provide these documents for inspection by the City, Maine Department of Environmental Protection or the U.S. Environmental Protection Agency upon request.
2. The WB Group, Inc's selected contractor shall maintain all tree and landscaping preservation measures as depicted on the landscaping plan (Exhibit) within the area of construction.
3. The storage of materials shall be identified and avoid being located under/near trees.

J. Construction Staging Area

1. The Construction Management Plan shall depict location of the material staging areas, the location on onsite temporary construction trailers, the location on onsite truck delivery holding areas, the location onsite truck washing stations, masonry mixing stations, the general location of the construction security fence and the general location of temporary construction dumpsters. An open storage areas shall be shown on the plan.
2. Delivery Truck Holding Areas On-Site: The delivery holding area shall be shown on the plan and shall not be blocked during construction. On days when the construction activities require multiple truck deliveries, these deliveries will be carefully scheduled so that there is always adequate on-site area for the holding of the trucks until they can be unloaded. Once at the site all vehicles well be brought within the fence line and will make every attempt to avoid queueing on public streets.
3. Delivery Truck Holding Areas Off-Site: In the event that adequate on-site area for holding of trucks is not available, an off-site marshalling area will be utilized for trucking. The designated off-site location will be identified in the construction management plan.

K. Parking During Construction

1. Construction Parking: Adequate parking for construction workers shall be provided on site or arrangements for off-street parking at an off-site location shall be provided. The parking arrangements shall be included in the construction management plan.
2. Parking: Where existing facilities are remaining in operation during construction, the construction management plan shall identify how the parking for employees and others shall be managed.
3. Truck Routes and Volumes: The Construction Management Plan shall address the designated truck routes and expected truck volumes.

L. Special Measures as Necessary

For construction work that will take place over a long period (e.g. 12 months or more), involve major demolition/ deep excavation/ piling and/or special construction techniques, or are located near sensitive uses (e.g. medical care facilities, schools), the Construction Management Plan should provide details and demonstrate that all appropriate special measures have been taken to avoid, minimize, or possibly compensate for potential impacts. This may include taking baseline measurements before construction, such as arranging to photograph the foundations of nearby properties upon consent of the owners, in order to assess any future impacts of vibration, noise, etc.

SURVEYING ENGINEERING LAND PLANNING

Northeast Civil Solutions

INCORPORATED

www.northeastcivilsolutions.com

41041
April 30, 2018

RE: Level III Subdivision Review – Capisic Meadow – Sidewalk Waiver Request

The application for Level III Subdivision Review for the proposed 7 lot development located at 130-144 Bancroft Street would like to request a waiver for the need for sidewalks on both sides of the proposed residential street servicing the subdivision.

In the pre-development state there are no existing sidewalks within the Bancroft Street public Right-of-Way. While sidewalks increase pedestrian circulation throughout a development, the proposed development would not benefit from additional sidewalks on both sides of the street, meanwhile a singular sidewalk will allow for access throughout the subdivision. The proposed sidewalk will not increase interconnectivity because there is no sidewalk along the adjacent subdivision to connect too.

The addition of sidewalks on both sides of the proposed right-of way would increase unnecessary impervious area throughout the subdivision. In order to meet the requirement to incorporate sidewalks on both sides of a proposed road, the project would require further wetland fill and disturbed area. This area will not support the use of duel sidewalks within the Right-of-Way without unnecessary costs and environmental effects within the proposed subdivision.

The site has been designed to conform to the surrounding community in its existing state, meanwhile abide to the requirements of the existing land use standards. Granting of the requested waiver will allow for the proposed subdivision to conform to the surrounding neighborhood, meanwhile reduce any possible adverse effects to the natural environment.

SURVEYING ENGINEERING LAND PLANNING
Northeast Civil Solutions
INCORPORATED
www.northeastcivilsolutions.com

July 11, 2018

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

RE: Staff Review Comments – 8 Lot Subdivision, 130 Bancroft Street Portland

Dear Jean:

We are writing to address review comments received from you via email on June 25, 2018, and subsequent emails. Your comments are indicated followed by our responses in bold.

Civil Engineering – Third Party Reviewer

1. The Applicant has submitted a copy of the NRPA Application to the DEP for proposed wetland fill. Copies of all final permit approvals should be forwarded to the City upon receipt.
   The MDEP has approved our application for a Tier I wetland fill permit. A copy of the approved permit has been forwarded to the City via eplan and email. The Army Corps of Engineers is reviewing our permit application. Once we receive a decision from the Army Corps we will forward this along to the City.

2. The stormwater inspection and maintenance plan should include provisions for the requirements of Chapter 32 of the City of Portland Code of Ordinances, as well as inspection and maintenance requirements for the proposed Filterra Units and Detention Pond. Update the stormwater inspection and maintenance plan.
   Stormwater inspection and maintenance plan have been updated in compliance with Chapter 32 of the City of Portland Code of Ordinances. Maintenance requirements for proposed Filterra Units and detentions ponds have been forwarded to the City via eplan and email.

3. The Applicant has stated that the lot impervious areas were included in the HydroCAD model, however the narrative report indicates that there will be 0.62-acres of new impervious area and the model indicates that there will be only 0.48-acres of new impervious area. Clarify the amount of impervious surface that has been modeled, and confirm that it includes all impervious surface anticipated to drain to the pond.

We have confirmed that the new impervious area for the project equals 0.65 acres. The HydroCAD model and the Stormwater Report have been updated to reflect this number. All impervious areas tributary to the pond have been included in the model.

4. Note that the standard detail for Sidewalk Ramp Detectable Warning Panels was revised in October 2017. The acceptable material is now uncoated cast iron. Please revise the detail.
   The sidewalk ramp detectable warning panel detail has been updated on the plans to reflect the October 2017 detail revision.

5. The Grading and Drainage Plan indicates that SD-7 will be a 15-inch pipe, but the HydroCAD model indicates that it is 18-inches. The dimensions of the emergency spillway are also inconsistent between the plans and the model. The Applicant should clarify and ensure that the drawings and the model are consistent.
   The Army Corps of Engineers (in reviewing the Tier I Wetland Impact Permit Application) has requested that all wetland crossing culverts be 36" wide and imbedded at least 6 inches. We have updated all the culverts in the wetland crossing areas to reflect a 36" pipe imbedded 1 foot. The pipe sizes have been updated on the pipe schedule on the plan set and in the HydroCAD model. A detail has been added to the plans to reflect this condition.

6. Proposed details include a "Type B Underdrain Installation Detail – Alternative A" that shows underdrain along the roadside edge under curbing; however, the proposed grading and drainage plan does not show locations or discharge points for proposed underdrain. Clarify the use of underdrain on the site
   Underdrain locations have been identified on the plan set. Underdrains are proposed to discharge into proposed cross culverts.

7. A construction management plan has not been provided. Provide a construction management plan using the City's template which is available online.
   A Construction Management Plan using the City's Template has been submitted to the City via eplan.

8. All piping installation within the proposed roadway is required to be in conformance with the City's Technical Manual, Section 2 Sanitary Sewer and Stormdrain. This includes material types and installation. Note that the City of Portland requires HDPE stormdrain pipe to be ADS HP triple-wall pipe. Refer to figure II-12 for the typical pipe trench installation. Update the plans and details to be in conformance with the City's standards.
   We have updated the pipe schedule to reflect the requirement for ADS HP triple-wall pipe. Additionally, we have added the City's II-12 Typical Pipe Trench Installation and Notes detail to our plan set.

9. We have reviewed the Grading and Drainage Plan, and there are a few areas where the grading is not detailed enough to show that water will not be directed towards the building foundations. Specifically on Lots 5, 6, and 7. Additional spot grades are also recommended in the area between Lots 2 and 3, the area in front of Lot 4 and the area adjacent to the

retaining wall at the edge of the detention pond to clearly define grading such that ponding will not occur. Provide updated Grading and Drainage Plan.
Spot grades have been added to the plans to clarify some of the grading areas. The retaining wall and pool have been removed from the plans as the pool will be removed as part of this project.

10. Filterra units are proposed for installation within the future City Right Of Way. The Applicant should discuss the maintenance of these systems with the City of Portland Department of Public works to determine if they will be maintained by the City or if maintenance will be required by the owners. In addition, a system of culverts extends through the site, both over private property and the City Right Of Way, to a stormwater pond that is located on private property. Responsibility of maintenance of all stormwater systems should be clearly established, and Stormwater Maintenance Agreements are required in conformance with the City's Chapter 32. Provide Stormwater Maintenance Agreements.
The maintenance of the proposed stormwater systems throughout the proposed development will be assessed via a Homeowners Association within the proposed subdivision. It will be the responsibility of all members of the Homeowners Association to ensure all stormwater facilities are up maintained to work as designed. This will include culverts, detention pond and other stormwater infrastructure not accepted by the City. Draft Homeowners Association documentation will be forwarded to the City once it has been completed.

Additionally, in discussions with the City Engineer (Keith Gray) it was indicated that the City may look at a different treatment device other than the FIlterra units. We will continue to work with the City on determining which device best suits the site and the City requirements.

Fire Department

11. All homes will be required to be sprinkled.
We have added a note to the Subdivision Plan indicating that all homes will be required to be sprinklered.

12. Fire Department access to all homes is acceptable.
No response required.

13. A 30 x 30 turnaround is required at the dead end of the road.
The turnaround has been drawn as 30 x 30 per detail I-5.

14. The fire hydrant at the end of the road must be removed. No fire hydrant is required for this project.
The hydrant has been removed from the plans.

Additional Comments

15. It is very unusual to have the piping going through private property. This along with the neighbors issues and the scale of wetland fill raises questions and we would like to be sure we are all on the same page (or at least have options clarified with known pros and cons) before it goes to a PB Workshop.
    The maintenance of the proposed stormwater systems throughout the proposed development will be assessed via a Homeowners Association within the proposed subdivision. It will be the responsibility of all members of the Homeowners Association to ensure all stormwater facilities are up maintained to work as designed. Draft Homeowners Association documentation will be forwarded to the City once it has been completed.

16. Also we would like a site plan or lot layout/development and landscape plan (see example attached) that includes the driveways, buildable areas on the lots, key dimensions, and a sidewalk along the north side of the proposed new road- also think about tree saves as this would seem appropriate here.
    An additional Site Layout Plan has been created to satisfy the requirements as indicated above. Building envelopes are indicated on the Subdivision Plan and additionally one story and two story setbacks are identified to show buildable areas. We have identified the clearing limits for the proposed development via pre and post construction tree lines on the submitted plans. We have identified a sidewalk on the southern side of the proposed road and have submitted a waiver request for a sidewalk along the northerly side of the proposed road as there is no sidewalk in Bancroft Street.

17. The issue here is partly re the physical layout, and partly the question of who is going to be responsible for the stormwater system and all parts of it - while the City would accept the street, it would not take responsibility for the stormwater system that is not in the street. And if part of that system is under private properties, will each property be responsible for their section or what? So one of the discussion topics (with DPW present) was this question.
    The maintenance of the proposed stormwater systems throughout the proposed development will be assessed via a Homeowners Association within the proposed subdivision. It will be the responsibility of all members of the Homeowners Association to ensure all stormwater facilities are up maintained to work as designed.

18. Who will be responsible for the proposed stormwater system located within private lots; who will be responsible for the maintenance of the detention pond and the existing easement that will be used for drainage (I would note that the City would not normally take on any of this maintenance and there would need for formal agreements to clarify/confirm)
    The maintenance of the proposed stormwater systems throughout the proposed development will be assessed via a Homeowners Association within the proposed subdivision. It will be the responsibility of all members of the Homeowners Association to ensure all stormwater facilities are up maintained to work as designed.

19. How will your system avoid flooding of neighbors properties (in view of the addition of impervious surfaces)
    Please see the previously submitted stormwater report and calculations explaining the proposed design indicating that the proposed stormwater infrastructure will control the peak flow via a detention pond.

20. Regarding the sidewalk, the other engineers who provide comments on projects wanted the sidewalk on the other side as it impacts less wetland, is less impervious area, and it is on the side of the applicants house
    NCS had met with Keith Gray and the City's 3rd party reviewer and spoken about the request that the sidewalk be located on the northerly side of the road and reached a conclusion that it would not be necessary to change the sidewalk location. The proposed design actually reduces impervious surface due to the fact that the sidewalk is shorter, not extending past the shared driveway between lots #6 and #7. Wetland impacts would remain the same whether the sidewalk were located on the northerly or southerly side of the proposed road due to grading. Necessary grading on both sides of the road, no matter which side the sidewalk were located, would not allow for wetland fill to be reduced.

Abutter Concerns

21. Respond to the comments from neighbors that I have sent (not in detail, but to broad questions)
    A proposed Stormwater Report, Traffic Study and DEP Wetland Fill Permit have been submitted in coordination with this project which addresses the broad spectrum of abutter concerns. We will be happy to discuss any outlying topics in further detail with the Planning Board.

    a. Stormwater
       There is a major concern brought forth by abutters in the surrounding are of stormwater mitigation and the concern that their previously existing "wet" lots will be further affected by the proposed development. The concerns are addressed by the Stormwater Report and calculations provided within the original submission package. The design has taken into account both on-site and off-site watersheds which come in contact with the proposed development. As required by the City, the development is not allowed to increase the peak runoff from the proposed parcel onto any abutting parcel. To control stormwater a partially open and closed drainage system has been implemented throughout the development through a series of drainage ditches and culverts. The proposed impervious surface created by the road will be treated via a Filterra System (or something approved equivalent by the City of Portland) and, along with all created stormwater, directed to a detention pond. The pond has been designed to meet the demands of a 25-year storm event, meanwhile drain within 24 hours after such storm event, eliminating the concern of standing water. Additionally, the stormwater report and calculations are being reviewed by the City's third party reviewer, Woodard and Curran.

b. Wetland Impacts

Wetland impacts have been minimized to the extent practical given the site layout. The MDEP has approved the Tier I wetland fill application for the project. The Army Corps of Engineers is reviewing our application.

c. Open Space

Even though a majority of the land used by the proposed residential development is existing undeveloped (lawn and woods) the land is private property. This land is not part of "Redlon Woods", nor is it part of the Portland Land Bank. The land has not been set aside and dedicated as "open space". As such, development is not restricted by an "open space" designation. The proposed design meets all necessary requirements for lot size and the development does not have an open space requirement that must be met for a traditional subdivision.

d. Underground Piping

A Boundary, Existing Conditions and Topographic Survey have been conducted for the project area identifying all possible on site features that may affect the proposed project or the surrounding area. Additionally, we have looked at City infrastructure plans for Bancroft Street and Capisic Street. As such, we do not anticipate any unknown drainage pipes crossing the property. Should any unknown pipes be encountered will look at all possible solutions to mitigate any effects this may have on the proposed design and ultimately devise a solutions to resolve/re-route any drainage piping. All revised designs will need to be reviewed and approved by the City.

e. Traffic

A Traffic Study conducted by Bill Bray, P.E. of Traffic Solutions was submitted providing information proving that the proposed development will have minimal effect on the existing traffic flows on Bancroft Street. The 6-7 daily trips, 7 per peak hour, will not overburden the existing right-of-way and will not require anything more than a stop bar and sign along the proposed intersection.

f. Site Layout

The proposed design meets the City's requirement for minimum lots size, frontage and building setbacks within the R-3 zone. We have also indicated setbacks for 1 & 1-1/2 story and 2 story houses on the plans.

g. Construction Time

At this point we do not know the timeframe for construction of all the houses. It will depend on the housing market. There will be additional noise and disruption during the construction phase.

h. Redlon Park drainage.

The Redlon Parks development's runoff drains onto the property of the proposed development. We have made provisions in the layout, to allow this runoff to continue to flow across our property to the existing outlet point.

i. Existing drainage easement

The parcels of land owned by Jacqueline Harkins, Dusko Rakovic & Zeljka Rakovic, and William F. Johnson & William R. Johnson, are subject to a 30 ' drainage easement as described in their respective property deeds and as shown on the original subdivision plan, recorded in Planbook 125, Page 8, that created their original parcel configurations. The proposed subdivision will create a Homeowners Association and it will be the responsibility of the Homeowners Association to maintain the 30' Drainage Easement. The City has requested that as part of the project the drainage easement area be cleared of existing vegetation and the ditch line re-graded to ensure positive flow to the pipe inlet. This work will be completed within the 30' drainage easement identified on the plans.

Please contact me if you have any questions or concerns. Thank you.

Sincerely,
Northeast Civil Solutions, Inc.

Michael Skolnick
Land Use Regulatory Specialist

Comments Regarding PL-000092-2018 130 Bancroft St

Peter Carpenter <petemcarpenter@gmail.com> Jun 4, 2018 9:37 AM
Posted in group: **Planning Board**

To whom it may concern,

I'm the property owner of 244 Bancroft St and I'm sending my comments regarding Plan Number PL-000092-2018.

While, I understand the need for new housing in the Portland area, I do not agree that this location is a suitable one to "shoehorn" in seven single family homes and a new city street.

One, there will be the inevitable increase in traffic that will result from seven new houses. At the very least, that means seven additional vehicles traveling in and out of the area. In all likely hood, there will be much more traffic than that.

Two, the land between Bancroft St and Stevens Ave contains some of the last non-public forest and freshwater wetlands left in the city. The subdivision would destroy much of it and that is forested land that will never return.

Three, we will have to undergo an extended period of traffic and noise disruption during the construction phase. I'm not sure how long it would take to build seven houses and a city street. I do know it took a long time to complete the nearby 11 Pomeroy St project and that involved only one house.

In conclusion, I am opposed to this plan and I can't imagine many of the property owners in the immediate area are very happy about it. I particularly think that seven houses is too many to squeeze into such a small area. As a compromise, I would be willing to hear about a plan consisting of one or two houses.

Thank you,
Peter Carpenter
244 Bancroft St.

Comment on Proposed Housing Subdivision at 130 Bancroft Street (PL-000092-2018)

Douglas Babkirk <doug.babkirk@maine.edu> Jun 5, 2018 9:22 PM
Posted in group: **Planning Board**

Date: June 5, 2018
To: City of Portland Planning Board Members
From: Douglas G. Babkirk
Re: PL-000092-2018 (Proposed subdivision at 130 Bancroft Street)

As a resident of the Rosemont neighborhood for the past ten years, I have appreciated the city's investment in acquiring, preserving and maintaining green space for wildlife habitats, public enjoyment and quality of life enhancement for Portland residents and visitors. Nearby Capisic Pond and Redlon Woods are two examples of the city's commitment to such open space.

Planning Board approval of the seven (7) lot subdivision, proposed by Joshua Wagner, representing the WB Group Inc., between Bancroft Street and Redlon Park would be inconsistent with the city's commitment to preserving green space and wetlands. I am well aware of the affordable housing shortage that exists in Portland and am unsure at this time what market the proposed subdivision would attract.

Regardless of the proposed housing audience, I am concerned about the negative impacts on the wetland that runs through the property under consideration because it is an extension of the wetland that courses through Redlon Park.

In the past two years we have noticed significant water backup after a rainfall in the Redlon Woods abutting our properties ever since the Chabad House, now operating as a year-round hotel for up to 15 Orthodox Jewish guests, was built on Pomeroy Street contiguous to Redlon Park. I fear any additional dense housing development adjoining Redlon Park and the Chabad House would only exacerbate the water drainage issue.

I plan to attend future meetings related to this proposed 2.9 acre development in a dense residential zone of Portland where green space is a premium for wildlife and residents alike.

55 Redlon Park
Portland, ME
712-5140

Proposed Housing Subdivision at 130 Bancroft Street (PL-000092-2018)

Jeff D. Emerson <jdemerson@northendgroup.com> Jun 7, 2018 8:45 AM
Posted in group: **Planning Board**

City of Portland Planning Board

389 Congress St
4th Floor
Portland, ME 04101

June 7, 2018

Planning Board Members:

The Planning board is contemplating approval of a development project which abuts one or more homes in the Redlon Park Association. I own one of the homes in the Association.

As a resident of this neighborhood since 2012, I have appreciated the City's care in preserving and maintaining undeveloped space for wildlife habitats, public enjoyment and quality of life enhancement for Portland residents and visitors.

Planning Board approval of the seven (7) lot subdivision, proposed by Joshua Wagner, representing the WB Group Inc., between Bancroft Street and Redlon Park would be contrary to the City's history of preserving green space and wetlands.

I also am concerned about the negative impacts on the wetland that runs through the property under consideration because it is an extension of the wetland that courses through Redlon Park.

In the past two years my neighbors have noticed significant water backup after a rainfall in the Redlon Woods abutting their properties ever since the Chabad House, now operating as a year-round commercial and religious property, was built on Pomeroy Street contiguous to Redlon Park. I fear that any additional dense housing development adjoining Redlon Park and the Chabad House would only exacerbate the water drainage issue.

While I am sympathetic to the City's need for additional housing I strongly urge the Planning Board not to approve a development which will burden the existing homes in the Rosemont neighborhood and further reduce the green space. The City made, and continues to make, a serious mistake in permitting the operation of the Chabad House in a residential neighborhood. I suggest that you do not further compound that mistake with the approval of additional development.

Jeff D. Emerson

President

NorthEnd Group LLC

18 Redlon Park Road

Portland, ME 04102

Tel: (240) 752-7143

Efax: (207) 221-1159

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Jeff D. Emerson
18 Redlon Park Road
Portland, ME 04102

City of Portland Planning Board
389 Congress St
4th Floor
Portland, ME 04101 June 7, 2018

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Redlon Woods/////Fwd: Bancroft subdivision

maureen gavin <mgavin@jhu.edu> Jun 7, 2018 5:26 PM
Posted in group: **Planning Board**

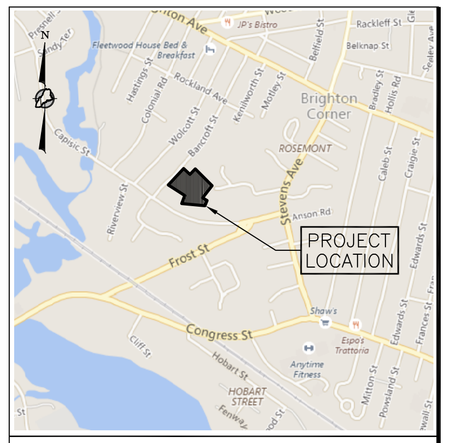
How is development like this even possible in wetlands of Redlon Park Woods??

I thought all this parkland and wetlands were to be preserved via Portland Land Bank??

Maureen C. Gavin
24 June St.
Portland, Maine 04102

Begin forwarded message:

From: Doug Babkirk <doug.babkirk@maine.edu>
Subject: Fwd: Bancroft subdivision
Date: June 7, 2018 at 4:48:33 PM EDT
To: mgavin@jhu.edu



VICINITY MAP
N.T.S.

SUBDIVISION NOTES

S-1. DEVELOPER:

S-2. SURVEYING / ENGINEERING:
NORTHEAST CIVIL SOLUTIONS, INC.
381 PAYNE ROAD
SCARBOROUGH, MAINE 04074

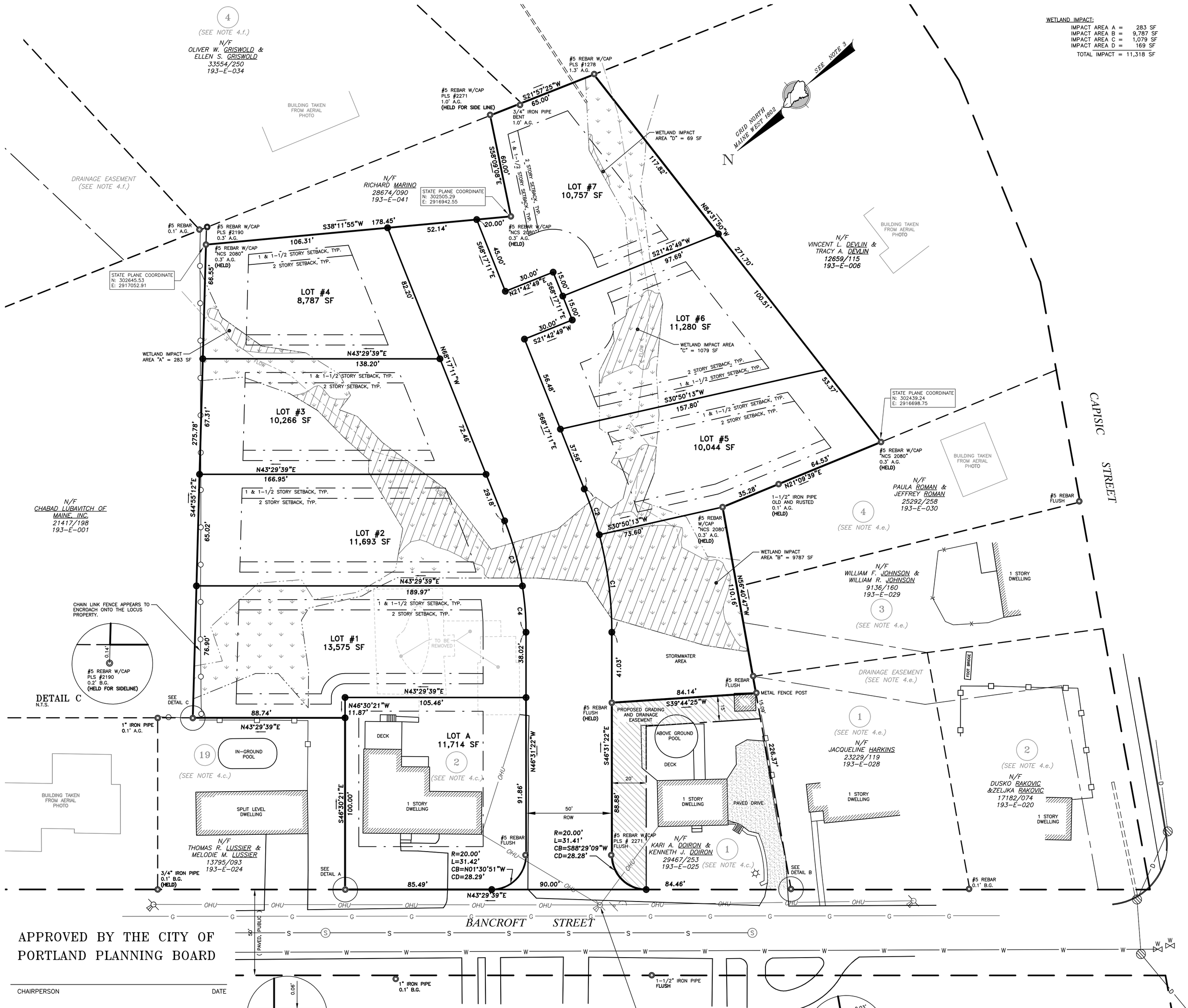
S-3. WETLAND DELINEATION:
LONGVIEW PARTNERS, LLC
6 SECOND STREET
BUXTON, MAINE 04093

S-4. THE SUBJECT PARCEL IS LOCATED IN R-3 ZONE. PORTIONS OF BULK & SPACE REQUIREMENTS ARE AS FOLLOWS:
MINIMUM LOT AREA = 6,500 S.F.
MINIMUM LOT FRONTAGE = 50'
FRONT SETBACK = 25'
REAR SETBACK = 25'
SIDE SETBACK = 8' MINIMUM
1 & 1-1/2 STORY = 8'
2 STORY = 14'
3 STORY = 16'

S-5. ELEVATIONS AND CONTOURS ARE BASED ON CITY OF PORTLAND DATUM. SEE PLAN FOR TBM DESCRIPTION.

APPROVED BY THE CITY OF PORTLAND PLANNING BOARD

CHAIRPERSON DATE



CURVE TABLE				
CURVE	LENGTH	RADIUS	CHORD LENGTH	CHORD BEARING
C1	57.40'	225.00'	57.25'	S53°49'52"E
C2	28.06'	225.00'	28.05'	S64°42'47"E
C3	39.39'	175.00'	39.30'	N61°50'20"W
C4	27.09'	175.00'	27.06'	N50°57'25"W

THIS PLAN IS FOR REVIEW PURPOSES ONLY AND IS NOT INTENDED FOR CONSTRUCTION OR RECORDING

LEGEND

- #5 REBAR WITH PLASTIC CAP (PROPOSED)
- SET GRANITE MONUMENT WITH PLASTIC CAP (PROPOSED) *(PROPOSED MONUMENTATION SHOWN ON THIS SURVEY PLAT MAY OR MAY NOT BE SET BY NCS, INC. AND IF SO WILL BE DONE UPON CLIENT AUTHORIZATION)*
- FOUND IRON (SIZE & TYPE AS NOTED)
- UTILITY POLE (NUMBER AS NOTED)
- GUY WIRE ANCHOR
- TREE LINE (APPROXIMATE)
- BOUNDARY LINE
- EASEMENT LINE
- EDGE OF PAVEMENT
- RIGHT-OF-WAY LINE
- ABUTTER LINE
- BUILDING SETBACK
- OHU OVERHEAD UTILITY
- *N/F* NOW OR FORMERLY OWNED BY
- *1234/567* DEED BOOK AND PAGE (CCRD)
- *12-34* TAX MAP-LOT
- PARENTHESIS DENOTE RECORD DATA

BOUNDARY NOTES

1. RECORD OWNERS OF THE PARCELS SURVEYED ARE DESCRIBED IN THE FOLLOWING DEEDS RECORDED IN THE CUMBERLAND COUNTY REGISTRY OF DEEDS:
   a. FROM EDWARD C. BROOKS & ROSE MARIE BROOKS TO KARI A. DOIRON & KENNETH J. DOIRON, DATED MARCH 30, 2012 AND RECORDED IN DEED BOOK 29467, PAGE 255 (PARCEL 193-E-039).
   b. FROM DIANE E. HERRICK TO PAUL WAGNER, DATED MARCH 23, 2010 AND RECORDED IN DEED BOOK 27668, PAGE 230 (PARCEL 193-E-026 & 040).
   c. FROM THE ESTATE OF STUART HERRICK, JR. TO JOSHUA WAGNER, DATED AUGUST 23, 2010 AND RECORDED IN DEED BOOK 28027, PAGE 268 (PARCEL 193-E-019).
2. THE PARCELS SURVEYED ARE IDENTIFIED ON THE CITY/TOWN OF PORTLAND TAX ASSESSOR'S MAP 193, BLOCK E, PARCELS 19, 26, 39 & 40.
3. THE BEARINGS SHOWN ON THIS PLAN ARE BASED ON MAINE STATE COORDINATE SYSTEM, WEST ZONE, 1801, GRID NORTH.
4. REFERENCE IS MADE TO THE FOLLOWING PLANS:
   a. "PLAN OF PROPERTY, 130 BANCROFT STREET, PORTLAND, MAINE", BY TITCOMB ASSOCIATES, DATED 8/30/2008, RECORDED IN PLAN BOOK 210, PAGE 228.
   b. "PLAN OF PROPERTY, 130 BANCROFT STREET, PORTLAND, MAINE", BY TITCOMB ASSOCIATES, DATED 8/13/2008, RECORDED IN PLAN BOOK 208, PAGE 370.
   c. "PLAN OF EMERSON WOODS, PORTLAND, MAINE", BY ROBERT P. TITCOMB, DATED 4/05/1973, RECORDED IN PLAN BOOK 94, PAGE 19.
   d. "PLAN OF EMERSON WOODS, PORTLAND, MAINE", BY ROBERT P. TITCOMB, DATED 12/20/1972, RECORDED IN PLAN BOOK 93, PAGE 42.
   e. "PLAN OF PROPERTY IN PORTLAND, MAINE MADE FOR CHARLOTTE L.F. CHENEY", BY H.I. & E.C. JORDAN, DATED 10/05/1979, RECORDED IN PLAN BOOK 125, PAGE 8,
   f. "1ST AMENDED SUBDIVISION PLAN OF REDLON PARK SUBDIVISION", BY SEBAGO TECHNICS, DATED 4/11/2016, RECORDED IN PLAN BOOK 216, PAGE 139.
   g. "PLANNED RESIDENTIAL UNIT DEVELOPMENT PLAN AND SUBDIVISION PLAN, REDLON PARK, REDLON ROAD, PORTLAND, MAINE" BY PINKHAM & GREER, DATED 2/27/1997, RECORDED IN PLAN BOOK 197, PAGE 493.
   h. "RIGHT-OF-WAY MAP, STATE HIGHWAY NO. 17, FEDERAL AID PROJECT NO. M-0614(2)", BY STATE OF MAINE DEPARTMENT OF TRANSPORTATION, DATED 4/1988, D.O.T. FILE NO. 3-364.
   j. MULTIPLE STREET LINE RECORDS PROVIDED BY THE CITY OF PORTLAND PUBLIC WORKS.
   k. PLAN OF BRIGHTON, PORTLAND, MAINE MADE FOR GEORGE T. EDWARDS, BY CLIFFORD C. LEGROW, DATED AUGUST, 1902, RECORDED IN PLAN BOOK 11, PAGE 109.
5. THE WIDTH OF BANCROFT STREET IS 50' BASED ON CITY OF PORTLAND STREET LINE RECORDS. THE LAYOUT OF THE RIGHT-OF-WAY LIMITS IS BASED ON SAID STREET LINE SHEETS AND MONUMENTATION FOUND.
6. ELEVATIONS AND CONTOURS ARE BASED ON CITY OF PORTLAND DATUM CALCULATED BY RTK (NAVD 1988 DATUM) AND ADDING 0.8' (DIFFERENCE BETWEEN NAVD 1988 AND NGVD 1929 IN PORTLAND) TO GET TO CITY DATUM. SEE PLAN FOR TBM DESCRIPTION.
7. 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.
8. WETLANDS SHOWN WERE DELINEATED BY LONGVIEW PARTNERS, LLC, JANUARY, 2017 AND FIELD LOCATED BY NCS. MAINE DEPARTMENT OF ENVIRONMENTAL PROTECTION PROVIDED A FIELD DETERMINATION THAT NO STREAMS EXIST ON THE SITE.

Revision:	By:	Date:	Change:

PROJECT: 41041	DRAWING NAME: 41041 Subdivision.dwg		
ISSUED: MAY 1, 2018	SCALE: 1"=30'	FB # 420	DRAWN BY: JAP
FIELDED BY: JAP / MAC	FIELD DATE: 1/10/2017		CHECKED BY: TFM

Drawing Name and Location:
SUBDIVISION PLAN
130 & 144 BANCROFT STREET, PORTLAND, MAINE

Owners:
JOSHUA WAGNER (193-E-019)
130 BANCROFT STREET, PORTLAND, MAINE 04102
PAUL WAGNER (193-E-026 & 040)
68 WOLCOTT STREET, PORTLAND, MAINE 04102
KARI DOIRON & KENNETH J. DOIRON (193-E-039)
144 BANCROFT STREET, PORTLAND, MAINE 04102

Prepared For:
JOSH WAGNER

STATE OF MAINE TROY F. McDONALD #2080 PROFESSIONAL LAND SURVEYOR 5/9/2018

SURVEYING • ENGINEERING • LAND PLANNING
Northeast Civil Solutions
INCORPORATED
381 PAYNE ROAD, SCARBOROUGH, MAINE 04074
tel 207.883.1000 800.882.2227
fax 207.883.1001
e-mail / website info@northeastcivilsolutions.com www.northeastcivilsolutions.com

0 30' 60' 120'

E:\Land Projects\41000\41041--Wagner--Portland\dwg\41041 Subdivision.dwg

Google Groups

130 Bancroft Street Subdivision

Jun 8, 2018 2:26 PM

Posted in group: **Planning Board**

Dear Ms. Fraser,

I am writing to express my concerns about the proposed subdivision at 130 Bancroft Street.

First, I live next door to this proposed development and the first that I heard of it, was via the post card from your office a week ago. I regularly would see Ms. Wagner, and not once did he mention his plans to me. The lack of transparency is troubling.

My concerns are: 1. As you know, this is wetland area. Most, if not all of the properties on the Mr Wagner's side of the street already have very wet back yards. When the Redlon development was built, people had flooded pools and basements. The same occurred as a result of "The Ledges" condo development on Steven's Avenue. 2. I understand that some kind of retention pond is proposed for behind my neighbor's property, soon to become Mr. Wagner's property. First, this acknowledges that Mr. Wagner and the engineers know this is very wet property. This retention pool could over flow, spilling directly into my already very wet backyard. This "pool" would also serve as a magnet for mosquitos and other insects, which could very possible create health issues for me, and the nearby property owners. 3. The traffic (conservatively 14 more cars) increase would change the already busy traffic pattern on the street. There are families with young children and grandparents whose grandchild visit, and this could very possibly create a safety issue. 4. Ledge is prevalent in the proposed space, and I am concerned about the structural effects from blasting and the additional upset that this would cause to the balance of the water table. 5. The green space on this street was one of the reasons I bought in this location twelve and a half years ago; Portland's green space is being eroded at too fast a pace; once land is developed, that green space is forever lost. 6. I am concerned about the impact to my property value. 7. Lastly, why wasn't the Landbank Trust on the notification list from the city? This organization found out this proposed project from an e-mail forwarded to them. They should have been among the first to receive notification of this proposed project.

In closing, I do not believe that this project is a good fit for this piece of land. I ask the planning board members to very carefully consider the points that I have outlined above, and I'm sure that they mirror other concerned residents' comments.

Respectfully submitted,

Jacqueline Harkins
Bancroft Street Resident
--
**** Please Note: ***
This E-mail and its attachments may be confidential
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represent those of the Portland Public Schools.*

PL-000092-2018 (Proposed subdivision at 130 Bancroft Street)

Oliver Griswold <owgriswo@gmail.com> Jun 8, 2018 3:46 PM
Posted in group: **Planning Board**

Date: June 7, 2018
To: City of Portland Planning Board Members
From: Oliver and Ellen Griswold
Re: PL-000092-2018 (Proposed subdivision at 130 Bancroft Street)

Planning Board Members:

We live directly in back of the proposed Bancroft development, adjoining the forestland that would be razed to make room for the seven lots. Forests like this one are becoming more and more rare in Portland, succumbing to development pressures in a growing city. But the character of the Rosemont neighborhood is in some ways defined by these pockets of open space. Balancing the density of our residential streets, they shape a community that is unlike any other in Portland, and provide an ideal spot for both adults and children to explore nature, observe wildlife, and play in a natural environment. We urge you to maintain this balance, and reject this development proposal.

We are also extremely concerned about the wetlands - both the negative impacts on the wetlands upon which these new houses would sit, and the consequences for surrounding neighborhoods that would be adversely impacted by displacement of the wetlands, including Rosemont and Redlon Park. Often the effects of displacing wetlands are not felt until it's too late, as has been the case in the recent past in this area.

Bancroft Street is already the site of a contentious development issue that has increased congestion, noise, and tensions in our neighborhood. Approving development that would not only compound these problems, but also fill in a valuable stretch of open space, would frankly feel like piling on. We have heard that the landowner is not remaining in the neighborhood, so these issues would be left for the rest of us to live with.

Thank you so much for your consideration of this letter. We plan to attend any meetings about this seven-lot development proposal, where we hope you will agree that there are simply too many potential problems to consider it a viable plan.

Oliver and Ellen Griswold
38 Redlon Park Rd

Re: Comments on proposed development at 130 Bancroft St. in Portland

Barbara Barhydt <bab@portlandmaine.gov> Jun 14, 2018 7:23 AM
Posted in group: **Planning Board**

Good morning:

Thank you for your public comment and we will include it in the materials for the Planning Board, when this item is scheduled for a workshop. At this time, I do not have a firm date for a planning board workshop. I am cc'ing Jean Fraser, who is the planner assigned to this project and she will share your comments with the other staff members and third party engineers who are reviewing the application under the City's standards for subdivisions.

I am also adding our Office Manager, Jennifer Munson, to this e-mail. She can advise you how to sign up for notifications through the City's web site, so you receive notification of Planning Board meetings and agendas.

Thank you.

Barbara

Barbara Barhydt
Development Review Services Manager
Planning Division
389 Congress Street 4th Floor
Portland, ME 04101
(207) 874-8699
Fax: (207) 756-8256
bab@portlandmaine.gov

On Wed, Jun 13, 2018 at 10:43 PM, Judy Gailen <judy@judygailendesigns.com> wrote:

> To the Planning Board,
>
> We live at 68 Bancroft St. It has come to my attention that Josh Wagner is proposing an 8 lot subdivision on our street. Because we live more than 500 ft. away from him, we did not get any of the information that he sent to neighbors and was not invited to the meeting. I think he wants to tell as few people as possible, so he doesn't have to deal with the fallout. The fact that he is holding the meeting in his garage at 4:00 in the afternoon on a Tuesday, when people who work cannot attend, is sneaky. But this is a fairly friendly and connected neighborhood, so it could not go unnoticed. And it appears that he wants to sell all those lots, while he himself will move away. I think that is unconscionable!
>
> A development like this would impact our entire neighborhood, not just his closest neighbors. The temple on Pomeroy impacts the whole street. This would impact it even more. When Redlon Park was built, the water problem on Bancroft by our house worsened, from what we heard. (We have been here for 20 years…moving in after they built it...and have been trying to solve the water problem ever since). There is so much water and /or ledge back there in those woods, that it would create even more of a problem. Especially since the city has refused to put another storm drain on the street. I imagine blasting would be necessary…I can't even imagine what will happen.
>
> But the biggest problem would be the traffic and congestion on Bancroft. There would be only one way in and out of the development, correct? It would be one thing if the road let out on Stevens or Capisic, but Bancroft is a quiet street with many children. We already have people using the street as a cut-through from Brighton to Capisic, speeding and running the stop sign at Rockland. Putting a 3-way stop at a new intersection in the middle of the block will not stop them.
>
> I realize that this is his land, and he can sell it if he wants, but this is wrong in so many ways. Apparently he bought more land from a neighbor that butts up against another neighbor's fence, without even asking her if she might be interested in buying it first. It's greed, pure and simple, with little thought to the impact on his surrounding neighbors and environment. We don't need more congestion on this street. We do need what green space we have here.
>
> If I had the money to buy him out and keep the woods from being developed, I would! But I don't, so I am asking that you consider very seriously the impact that this development would have. The concerns about the temple project went unheeded. (No one building a "house" sends out a glossy fundraising brochure to raise money to build classrooms, hospitality rooms, two kitchens, and other parts of a temple campus!). I imagine house lots would bring in a lot more in property taxes to the city, but please consider very seriously what this would do to this neighborhood.
>
> Even though I live more than 500 ft from the property, can I be included on an 'interested parties' list and be informed of any public hearing that takes place?

Thank you,
Judy Gailen

FW: Bancroft St Project

Doiron, Ken <kdoiron@ptc.com> Jun 13, 2018 11:06 AM
Posted in group: **Planning Board**

To whom it may concern:

My wife and I wanted to write in support of the proposed development project off Bancroft St. We live at 144 Bancroft and we will be the most directly affected by the project. We feel the new houses going in will certainly improve property values in the Rosemont neighborhood and do not see any issues that would negatively impact to us or surrounding neighbors.

One of the biggest positives for us personally will be correcting the major water drainage issues we have on our property. The back two-thirds of our land is unusable because the water drainage from the Redlon Park Rd development and an old culvert from a property on Capisic Street. They both end up collecting on our property. There is a drainage easement from Capisic Street to our property line that has not been taken care of in years resulting in the overgrowth of trees and weeds and the sediment build up now actually holds water on our land. We are looking forward to that problem getting resolved through this planned development as it is a muddy mess and is a mosquito breeding ground. We would be happy to have someone from the Planning Board come visit us to show off these issues.

We believe there will be concern over more cars on Bancroft Street but we also see this as an opportunity to fix the number of cars currently speeding down the road as they cut from Brighton to Capisic. We would like to see a 3 way stop on at the new road being proposed.

Thank you for taking the time to read our email and we look forward to this new development in our neighborhood.

Regards,

Ken & Kari Doiron

Google Groups

130 Bancroft - Benjamin Way (Rosemont 7 family development)

Sarah Delisle <sarahmdelisle@gmail.com> Jun 14, 2018 12:12 PM
Posted in group: **Planning Board**

Hello Planning Board Members,

I live at 111 Bancroft Street and have lived on Bancroft St. with my family for 9 years, and I plan to stay at least that many more. As I Realtor I see the extreme need for more housing every day. There was another article this morning about the housing shortage we are facing as a city. From the plans I have seen these homes will fit with the scope and scale of the neighborhood, unlike a giant one family home taking up the space of 7 homes. This project will be not only be good for the home values in Rosemonet but it will allow 7 new residents to our desirable neighborhood. I realize the opposition has concern for the wetlands and I also appreciate our local wildlife and green spaces --If this plan was for Capisic Pond Park or any area of the Portland Trails I would be opposed to it. It is completely natural for change to bring forth apprehension in neighbors, that this project will directly effect, but when weighing the pros and cons I see this growth supporting a healthy growth for our neighborhood. I understand that there will be a period of construction and although I most definitely am irritated when driving downtown through construction I realize the value when it's done.

I know Josh as a neighbor and he and his family have been nothing short of pleasant and respectful neighbors. I know Josh is a business owner and has a great reputation in the real estate community. Although I do not know him beyond a passing neighborly conversation their reputation for being good neighbors and business owners makes me feel confident that Josh will have the utmost care for this project and our neighborhood. Please consider this project as smart and productive growth for our city and neighborhood.

I appreciate your consideration.

_____
Sarah Delisle
Associate Broker/Realtor
Vitalius Real Estate Group
207.523.9183

Portland Maine Yes. Google's good here.

Jennifer Munson <jmy@portlandmaine.gov>

Fwd: 130 Bancroft St

Jean Fraser <jf@portlandmaine.gov> Fri, Jul 6, 2018 at 9:32 AM
To: Jennifer Munson <jmy@portlandmaine.gov>

Could you place "on the record" - thanks

---------- Forwarded message ----------
From: **Ejlheureux** <ejlheureux@aol.com>
Date: Thu, Jul 5, 2018 at 10:27 AM
Subject: 130 Bancroft St
To: jf@portlandmaine.gov

I have been recently informed that there is a proposal to build 7 homes at this location. My initial reaction was WHAT?.
The mere fact that Mr. Wagner needs a variance speaks to fact that homes should not be built on the property. My concerns are with the fact that some of property is wetlands(and I don't see that building a detention pond is equitable tradeoff), the increase traffic in the area and the negative impact that it will have on the neighbors.

I want to be placed on the notice list for any actions on this property.

Thank you

Estelle
ejlheureux@aol.com

--
Jean Fraser, Planner
City of Portland
874 8728

Google Groups

In reference to 130 Bancroft Development Plan

Caleb O'Connell <caleb@caleboconnell.com> Jul 9, 2018 6:11 PM
Posted in group: **Planning Board**

I'm writing in objection to the plan for 130 Bancroft st that is porpoised by Josh Wagner and Northeast Civil Engineering. Both Josh and the engineers who made themselves available for the neighborhood meeting were very helpful in talking with neighbors and their concerns about the development.

The water issues in question are not just runoff or storm water as they mention in their narrative. This water is a stream based flow that runs from the higher elevation down through the neighborhood to Capsic brook as it probably has forever. For 6-8 months of the year there is a very defined edge stream that flows through the neighborhood into the cities catch basin to direct water into Capsic brook. Due to the fact the area has been developed poorly over time, the natural streams usually come straight across my lawn and spew up from under ground culverts probably installed in the 1920s. This water comes from high elevations to the east and flows down as a stream, which I imagine has always been the case. Any change in the flow of this water could effect my property of the properties directly downstream of this development. Also, the house lots proposed would have to deal with the large amounts of water in their future lining them up for problems.

The engineering firms focus on the Redlon Park development and what was done poorly there causing the water be worse for everyone else is exactly the reason this project should reconsidered from it proposed size. While I agree that Redlon probably was not done correctly, I see no reason that this new proposal would be any different. And everyone else at the neighborhood meeting expressed the same concerns.

Neighbors who have been dealing with this water issue for years were rightfully concerned how this was going to negatively effect them and after repeated questions with no real answer it was obvious we would all be on our own to monitor our own situation and chase down whomever might be the next responsible person in line. It is typical Tough Luck situation.

Possible solution

Smaller development that doesn't put buildings directly on top of the stream running through. Possibly having those properties be included in the Redlon woods park that has been in development for years.

Google Groups

130 Bancroft sub division

Diane Herrick <ben7@maine.rr.com> Jul 10, 2018 6:21 PM
Posted in group: **Planning Board**

Planning Board Members,

I currently live at 159 Bancroft St. My late husband, Stewart Herrick and I used to live at 130 Bancroft St. We owned the land Josh Wagner plans on developing.
I am writing you in support of the proposed subdivision. Having lived there for many years it was frustrating having such a large mostly unusable back yard. Ever since Redlon Park went in the amount of water passing over the land made it a soggy mess. It was July most years by the time it dried out enough that I could mow it.
Josh has shared with me his plans and I feel that it will positively impact our neighborhood and make good use out of a relatively uninviting piece of land.

Respectfully, Diane Herrick

From: <jackiehark@maine.rr.com>
Date: Tue, Jul 3, 2018 at 1:48 PM
Subject: 130 Bancroft Street Proposed Subdivision
To: planningboard@portlandmaine.gov
Cc: jf@portlandmaine.gov

Dear Planners,

I am writing to follow-up with additional concerns/questions regarding the proposed subdivision at 130 Bancroft Street, subsequent to the meeting that was held by the developer.

First, the detention pond is of major concern, because of the location (right next to my property). I am concerned about possible overflow from the pond onto my property, and I am concerned about it being a breeding ground for mosquitos and other disease carrying insects. Also, vigilant maintenance is paramount to detention ponds working effectively. What checks and balance are in place on the City's part to make sure that the pond is regularly maintained? Does the City require a responsible party to be named in a contract, and to report that regular maintenance has been done? How soon does the City respond if the maintenance is not being done?

The area where the developer wants to build these houses is very wet, and becomes extremely so, after even a moderate a rainstorm. The developer commented at the meeting when neighbors next door mentioned how wet their back property is, that many times he is unable to use his ATV his backyard because of the wet ground; yet, he is proposing seven homes to be built on that land. An abutting neighbor to this project brought up at the meeting, concerns to do with possible underground drainage pipes that could be discovered upon excavating and how that drainage could further exacerbate the existing major water problems in the back of properties to the left and right of 130 Bancroft Street. It was obvious that the engineers at the meeting had not anticipated this very good question, and they did not have a conclusive answer for the question. The Ledges (condo development) first caused added drainage issues to properties on a significant stretch of backyards on the even side of Bancroft Street, then Redlon Park added to the already troublesome drainage issues, and now this project could potentially cause serious flooding issues for those same properties.

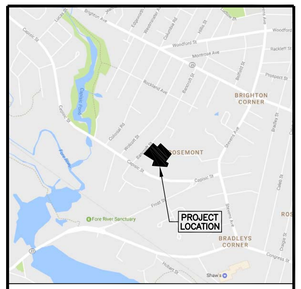
Lastly, the engineers were unclear about who would be responsible for cleaning out the drainage easement that runs behind my property and my neighbor's property. Is it the City's responsibility or is it the developer's responsibility? Who would be responsible for removing debris (bushes, felled trees, etc.) when the clean out is completed?

I ask you to consider the ramifications of this proposed development on people who have lived in this neighborhood for some time, and already endured negative impacts to their property and the use of their property (due to water infiltration).

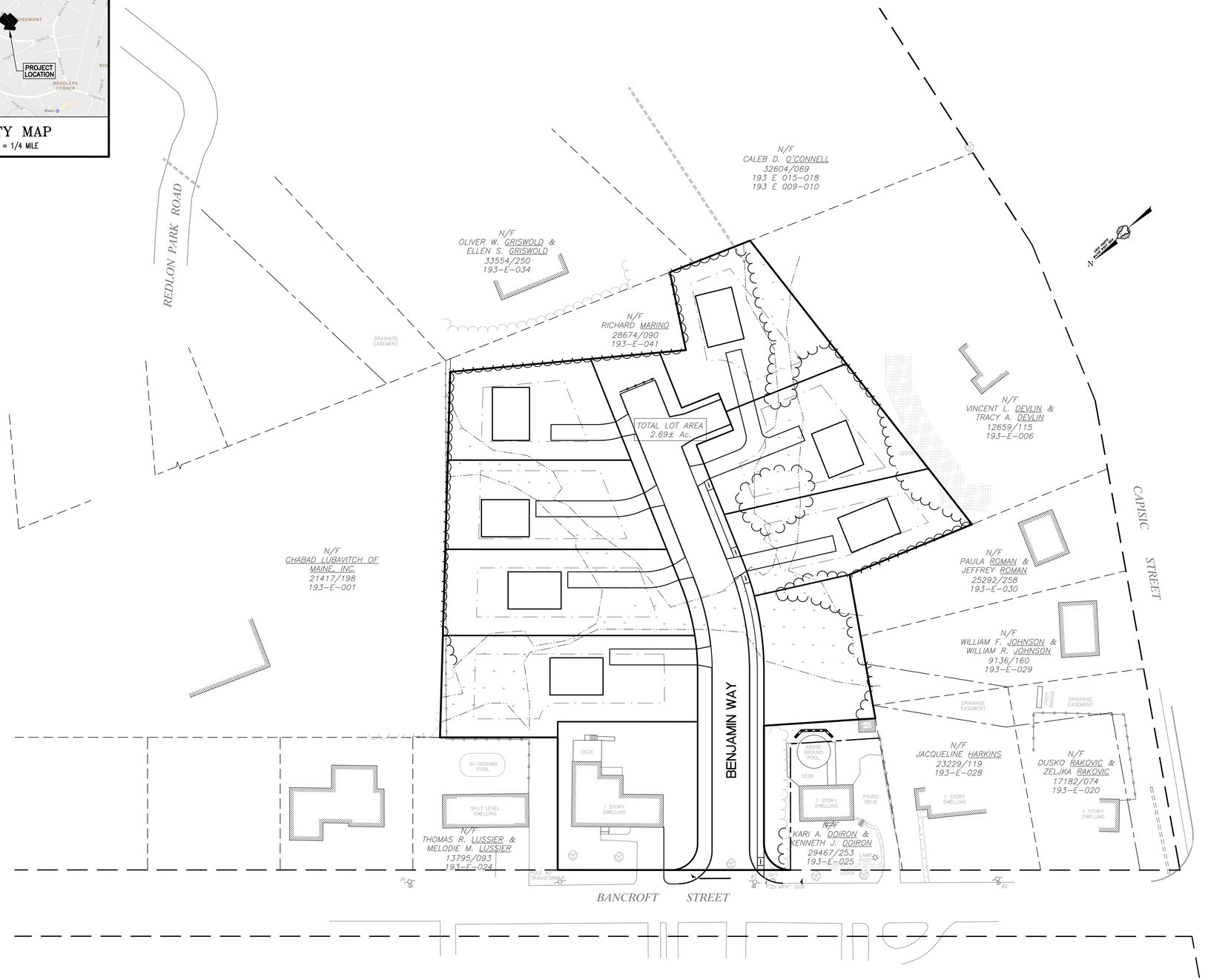
Respectfully submitted,

Jacqueline Harkins

PROPOSED CAPISIC MEADOWS SUBDIVISION
130 BANCROFT STREET, PORTLAND, MAINE



VICINITY MAP
SCALE: 1" = 1/4 MILE



SHEET INDEX

1. COVER/INDEX/VICINITY MAP
2. BOUNDARY & TOPOGRAPHIC SURVEY
3. SUBDIVISION PLAN
4. PLAN & PROFILE
5. GRADING & DRAINAGE PLAN
6. UTILITY PLAN
7. EROSION & SEDIMENTATION CONTROL PLAN
8. EROSION & SEDIMENTATION CONTROL NOTES AND DETAILS
9. CONSTRUCTION DETAILS – SHEET 1
10. CONSTRUCTION DETAILS – SHEET 2
11. CONSTRUCTION DETAILS – SHEET 3
12. CONSTRUCTION DETAILS – SHEET 4
13. CONSTRUCTION DETAILS – SHEET 5
14. CONSTRUCTION DETAILS – SHEET 6

PRE-DEVELOPMENT DRAINAGE AREA PLAN

POST-DEVELOPMENT DRAINAGE AREA PLAN

ABUTTERS

ASSESSOR'S MAP	PARCEL NUMBER	OWNER'S NAME
193-E	1	CHABAD LUBAVITCH OF MAINE, INC. 101 CAIGIE STREET, PORTLAND, ME 04102 BOOK 21417, PAGE 198
193-E	34	OLIVER W. GRISWOLD 7 ELLEN S. GRISWOLD 38 REDLON PARK ROAD, PORTLAND, ME 04102 BOOK 33554, PAGE 250
193-E	41	RICHARD MARINO 38 REDLON PARK ROAD, PORTLAND, ME 04102 BOOK 28674, PAGE 90
193-E	15 – 18 9 & 10	CALEB D. O'DONNEL BOOK 32604, PAGE 69
193-E	6	VINCENT L. DEVLIN 99 CAPISIC STREET, PORTLAND, ME 04102 BOOK 12659, PAGE 115
193-E	30	PAULA ROMAN & JEFFERY ROMAN 60 WOODVALE STREET, PORTLAND, ME 04102 BOOK 25292, PAGE 258
193-E	29	WILLIAM R. JOHNSON & WILLIAM F. JOHNSON 119 CAPISIC STREET, PORTLAND, ME 04102 BOOK 9136, PAGE 160
193-E	28	JACQUELINE HARKINS 154 BANCROFT STREET, PORTLAND, ME 04102 BOOK 23229, PAGE 119
193-E	20	DUSKO RAKOVIC & ZELKA RAKOVIC 164 BANCROFT STREET, PORTLAND, ME 04102 BOOK 17182, PAGE 74
193-E	24	THOMAS R. LUSSIER & MELODY M. LUSSIER 126 BANCROFT STREET, PORTLAND, ME 04102 BOOK 13795, PAGE 93

THIS PLAN IS FOR REVIEW PURPOSES ONLY AND IS NOT INTENDED FOR CONSTRUCTION OR RECORDING

Revision:	By:	Date:	Change:
2	SMA	5/11/18	SUBMITTED FOR PRELIMINARY SITE PLAN/SUBDIVISION REVIEW
1	SMA	5/4/18	SUBMITTED FOR MDEP TIER 1 REVIEW

PROJECT NUMBER: 41041 | ACAD FILE: 41041-COVER.DWG | SCALE: 1" = 40' | DATE: MAY 1, 2018

DRAWING STATUS
- ☐ SITE PLAN REVIEW
- ☒ DEP REVIEW
- ☐ PLANNING BOARD
- ☐ SKETCH PLAN
- ☐ FOR CONSTRUCTION

5-11-18

Drawing Name:
COVER/INDEX/VICINITY PLAN

Project Name:
PROPOSED CAPISIC MEADOWS SUBDIVISION
130 BANCROFT STREET, PORTLAND, MAINE 04102

Owner/Applicant:
WB GROUP, INC
130 BANCROFT STREET, PORTLAND, MAINE 04102

STATE OF MAINE – ANTHONY P. PANCIOCCO JR. – No. 10941 – REGISTERED PROFESSIONAL ENGINEER
5-11-18

SURVEYING • ENGINEERING • LAND PLANNING
Northeast Civil Solutions
INCORPORATED
381 PAYNE ROAD, SCARBOROUGH, MAINE 04074
tel 207.883.1000 fax 207.883.1001 e-mail / website info@northeastcivilsolutions.com www.northeastcivilsolutions.com

0 40' 80' 160'

E:\LAND PROJECT\41000\41041 - WAGNER-PORTLAND\PLANSET\41041-COVER.DWG

VICINITY MAP
N.T.S.

LEGEND

- #5 REBAR WITH PLASTIC CAP SET ON FEBRUARY 23, 2017
- FOUND IRON (SIZE & TYPE AS NOTED)
- UTILITY POLE (NUMBER AS NOTED)
- GUY WIRE ANCHOR
- SEWER MANHOLE
- FOUND DECIDUOUS TREE (SIZE & TYPE AS NOTED)
- FOUND CONIFEROUS TREE (SIZE & TYPE AS NOTED)
- TREE LINE (APPROXIMATE)
- BOUNDARY LINE
- EASEMENT LINE
- EDGE OF PAVEMENT
- RIGHT–OF–WAY LINE
- ABUTTER LINE
- BUILDING SETBACK
- OHU — OVERHEAD UTILITY
- N/F — NOW OR FORMERLY OWNED BY
- 1234/567 — DEED BOOK AND PAGE (CCRD)
- 12–34 — TAX MAP–LOT
- (123.45') — PARENTHESIS DENOTE RECORD DATA FROM DEEDS
- 22 — LOT NUMBERS FROM REFERENCED PLANS

NOTES

1. RECORD OWNERS OF THE PARCELS SURVEYED ARE DESCRIBED IN THE FOLLOWING DEEDS RECORDED IN THE CUMBERLAND COUNTY REGISTRY OF DEEDS:
   a. FROM EDWARD C. BROOKS & ROSE MARIE BROOKS TO KARI A. DOIRON & KENNETH J. DOIRON, DATED MARCH 30, 2012 AND RECORDED IN DEED BOOK 29467, PAGE 255 (PARCEL 193–E–039).
   b. FROM DIANE E. HERRICK TO PAUL WAGNER, DATED MARCH 23, 2010 AND RECORDED IN DEED BOOK 27668, PAGE 230 (PARCEL 193–E–026 & 040).
   c. FROM THE ESTATE OF STUART HERRICK, JR. TO JOSHUA WAGNER, DATED AUGUST 23, 2010 AND RECORDED IN DEED BOOK 28027, PAGE 268 (PARCEL 193–E–019).
2. THE PARCELS SURVEYED ARE IDENTIFIED ON THE CITY/TOWN OF PORTLAND TAX ASSESSOR'S MAP 193, BLOCK E, PARCELS 19, 26, 39 & 40.
3. THE BEARINGS SHOWN ON THIS PLAN ARE BASED ON MAINE STATE COORDINATE SYSTEM, WEST ZONE, 1801, GRID NORTH.
4. REFERENCE IS MADE TO THE FOLLOWING PLANS:
   a. "PLAN OF PROPERTY, 130 BANCROFT STREET, PORTLAND, MAINE", BY TITCOMB ASSOCIATES, DATED 8/30/2008, RECORDED IN PLAN BOOK 210, PAGE 228.
   b. "PLAN OF PROPERTY, 130 BANCROFT STREET, PORTLAND, MAINE", BY TITCOMB ASSOCIATES, DATED 8/13/2008, RECORDED IN PLAN BOOK 208, PAGE 370.
   c. "PLAN OF EMERSON WOODS, PORTLAND, MAINE", BY ROBERT P. TITCOMB, DATED 4/05/1973, RECORDED IN PLAN BOOK 94, PAGE 19.
   d. "PLAN OF EMERSON WOODS, PORTLAND, MAINE", BY ROBERT P. TITCOMB, DATED 12/20/1972, RECORDED IN PLAN BOOK 93, PAGE 42.
   e. "PLAN OF PROPERTY IN PORTLAND, MAINE MADE FOR CHARLOTTE L.F. CHENEY", BY H.I. & E.C. JORDAN, DATED 10/05/1979, RECORDED IN PLAN BOOK 125, PAGE 8,
   f. "1ST AMENDED SUBDIVISION PLAN OF REDLON PARK SUBDIVISION", BY SEBAGO TECHNICS, DATED 4/11/2016, RECORDED IN PLAN BOOK 216, PAGE 139.
   g. "PLANNED RESIDENTIAL UNIT DEVELOPMENT PLAN AND SUBDIVISION PLAN, REDLON PARK, REDLON ROAD, PORTLAND, MAINE" BY PINKHAM & GREER, DATED 2/27/1997, RECORDED IN PLAN BOOK 197, PAGE 493.
   h. "RIGHT–OF–WAY MAP, STATE HIGHWAY NO. 17, FEDERAL AID PROJECT NO. M–0614(2)", BY STATE OF MAINE DEPARTMENT OF TRANSPORTATION, DATED 4/1988, D.O.T. FILE NO. 3–364.
   j. MULTIPLE STREET LINE RECORDS PROVIDED BY THE CITY OF PORTLAND PUBLIC WORKS.
   k. PLAN OF BRIGHTON, PORTLAND, MAINE MADE FOR GEORGE T. EDWARDS, BY CLIFFORD C. LEGROW, DATED AUGUST, 1902, RECORDED IN PLAN BOOK 11, PAGE 109.
5. THE WIDTH OF BANCROFT STREET IS 50' BASED ON CITY OF PORTLAND STREET LINE RECORDS. THE LAYOUT OF THE RIGHT–OF–WAY LIMITS IS BASED ON SAID STREET LINE SHEETS AND MONUMENTATION FOUND.
6. THE PARCEL SURVEYED IS LOCATED IN THE R–3 ZONE/DISTRICT. PORTIONS OF BULK & SPACE REQUIREMENTS ARE AS FOLLOWS:
   MINIMUM LOT AREA = 6,500 S.F.
   MINIMUM FRONTAGE = 50'
   SETBACKS:
   FRONT = 25'
   SIDE = 8' MINIMUM
   1 & 1–1/2 STORY = 8'
   2 STORY = 14'
   3 STORY = 16'
   REAR = 25'
7. OTHER MUNICIPAL AND STATE OVERLAY ZONES MAY EXIST AND APPLY. BEFORE PROCEEDING ON ANY PROJECT WE RECOMMEND VERIFYING CURRENT ZONE AND ALL APPLICABLE SETBACKS AND RESTRICTIONS WITH THE APPROPRIATE AGENCIES.
8. ELEVATIONS AND CONTOURS ARE BASED ON CITY OF PORTLAND DATUM CALCULATED BY RTK (NAVD 1988 DATUM) AND ADDING 0.8' (DIFFERENCE BETWEEN NAVD 1988 AND NGVD 1929 IN PORTLAND) TO GET TO CITY DATUM. SEE PLAN FOR TBM DESCRIPTION.
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. WETLANDS SHOWN WERE DELINEATED BY LONGVIEW PARTNERS, LLC, JANUARY, 2017 AND FIELD LOCATED BY NCS. MAINE DEPARTMENT OF ENVIRONMENTAL PROTECTION PROVIDED A FIELD DETERMINATION THAT NO STREAMS EXIST ON THE SITE.

Revision:	By:	Date:	Change:
2	JAP	2/23/17	REVISE TO REMOVE 193–E–025 FROM PROJECT
1	MAC	2/23/17	ADDED SET PINS

PROJECT: 41041	DRAWING NAME: 41041.dwg		
ISSUED: FEBRUARY 10, 2017	SCALE: 1"=30'	FB # 420	DRAWN BY: JAP
FIELDED BY: JAP / MAC	FIELD DATE: 1/10/2017		CHECKED BY: TFM

Drawing Name and Location:

BOUNDARY & TOPOGRAPHIC SURVEY
130 & 144 BANCROFT STREET, PORTLAND, MAINE

Owners:

JOSHUA WAGNER (193–E–019)
130 BANCROFT STREET, PORTLAND, MAINE 04102
PAUL WAGNER (193–E–026 & 040)
68 WOLCOTT STREET, PORTLAND, MAINE 04102
KARI DOIRON & KENNETH J. DOIRON (193–E–039)
144 BANCROFT STREET, PORTLAND, MAINE 04102

Prepared For:

JOSH WAGNER

SURVEYING • ENGINEERING • LAND PLANNING
Northeast Civil Solutions
INCORPORATED
381 PAYNE ROAD, SCARBOROUGH, MAINE 04074
tel 207.883.1000 800.882.2227 fax 207.883.1001 e–mail / website info@northeastcivilsolutions.com www.northeastcivilsolutions.com

0 30' 60' 120'

STAMP AND SIGNATURE

TROY F. McDONALD
MAINE PROFESSIONAL LAND SURVEYOR No. 2080
5/01/2018
DATE

STATE OF MAINE TROY F. McDONALD #2080 PROFESSIONAL LAND SURVEYOR

E:\Land Projects\41000\41041–Wagner–Portland\dwg\40041.dwg

VICINITY MAP
N.T.S.

SUBDIVISION NOTES

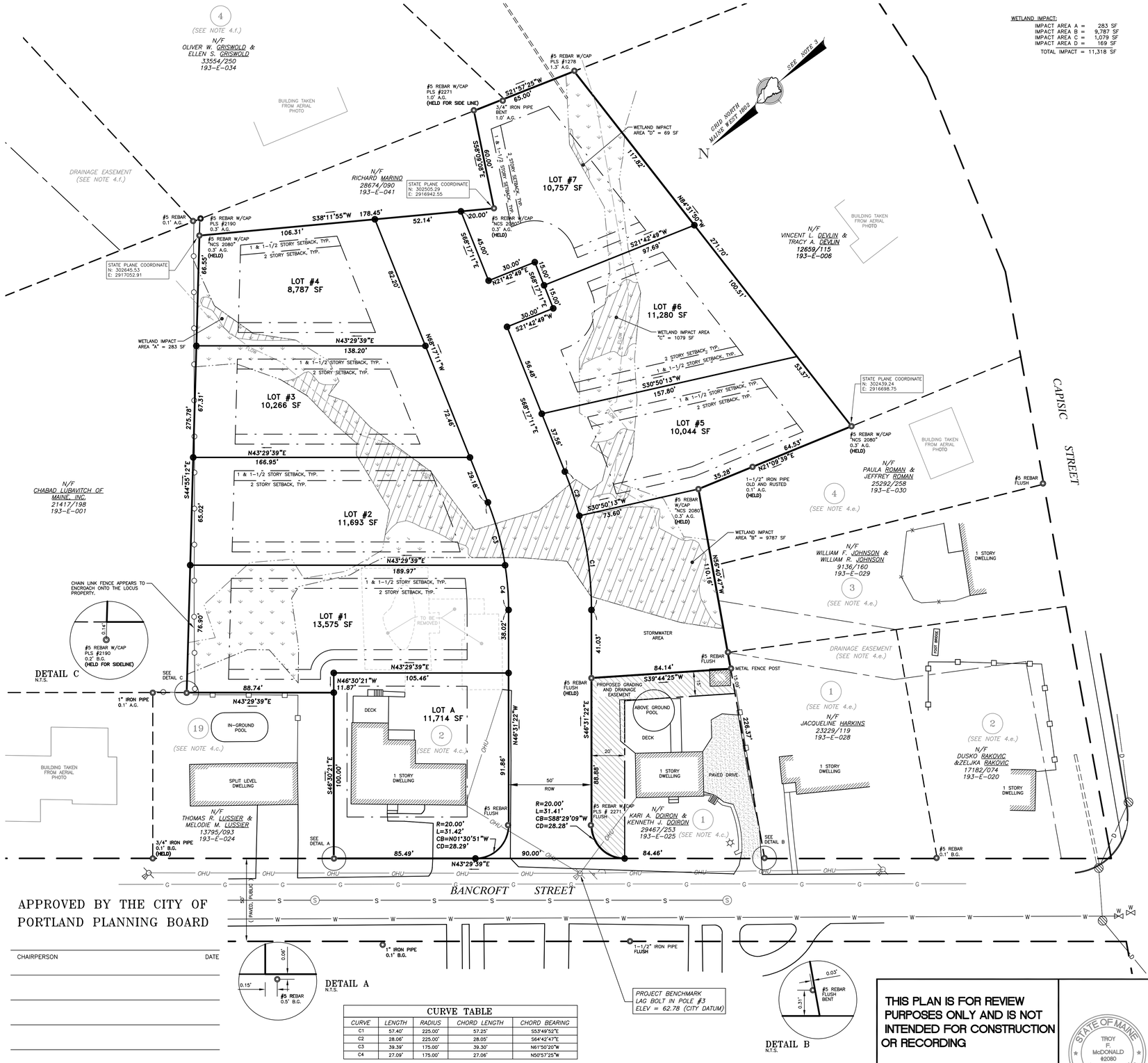
S-1. DEVELOPER:

S-2. SURVEYING / ENGINEERING:
NORTHEAST CIVIL SOLUTIONS, INC.
381 PAYNE ROAD
SCARBOROUGH, MAINE 04074

S-3. WETLAND DELINEATION:
LONGVIEW PARTNERS, LLC
6 SECOND STREET
BUXTON, MAINE 04093

S-4. THE SUBJECT PARCEL IS LOCATED IN R-3 ZONE. PORTIONS OF BULK & SPACE REQUIREMENTS ARE AS FOLLOWS:
MINIMUM LOT AREA = 6,500 S.F.
MINIMUM LOT FRONTAGE = 50'
FRONT SETBACK = 25'
REAR SETBACK = 25'
SIDE SETBACK = 8' MINIMUM
1 & 1-1/2 STORY = 8'
2 STORY = 14'
3 STORY = 16'

S-5. ELEVATIONS AND CONTOURS ARE BASED ON CITY OF PORTLAND DATUM. SEE PLAN FOR TBM DESCRIPTION.



CURVE TABLE

CURVE	LENGTH	RADIUS	CHORD LENGTH	CHORD BEARING
C1	57.40'	225.00'	57.25'	S53°49'52"E
C2	28.06'	225.00'	28.05'	S64°42'47"E
C3	39.39'	175.00'	39.30'	N61°50'20"W
C4	27.09'	175.00'	27.06'	N50°57'25"W

APPROVED BY THE CITY OF PORTLAND PLANNING BOARD

CHAIRPERSON DATE

THIS PLAN IS FOR REVIEW PURPOSES ONLY AND IS NOT INTENDED FOR CONSTRUCTION OR RECORDING

STATE OF MAINE
TROY F. McDONALD
#2080
PROFESSIONAL
LAND SURVEYOR
5/9/2018

LEGEND

- #5 REBAR WITH PLASTIC CAP (PROPOSED)
- SET GRANITE MONUMENT WITH PLASTIC CAP (PROPOSED)
  (PROPOSED MONUMENTATION SHOWN ON THIS SURVEY PLAT MAY OR MAY NOT BE SET BY NCS, INC. AND IF SO WILL BE DONE UPON CLIENT AUTHORIZATION)
- FOUND IRON (SIZE & TYPE AS NOTED)
- UTILITY POLE (NUMBER AS NOTED)
- GUY WIRE ANCHOR
- TREE LINE (APPROXIMATE)
- BOUNDARY LINE
- EASEMENT LINE
- EDGE OF PAVEMENT
- RIGHT-OF-WAY LINE
- ABUTTER LINE
- BUILDING SETBACK
- OHU — OVERHEAD UTILITY
- N/F — NOW OR FORMERLY OWNED BY
- 1234/567 — DEED BOOK AND PAGE (CCRD)
- 12-34 — TAX MAP-LOT
- PARENTHESIS DENOTE RECORD DATA

BOUNDARY NOTES

1. RECORD OWNERS OF THE PARCELS SURVEYED ARE DESCRIBED IN THE FOLLOWING DEEDS RECORDED IN THE CUMBERLAND COUNTY REGISTRY OF DEEDS:
   a. FROM EDWARD C. BROOKS & ROSE MARIE BROOKS TO KARI A. DOIRON & KENNETH J. DOIRON, DATED MARCH 30, 2012 AND RECORDED IN DEED BOOK 29467, PAGE 255 (PARCEL 193-E-039).
   b. FROM DIANE E. HERRICK TO PAUL WAGNER, DATED MARCH 23, 2010 AND RECORDED IN DEED BOOK 27668, PAGE 230 (PARCEL 193-E-026 & 040).
   c. FROM THE ESTATE OF STUART HERRICK, JR. TO JOSHUA WAGNER, DATED AUGUST 23, 2010 AND RECORDED IN DEED BOOK 28027, PAGE 268 (PARCEL 193-E-019).
2. THE PARCELS SURVEYED ARE IDENTIFIED ON THE CITY/TOWN OF PORTLAND TAX ASSESSOR'S MAP 193, BLOCK E, PARCELS 19, 26, 39 & 40.
3. THE BEARINGS SHOWN ON THIS PLAN ARE BASED ON MAINE STATE COORDINATE SYSTEM, WEST ZONE, 1801, GRID NORTH.
4. REFERENCE IS MADE TO THE FOLLOWING PLANS:
   a. "PLAN OF PROPERTY, 130 BANCROFT STREET, PORTLAND, MAINE", BY TITCOMB ASSOCIATES, DATED 8/30/2008, RECORDED IN PLAN BOOK 210, PAGE 228.
   b. "PLAN OF PROPERTY, 130 BANCROFT STREET, PORTLAND, MAINE", BY TITCOMB ASSOCIATES, DATED 8/13/2008, RECORDED IN PLAN BOOK 208, PAGE 370.
   c. "PLAN OF EMERSON WOODS, PORTLAND, MAINE", BY ROBERT P. TITCOMB, DATED 4/05/1973, RECORDED IN PLAN BOOK 94, PAGE 19.
   d. "PLAN OF EMERSON WOODS, PORTLAND, MAINE", BY ROBERT P. TITCOMB, DATED 12/20/1972, RECORDED IN PLAN BOOK 93, PAGE 42.
   e. "PLAN OF PROPERTY IN PORTLAND, MAINE MADE FOR CHARLOTTE L.F. CHENEY", BY H.I. & E.C. JORDAN, DATED 10/05/1979, RECORDED IN PLAN BOOK 125, PAGE 8,
   f. "1ST AMENDED SUBDIVISION PLAN OF REDLON PARK SUBDIVISION", BY SEBAGO TECHNICS, DATED 4/11/2016, RECORDED IN PLAN BOOK 216, PAGE 139.
   g. "PLANNED RESIDENTIAL UNIT DEVELOPMENT PLAN AND SUBDIVISION PLAN, REDLON PARK, REDLON ROAD, PORTLAND, MAINE" BY PINKHAM & GREER, DATED 2/27/1997, RECORDED IN PLAN BOOK 197, PAGE 493.
   h. "RIGHT-OF-WAY MAP, STATE HIGHWAY NO. 17, FEDERAL AID PROJECT NO. M-0614(2)", BY STATE OF MAINE DEPARTMENT OF TRANSPORTATION, DATED 4/1988, D.O.T. FILE NO. 3-364.
   j. MULTIPLE STREET LINE RECORDS PROVIDED BY THE CITY OF PORTLAND PUBLIC WORKS.
   k. PLAN OF BRIGHTON, PORTLAND, MAINE MADE FOR GEORGE T. EDWARDS, BY CLIFFORD C. LEGROW, DATED AUGUST, 1902, RECORDED IN PLAN BOOK 11, PAGE 109.
5. THE WIDTH OF BANCROFT STREET IS 50' BASED ON CITY OF PORTLAND STREET LINE RECORDS. THE LAYOUT OF THE RIGHT-OF-WAY LIMITS IS BASED ON SAID STREET LINE SHEETS AND MONUMENTATION FOUND.
6. ELEVATIONS AND CONTOURS ARE BASED ON CITY OF PORTLAND DATUM CALCULATED BY RTK (NAVD 1988 DATUM) AND ADDING 0.8' (DIFFERENCE BETWEEN NAVD 1988 AND NGVD 1929 IN PORTLAND) TO GET TO CITY DATUM. SEE PLAN FOR TBM DESCRIPTION.
7. 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.
8. WETLANDS SHOWN WERE DELINEATED BY LONGVIEW PARTNERS, LLC, JANUARY, 2017 AND FIELD LOCATED BY NCS. MAINE DEPARTMENT OF ENVIRONMENTAL PROTECTION PROVIDED A FIELD DETERMINATION THAT NO STREAMS EXIST ON THE SITE.

Revision:	By:	Date:	Change:

PROJECT: 41041	DRAWING NAME: 41041 Subdivision.dwg		
ISSUED: MAY 1, 2018	SCALE: 1"=30'	FB # 420	DRAWN BY: JAP
FIELDED BY: JAP / MAC	FIELD DATE: 1/10/2017		CHECKED BY: TFM

Drawing Name and Location:
SUBDIVISION PLAN
130 & 144 BANCROFT STREET, PORTLAND, MAINE

Owners:
JOSHUA WAGNER (193-E-019)
130 BANCROFT STREET, PORTLAND, MAINE 04102
PAUL WAGNER (193-E-026 & 040)
68 WOLCOTT STREET, PORTLAND, MAINE 04102
KARI DOIRON & KENNETH J. DOIRON (193-E-039)
144 BANCROFT STREET, PORTLAND, MAINE 04102

Prepared For:
JOSH WAGNER

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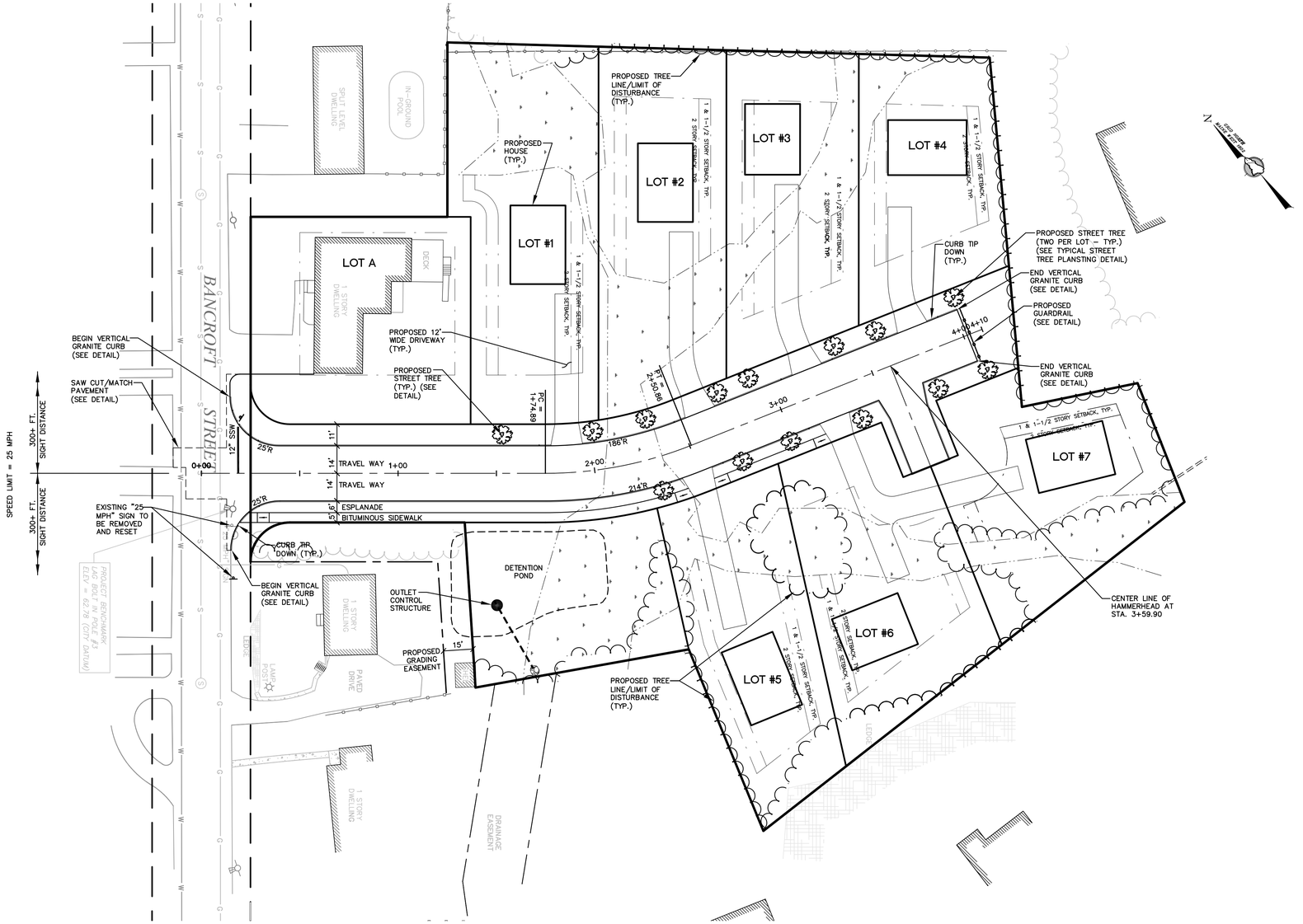

LEGEND

- BOUNDARY LINE
- EDGE OF PAVEMENT
- RIGHT-OF-WAY LINE
- ABUTTER
- EXISITNG EASEMENT
- BUILDING SETBACK
- EXISTING UTILITY POLE
- OHU — EXISTING OVERHEAD UTILITY
- EXISTING HYDRANT
- EXISTING HYDRANT
- W — W — EXISTING WATER LINE
- EXISTING SEWER MANHOLE
- S — S — EXISTING WATER LINE
- EXISTING TREE
- EXISTING TREE LINE
- WETLAND

THIS PLAN IS FOR REVIEW PURPOSES ONLY AND IS NOT INTENDED FOR CONSTRUCTION OR RECORDING

Revision:	By:	Date:	Change:

PROJECT NUMBER: 41041 | ACAD FILE: 41041-SITE.DWG | SCALE: 1" = 30' | DATE: MAY 1, 2018

Drawing Name:
SITE LAYOUT PLAN

Project Name:
PROPOSED CAPISIC MEADOWS SUBDIVISION
130 BANCROFT STREET, PORTLAND, MAINE 04102

Owner/Applicant:
WB GROUP, INC
130 BANCROFT STREET, PORTLAND, MAINE 04102

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SHEET 15 OF 15

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LEGEND

- BOUNDARY LINE
- EDGE OF PAVEMENT
- RIGHT-OF-WAY LINE
- ABUTTER
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- BUILDING SETBACK
- EXISTING UTILITY POLE
- OHU — EXISTING OVERHEAD UTILITY
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- EXISTING HYDRANT
- W — W — EXISTING WATER LINE
- S — EXISTING SEWER MANHOLE
- S — S — EXISTING WATER LINE
- EXISTING TREE
- EXISTING TREE LINE
- WETLAND
- 59 — EXISTING CONTOUR
- PROPOSED TREE LINE
- PROPOSED DRAIN LINE
- PROPOSED OUTLET CONTROL STRUCTURE
- PROPOSED GRADING & DRAINAGE EASEMENT
- WETLAND IMPACT
- 48 — PROPOSED CONTOUR

NOTES

1. WETLAND IMPACT:
   - IMPACT AREA A = 242 SF
   - IMPACT AREA B = 9,408 SF
   - IMPACT AREA C = 1,018 SF
   - IMPACT AREA D = 73 SF
   - TOTAL IMPACT = 10,741 SF
2. ALL PROPOSED HOUSES THAT HAVE BASEMENTS SHOULD INCLUDE PROVISIONS FOR A SUMP PUMP, AND SUMP PUMP DISCHARGE WITH BACK-FLOW PREVENTION.

PIPE SCHEDULE				
PIPE	PIPE DIAMETER	PIPE LENGTH	PIPE SLOPE (FT/FT)	TYPE
SD-1	24"	51'	0.0059	CORRUGATED HDPE (SMOOTH INTERIOR)
SD-2	24"	45'	0.0056	CORRUGATED HDPE (SMOOTH INTERIOR)
SD-3	15"	80'	0.0063	CORRUGATED HDPE (SMOOTH INTERIOR)
SD-4	18"	85'	0.006	CORRUGATED HDPE (SMOOTH INTERIOR)
SD-5	18"	72'	0.007	CORRUGATED HDPE (SMOOTH INTERIOR)
SD-6	15"	32'	0.031	CORRUGATED HDPE (SMOOTH INTERIOR)
SD-7	15"	38'	0.013	CORRUGATED HDPE (SMOOTH INTERIOR)
SD-8	15"	35'	0.014	CORRUGATED HDPE (SMOOTH INTERIOR)

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Revision:	By:	Date:	Change:
2	SMA	5/11/18	SUBMITTED FOR PRELIMINARY SITE PLAN/SUBDIVISION REVIEW
1	SMA	5/4/18	SUBMITTED FOR MDEP TIER 1 REVIEW

PROJECT NUMBER: 41041 | ACAD FILE: 41041-GRADING.DWG | SCALE: 1" = 30' | DATE: MAY 1, 2018

Drawing Name:
GRADING & DRAINAGE PLAN

Project Name:
PROPOSED CAPISIC MEADOWS SUBDIVISION
130 BANCROFT STREET, PORTLAND, MAINE 04102

Owner/Applicant:
WB GROUP, INC
130 BANCROFT STREET, PORTLAND, MAINE 04102

STATE OF MAINE — ANTHONY P. PANCIOCCO JR. — No. 10941 — REGISTERED PROFESSIONAL ENGINEER — 5-11-18

SHEET 5 OF 14

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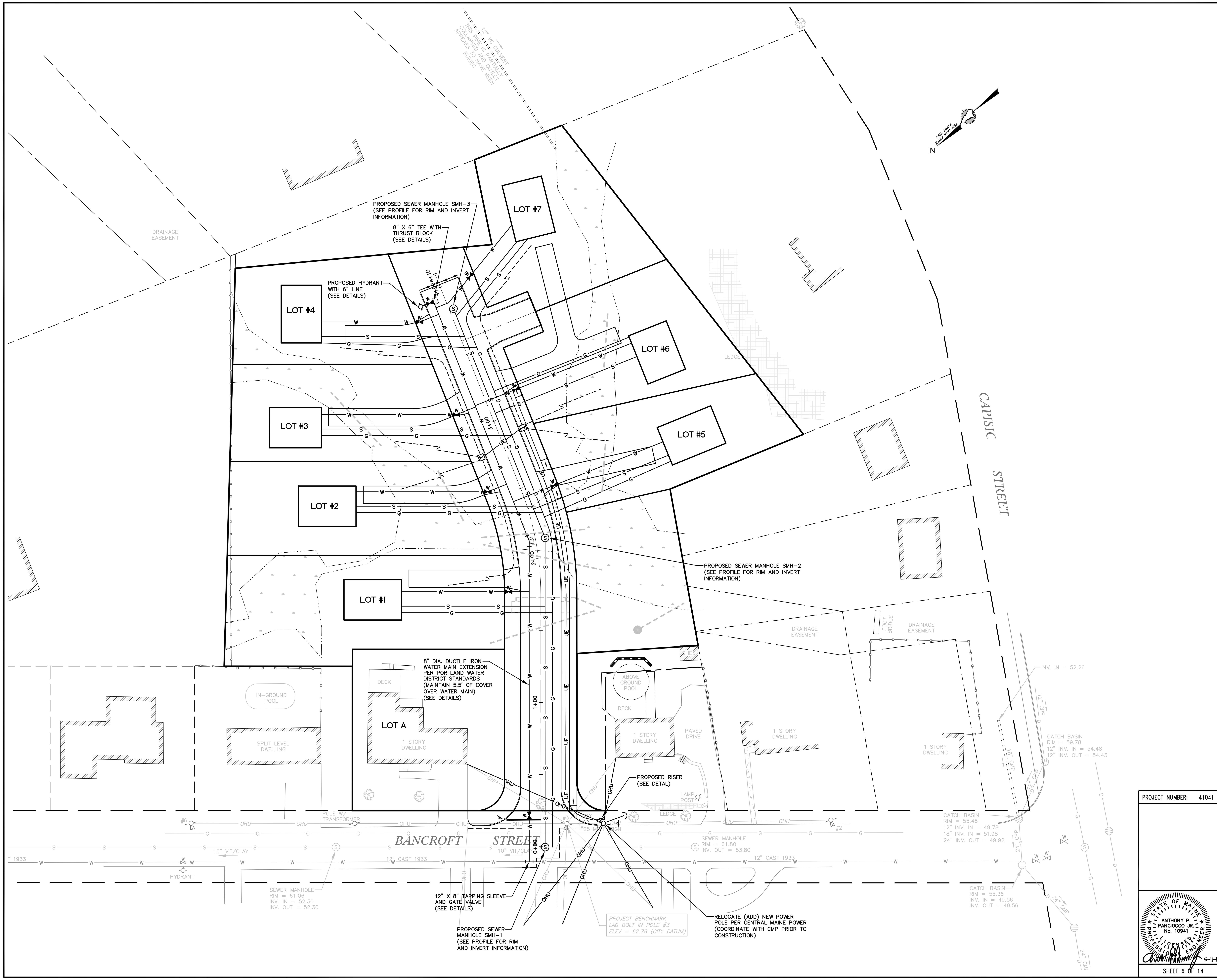

LEGEND

- BOUNDARY LINE
- EDGE OF PAVEMENT
- RIGHT-OF-WAY LINE
- ABUTTER
- EXISTING EASEMENT
- BUILDING SETBACK
- EXISTING UTILITY POLE
- EXISTING OVERHEAD UTILITY
- EXISTING HYDRANT
- EXISTING HYDRANT
- EXISTING WATER LINE
- EXISTING SEWER MANHOLE
- EXISTING WATER LINE
- EXISTING TREE
- EXISTING TREE LINE
- WETLAND
- PROPOSED WATER LINE
- PROPOSED SEWER LINE
- PROPOSED DRAIN LINE
- PROPOSED OVERHEAD UTILITIES
- PROPOSED UNDERGROUND UTILITIES
- PROPOSED GAS LINE
- PROPOSED OUTLET CONTROL STRUCTURE

CONSTRUCTION NOTES

1. ALL EXISTING UTILITY LOCATIONS SHOWN ARE APPROXIMATE AND HAVE BEEN DETERMINED BY SURFACE EVIDENCE AND/OR PREVIOUSLY GENERATED PLANS. NO GUARANTEE IS MADE THAT ALL UTILITIES ARE SHOWN OR WILL BE FOUND IN LOCATIONS INDICATED. THIS INFORMATION IS PROVIDED FOR REFERENCE AND THE CONTRACTOR SHALL VERIFY LOCATION OF ALL UTILITIES AND POINTS OF CONNECTION IN THE FIELD. CONTRACTOR SHALL BE RESPONSIBLE FOR REPAIR AND RESTORATION OF ALL UTILITIES DISTURBED DURING CONSTRUCTION AT NO EXTRA EXPENSE TO THE OWNER.
2. CONTRACTOR SHALL VISIT THE SITE AND FAMILIARIZE HIM OR HERSELF WITH ALL CONDITIONS AFFECTING THE PROPOSED WORK AND SHALL MAKE PROVISIONS AS TO THE COST THEREOF. CONTRACTOR SHALL BE RESPONSIBLE FOR FAMILIARIZING HIM OR HERSELF WITH ALL CONTRACT DOCUMENTS, FIELD CONDITIONS AND DIMENSIONS AND CONFORMING THAT THE WORK MAY BE ACCOMPLISHED AS SHOWN PRIOR TO PROCEEDING WITH CONSTRUCTION. ANY DISCREPANCIES SHALL BE BROUGHT TO THE ATTENTION OF THE ENGINEER PRIOR TO THE COMMENCEMENT OF WORK.
3. CONTRACTOR SHALL NOTIFY ENGINEER OF ALL PRODUCTS OR ITEMS NOTED AS "EXISTING" WHICH ARE NOT FOUND IN THE FIELD.
4. ALL SUBSURFACE UTILITY LINES, SHOWN HEREON, ARE BASED SOLELY ON THE FIELD LOCATION OF VISIBLE STRUCTURES, SMH'S, CB'S, HYDRANTS, ETC. IN CONJUNCTION WITH DESIGN AND OR AS-BUILT PLANS SUPPLIED TO NORTHEAST CIVIL SOLUTIONS BY OTHERS. PRIOR TO ANY CONSTRUCTION, EXCAVATION, TEST BORINGS, DRILLING ETC. DIG SAFE MUST BE NOTIFIED AND A SITE IDENTIFICATION NUMBER, ALONG WITH A SAFE TO DIG DATE OBTAINED. THE SITE CONTRACTOR SHALL BE RESPONSIBLE FOR FIELD VERIFYING THE LOCATION, DEPTH AND MATERIAL OF ALL SUBSURFACE UTILITY LINES SHOWN HEREON, AND ON ANY AND ALL OTHERS LOCATED ON SITE WITHIN THE CONSTRUCTION AREA. CONTACT DIG-SAFE (888) DIG-SAFE PRIOR TO ANY EXCAVATION WORK.
5. COORDINATE ALL ELECTRICAL WORK WITH CENTRAL MAINE POWER (CMP) PRIOR TO CONSTRUCTION.
6. ALL WATER LINE WORK SHALL MEET PORTLAND WATER DISTRICT (PWD) STANDARDS. COORDINATE ALL WORK WITH THE DISTRICT PRIOR TO CONSTRUCTION.
7. ALL SEWER LINE WORK SHALL MEET CITY OF PORTLAND PUBLIC WORKS DEPARTMENT STANDARDS. COORDINATE ALL WORK WITH THE CITY PRIOR TO CONSTRUCTION.

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Revision:	By:	Date:	Change:
2	SMA	5/11/18	SUBMITTED FOR PRELIMINARY SITE PLAN/SUBDIVISION REVIEW
1	SMA	5/4/18	SUBMITTED FOR MDEP TIER 1 REVIEW

PROJECT NUMBER: 41041	ACAD FILE: 41041-UTILITY.DWG	SCALE: 1" = 30'	DATE: MAY 1, 2018

Drawing Name:

UTILITY PLAN

Project Name:

PROPOSED CAPISIC MEADOWS SUBDIVISION

130 BANCROFT STREET, PORTLAND, MAINE 04102

Owner/Applicant:

WB GROUP, INC

130 BANCROFT STREET, PORTLAND, MAINE 04102

STATE OF MAINE ANTHONY P. PANCIOCCO JR. No. 10941 LICENSED PROFESSIONAL ENGINEER 5-11-18

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Northeast Civil Solutions INCORPORATED

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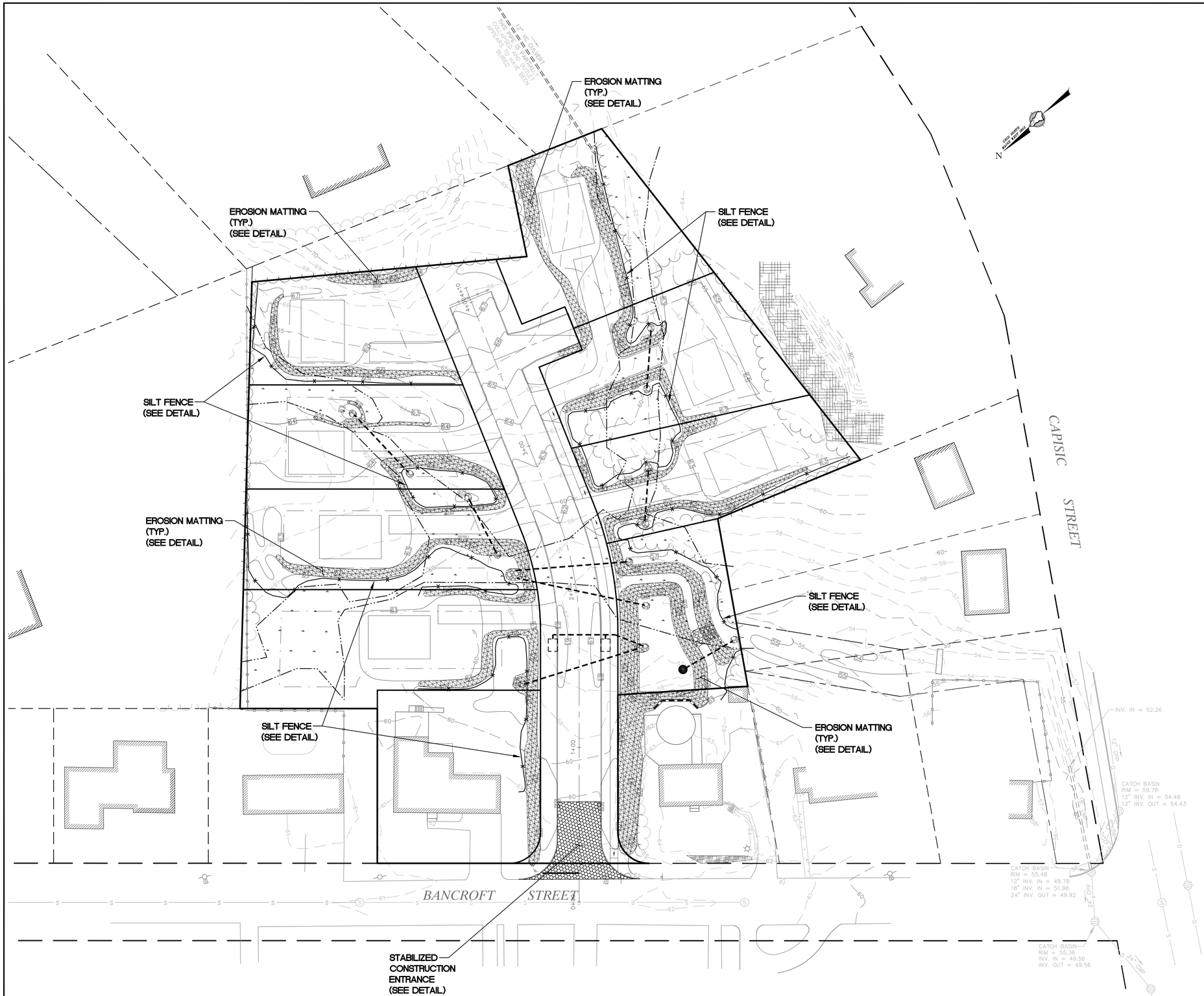

LEGEND

- MULCH BERM/EROSION CONTROL MIX OR SILT FENCE
- STABILIZED CONSTRUCTION ENTRANCE
- EROSION CONTROL MATTING

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1	SMA	5/4/18	SUBMITTED FOR MDEP TIER 1 REVIEW

PROJECT NUMBER: 41041 | ACAD FILE: 41041-EROSION.DWG | SCALE: 1" = 30' | DATE: MAY 1, 2018

Drawing Name:
EROSION & SEDIMENTATION CONTROL PLAN

Project Name:
PROPOSED CAPISIC MEADOWS SUBDIVISION
130 BANCROFT STREET, PORTLAND, MAINE 04102

Owner/Applicant:
WB GROUP, INC
130 BANCROFT STREET, PORTLAND, MAINE 04102

STATE OF MAINE — ANTHONY P. PANCIOCCO JR. No. 10941 — REGISTERED PROFESSIONAL ENGINEER — 5-11-18

SHEET 7 OF 14

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EROSION AND SEDIMENTATION CONTROL PLAN NOTES

SEDIMENTATION AND EROSION FOR THIS PROJECT IS BASED UPON SOUND CONSERVATION PRACTICES, AND ADHERES TO THE STANDARDS DETAILED IN MAINE EROSION AND SEDIMENT CONTROL BEST MANAGEMENT PRACTICES (BMP) BY THE MAINE DEPARTMENT OF ENVIRONMENTAL PROTECTION, DATED OCTOBER 2016. THE CONTRACTOR SHALL MAKE HIMSELF FAMILIAR WITH THE AFOREMENTIONED PUBLICATION AND COMPLY WITH THE PRACTICES PRESENTED THEREIN.

A PERSON WHO CONDUCTS, OR CAUSES TO BE CONDUCTED, AN ACTIVITY THAT INVOLVES FILLING, DISPLACING OR EXPOSING SOIL OR OTHER EARTHEN MATERIALS SHALL TAKE MEASURES TO PREVENT UNREASONABLE EROSION OF SOIL OR SEDIMENT BEYOND THE PROJECT SITE OR INTO A PROTECTED NATURAL RESOURCE AS DEFINED IN 38 M.R.S. §480–B. EROSION CONTROL MEASURES MUST BE IN PLACE BEFORE THE ACTIVITY BEGINS. MEASURES MUST REMAIN IN PLACE AND FUNCTIONAL UNTIL THE SITE IS PERMANENTLY STABILIZED. ADEQUATE AND TIMELY TEMPORARY AND PERMANENT STABILIZATION MEASURES MUST BE TAKEN.

1 EROSION AND SEDIMENTATION CONTROL

1.1 POLLUTION PREVENTION. MINIMIZE DISTURBED AREAS AND PROTECT NATURAL DOWNGRADIENT BUFFER AREAS TO THE EXTENT PRACTICABLE. CONTROL STORMWATER VOLUME AND VELOCITY WITHIN THE SITE TO MINIMIZE SOIL EROSION. MINIMIZE THE DISTURBANCE OF STEEP SLOPES. CONTROL STORMWATER DISCHARGES, INCLUDING BOTH PEAK FLOW RATES AND VOLUME, TO MINIMIZE EROSION AT OUTLETS. THE DISCHARGE MAY NOT RESULT IN EROSION OF ANY OPEN DRAINAGE CHANNELS, SWALES, STREAM CHANNELS OR STREAM BANKS, UPLAND, OR COASTAL OR FRESHWATER WETLANDS OFF THE PROJECT SITE. WHENEVER PRACTICABLE, NO DISTURBANCE ACTIVITIES SHOULD TAKE PLACE WITHIN 50 FEET OF ANY PROTECTED NATURAL RESOURCE. IF DISTURBANCE ACTIVITIES TAKE PLACE BETWEEN 30 FEET AND 50 FEET OF ANY PROTECTED NATURAL RESOURCE, AND STORMWATER DISCHARGES THROUGH THE DISTURBED AREAS TOWARD THE PROTECTED NATURAL RESOURCE, PERIMETER EROSION CONTROLS MUST BE DOUBLED. IF DISTURBANCE ACTIVITIES TAKE PLACE LESS THAN 30 FEET FROM ANY PROTECTED NATURAL RESOURCE, AND STORMWATER DISCHARGES THROUGH THE DISTURBED AREAS TOWARD THE PROTECTED NATURAL RESOURCE, PERIMETER EROSION CONTROLS MUST BE DOUBLED AND DISTURBED AREAS MUST BE TEMPORARILY OR PERMANENTLY STABILIZED WITHIN 7 DAYS.

1.2 SEDIMENT BARRIERS. PRIOR TO CONSTRUCTION, PROPERLY INSTALL SEDIMENT BARRIERS AT THE DOWNGRADIENT EDGE OF ANY AREA TO BE DISTURBED AND ADJACENT TO ANY DRAINAGE CHANNELS WITHIN THE DISTURBED AREA. SEDIMENT BARRIERS SHOULD BE INSTALLED DOWNGRADIENT OF SOIL OR SEDIMENT STOCKPILES AND STORMWATER PREVENTED FROM RUNNING ONTO THE STOCKPILE. MAINTAIN THE SEDIMENT BARRIERS BY REMOVING ACCUMULATED SEDIMENT, OR REMOVING AND REPLACING THE BARRIER, UNTIL THE DISTURBED AREA IS PERMANENTLY STABILIZED. WHERE A DISCHARGE TO A STORM DRAIN INLET OCCURS, IF THE STORM DRAIN CARRIES WATER DIRECTLY TO A SURFACE WATER AND YOU HAVE AUTHORITY TO ACCESS THE STORM DRAIN INLET, YOU MUST INSTALL AND MAINTAIN PROTECTION MEASURES THAT REMOVE SEDIMENT FROM THE DISCHARGE.

1.3 STABILIZED CONSTRUCTION ENTRANCE. PRIOR TO CONSTRUCTION, PROPERLY INSTALL A STABILIZED CONSTRUCTION ENTRANCE (SCE) AT ALL POINTS OF EGRESS FROM THE SITE. THE SCE IS A STABILIZED PAD OF AGGREGATE, UNDERLAIN BY A GEOTEXTILE FILTER FABRIC, USED TO PREVENT TRAFFIC FROM TRACKING MATERIAL AWAY FROM THE SITE ONTO PUBLIC ROWS. MAINTAIN THE SCE UNTIL ALL DISTURBED AREAS ARE STABILIZED.

1.4 TEMPORARY STABILIZATION. WITHIN 7 DAYS OF THE CESSATION OF CONSTRUCTION ACTIVITIES IN AN AREA THAT WILL NOT BE WORKED FOR MORE THAN 7 DAYS, STABILIZE ANY EXPOSED SOIL WITH MULCH, OR OTHER NON–ERODIBLE COVER. STABILIZE AREAS WITHIN 75 FEET OF A WETLAND OR WATERBODY WITHIN 48 HOURS OF THE INITIAL DISTURBANCE OF THE SOIL OR PRIOR TO ANY STORM EVENT, WHICHEVER COMES FIRST.

1.5 REMOVAL OF TEMPORARY MEASURES. REMOVE ANY TEMPORARY CONTROL MEASURES, SUCH AS SILT FENCE, WITHIN 30 DAYS AFTER PERMANENT STABILIZATION IS ATTAINED. REMOVE ANY ACCUMULATED SEDIMENTS AND STABILIZE.

1.6 PERMANENT STABILIZATION. IF THE AREA WILL NOT BE WORKED FOR MORE THAN ONE YEAR OR HAS BEEN BROUGHT TO FINAL GRADE, THEN PERMANENTLY STABILIZE THE AREA WITHIN 7 DAYS BY PLANTING VEGETATION, SEEDING, SOD, OR THROUGH THE USE OF PERMANENT MULCH, OR RIPRAP, OR ROAD SUB–BASE. IF USING VEGETATION FOR STABILIZATION, SELECT THE PROPER VEGETATION FOR THE LIGHT, MOISTURE, AND SOIL CONDITIONS; AMEND AREAS OF DISTURBED SUBSOILS WITH TOPSOIL, COMPOST, OR FERTILIZERS; PROTECT SEEDED AREAS WITH MULCH OR, IF NECESSARY, EROSION CONTROL BLANKETS; AND SCHEDULE SODDING, PLANTING, AND SEEDING SO TO AVOID DIE–OFF FROM SUMMER DROUGHT AND FALL FROSTS. NEWLY SEEDED OR SODDED AREAS MUST BE PROTECTED FROM VEHICLE TRAFFIC, EXCESSIVE PEDESTRIAN TRAFFIC, AND CONCENTRATED RUNOFF UNTIL THE VEGETATION IS WELL–ESTABLISHED WITH 90% COVER BY HEALTHY VEGETATION. IF NECESSARY, AREAS MUST BE REWORKED AND RESTABILIZED IF GERMINATION IS SPARSE, PLANT COVERAGE IS SPOTTY, OR TOPSOIL EROSION IS EVIDENT. ONE OR MORE OF THE FOLLOWING MAY APPLY TO A PARTICULAR SITE.

1.6.1 SEEDED AREAS. FOR SEEDED AREAS, PERMANENT STABILIZATION MEANS A 90% COVER OF THE DISTURBED AREA WITH MATURE, HEALTHY PLANTS WITH NO EVIDENCE OF WASHING OR RILLING OF THE TOPSOIL.

1.6.2 SODDED AREAS. FOR SODDED AREAS, PERMANENT STABILIZATION MEANS THE COMPLETE BINDING OF THE SOD ROOTS INTO THE UNDERLYING SOIL WITH NO SLUMPING OF THE SOD OR DIE–OFF.

1.6.3 PERMANENT MULCH. FOR MULCHED AREAS, PERMANENT MULCHING MEANS TOTAL COVERAGE OF THE EXPOSED AREA WITH AN APPROVED MULCH MATERIAL. EROSION CONTROL MIX MAY BE USED AS MULCH FOR PERMANENT STABILIZATION ACCORDING TO THE APPROVED APPLICATION RATES AND LIMITATIONS.

1.6.4 RIPRAP. 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 TO PREVENT SOIL MOVEMENT FROM BEHIND THE RIPRAP. STONE MUST BE SIZED APPROPRIATELY. IT IS RECOMMENDED THAT ANGULAR STONE BE USED.

1.6.5 AGRICULTURAL USE. FOR CONSTRUCTION PROJECTS ON LAND USED FOR AGRICULTURAL PURPOSES (E.G., PIPELINES ACROSS CROP LAND), PERMANENT STABILIZATION MAY BE ACCOMPLISHED BY RETURNING THE DISTURBED LAND TO AGRICULTURAL USE.

1.6.6 PAVED AREAS. FOR PAVED AREAS, PERMANENT STABILIZATION MEANS THE PLACEMENT OF THE COMPACTED GRAVEL SUBBASE IS COMPLETED, PROVIDED IT IS FREE OF FINE MATERIALS THAT MAY RUNOFF WITH A RAIN EVENT

1.6.7 DITCHES, CHANNELS, AND SWALES. FOR OPEN CHANNELS, PERMANENT STABILIZATION MEANS THE CHANNEL IS STABILIZED WITH A 90% COVER OF HEALTHY VEGETATION, WITH A WELL–GRADED RIPRAP LINING, TURF REINFORCEMENT MAT, OR WITH ANOTHER NON–EROSIVE LINING SUCH AS CONCRETE OR ASPHALT PAVEMENT. THERE MUST BE NO EVIDENCE OF SLUMPING OF THE CHANNEL LINING, UNDERCUTTING OF THE CHANNEL BANKS, OR DOWN–CUTTING OF THE CHANNEL.

1.7 WINTER CONSTRUCTION. "WINTER CONSTRUCTION" IS CONSTRUCTION ACTIVITY PERFORMED DURING THE PERIOD FROM NOVEMBER 1 THROUGH APRIL 15. IF DISTURBED AREAS ARE NOT STABILIZED WITH PERMANENT MEASURES BY NOVEMBER 1 OR NEW SOIL DISTURBANCE OCCURS AFTER NOVEMBER 1, BUT BEFORE APRIL 15, THEN THESE AREAS MUST BE PROTECTED AND RUNOFF FROM THEM MUST BE CONTROLLED BY ADDITIONAL MEASURES AND RESTRICTIONS

1.7.1 SITE STABILIZATION. FOR WINTER STABILIZATION, HAY MULCH IS APPLIED AT TWICE THE STANDARD TEMPORARY STABILIZATION RATE. AT THE END OF EACH CONSTRUCTION DAY, AREAS THAT HAVE BEEN BROUGHT TO FINAL GRADE MUST BE STABILIZED. MULCH MAY NOT BE SPREAD ON TOP OF SNOW.

1.7.2 SEDIMENT BARRIERS. ALL AREAS WITHIN 75 FEET OF A PROTECTED NATURAL RESOURCE (I.E. STREAM THREAD, ETC.) MUST BE PROTECTED WITH A DOUBLE ROW OF SEDIMENT BARRIERS.

1.7.3 DITCH. ALL VEGETATED DITCH LINES THAT HAVE NOT BEEN STABILIZED BY NOVEMBER 1, OR WILL BE WORKED DURING THE WINTER CONSTRUCTION PERIOD, MUST BE STABILIZED WITH AN APPROPRIATE STONE LINING BACKED BY AN APPROPRIATE GRAVEL BED OR GEOTEXTILE UNLESS SPECIFICALLY RELEASED FROM THIS STANDARD BY THE DEPARTMENT.

1.7.4 SLOPES. MULCH NETTING MUST BE USED TO ANCHOR MULCH ON ALL SLOPES GREATER THAN 8% UNLESS EROSION CONTROL BLANKETS OR EROSION CONTROL MIX IS BEING USED ON THESE SLOPES.

1.8 STORMWATER CHANNELS. DITCHES, SWALES, AND OTHER OPEN STORMWATER CHANNELS MUST BE DESIGNED, CONSTRUCTED, AND STABILIZED USING MEASURES THAT ACHIEVE LONG–TERM EROSION CONTROL. DITCHES, SWALES AND OTHER OPEN STORMWATER CHANNELS MUST BE SIZED TO HANDLE, AT A MINIMUM, THE EXPECTED VOLUME RUN–OFF. EACH CHANNEL SHOULD BE CONSTRUCTED IN SECTIONS SO THAT THE SECTION'S GRADING, SHAPING, AND INSTALLATION OF THE PERMANENT LINING CAN BE COMPLETED THE SAME DAY. IF A CHANNEL'S FINAL GRADING OR LINING INSTALLATION MUST BE DELAYED, THEN DIVERSION BERMS MUST BE USED TO DIVERT STORMWATER AWAY FROM THE CHANNEL, PROPERLY–SPACED CHECK DAMS MUST BE INSTALLED IN THE CHANNEL TO SLOW THE WATER VELOCITY, AND A TEMPORARY LINING INSTALLED ALONG THE CHANNEL TO PREVENT SCOURING. PERMANENT STABILIZATION FOR CHANNELS IS ADDRESSED UNDER SECTION 1.6.7 ABOVE.

1.8.1 THE CHANNEL SHOULD RECEIVE ADEQUATE ROUTINE MAINTENANCE TO MAINTAIN CAPACITY AND PREVENT OR CORRECT ANY EROSION OF THE CHANNEL'S BOTTOM OR SIDE SLOPES.

1.8.2 WHEN THE WATERSHED DRAINING TO A DITCH OR SWALE IS LESS THAN 1 ACRE OF TOTAL DRAINAGE AND LESS THAN ¼ ACRE OF IMPERVIOUS AREA, DIVERSION OF RUNOFF TO ADJACENT WOODED OR OTHERWISE VEGETATED BUFFER AREAS IS ENCOURAGED WHERE THE OPPORTUNITY EXISTS.

1.9 SEDIMENT BASINS. SEDIMENT BASINS MUST BE DESIGNED TO PROVIDE STORAGE FOR EITHER THE CALCULATED RUNOFF FROM A 2–YEAR, 24–HOUR STORM OR PROVIDE FOR 3,600 CUBIC FEET OF CAPACITY PER ACRE DRAINING TO THE BASIN. OUTLET STRUCTURES MUST DISCHARGE WATER FROM THE SURFACE OF THE BASIN WHENEVER POSSIBLE. EROSION CONTROLS AND VELOCITY DISSIPATION DEVICES MUST BE USED IF THE DISCHARGING WATERS ARE LIKELY TO CREATE EROSION. ACCUMULATED SEDIMENT MUST BE REMOVED AS NEEDED FROM THE BASIN TO MAINTAIN AT LEAST ½ OF THE DESIGN CAPACITY OF THE BASIN. THE USE OF CATIONIC TREATMENT CHEMICALS, SUCH AS POLYMERS, FLOCCULANTS, OR OTHER CHEMICALS THAT CONTAIN AN OVERALL POSITIVE CHARGE DESIGNED TO REDUCE TURBIDITY IN STORMWATER MUST RECEIVE PRIOR APPROVAL FROM THE DEPARTMENT. WHEN REQUESTING APPROVAL TO USE CATIONIC TREATMENT CHEMICALS, YOU MUST DESCRIBE APPROPRIATE CONTROLS AND IMPLEMENTATION PROCEDURES TO ENSURE THE USE WILL NOT LEAD TO A VIOLATION OF WATER QUALITY STANDARDS. IN ADDITION, YOU MUST SPECIFY THE TYPE(S) OF SOIL LIKELY TO BE TREATED ON THE SITE, CHEMICALS TO BE USED AND HOW THEY ARE TO BE APPLIED AND IN WHAT QUANTITY, ANY MANUFACTURER'S RECOMMENDATIONS, AND ANY TRAINING HAD BY PERSONNEL WHO WILL HANDLE AND APPLY THE CHEMICALS.

1.10 ROADS. GRAVEL AND PAVED ROADS MUST BE DESIGNED AND CONSTRUCTED WITH CROWNS OR OTHER MEASURES, SUCH AS WATER BARS, TO ENSURE THAT STORMWATER IS DELIVERED IMMEDIATELY TO ADJACENT STABLE DITCHES, VEGETATED BUFFER AREAS, CATCH BASIN INLETS, OR STREET GUTTERS.

1.11 CULVERTS. CULVERTS MUST BE SIZED TO AVOID UNINTENDED FLOODING OF UPSTREAM AREAS OR FREQUENT OVERTOPPING OF ROADWAYS. CULVERT INLETS MUST BE PROTECTED WITH APPROPRIATE MATERIALS FOR THE EXPECTED ENTRANCE VELOCITY, AND PROTECTION MUST EXTEND AT LEAST AS HIGH AS THE EXPECTED MAXIMUM ELEVATION OF STORAGE BEHIND THE CULVERT. CULVERT OUTLET DESIGN MUST INCORPORATE MEASURES, SUCH AS APRONS, TO PREVENT SCOUR OF THE STREAM CHANNEL. OUTLET PROTECTION MEASURES MUST BE DESIGNED TO STAY WITHIN THE CHANNEL LIMITS. THE DESIGN MUST TAKE ACCOUNT OF TAILWATER DEPTH.

1.12 PARKING AREAS. PARKING AREAS MUST BE CONSTRUCTED TO ENSURE RUNOFF IS DELIVERED TO ADJACENT SWALES, CATCH BASINS, CURB GUTTERS, OR BUFFER AREAS WITHOUT ERODING AREAS DOWNSLOPE. THE PARKING AREA'S SUBBASE COMPACTION AND GRADING MUST BE DONE TO ENSURE RUNOFF IS EVENLY DISTRIBUTED TO ADJACENT BUFFERS OR SIDE SLOPES. CATCH BASINS MUST BE LOCATED AND SET TO PROVIDE ENOUGH STORAGE DEPTH AT THE INLET TO ALLOW INFLOW OF PEAK RUNOFF RATES WITHOUT BY–PASS OF RUNOFF TO OTHER AREAS.

2 INSPECTION AND MAINTENANCE

2.1 DURING CONSTRUCTION. THE FOLLOWING STANDARDS MUST BE MET DURING CONSTRUCTION.

2.1.1 INSPECTION AND CORRECTIVE ACTION. INSPECT DISTURBED AND IMPERVIOUS AREAS, EROSION CONTROL MEASURES, MATERIALS STORAGE AREAS THAT ARE EXPOSED TO PRECIPITATION, AND LOCATIONS WHERE VEHICLES ENTER OR EXIT THE SITE. INSPECT THESE AREAS AT LEAST ONCE A WEEK AS WELL AS BEFORE AND WITHIN 24 HOURS AFTER A STORM EVENT (RAINFALL), AND PRIOR TO COMPLETING PERMANENT STABILIZATION MEASURES. A PERSON WITH KNOWLEDGE OF EROSION AND STORMWATER CONTROL, INCLUDING THE STANDARDS AND CONDITIONS IN THE PERMIT, SHALL CONDUCT THE INSPECTIONS.

2.1.2 MAINTENANCE. IF BEST MANAGEMENT PRACTICES (BMPS) NEED TO BE REPAIRED, THE REPAIR WORK SHOULD BE INITIATED UPON DISCOVERY OF THE PROBLEM BUT NO LATER THAN THE END OF THE NEXT WORKDAY. IF ADDITIONAL BMPS OR SIGNIFICANT REPAIR OF BMPS ARE NECESSARY, IMPLEMENTATION MUST BE COMPLETED WITHIN 7 CALENDAR DAYS AND PRIOR TO ANY STORM EVENT (RAINFALL). ALL MEASURES MUST BE MAINTAINED IN EFFECTIVE OPERATING CONDITION UNTIL AREAS ARE PERMANENTLY STABILIZED.

2.1.3 DOCUMENTATION. KEEP A LOG (REPORT) SUMMARIZING THE INSPECTIONS AND ANY CORRECTIVE ACTION TAKEN. THE LOG MUST INCLUDE THE NAME(S) AND QUALIFICATIONS OF THE PERSON MAKING THE INSPECTIONS, THE DATE(S) OF THE INSPECTIONS, AND MAJOR OBSERVATIONS ABOUT THE OPERATION AND MAINTENANCE OF EROSION AND SEDIMENTATION CONTROLS, MATERIALS STORAGE AREAS, AND VEHICLES ACCESS POINTS TO THE PARCEL. MAJOR OBSERVATIONS MUST INCLUDE BMPS THAT NEED MAINTENANCE, BMPS THAT FAILED TO OPERATE AS DESIGNED OR PROVED INADEQUATE FOR A PARTICULAR LOCATION, AND LOCATION(S) WHERE ADDITIONAL BMPS ARE NEEDED. FOR EACH BMP REQUIRING MAINTENANCE, BMP NEEDING REPLACEMENT, AND LOCATION NEEDING ADDITIONAL BMPS, NOTE IN THE LOG THE CORRECTIVE ACTION TAKEN AND WHEN IT WAS TAKEN. THE LOG MUST BE MADE ACCESSIBLE TO DEPARTMENT STAFF AND A COPY MUST BE PROVIDED UPON REQUEST. THE PERMITTEE SHALL RETAIN A COPY OF THE LOG FOR A PERIOD OF AT LEAST THREE YEARS FROM THE COMPLETION OF PERMANENT STABILIZATION.

2.2 POST–CONSTRUCTION. THE FOLLOWING STANDARDS MUST BE MET AFTER CONSTRUCTION.

2.2.1 PLAN. CARRY OUT AN APPROVED INSPECTION AND MAINTENANCE PLAN THAT IS CONSISTENT WITH THE MINIMUM REQUIREMENTS OF THIS SECTION. THE PLAN MUST ADDRESS INSPECTION AND MAINTENANCE OF THE PROJECT'S PERMANENT EROSION CONTROL MEASURES AND STORMWATER MANAGEMENT SYSTEM.

2.2.2 INSPECTION AND MAINTENANCE. ALL MEASURES MUST BE MAINTAINED IN EFFECTIVE OPERATING CONDITION. A PERSON WITH KNOWLEDGE OF EROSION AND STORMWATER CONTROL, INCLUDING THE STANDARDS AND CONDITIONS IN THE PERMIT, SHALL CONDUCT THE INSPECTIONS. THE FOLLOWING AREAS, FACILITIES, AND MEASURES MUST BE INSPECTED AND IDENTIFIED DEFICIENCIES MUST BE CORRECTED. AREAS, FACILITIES, AND MEASURES OTHER THAN THOSE LISTED BELOW MAY ALSO REQUIRE INSPECTION ON A SPECIFIC SITE. INSPECTION OR MAINTENANCE TASKS OTHER THAN THOSE DISCUSSED BELOW MUST BE INCLUDED IN THE MAINTENANCE PLAN DEVELOPED FOR A SPECIFIC SITE.

2.2.2.1 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. SEE PERMANENT STABILIZATION STANDARDS IN SECTION 1.6.

2.2.2.2 INSPECT DITCHES, SWALES AND OTHER OPEN STORMWATER CHANNELS IN THE SPRING, IN LATE FALL, AND AFTER HEAVY RAINS TO REMOVE ANY OBSTRUCTIONS TO FLOW, REMOVE ACCUMULATED SEDIMENTS AND DEBRIS, TO CONTROL VEGETATED GROWTH THAT COULD OBSTRUCT FLOW, AND TO REPAIR ANY EROSION OF THE DITCH LINING. VEGETATED DITCHES MUST BE MOWED AT LEAST ANNUALLY OR OTHERWISE MAINTAINED TO CONTROL THE GROWTH OF WOODY VEGETATION AND MAINTAIN FLOW CAPACITY. ANY WOODY VEGETATION GROWING THROUGH RIPRAP LININGS MUST ALSO BE REMOVED. REPAIR ANY SLUMPING SIDE SLOPES AS SOON AS PRACTICABLE. IF THE DITCH HAS A RIPRAP LINING, REPLACE RIPRAP ON AREAS WHERE ANY UNDERLYING FILTER FABRIC OR UNDERDRAIN GRAVEL IS SHOWING THROUGH THE STONE OR WHERE STONES HAVE DISLODGED. THE CHANNEL MUST RECEIVE ADEQUATE ROUTINE MAINTENANCE TO MAINTAIN CAPACITY AND PREVENT OR CORRECT ANY EROSION OF THE CHANNEL'S BOTTOM OR SIDESLOPES.

2.2.2.3 INSPECT CULVERTS IN THE SPRING, IN 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; AND TO REPAIR ANY EROSION DAMAGE AT THE CULVERT'S INLET AND OUTLET.

2.2.2.4 INSPECT AND CLEAN OUT CATCH BASINS. CLEAN–OUT MUST INCLUDE THE REMOVAL AND LEGAL DISPOSAL OF ANY 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. IF THE BASIN OUTLET IS DESIGNED TO TRAP FLOATABLE MATERIALS, THEN REMOVE THE FLOATING DEBRIS AND ANY FLOATING OILS (USING OIL–ABSORPTIVE PADS).

2.2.2.5 INSPECT RESOURCE AND TREATMENT BUFFERS ONCE A YEAR FOR EVIDENCE OF EROSION, CONCENTRATING FLOW, AND ENCROACHMENT BY DEVELOPMENT. IF FLOWS ARE CONCENTRATING WITHIN A BUFFER, SITE GRADING, LEVEL SPREADERS, OR DITCH TURN–OUTS MUST BE USED TO ENSURE A MORE EVEN DISTRIBUTION OF FLOW INTO A BUFFER. CHECK DOWN SLOPE OF ALL SPREADERS AND TURN–OUTS FOR EROSION. IF EROSION IS PRESENT, ADJUST OR MODIFY THE SPREADER'S OR TURNOUT'S LIP TO ENSURE A BETTER DISTRIBUTION OF FLOW INTO A BUFFER. CLEAN–OUT ANY ACCUMULATION OF SEDIMENT WITHIN THE SPREADER BAYS OR TURN–OUT POOLS.

2.2.2.6 INSPECT AT LEAST ONCE PER YEAR, EACH STORMWATER MANAGEMENT POND OR BASIN, INCLUDING THE POND'S EMBANKMENTS, OUTLET STRUCTURE, AND EMERGENCY SPILLWAY. REMOVE AND DISPOSE OF ACCUMULATED SEDIMENTS IN THE POND. CONTROL WOODY VEGETATION ON THE POND'S EMBANKMENTS.

2.2.2.7 INSPECT AT LEAST ONE PER YEAR, EACH UNDERDRAINED FILTER, INCLUDING THE FILTER EMBANKMENTS, VEGETATION, UNDERDRAIN PIPING, AND OVERFLOW SPILLWAY. REMOVE AND DISPOSE OF ACCUMULATED SEDIMENTS IN THE FILTER. IF NEEDED, REHABILITATE ANY CLOGGED SURFACE LININGS, AND FLUSH UNDERDRAIN PIPING.

2.2.2.8 INSPECT EACH MANUFACTURED SYSTEM INSTALLED ON THE SITE, INCLUDING THE SYSTEM'S INLET, TREATMENT CHAMBER(S), AND OUTLET AT LEAST ONCE PER YEAR, OR IN ACCORDANCE WITH THE MAINTENANCE GUIDELINES RECOMMENDED BY THE MANUFACTURER BASED ON THE ESTIMATED RUNOFF AND POLLUTANT LOAD EXPECTED TO THE SYSTEM FROM THE PROJECT. REMOVE AND DISPOSE OF ACCUMULATED SEDIMENTS, DEBRIS, AND CONTAMINATED WATERS FROM THE SYSTEM AND, IF APPLICABLE, REMOVE AND REPLACE ANY CLOGGED OR SPENT FILTER MEDIA.

2.2.3 REGULAR MAINTENANCE

2.2.3.1 CLEAR ACCUMULATIONS OF WINTER SAND IN PARKING LOTS AND ALONG ROADWAYS AT LEAST ONCE A YEAR, PREFERABLY IN THE SPRING. ACCUMULATIONS ON PAVEMENT MAY BE REMOVED BY PAVEMENT SWEEPING. ACCUMULATIONS OF SAND ALONG ROAD SHOULDERS MAY BE REMOVED BY GRADING EXCESS SAND TO THE PAVEMENT EDGE AND REMOVING IT MANUALLY OR BY A FRONT–END LOADER. GRADING OF GRAVEL ROADS, OR GRADING OF THE GRAVEL SHOULDERS OF GRAVEL OR PAVED ROADS, MUST BE ROUTINELY PERFORMED TO ENSURE THAT STORMWATER DRAINS IMMEDIATELY OFF THE ROAD SURFACE TO ADJACENT BUFFER AREAS OR STABLE DITCHES, AND IS NOT IMPEDED BY ACCUMULATIONS OF GRADED MATERIAL ON THE ROAD SHOULDER OR BY EXCAVATION OF FALSE DITCHES IN THE SHOULDER. IF WATER BARS OR OPEN–TOP CULVERTS ARE USED TO DIVERT RUNOFF FROM ROAD SURFACES, CLEAN–OUT ANY SEDIMENTS WITHIN OR AT THE OUTLET OF THESE STRUCTURES TO RESTORE THEIR FUNCTION.

2.2.3.2 MANAGE EACH BUFFER'S VEGETATION CONSISTENTLY WITH THE REQUIREMENTS IN ANY DEED RESTRICTIONS FOR THE BUFFER. WOODED BUFFERS MUST REMAIN FULLY WOODED AND HAVE NO DISTURBANCE TO THE DUFF LAYER. VEGETATION IN NON–WOODED BUFFERS MAY NOT BE CUT MORE THAN THREE TIMES PER YEAR, AND MAY NOT BE CUT SHORTER THAN SIX INCHES.

2.2.4 DOCUMENTATION. KEEP A LOG (REPORT) SUMMARIZING INSPECTIONS, MAINTENANCE, AND ANY CORRECTIVE ACTIONS TAKEN. THE LOG MUST INCLUDE THE DATE ON WHICH EACH INSPECTION OR MAINTENANCE TASK WAS PERFORMED, A DESCRIPTION OF THE INSPECTION FINDINGS OR MAINTENANCE COMPLETED, AND THE NAME OF THE INSPECTOR OR MAINTENANCE PERSONNEL PERFORMING THE TASK. IF A MAINTENANCE TASK REQUIRES THE CLEAN–OUT OF ANY SEDIMENTS OR DEBRIS, INDICATE WHERE THE SEDIMENT AND DEBRIS WAS DISPOSED AFTER REMOVAL. THE LOG MUST BE MADE ACCESSIBLE TO DEPARTMENT STAFF AND A COPY PROVIDED TO THE DEPARTMENT UPON REQUEST. THE PERMITTEE SHALL RETAIN A COPY OF THE LOG FOR A PERIOD OF AT LEAST FIVE YEARS FROM THE COMPLETION OF PERMANENT STABILIZATION.

2.3 RE–CERTIFICATION. SUBMIT A CERTIFICATION OF THE FOLLOWING TO THE DEPARTMENT WITHIN THREE MONTHS OF THE EXPIRATION OF EACH FIVE–YEAR INTERVAL FROM THE DATE OF ISSUANCE OF THE PERMIT.

2.3.1 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.

2.3.2 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.

2.3.3 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.

2.3.4 MUNICIPALITIES WITH SEPARATE STORM SEWER SYSTEMS REGULATED UNDER THE MAINE POLLUTANT DISCHARGE ELIMINATION SYSTEM (MPDES) PROGRAM MAY REPORT ON ALL REGULATED SYSTEMS UNDER THEIR CONTROL AS PART OF THEIR REQUIRED ANNUAL REPORTING IN LIEU OF SEPARATE CERTIFICATION OF EACH SYSTEM. MUNICIPALITIES NOT REGULATED BY THE MPDES PROGRAM, BUT THAT ARE RESPONSIBLE FOR MAINTENANCE OF PERMITTED STORMWATER SYSTEMS, MAY REPORT ON MULTIPLE STORMWATER SYSTEMS IN ONE REPORT.

2.4 DURATION OF MAINTENANCE. PERFORM MAINTENANCE AS DESCRIBED AND REQUIRED IN THE PERMIT UNLESS AND UNTIL THE SYSTEM IS FORMALLY ACCEPTED BY THE 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 DEPARTMENT 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 DEPARTMENT STANDARDS. UPON SUCH ASSUMPTION OF RESPONSIBILITY, AND APPROVAL BY THE DEPARTMENT, 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.

3 HOUSEKEEPING

3.1 SPILL PREVENTION. CONTROLS MUST BE USED TO PREVENT POLLUTANTS FROM CONSTRUCTION AND WASTE MATERIALS STORED ON SITE TO ENTER STORMWATER, WHICH INCLUDES STORAGE PRACTICES TO MINIMIZE EXPOSURE OF THE MATERIALS TO STORMWATER. THE SITE CONTRACTOR OR OPERATOR MUST DEVELOP, AND IMPLEMENT AS NECESSARY, APPROPRIATE SPILL PREVENTION, CONTAINMENT, AND RESPONSE PLANNING MEASURES.

3.2 GROUNDWATER PROTECTION. DURING CONSTRUCTION, LIQUID PETROLEUM PRODUCTS AND OTHER HAZARDOUS MATERIALS WITH THE POTENTIAL TO CONTAMINATE GROUNDWATER MAY NOT BE STORED OR HANDLED IN AREAS OF THE SITE DRAINING TO AN INFILTRATION AREA. AN "INFILTRATION AREA" IS ANY AREA OF THE SITE THAT BY DESIGN OR AS A RESULT OF SOILS, TOPOGRAPHY AND OTHER RELEVANT FACTORS ACCUMULATES RUNOFF THAT INFILTRATES INTO THE SOIL. DIKES, BERMS, SUMPS, AND OTHER FORMS OF SECONDARY CONTAINMENT THAT PREVENT DISCHARGE TO GROUNDWATER MAY BE USED TO ISOLATE PORTIONS OF THE SITE FOR THE PURPOSES OF STORAGE AND HANDLING OF THESE MATERIALS. ANY PROJECT PROPOSING INFILTRATION OF STORMWATER MUST PROVIDE ADEQUATE PRE–TREATMENT OF STORMWATER PRIOR TO DISCHARGE OF STORMWATER TO THE INFILTRATION AREA, OR PROVIDE FOR TREATMENT WITHIN THE INFILTRATION AREA, IN ORDER TO PREVENT THE ACCUMULATION OF FINES, REDUCTION IN INFILTRATION RATE, AND CONSEQUENT FLOODING AND DESTABILIZATION.

3.3 FUGITIVE SEDIMENT AND DUST. ACTIONS MUST BE TAKEN TO ENSURE THAT ACTIVITIES DO NOT RESULT IN NOTICEABLE EROSION OF SOILS OR FUGITIVE DUST EMISSIONS DURING OR AFTER CONSTRUCTION. OIL MAY NOT BE USED FOR DUST CONTROL, BUT OTHER WATER ADDITIVES MAY BE CONSIDERED AS NEEDED. A STABILIZED CONSTRUCTION ENTRANCE (SCE) SHOULD BE INCLUDED TO MINIMIZE TRACKING OF MUD AND SEDIMENT. IF OFF–SITE TRACKING OCCURS, PUBLIC ROADS SHOULD BE SWEPT IMMEDIATELY AND NO LESS THAN ONCE A WEEK AND PRIOR TO SIGNIFICANT STORM EVENTS. OPERATIONS DURING DRY MONTHS, THAT EXPERIENCE FUGITIVE DUST PROBLEMS, SHOULD WET DOWN UNPAVED ACCESS ROADS ONCE A WEEK OR MORE FREQUENTLY AS NEEDED WITH A WATER ADDITIVE TO SUPPRESS FUGITIVE SEDIMENT AND DUST.

3.4 DEBRIS AND OTHER MATERIALS. MINIMIZE THE EXPOSURE OF CONSTRUCTION DEBRIS, BUILDING AND LANDSCAPING MATERIALS, TRASH, FERTILIZERS, PESTICIDES, HERBICIDES, DETERGENTS, SANITARY WASTE AND OTHER MATERIALS TO PRECIPITATION AND STORMWATER RUNOFF. THESE MATERIALS MUST BE PREVENTED FROM BECOMING A POLLUTANT SOURCE.

3.5 EXCAVATION DE–WATERING. EXCAVATION DE–WATERING IS THE REMOVAL OF WATER FROM TRENCHES, FOUNDATIONS, COFFER DAMS, PONDS, AND OTHER AREAS WITHIN THE CONSTRUCTION AREA THAT RETAIN WATER AFTER EXCAVATION. IN MOST CASES THE COLLECTED WATER IS HEAVILY SILTED AND HINDERS CORRECT AND SAFE CONSTRUCTION PRACTICES. THE COLLECTED WATER REMOVED FROM THE PONDED AREA, EITHER THROUGH GRAVITY OR PUMPING, MUST BE SPREAD THROUGH NATURAL WOODED BUFFERS OR REMOVED TO AREAS THAT ARE SPECIFICALLY DESIGNED TO COLLECT THE MAXIMUM AMOUNT OF SEDIMENT POSSIBLE, LIKE A COFFERDAM SEDIMENTATION BASIN. AVOID ALLOWING THE WATER TO FLOW OVER DISTURBED AREAS OF THE SITE. EQUIVALENT MEASURES MAY BE TAKEN IF APPROVED BY THE DEPARTMENT.

3.6 AUTHORIZED NON–STORMWATER DISCHARGES. IDENTIFY AND PREVENT CONTAMINATION BY NON–STORMWATER DISCHARGES. WHERE ALLOWED NON–STORMWATER DISCHARGES EXIST, THEY MUST BE IDENTIFIED AND STEPS SHOULD BE TAKEN TO ENSURE THE IMPLEMENTATION OF APPROPRIATE POLLUTION PREVENTION MEASURES FOR THE NON–STORMWATER COMPONENT(S) OF THE DISCHARGE. AUTHORIZED NON–STORMWATER DISCHARGES ARE:

3.6.1 DISCHARGES FROM FIREFIGHTING ACTIVITY;
3.6.2 FIRE HYDRANT FLUSHINGS;
3.6.3 VEHICLE WASHWATER IF DETERGENTS ARE NOT USED AND WASHING IS LIMITED TO THE EXTERIOR OF VEHICLES (ENGINE, UNDERCARRIAGE AND TRANSMISSION WASHING IS PROHIBITED);
3.6.4 DUST CONTROL RUNOFF IN ACCORDANCE WITH PERMIT CONDITIONS AND APPENDIX (C)(3);
3.6.5 ROUTINE EXTERNAL BUILDING WASHDOWN, NOT INCLUDING SURFACE PAINT REMOVAL, THAT DOES NOT INVOLVE DETERGENTS;
3.6.6 PAVEMENT WASHWATER (WHERE SPILLS/LEAKS OF TOXIC OR HAZARDOUS MATERIALS HAVE NOT OCCURRED, UNLESS ALL SPILLED MATERIAL HAD BEEN REMOVED) IF DETERGENTS ARE NOT USED;
3.6.7 UNCONTAMINATED AIR CONDITIONING OR COMPRESSOR CONDENSATE;
3.6.8 UNCONTAMINATED GROUNDWATER OR SPRING WATER;
3.6.9 FOUNDATION OR FOOTER DRAIN–WATER WHERE FLOWS ARE NOT CONTAMINATED;
3.6.10 UNCONTAMINATED EXCAVATION DEWATERING (SEE REQUIREMENTS IN APPENDIX C(5));
3.6.11 POTABLE WATER SOURCES INCLUDING WATERLINE FLUSHINGS; AND
3.6.12 LANDSCAPE IRRIGATION.

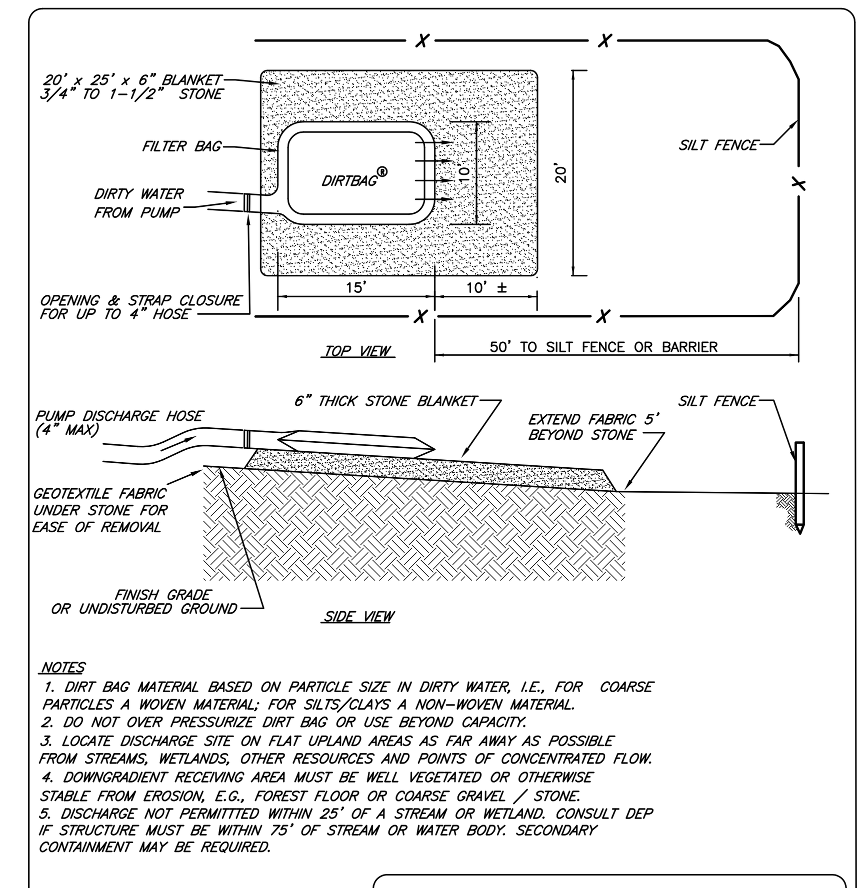
3.7 UNAUTHORIZED NON–STORMWATER DISCHARGES. THE DEPARTMENT'S APPROVAL UNDER THIS CHAPTER DOES NOT AUTHORIZE A DISCHARGE THAT IS MIXED WITH A SOURCE OF NON–STORMWATER, OTHER THAN THOSE DISCHARGES IN COMPLIANCE WITH APPENDIX C (6). SPECIFICALLY, THE DEPARTMENT'S APPROVAL DOES NOT AUTHORIZE DISCHARGES OF THE FOLLOWING:

3.7.1 WASTEWATER FROM THE WASHOUT OR CLEANOUT OF CONCRETE, STUCCO, PAINT, FORM RELEASE OILS, CURING COMPOUNDS OR OTHER CONSTRUCTION MATERIALS;

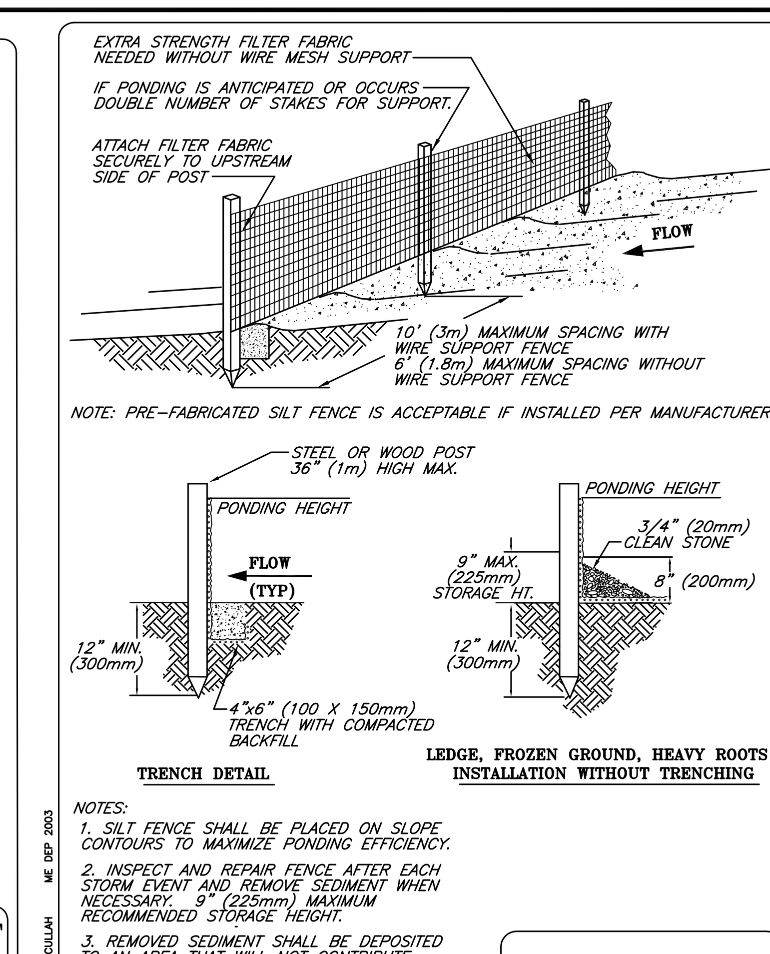
3.7.2 FUELS, OILS OR OTHER POLLUTANTS USED IN VEHICLE AND EQUIPMENT OPERATION AND MAINTENANCE;

3.7.3 SOAPS, SOLVENTS, OR DETERGENTS USED IN VEHICLE AND EQUIPMENT WASHING; AND

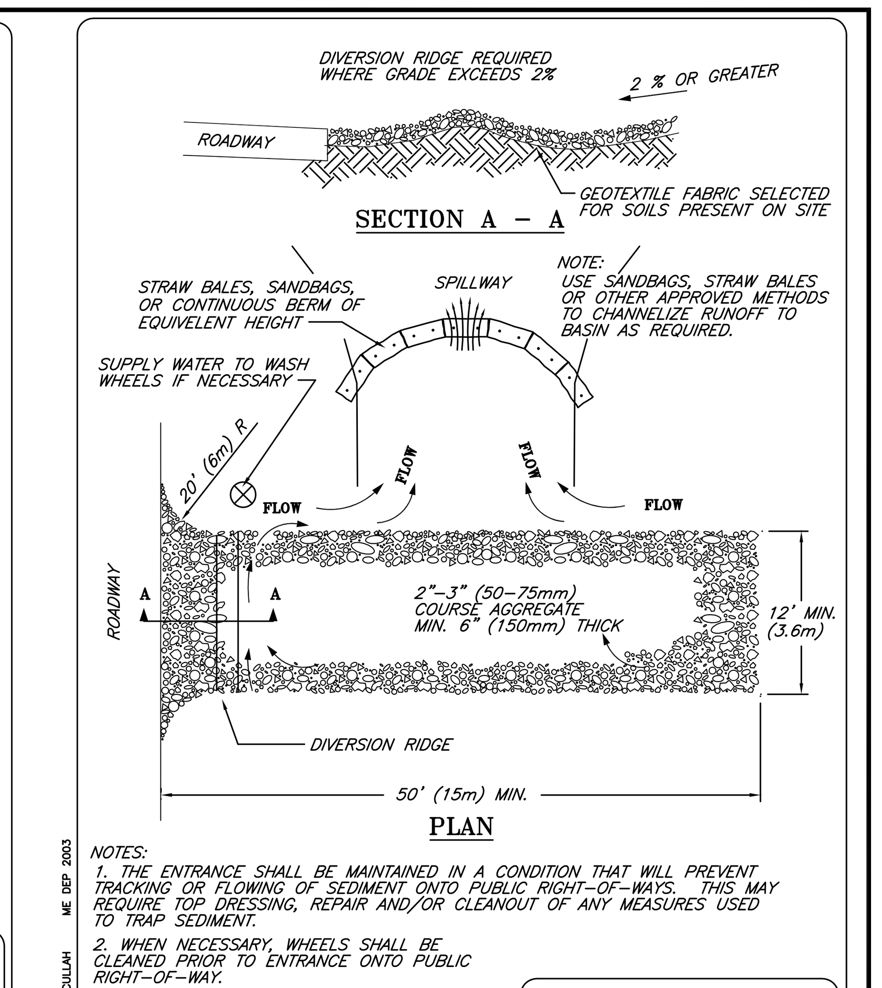
3.7.4 TOXIC OR HAZARDOUS SUBSTANCES FROM A SPILL OR OTHER RELEASE.



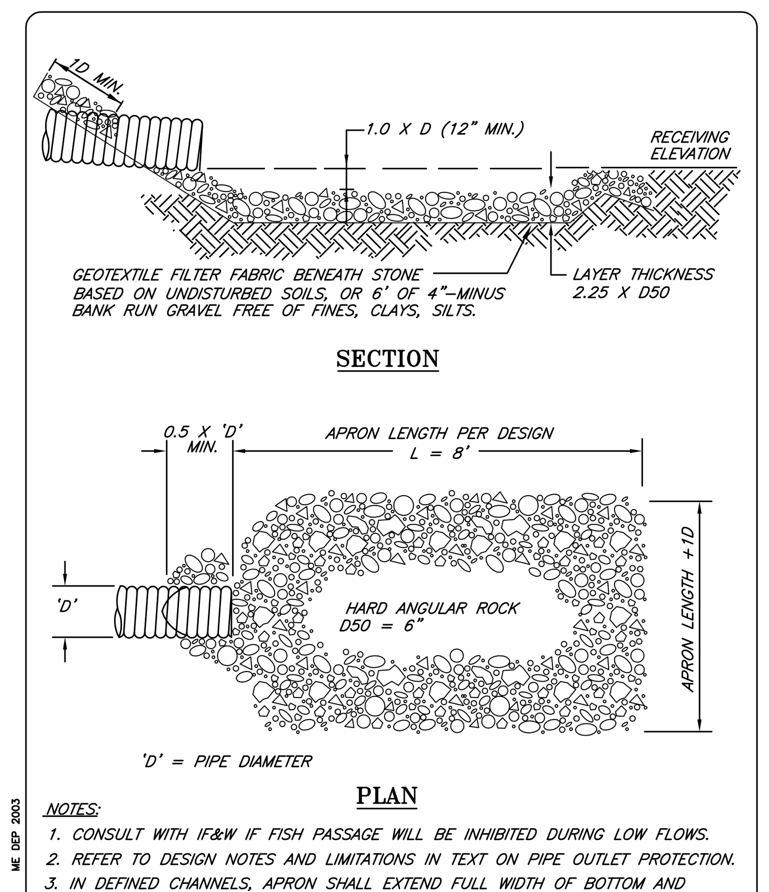
PUMPED DISCHARGE SEDIMENT CONTROL DEVICE ("DIRT BAG")



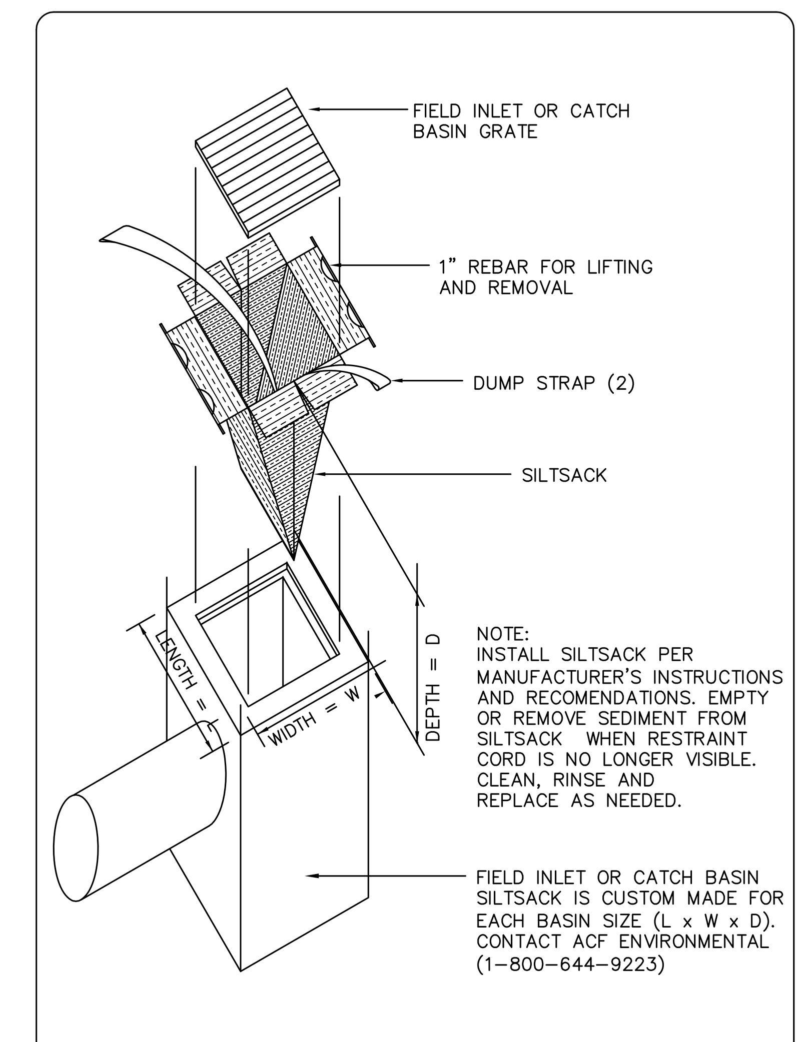
SILT FENCE



TEMPORARY GRAVEL CONSTRUCTION ENTRANCE/EXIT



PIPE INLET/OUTLET PROTECTION (RIP RAP)



SILTSACK INLET SEDIMENT CONTROL DEVICE

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 FOR THE EROSION AND SEDIMENTATION CONTROL INSPECTIONS AND MAINTENANCE.

GENERAL NOTE:

ALL TEMPORARY EROSION AND WATER POLLUTION CONTROLS SHALL MEET MDOT ITEM 656.

THIS PLAN IS FOR REVIEW PURPOSES ONLY AND IS NOT INTENDED FOR CONSTRUCTION OR RECORDING

Revision:	By:	Date:	Change:
2	SMA	5/11/18	SUBMITTED FOR PRELIMINARY SITE PLAN/SUBDIVISION REVIEW
1	SMA	5/4/18	SUBMITTED FOR MDEP TIER 1 REVIEW

PROJECT NUMBER: 41041 | ACAD FILE: 41041–DETAILS.DWG | SCALE: AS NOTED | DATE: MAY 1, 2018

Drawing Name:
EROSION & SEDIMENTATION CONTROL NOTES AND DETAILS

Project Name and Location:
PROPOSED CAPISIC MEADOWS SUBDIVISION
130 BANCROFT STREET, PORTLAND, MAINE 04102

Prepared For:
WB GROUP, INC
130 BANCROFT STREET, PORTLAND, MAINE 04102

STATE OF MAINE ANTHONY P. PANCIOCCO JR. No. 10941 LICENSED PROFESSIONAL ENGINEER
5-11-18

SHEET 8 OF 14

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www.northeastcivilsolutions.com

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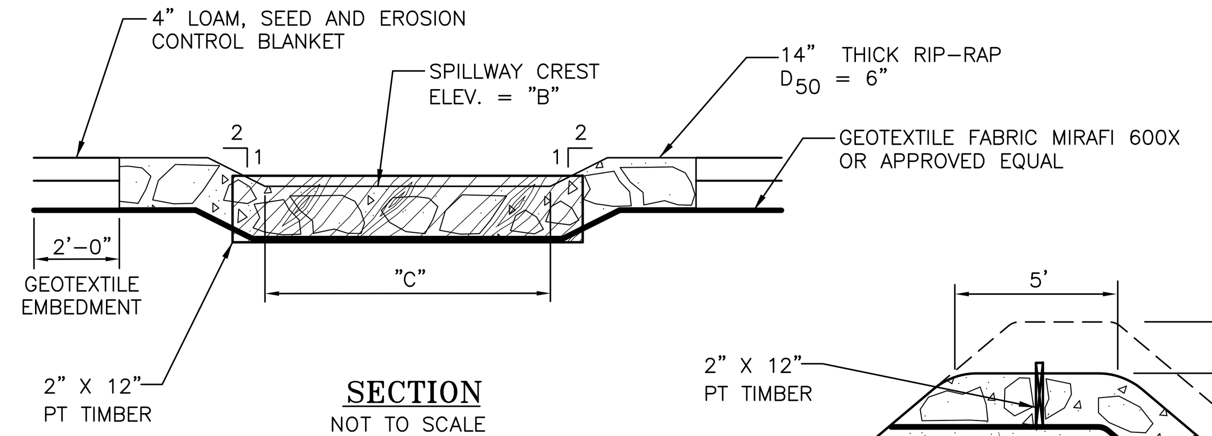
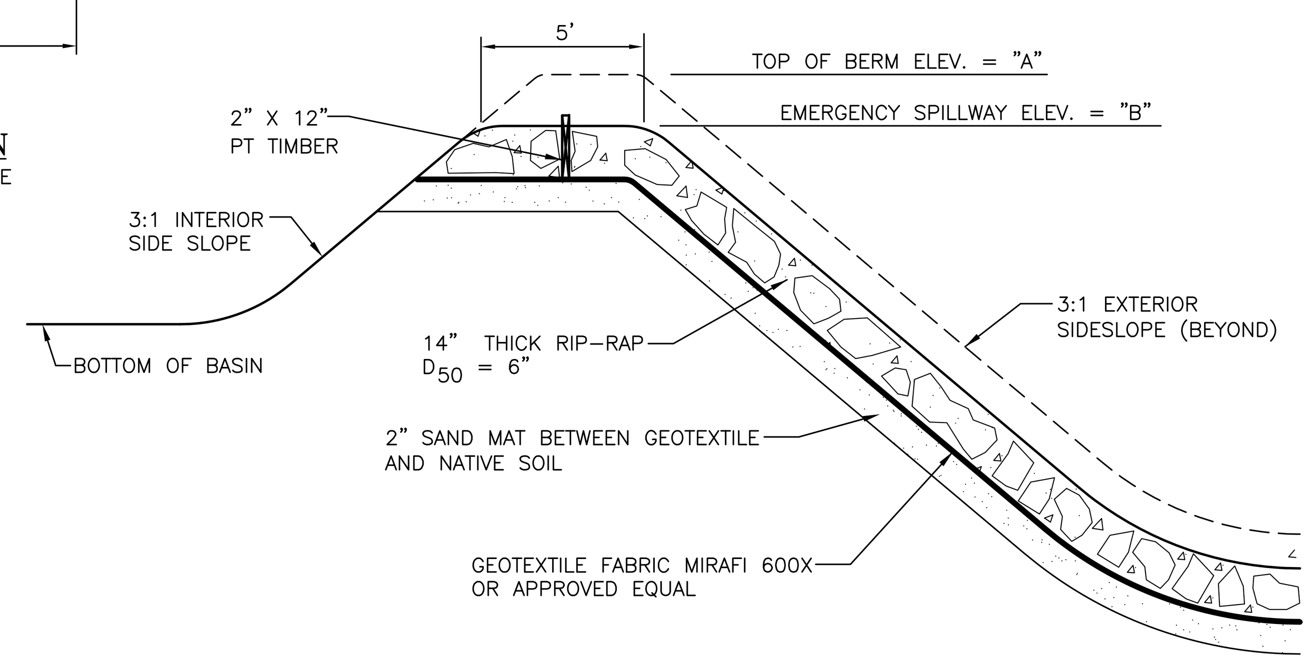
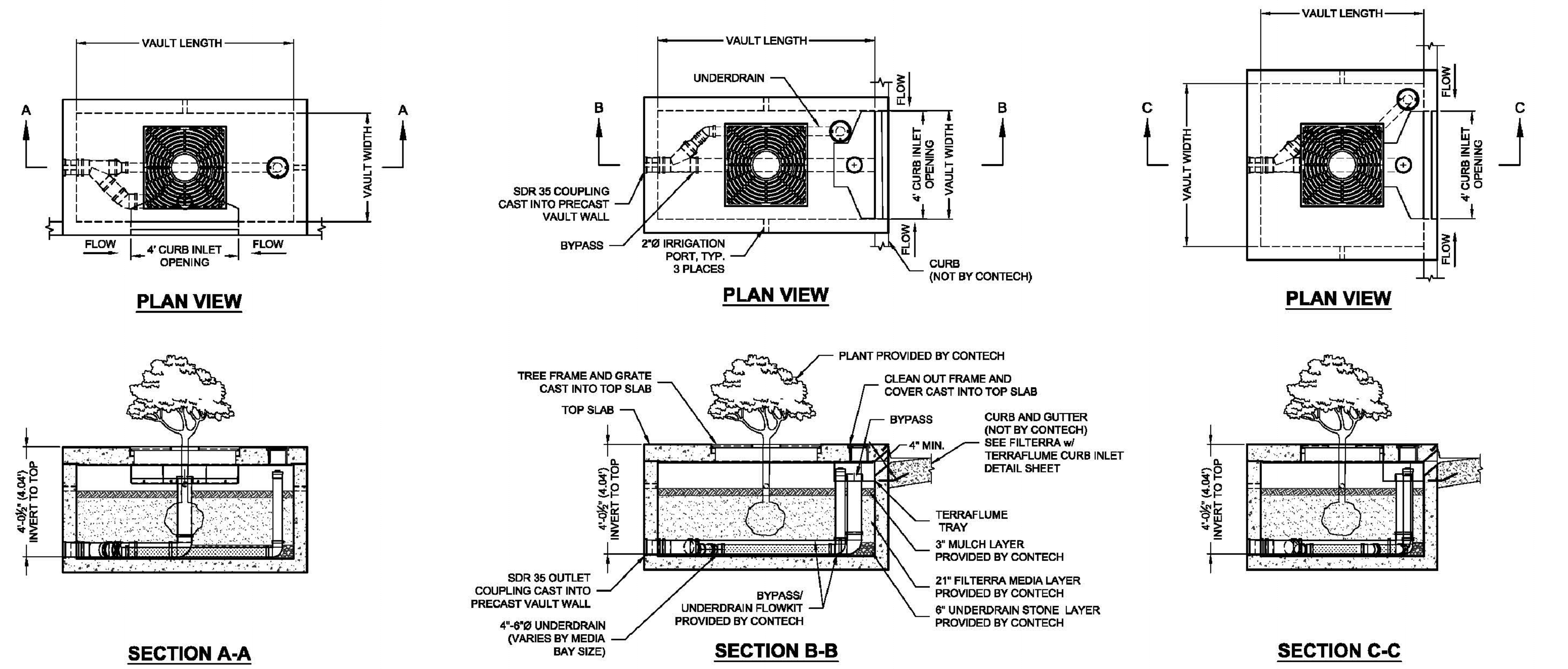


SECTION
NOT TO SCALE

POND	"A"	"B"	"C"
DET-1	60.15	59.20	8.00



CROSS SECTION OF EMERGENCY SPILLWAY
NOT TO SCALE



FTIBC LONG SIDE CURB INLET

DESIGNATION	AVAIL-ABILITY	MEDIA BAY SIZE	VAULT SIZE (L x W)	MAX. OUTLET/ BYPASS PIPE DIA.	MAX. BYPASS FLOW (CFS)	UNDER-DRAIN PIPE DIA. (PERF)	TREE GRATE QTY. & SIZE
FTIBC0604	N/A CA	6 x 4	6 x 4	8" SDR 35	1.89	4" SDR 35	(1) 3' x 3'
FTIBC06504	CA ONLY	6.5 x 4	6.5 x 4	8" SDR 35	1.89	4" SDR 35	(1) 3' x 3'
FTIBC078045	MID-ATL ONLY	7.83 x 4.5	7.83 x 4.5	8" SDR 35	1.89	4" SDR 35	(1) 3' x 3'
FTIBC0804	N/A MID-ATL	8 x 4	8 x 4	8" SDR 35	1.89	4" SDR 35	(1) 3' x 3'
FTIBC0806	ALL	8 x 6	8 x 6	10" SDR 35	2.37	4" SDR 35	(1) 4' x 4'
FTIBC1006	ALL	10 x 6	10 x 6	10" SDR 35	2.37	6" SDR 35	(1) 4' x 4'
FTIBC1206	ALL	12 x 6	12 x 6	10" SDR 35	2.37	6" SDR 35	(2) 4' x 4'
FTIBC1307	ALL	13 x 7	13 x 7	10" SDR 35	2.37	6" SDR 35	(2) 4' x 4'

N/A = NOT AVAILABLE

FTIBC SHORT SIDE CURB INLET

DESIGNATION	AVAIL-ABILITY	MEDIA BAY SIZE	VAULT SIZE (W x L)	MAX. OUTLET/ BYPASS PIPE DIA.	MAX. BYPASS FLOW (CFS)	UNDER-DRAIN PIPE DIA. (PERF)	TREE GRATE QTY. & SIZE
FTIBC0406	N/A CA	4 x 6	4 x 6	8" SDR 35	1.89	4" SDR 35	(1) 3' x 3'
FTIBC04065	CA ONLY	4 x 6.5	4 x 6.5	8" SDR 35	1.89	4" SDR 35	(1) 3' x 3'
FTIBC0408	N/A MID-ATL	4 x 8	4 x 8	8" SDR 35	1.89	4" SDR 35	(1) 3' x 3'
FTIBC045078	MID-ATL ONLY	4.5 x 7.83	4.5 x 7.83	8" SDR 35	1.89	4" SDR 35	(1) 3' x 3'
FTIBC0608	ALL	6 x 8	6 x 8	10" SDR 35	2.37	4" SDR 35	(1) 4' x 4'
FTIBC0610	ALL	6 x 10	6 x 10	10" SDR 35	2.37	6" SDR 35	(1) 4' x 4'
FTIBC0612	ALL	6 x 12	6 x 12	10" SDR 35	2.37	6" SDR 35	(2) 4' x 4'
FTIBC0713	ALL	7 x 13	7 x 13	10" SDR 35	2.37	6" SDR 35	(2) 4' x 4'

N/A = NOT AVAILABLE

FTIBC SQUARE CURB INLET

DESIGNATION	AVAIL-ABILITY	MEDIA BAY SIZE	VAULT SIZE (L x W)	MAX. OUTLET/ BYPASS PIPE DIA.	MAX. BYPASS FLOW (CFS)	UNDER-DRAIN PIPE DIA. (PERF)	TREE GRATE QTY. & SIZE
FTIBC0404	ALL	4 x 4	4'-0"	6" SDR 35	1.42	4" SDR 35	(1) 3' x 3'
FTIBC0606	ALL	6 x 6	6'-0"	8" SDR 35	1.89	4" SDR 35	(1) 3' x 3'

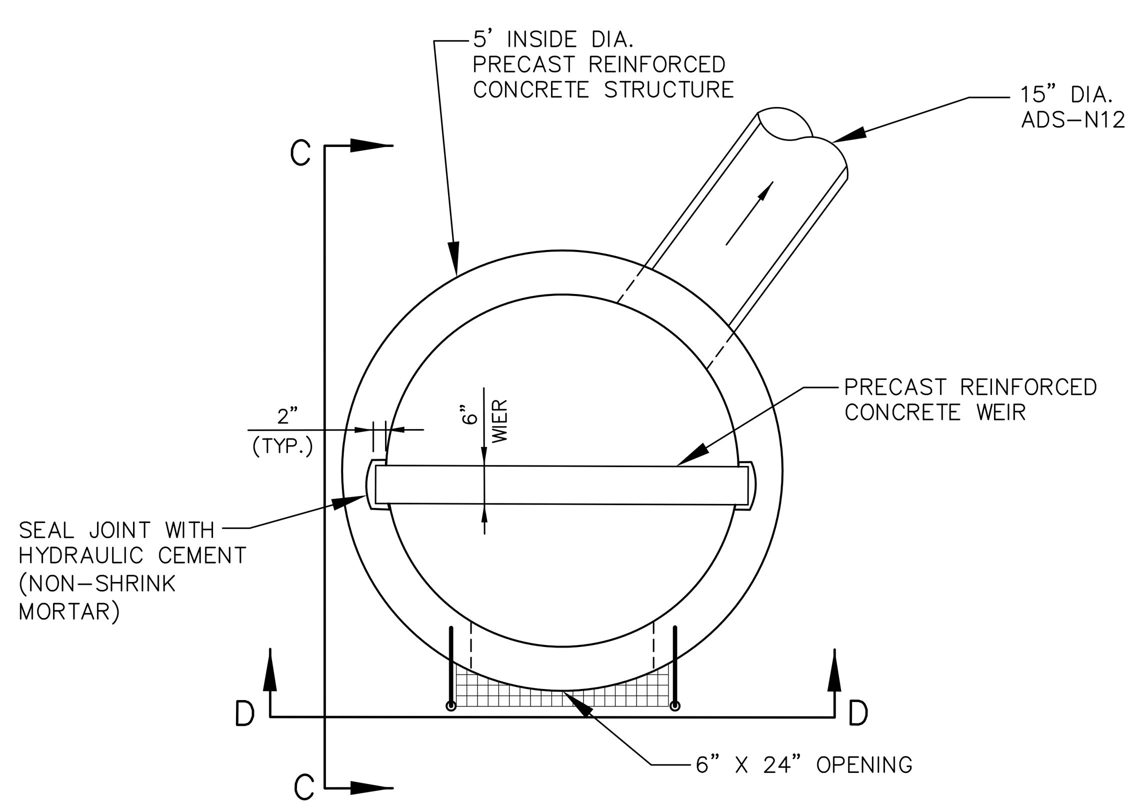
N/A = NOT AVAILABLE

INTERNAL PIPE CONFIGURATION MAY VARY DEPENDING ON VAULT SIZE.

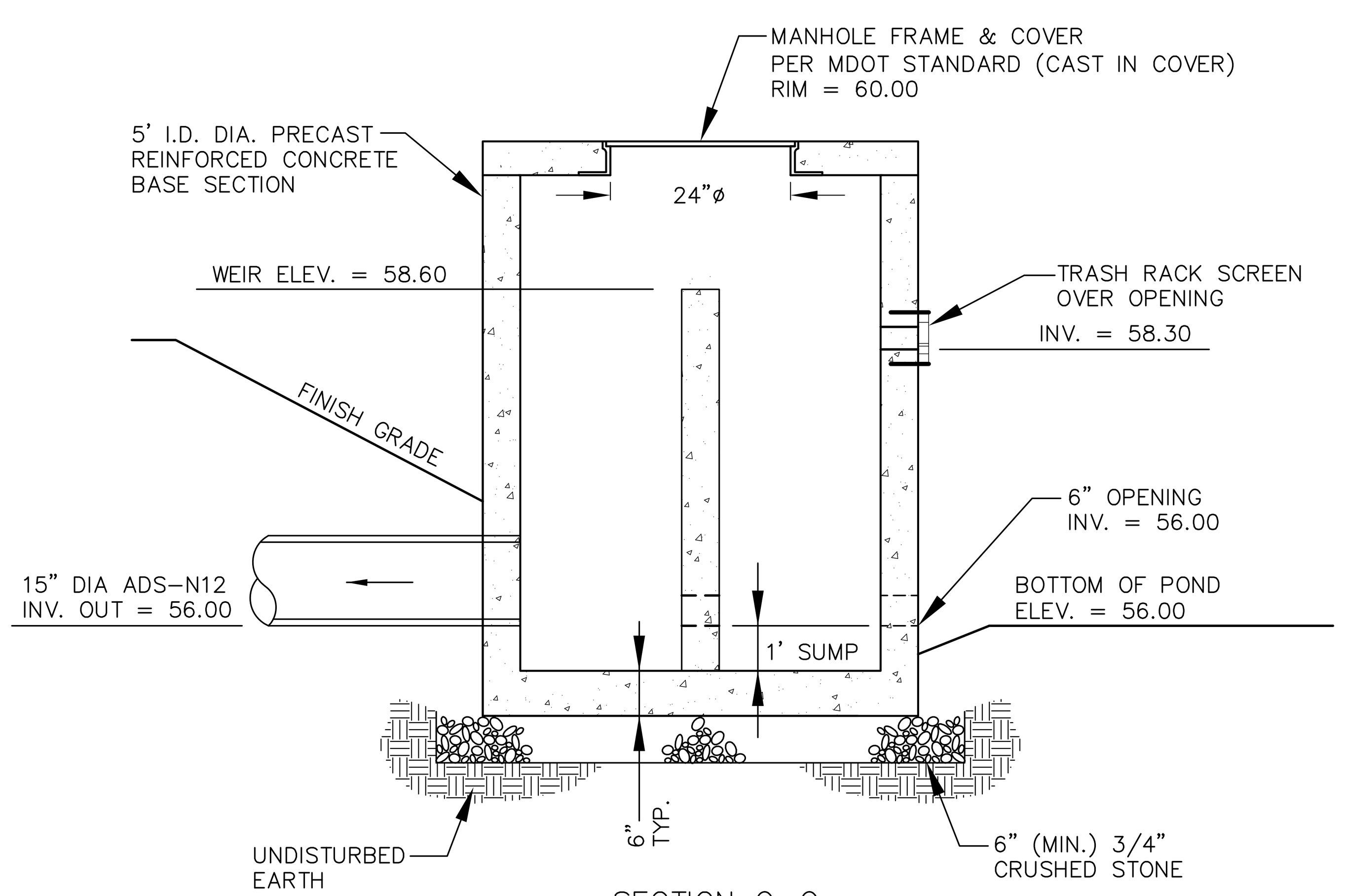
filterra

CONTECH ENGINEERED SOLUTIONS LLC
www.ContechES.com
9025 Centre Pointe Dr., Suite 400, West Chester, OH 45069
800-338-1122 513-645-7000 513-645-7993 FAX

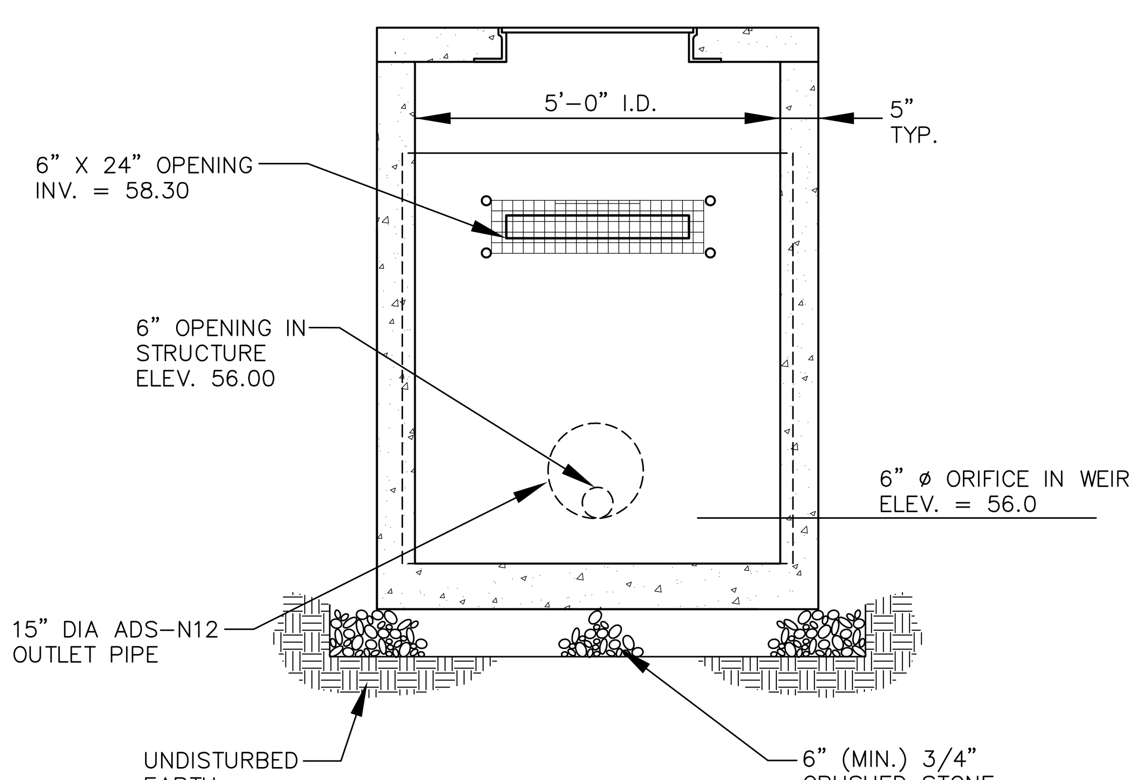
FILTERRA INTERNAL BYPASS CURB (FTIBC) CONFIGURATION DETAIL



PLAN VIEW



SECTION C-C



SECTION D-D

PRECAST CONCRETE OUTLET CONTROL STUCTURE (OCS-1)
N.T.S.

THIS PLAN IS FOR REVIEW PURPOSES ONLY AND IS NOT INTENDED FOR CONSTRUCTION OR RECORDING

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2	SMA	5/11/18	SUBMITTED FOR PRELIMINARY SITE PLAN/SUBDIVISION REVIEW
1	SMA	5/4/18	SUBMITTED FOR MDEP TIER 1 REVIEW

PROJECT NUMBER: 41041 | ACAD FILE: 41041-DETAILS.DWG | SCALE: AS NOTED | DATE: MAY 1, 2018

Drawing Name:
CONSTRUCTION DETAILS - SHEET 1

Project Name and Location:
PROPOSED CAPISIC MEADOWS SUBDIVISION
130 BANCROFT STREET, PORTLAND, MAINE 04102

Prepared For:
WB GROUP, INC
130 BANCROFT STREET, PORTLAND, MAINE 04102

STATE OF MAINE
ANTHONY P. PANCIOCCO JR.
No. 10941
PROFESSIONAL ENGINEER
LICENSED
5-11-18

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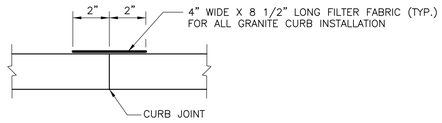
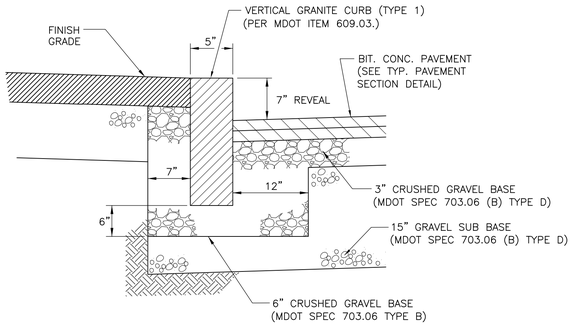


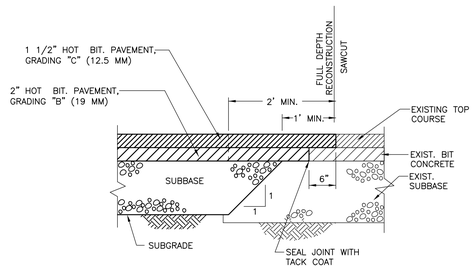
PLAN VIEW



NOTE: PER MDOT ITEM 703.06 (B) TYPE D

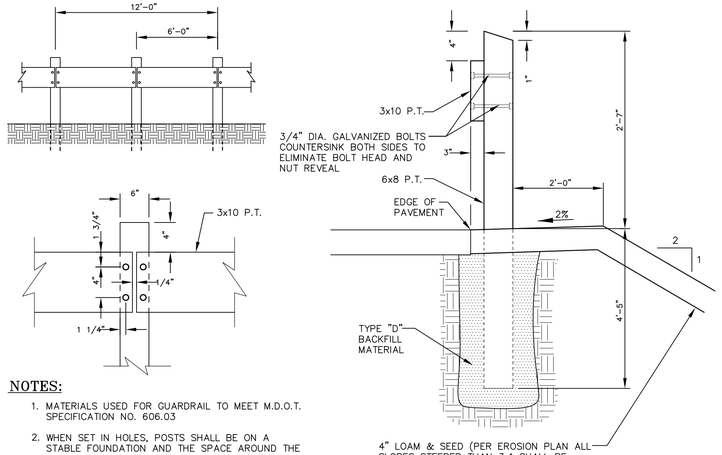
VERTICAL GRANITE CURB DETAIL

N.T.S.



SAWCUT & PAVEMENT MATCH DETAIL

N.T.S.

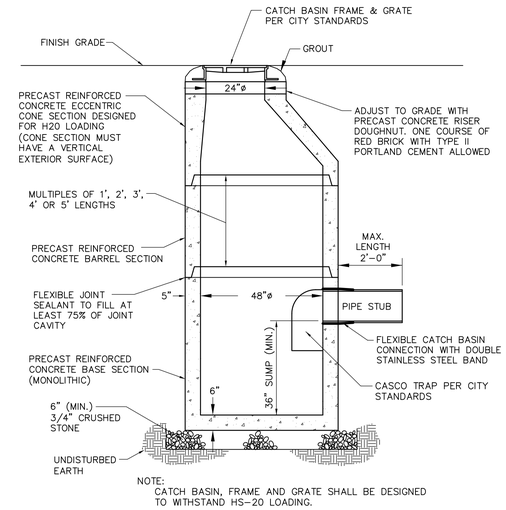


NOTES:

1. MATERIALS USED FOR GUARDRAIL TO MEET M.D.O.T. SPECIFICATION NO. 606.03
2. WHEN SET IN HOLES, POSTS SHALL BE ON A STABLE FOUNDATION AND THE SPACE AROUND THE POSTS BACKFILLED IN LAYERS WITH SUITABLE MATERIAL, THOROUGHLY TAMPED.

PRESSURE TREATED WOOD GUARDRAIL

N.T.S.

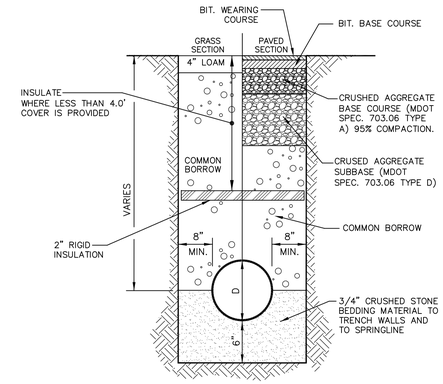


NOTE:
CATCH BASIN, FRAME AND GRATE SHALL BE DESIGNED TO WITHSTAND HS-20 LOADING.

PER MDOT ITEM 604.

PRECAST CONCRETE CATCH BASIN DETAIL

N.T.S.



NOTE: ALL MATERIAL SHALL BE COMPACTED TO 95% OF THE MAXIMUM PROCTOR DENSITY (MODIFIED)

TYPICAL STORMWATER TRENCH SECTION

NOT TO SCALE

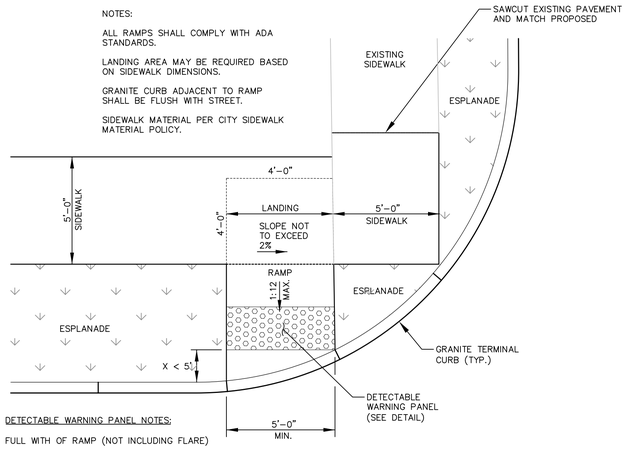
NOTES:

ALL RAMPS SHALL COMPLY WITH ADA STANDARDS.

LANDING AREA MAY BE REQUIRED BASED ON SIDEWALK DIMENSIONS.

GRANITE CURB ADJACENT TO RAMP SHALL BE FLUSH WITH STREET.

SIDEWALK MATERIAL PER CITY SIDEWALK MATERIAL POLICY.



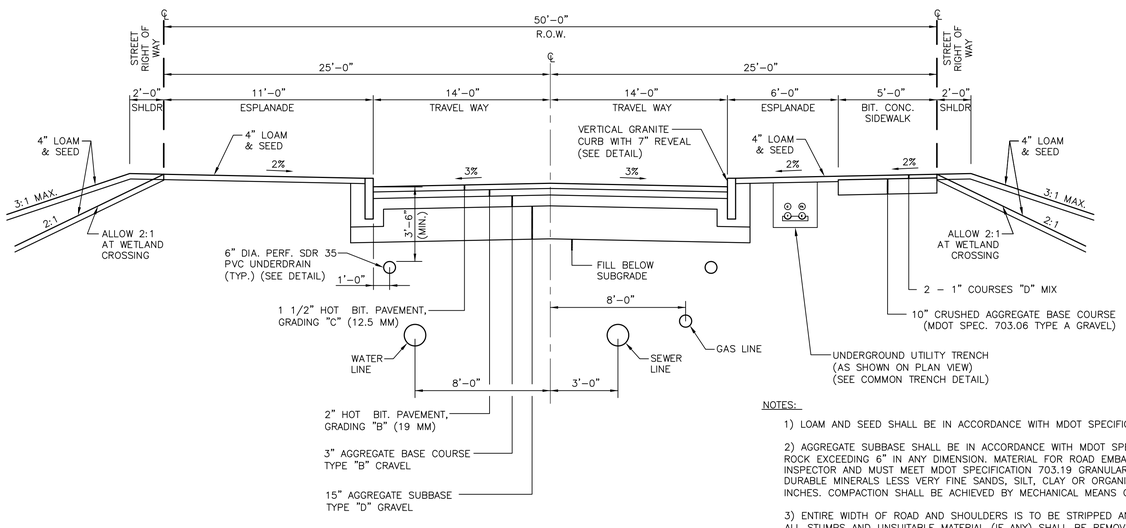
DETECTABLE WARNING PANEL NOTES:

FULL WITH OF RAMP (NOT INCLUDING FLARE)

PANEL ORIENTATED AS SHOWN IF X < 5'
(IF > 5', THEN PANEL IS PARALLEL TO CURB)

SIDEWALK LAYOUT DETAIL

N.T.S.



TYPICAL ROAD CROSS SECTION

NOT TO SCALE

NOTES:

1) LOAM AND SEED SHALL BE IN ACCORDANCE WITH MDOT SPECIFICATIONS 615 AND 618, METHOD #1.

2) AGGREGATE SUBBASE SHALL BE IN ACCORDANCE WITH MDOT SPECIFICATIONS, SECTION 403 AND SHALL NOT CONTAIN PARTICLES OF ROCK EXCEEDING 6" IN ANY DIMENSION. MATERIAL FOR ROAD EMBANKMENT SHALL BE SUITABLE EXCAVATED MATERIAL APPROVED BY TOWN INSPECTOR AND MUST MEET MDOT SPECIFICATION 703.19 GRANULAR BORROW. SUITABLE GRANULAR FILL MATERIAL SHALL CONSIST OF HARD DURABLE MINERALS LESS VERY FINE SANDS, SILT, CLAY OR ORGANIC MATERIALS. MATERIAL IS TO BE PLACED IN LIFTS NOT TO EXCEED 12 INCHES. COMPACTION SHALL BE ACHIEVED BY MECHANICAL MEANS OF A "DYNAPAC", RIDING ROLLER, OR TRACKING WITH HEAVY EQUIPMENT.

3) ENTIRE WIDTH OF ROAD AND SHOULDERS IS TO BE STRIPPED AND GRUBBED OF TOP SOIL, ORGANICS AND ALL DELETERIOUS MATERIAL. ALL STUMPS AND UNSUITABLE MATERIAL (IF ANY) SHALL BE REMOVED IF WITHIN 5 FEET OF FINISHED GRADE UNDER PAVED AREAS.

4) SEE GRADING PLAN & PROFILE FOR GRADING INTENT.

5) ALL PROPOSED INFRASTRUCTURE LOCATED WITHIN THE ROAD RIGHT OF WAY SHALL MEET CITY OF PORTLAND TECHNICAL MANUAL STANDARDS.

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1	SMA	5/4/18	SUBMITTED FOR MDEP TIER 1 REVIEW

PROJECT NUMBER: 41041 | ACAD FILE: 41041-DETAILS.DWG | SCALE: AS NOTED | DATE: MAY 1, 2018

Drawing Name:
CONSTRUCTION DETAILS - SHEET 2

Project Name and Location:
PROPOSED CAPISIC MEADOWS SUBDIVISION
130 BANCROFT STREET, PORTLAND, MAINE 04102

Prepared For:
WB GROUP, INC
130 BANCROFT STREET, PORTLAND, MAINE 04102

STATE OF MAINE
ANTHONY P. PANCIOCCO JR.
No. 10941
REGISTERED PROFESSIONAL ENGINEER
5-11-18

SHEET 10 OF 14

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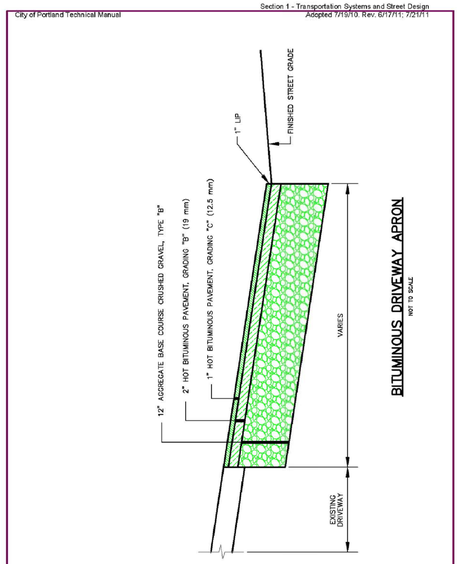
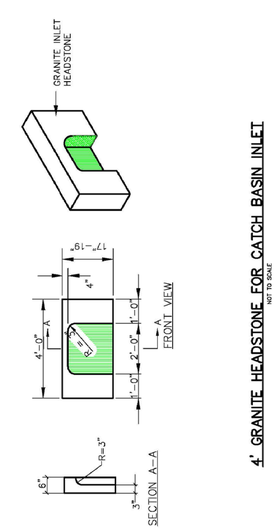


BITUMINOUS DRIVEWAY APRON

NOT TO SCALE

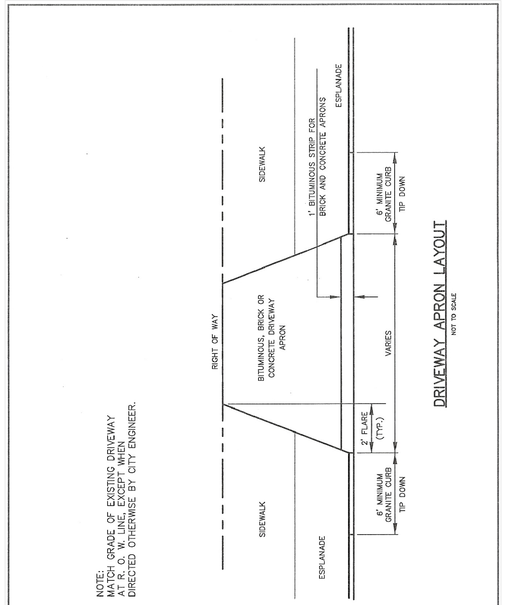
DATE: AUGUST 2009 REVISED:	CITY OF PORTLAND, MAINE TECHNICAL STANDARDS MANUAL	TRANSPORTATION SYSTEMS AND STREET DESIGN SECTION I	FIGURE: I-13
	BITUMINOUS DRIVEWAY APRON		



4' GRANITE HEADSTONE FOR CATCH BASIN INLET

NOT TO SCALE

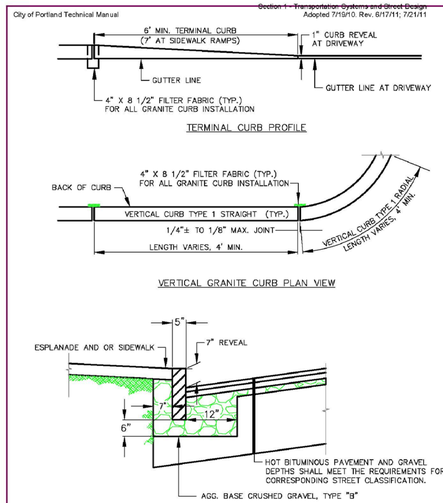
DATE: AUGUST 2009 REVISED:	CITY OF PORTLAND, MAINE TECHNICAL STANDARDS MANUAL	SANITARY SEWER AND STORM DRAIN DESIGN STANDARDS SECTION II	FIGURE: II-11
	4' GRANITE HEADSTONE FOR CATCH BASIN INLET		



DRIVEWAY APRON LAYOUT

NOT TO SCALE

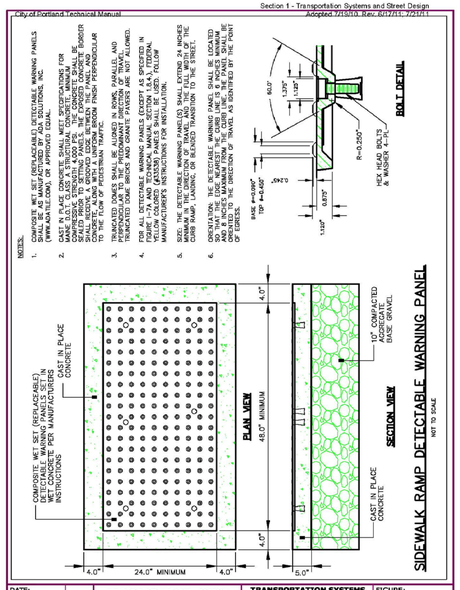
DATE: AUGUST 2009 REVISED:	CITY OF PORTLAND, MAINE TECHNICAL STANDARDS MANUAL	TRANSPORTATION SYSTEMS AND STREET DESIGN SECTION I	FIGURE: I-9
	DRIVEWAY APRON LAYOUT		



VERTICAL GRANITE CURB FULL DEPTH STREET CONSTRUCTION

NOT TO SCALE

DATE: AUGUST 2009 REVISED:	CITY OF PORTLAND, MAINE TECHNICAL STANDARDS MANUAL	TRANSPORTATION SYSTEMS AND STREET DESIGN SECTION I	FIGURE: I-16
	VERTICAL GRANITE CURB FULL DEPTH STREET CONSTRUCTION		



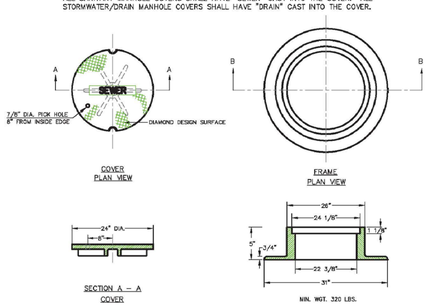
SIDEWALK RAMP DETECTABLE WARNING PANEL

NOT TO SCALE

DATE: JUNE 3, 2010 REVISED: MARCH 2, 2011 JUNE 23, 2011	CITY OF PORTLAND, MAINE TECHNICAL STANDARDS MANUAL	TRANSPORTATION SYSTEMS AND STREET DESIGN SECTION I	FIGURE: I-7
	SIDEWALK RAMP DETECTABLE WARNING PANEL		

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.

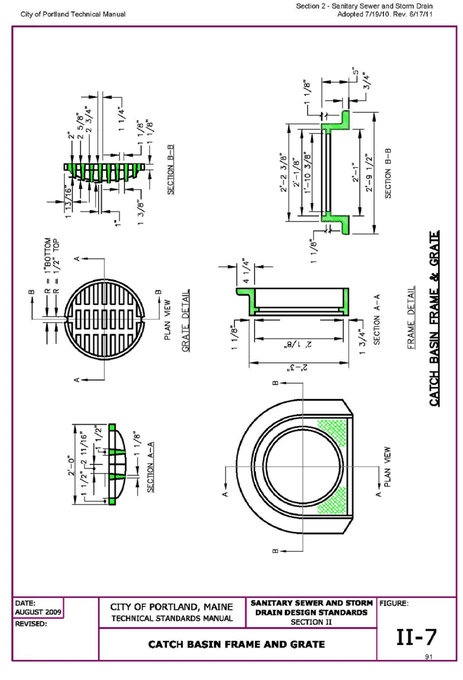
ALL SANITARY MANHOLE COVERS SHALL HAVE "SEWER" CAST INTO THE COVER. ALL STORMWATER/DRAIN MANHOLE COVERS SHALL HAVE "DRAIN" CAST INTO THE COVER.



CAST IRON MANHOLE COVER AND FRAME

NOT TO SCALE

DATE: AUGUST 2009 REVISED:	CITY OF PORTLAND, MAINE TECHNICAL STANDARDS MANUAL	SANITARY SEWER AND STORM DRAIN DESIGN STANDARDS SECTION II	FIGURE: II-5
	CAST IRON MANHOLE COVER AND FRAME		

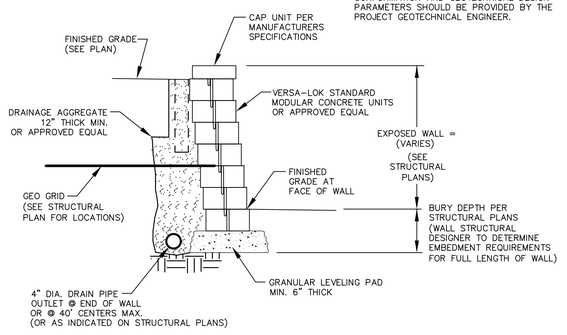


CATCH BASIN FRAME & GRATE

NOT TO SCALE

DATE: AUGUST 2009 REVISED:	CITY OF PORTLAND, MAINE TECHNICAL STANDARDS MANUAL	SANITARY SEWER AND STORM DRAIN DESIGN STANDARDS SECTION II	FIGURE: II-7
	CATCH BASIN FRAME AND GRATE		

NOTE:
CONTRACTOR TO PROVIDE STAMPED ENGINEERED DESIGN PLANS PRIOR TO CONSTRUCTION. SUBGRADE SOIL CONFORMATION AND GEOTECHNICAL DESIGN PARAMETERS SHOULD BE PROVIDED BY THE PROJECT GEOTECHNICAL ENGINEER.



MSE BLOCK RETAINING WALL

N.T.S.

Revision:	By:	Date:	Change:
2	SMA	5/11/18	SUBMITTED FOR PRELIMINARY SITE PLAN/SUBDIVISION REVIEW
1	SMA	5/4/18	SUBMITTED FOR MDEP TIER 1 REVIEW

PROJECT NUMBER: 41041 | ACAD FILE: 41041-DETAILS.DWG | SCALE: AS NOTED | DATE: MAY 1, 2018

Drawing Name:
CONSTRUCTION DETAILS – SHEET 3

Project Name and Location:
PROPOSED CAPISIC MEADOWS SUBDIVISION
130 BANCROFT STREET, PORTLAND, MAINE 04102

Prepared For:
WB GROUP, INC
130 BANCROFT STREET, PORTLAND, MAINE 04102

THIS PLAN IS FOR REVIEW PURPOSES ONLY AND IS NOT INTENDED FOR CONSTRUCTION OR RECORDING

STATE OF MAINE — ANTHONY P. PANCIOCCO JR. No. 10941 — REGISTERED PROFESSIONAL ENGINEER — 5-11-18

SHEET 11 OF 14

SURVEYING ● ENGINEERING ● LAND PLANNING
Northeast Civil Solutions
INCORPORATED
381 PAYNE ROAD, SCARBOROUGH, MAINE 04074
tel. 207.883.1000 fax. 207.883.1001 e-mail / website info@northeastcivilsolutions.com www.northeastcivilsolutions.com

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DATE: AUGUST 2009
REVISED:

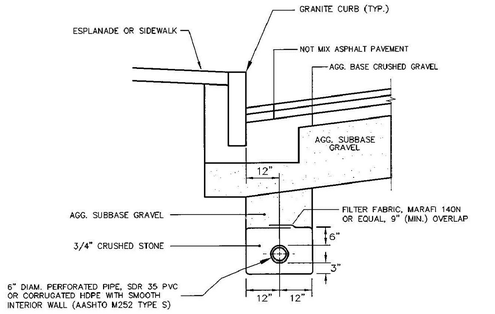
CITY OF PORTLAND, MAINE
TECHNICAL STANDARDS MANUAL

TRANSPORTATION SYSTEMS AND STREET DESIGN
SECTION I

UNDERDRAIN INSTALLATION ALTERNATIVE A

FIGURE: I-20

NOTES
1. UNDERDRAIN PIPE INVERT ELEVATIONS SHALL BE AT LEAST 42 INCHES BELOW GUTTER GRADES.
2. PERFORATIONS IN UNDERDRAIN PIPE SHALL BE ORIENTED DOWN.

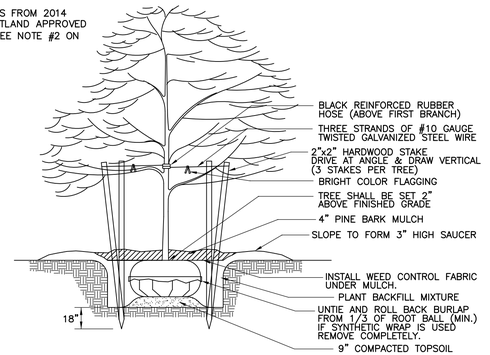


TYPE "B" UNDERDRAIN INSTALLATION DETAIL – ALTERNATIVE "A"
NOT TO SCALE

City of Portland Technical Manual
Section 1 - Transportation Systems and Street Design
Adopted 7/19/10, Rev. 6/7/11; 7/27/11

PLANTING SCHEDULE			
QUANTITY	BOTANICAL NAME	COMMON NAME	SIZE
14*	ACER RUBRUM 'RED SUNSET'*	RED SUNSET MAPLE*	6'-7'

*VARY SPECIES FROM 2014 CITY OF PORTLAND APPROVED TREE LIST (SEE NOTE #2 ON SITE PLAN)



TYPICAL STREET TREE PLANTING
NOT TO SCALE

PAVEMENT MARKING NOTES :

1. ALL PAVEMENT MARKING WORDS AND SYMBOLS SHALL BE RETROREFLECTIVE WHITE AND SHALL CONFORM TO THE **MUTCD** AND MDOT ITEM 627.
2. WORDS AND SYMBOLS SHALL BE CENTERED LATERALLY WITHIN THE LANE. THE LONGITUDINAL DIMENSION SHALL BE PARALLEL TO THE LANE.
3. MULTI-WORD MESSAGES SHALL READ "UP"; THAT IS, THE FIRST WORD SHALL BE NEAREST THE APPROACHING DRIVER.
4. THE WORD "ONLY" SHALL NOT BE USED WITH THROUGH OR COMBINATION ARROWS, AND SHALL NOT BE USED ADJACENT TO A BROKEN LANE LINE. A TURN ARROW SHALL PRECEDE THE WORD "ONLY".
5. COMBINATION ARROWS MAY BE COMPRISED OF 2 SINGLE ARROWS (e.g. TURN AND THROUGH ARROWS). HOWEVER, THE SHAFTS OF THE ARROWS SHALL COINCIDE.
6. PREFORMED TAPE WORDS AND SYMBOLS SHALL BE PRE-CUT, EITHER BY THE MANUFACTURER OR THE CONTRACTOR.
7. WRONG-WAY ARROWS SHALL NOT BE SUBSTITUTED FOR THROUGH ARROWS.
8. LONGITUDINAL SPACING BETWEEN SUCCESSIVE WORDS AND/OR SYMBOLS SHOULD BE AT LEAST 4 TIMES THE HEIGHT OF THE LARGEST CHARACTER.

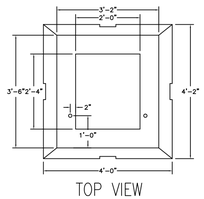
TRAFFIC SIGNS								
IDENTIFICATION NUMBER	SIGN HEIGHT	SIGN WIDTH	POST PER SIGN	TEXT	NUMBER OF SIGNS REQ'D.	SIGN AREA SQ. FT. NOM. AREA	SIGN AREA SQ. FT. TOTAL AREA	REMARKS
R1-1	30"	30"	1	STOP	1	6.25	6.25	PER MUTCD

NOTE: ALL SIGNS SHALL CONFORM TO MUTCD STANDARDS

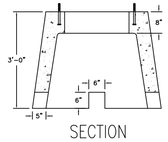
PRECAST CONCRETE PRODUCTS OF MAINE, INC. PHONE (207) 729-1628 FAX (207) 729-8710

CMP RESIDENTIAL TRANSFORMER PAD
(25 – 167 KVA)

ITEM #B-1
WEIGHT – 3,160 LBS



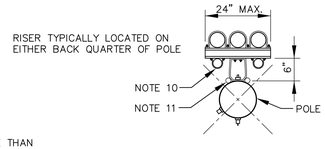
TOP VIEW



SECTION

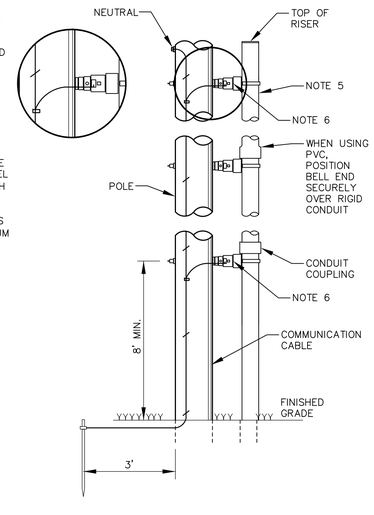
DESIGN NOTES:

1 – CONCRETE 4000 PSI AT 28 DAYS.
2 – REINFORCING 4X4 W.W.M.
3 – (2) – 5/8" DIA X 8" LONG BOLTS

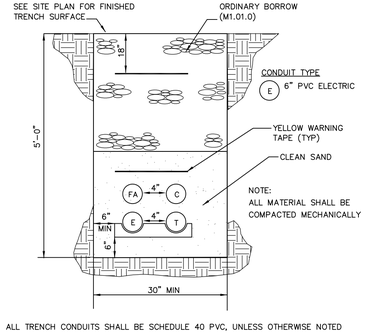


NOTES:

1. STAND OFF BRACKETS ARE REQUIRED WHEN MORE THAN ONE CONDUIT PER UTILITY IS TO BE INSTALLED ON A POLE.
2. ALL THREE PHASE PRIMARY RISERS, WHETHER STAND OFF BRACKETS ARE USED OR NOT, SHALL BE RIGID STEEL FOR THE FIRST SECTION.
3. ON SINGLE PHASE PRIMARY, SECONDARY AND SERVICE URD RISERS USING STAND OFF BRACKETS, RIGID STEEL OR SCHEDULE 80 MAY BE USED.
4. WHERE RIGID STEEL OR SCHEDULE 80 PVC IS USED FOR THE RISER, ONE BRACKET SHALL BE USED TO SUPPORT EACH SECTION OF CONDUIT UP TO 10 FEET IN LENGTH. EACH BRACKET IS TO BE PLACED JUST BELOW THE RISER CONDUIT COUPLING.
5. CONDUIT SECTIONS FOR A SINGLE PHASE OR THREE PHASE RISERS USING STAND OFF BRACKETS SHALL BE RIGID STEEL OR SCHEDULE 80 PVC CONDUIT ONLY (SEE NOTE #2), WITH THE EXCEPTION THAT SCHEDULE 40 PVC SUNLIGHT RESISTANT CONDUIT MAY BE USED FOR THE TOP SECTION OF THE RISER (NOT LONGER THAN 10'). IF TOP SECTION IS LONGER THAN 24" IT MUST BE SUPPORTED WITH A MINIMUM OF ONE STAND OFF BRACKET. IF TOP SECTION IS SCHEDULE 40 PVC AND LONGER THAN 72" IT MUST BE SUPPORTED BY NO FEWER THAN TWO STAND OFF BRACKETS.
6. WHERE PVC IS USED FOR THE RISER, EACH STAND OFF BRACKET SUPPORTING THE PVC SHALL BE GROUNDED. WHERE STEEL IS USED FOR THE RISER ONE STAND OFF BRACKET SUPPORTING THE STEEL IS REQUIRED TO BE GROUNDED.
7. SWEEPS, WHEN USED, ARE REQUIRED TO BE STEEL.
8. IF RISER IS ALL STEEL CONDUIT, INSTALL INSULATED GROUNDING BUSHING AT TOP OF RISER.
9. LOWEST BRACKET SHALL BE A MINIMUM OF 8 FEET ABOVE FINISHED GRADE.
10. ALTERNATE LOCATION FOR COMMUNICATION CABLE IF RUN IN METAL CONDUIT OR SCHEDULE 80.
11. COMMUNICATION CABLE MAY BE ATTACHED DIRECTLY TO POLE ADJACENT TO BRACKETS.



TYPICAL RISER DETAIL
NOT TO SCALE



ALL TRENCH CONDUITS SHALL BE SCHEDULE 40 PVC, UNLESS OTHERWISE NOTED

COMMON TRENCH DETAIL
ELECTRIC/TELEPHONE/FIRE ALARM/CABLE
NOT TO SCALE

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Drawing Name:
CONSTRUCTION DETAILS – SHEET 4

Project Name and Location:
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130 BANCROFT STREET, PORTLAND, MAINE 04102

Prepared For:
WB GROUP, INC
130 BANCROFT STREET, PORTLAND, MAINE 04102

STATE OF MAINE ANTHONY P. PANICOCCO JR. No. 10941 REGISTERED PROFESSIONAL ENGINEER
5-11-18

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tel 207.883.1000 fax 207.883.1001 e-mail / website info@northeastcivilsolutions.com www.northeastcivilsolutions.com

SHEET 12 OF 14

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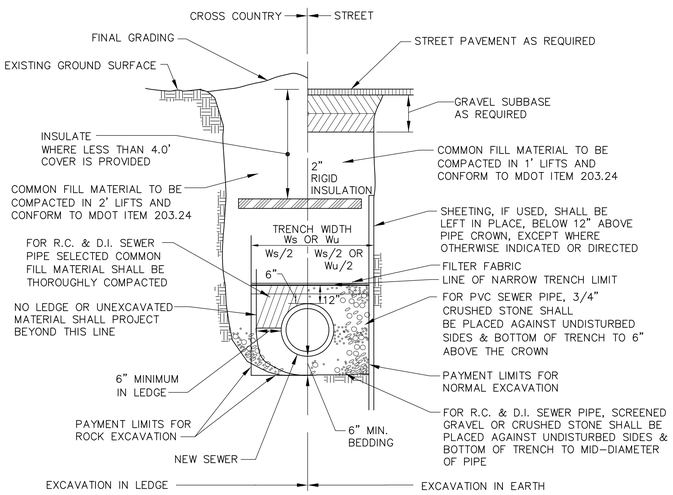
NOTES:

1. TRENCHES LOCATED ON THE ROAD SHOULDER SHALL BE TREATED THE SAME AS STREET EXCEPT FOR PAVING
2. SATISFACTORY EXCAVATED MATERIAL CAN BE USED FOR BACKFILL ABOVE THE LINE OF NARROW TRENCH LIMIT.

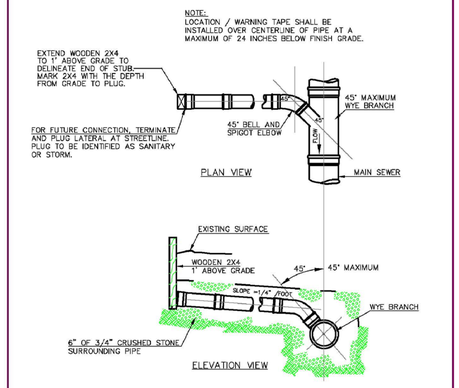
TRENCH WIDTH Ws OR Wu		
DIAMETER OF PIPE D	Wu UNSHEETED	Ws SHEETED
12" AND SMALLER	3'-0"	4'-2"
15"	3'-2"	4'-4"
18"	3'-6"	4'-8"
21"	3'-10"	5'-0"
24"	4'-2"	5'-4"
27"	4'-6"	5'-8"
30"	4'-10"	6'-0"
36"	5'-6"	6'-8"
42"	6'-2"	7'-4"
48"	6'-10"	8'-0"

TRENCH WIDTH DATA



SEWER TRENCH SECTION

N. T. S.

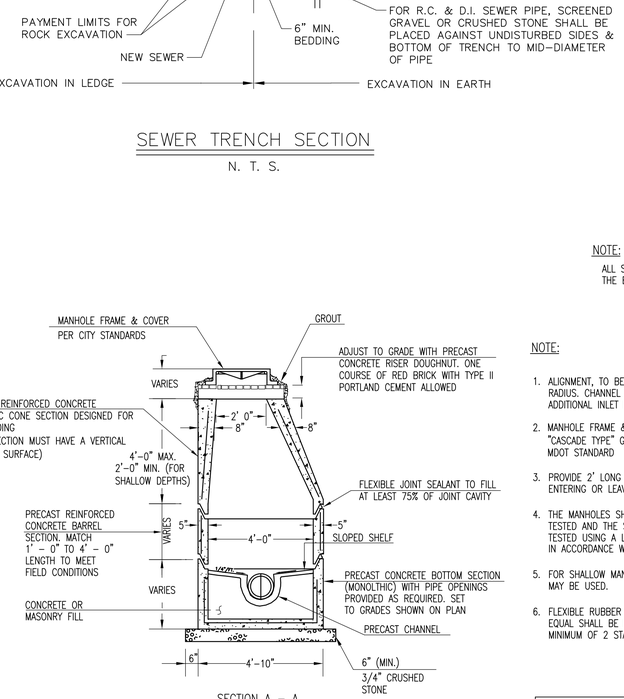


TYPICAL HOUSE LATERAL TEE/WYE CONNECTION

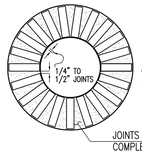
NOT TO SCALE

DATE: AUGUST 2009 REVISED:	CITY OF PORTLAND, MAINE TECHNICAL STANDARDS MANUAL	SANITARY SEWER AND STORM DRAIN DESIGN STANDARDS SECTION II	FIGURE: II-17
	TYPICAL HOUSE LATERAL TEE/WYE CONNECTION		

101



SECTION A – A



NOTE:
JOINTS SHALL BE STAGGERED FOR EACH COURSE

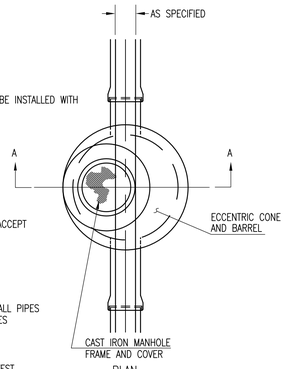
JOINTS SHALL BE COMPLETELY FILLED WITH MORTAR

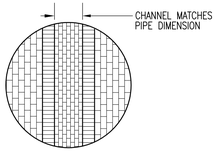
BRICK JOINT DETAIL

NOTE:
ALL SEWER PIPES SHALL BE INSTALLED WITH THE BELLS UPGRADIENT.

NOTE:

1. ALIGNMENT, TO BE BUILT ON SMOOTH RADIUS. CHANNEL TO BE SHAPED TO ACCEPT ADDITIONAL INLET PIPES.
2. MANHOLE FRAME & COVER "CASCADE TYPE" GRATE PER MDOT STANDARD
3. PROVIDE 2' LONG (MAX.) STUBS FOR ALL PIPES ENTERING OR LEAVING SEWER MANHOLES
4. THE MANHOLES SHALL BE VACUUM TESTED AND THE SEWER PIPELINE TESTED USING A LOW PRESSURE AIR TEST IN ACCORDANCE WITH TOWN SPECIFICATIONS.
5. FOR SHALLOW MANHOLES, A 2' CONE MAY BE USED.
6. FLEXIBLE RUBBER BOOT OR APPROVED EQUAL SHALL BE EQUIPPED WITH A MINIMUM OF 2 STAINLESS STEEL BANDS





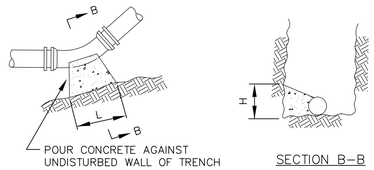
SHELF DETAIL

CATCH BASIN/DRAIN MANHOLE DIMENSIONAL REQUIREMENTS		
I.D.	WALL WIDTH	FLOOR THICKNESS
4'-0"	5"	6"
5'-0"	6"	6"
6'-0"	7"	6"
8'-0"	8"	8"
10'-0"	10"	9"

NOTE:
MANHOLE, FRAME AND COVER SHALL BE DESIGNED TO WITHSTAND HS-20 LOADING.

PRECAST CONCRETE SEWER MANHOLE TYPE "A"

NOT TO SCALE



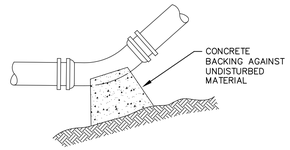
SECTION B–B

BEARING AREAS – SQUARE FEET					
NOMINAL DIAMETER OF FITTING	FITTING				
	DEAD END	BRANCH OF TEE	90° BEND	45° BEND	BEND SMALLER THAN 45° GREATER THAN 10°
6"	2	2	3	2	2
8"	4	4	5	3	2
10"	6	6	8	4	2
12"	8	8	10	6	3
14"	12	12	16	9	4
16"	12	12	20	10	5

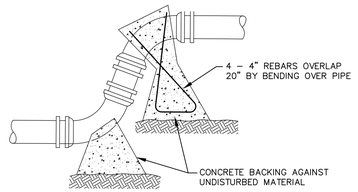
NOTES
1. ALL BENDS, TEE HYDRANTS AND DEAD ENDS SHALL BE BRACED WITH CONCRETE THRUST BLOCKS.
2. BEARING AREA IS AREA OF CONCRETE IN CONTACT WITH WALL OF TRENCH=HxL.
3. HEIGHT (H) AND LENGTH (L) AS REQUIRED TO OBTAIN BEARING AREA IN TABLE.

THRUST BLOCK DETAILS

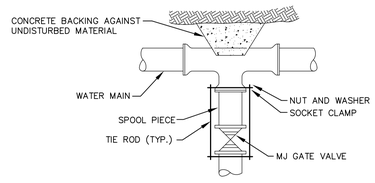
NOT TO SCALE



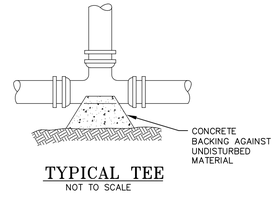
TYPICAL BEND
NOT TO SCALE



TYPICAL OFF-SET
NOT TO SCALE



TYPICAL VALVE CONNECTION
RESTRAINED JOINT TEE
NOT TO SCALE



TYPICAL TEE
NOT TO SCALE

GENERAL NOTES

1. LOCATIONS OF UTILITIES ARE APPROXIMATE.
2. IT SHALL BE THE CONTRACTOR'S RESPONSIBILITY TO HAVE ALL THE UTILITIES LOCATE THEIR SERVICES PRIOR TO THE START OF CONSTRUCTION.
3. ALL EXISTING CATCH BASINS, MANHOLES, CONNECTIONS, AND OUTLET PIPING SHALL BE CLEANED AND LEFT IN SATISFACTORY OPERATING CONDITION AFTER CONSTRUCTION HAS BEEN COMPLETED. NO SEPARATE PAYMENT WILL BE MADE FOR THIS WORK.
4. ALL MANHOLE FRAMES SHALL BE SUPPLIED WITH SOLID MANHOLE COVERS; SEE STANDARD DETAIL.
5. ALL GRANITE CATCH BASIN STONES, MANHOLE FRAMES AND COVERS TO BE REMOVED SHALL BE REUSED AS DIRECTED BY THE PROJECT ENGINEER. NO SEPARATE PAYMENT WILL BE MADE FOR THIS WORK.
6. ALL TERMINAL MANHOLES SHALL HAVE CHANNELS CONSTRUCTED STRAIGHT THROUGH THE MANHOLE.

GENERAL NOTES FOR SEWER PIPES, MANHOLES AND CATCH BASINS

1. ALL CONCRETE SHALL BE CLASS "A" AND HAVE A MINIMUM ULTIMATE COMPRESSIVE STRENGTH OF 4000 lbs. PER SQ. INCH AT THE END OF 28 DAYS, UNLESS OTHERWISE NOTED.
2. PRECAST REINFORCED CONE BARREL MANUFACTURED PER ASTM SPEC. C-478-67
3. SEWER BRICK SHALL CONFORM TO ASTM SPEC. DESIGNATE ON C-32-63, GRADE MA AND SA.
4. ALL MANHOLES SHALL HAVE A BITUMINOUS WATERPROOFING APPLIED TO THE EXTERIOR SURFACE.
5. CASTINGS SHALL CONFORM TO ASTM DESIGNATION A48-CLASS 35. ALL PARTS OF CASTINGS, EXCEPT FINISHED SURFACE, SHALL RECEIVE A COAT OF COAL TAR PITCH VARNISH OR ASPHALTUM PAINT WHICH SHALL BE SMOOTH AND TOUGH BUT NOT BRITTLE.
6. MANHOLES TO BE CONSTRUCTED OF PRECAST REINFORCED CONCRETE.
7. ALL PRECAST MANHOLES AND CATCH BASINS SHALL BE IDENTIFIED BY LABLE, PAINTED ON THE SIDE OF THE STRUCTURE BY THE MANUFACTURER.
8. STORM MANHOLES SHALL HAVE CAST IRON COVERS WITH ONE DRILLED PICK HOLE. 26"ø NEENAH COVER OR APPROVED EQUAL. NO HOLES ARE ALLOWED IN SEWER MANHOLE COVERS
9. ALL SEWER PIPES USED SHALL BE SDR-35, MEETING THE REQUIREMENTS OF ASTM 3034. PIPES SHALL HAVE GASKETS AND BE INSTALLED WITH BELLS UPHILL.
10. THE RUBBER BOOT FOR THE SEWER PIPE PENETRATIONS INTO THE MANHOLES SHALL HAVE AT LEAST 2 STAINLESS STEEL CLAMPS.

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PROJECT NUMBER: 41041 | ACAD FILE: 41041-DETAILS.DWG | SCALE: AS NOTED | DATE: MAY 1, 2018

Drawing Name:
CONSTRUCTION DETAILS – SHEET 5

Project Name and Location:
PROPOSED CAPISIC MEADOWS SUBDIVISION
130 BANCROFT STREET, PORTLAND, MAINE 04102

Prepared For:
WB GROUP, INC
130 BANCROFT STREET, PORTLAND, MAINE 04102

STATE OF MAINE — ANTHONY P. PANCIOCCO JR. — No. 10941 — LICENSED PROFESSIONAL ENGINEER — 5-11-18

SHEET 13 OF 14

SURVEYING • ENGINEERING • LAND PLANNING
Northeast Civil Solutions
INCORPORATED
381 PAYNE ROAD, SCARBOROUGH, MAINE 04074
tel 207.883.1000 fax 207.883.1001 e-mail / website info@northeastcivilsolutions.com www.northeastcivilsolutions.com

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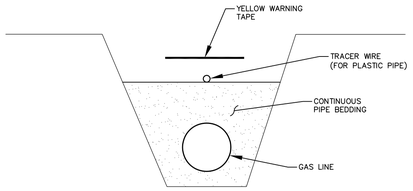
UNDERGROUND GAS PIPING INSTALLATION NOTE:

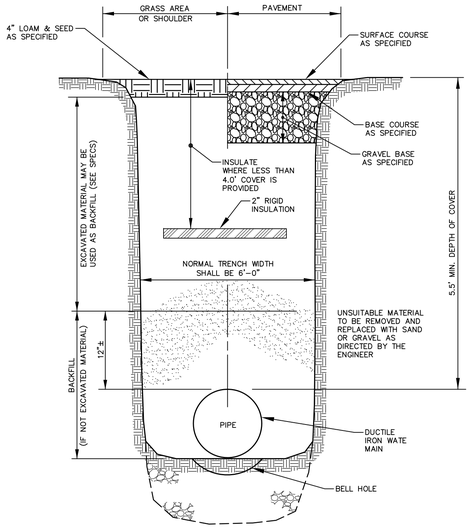
COVER DEPTH – SHOULD BE INSTALLED AT LEAST 18" OF COVER. CAN BE 12" IN AREAS WHERE EXTERNAL DAMAGE IS NOT LIKELY. IF LESS THAN 12", PROVIDE A PROTECTIVE CONDUIT OR BRIDGING. ALWAYS USE WARNING TAPE AND TRACER WIRE FIR PLASTIC PIPING.

BACK FILLING TRENCHES – PIPE SHOULD HAVE A FIRM, CONTINUOUS BEARING ON TRENCH BOTTOM. WHEN INSTALLING GAS PIPING, ESPECIALLY PLASTIC, IN A FLOODED TRENCH, CARE SHOULD BE TAKEN TO PREVENT THE PIPE FROM FLOATING UP IN THE TRENCH DURING BACK FILLING OPERATIONS.

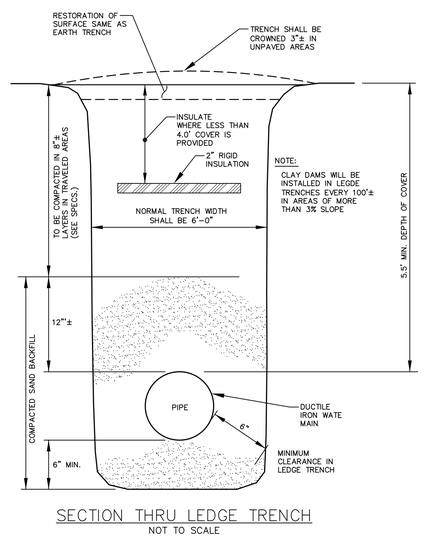
COORDINATE ALL INSTALLATIONS WITH UNITIL.



GAS LINE TRENCH DETAIL
NOT TO SCALE



SECTION THRU EARTH TRENCH
NOT TO SCALE



SECTION THRU LEDGE TRENCH
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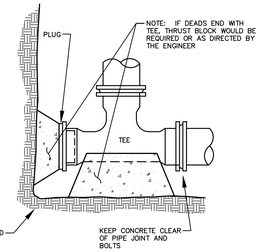
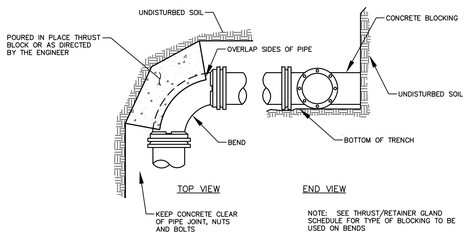
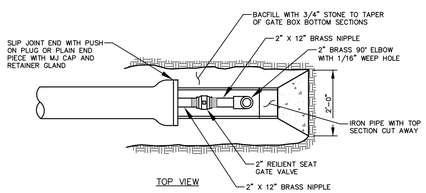
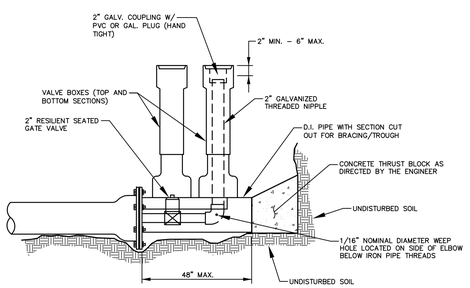


STANDARD TEE BLOCKING
NOT TO SCALE

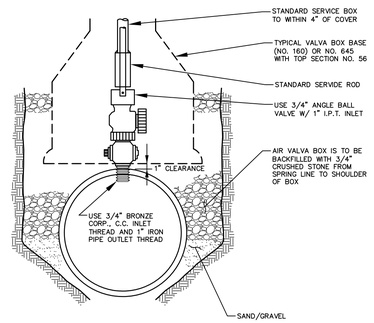


STANDARD BEND BLOCKING
NOT TO SCALE



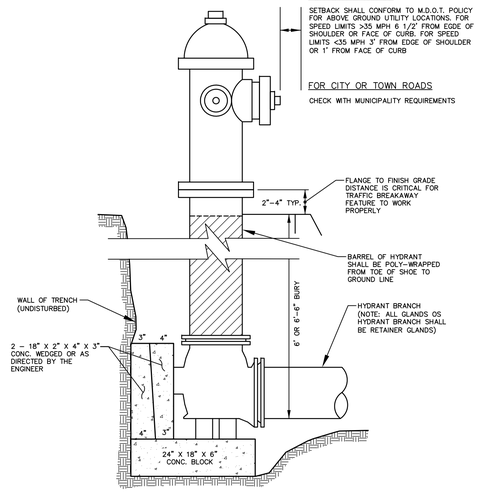


STANDARD 2" BLOW OFF
NOT TO SCALE

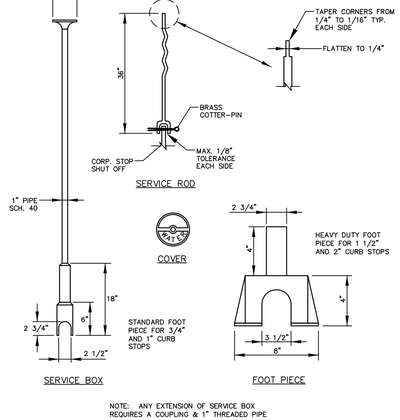


TYPICAL AIR VALVE (1")
NOT TO SCALE

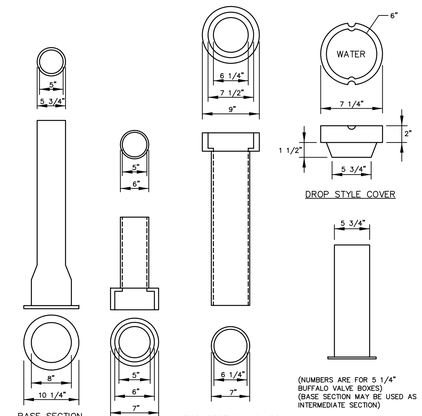
PLAN VIEW
NOT TO SCALE



TYPICAL HYDRANT INSTALLATION DETAIL
NOT TO SCALE



NOTE: ANY EXTENSION OF SERVICE BOX REQUIRES A COUPLING & 1" THREADED PIPE



VALVE BOX & COVER
NOT TO SCALE

ALL WATER LINE WORK TO MEET PORTLAND WATER DISTRICT STANDARDS

THIS PLAN IS FOR REVIEW PURPOSES ONLY AND IS NOT INTENDED FOR CONSTRUCTION OR RECORDING

Revision:	By:	Date:	Change:
2	SMA	5/11/18	SUBMITTED FOR PRELIMINARY SITE PLAN/SUBDIVISION REVIEW
1	SMA	5/4/18	SUBMITTED FOR MDEP TIER 1 REVIEW

PROJECT NUMBER: 41041 | ACAD FILE: 41041-DETAILS.DWG | SCALE: AS NOTED | DATE: MAY 1, 2018

Drawing Name:
CONSTRUCTION DETAILS – SHEET 6

Project Name and Location:
PROPOSED CAPISIC MEADOWS SUBDIVISION
130 BANCROFT STREET, PORTLAND, MAINE 04102

Prepared For:
WB GROUP, INC
130 BANCROFT STREET, PORTLAND, MAINE 04102

STATE OF MAINE — ANTHONY P. PANCIOCCO JR. No. 10941 — REGISTERED PROFESSIONAL ENGINEER — 5-11-18

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tel 207.883.1000 fax 207.883.1001 e-mail / website info@northeastcivilsolutions.com www.northeastcivilsolutions.com

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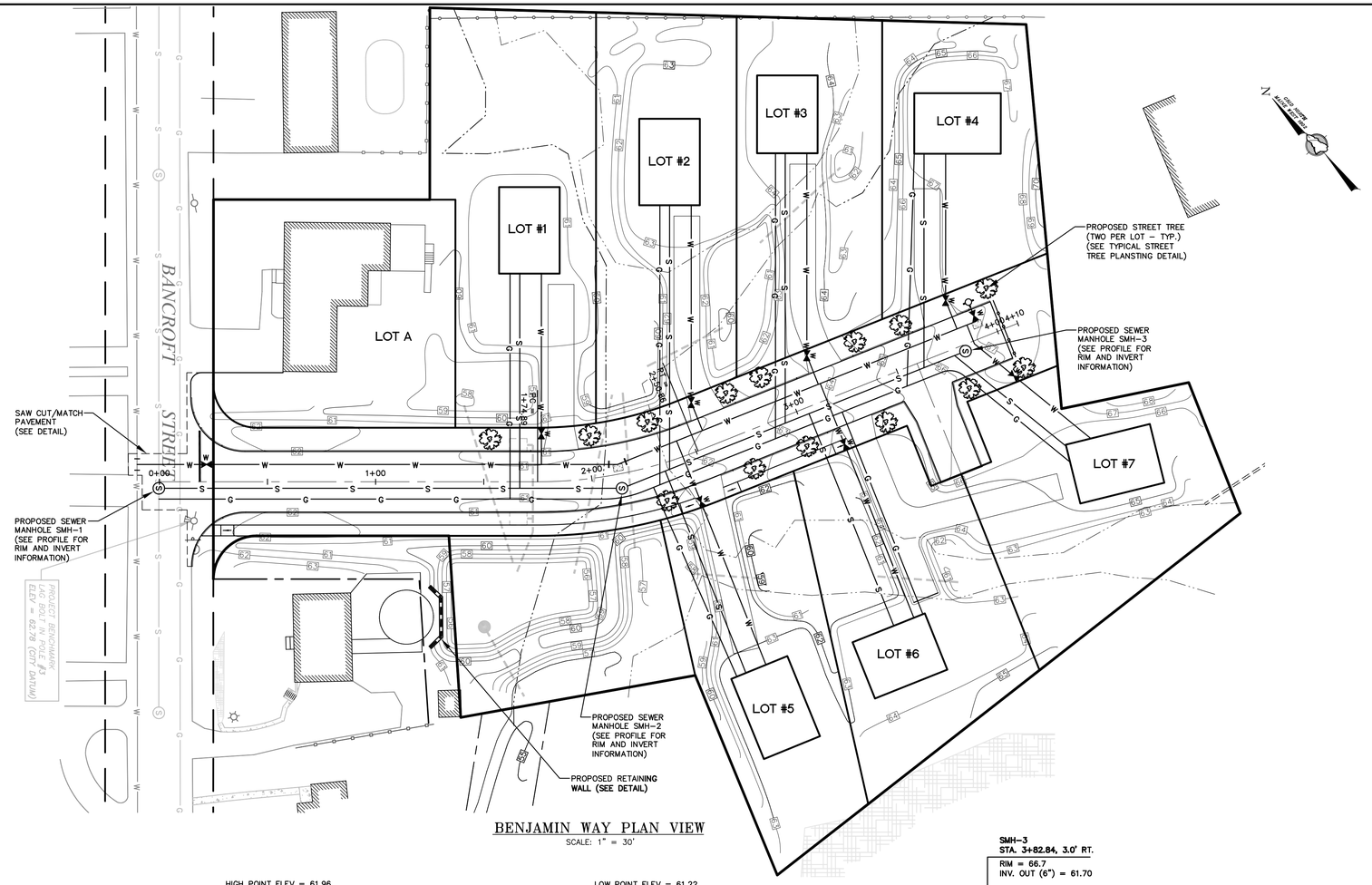
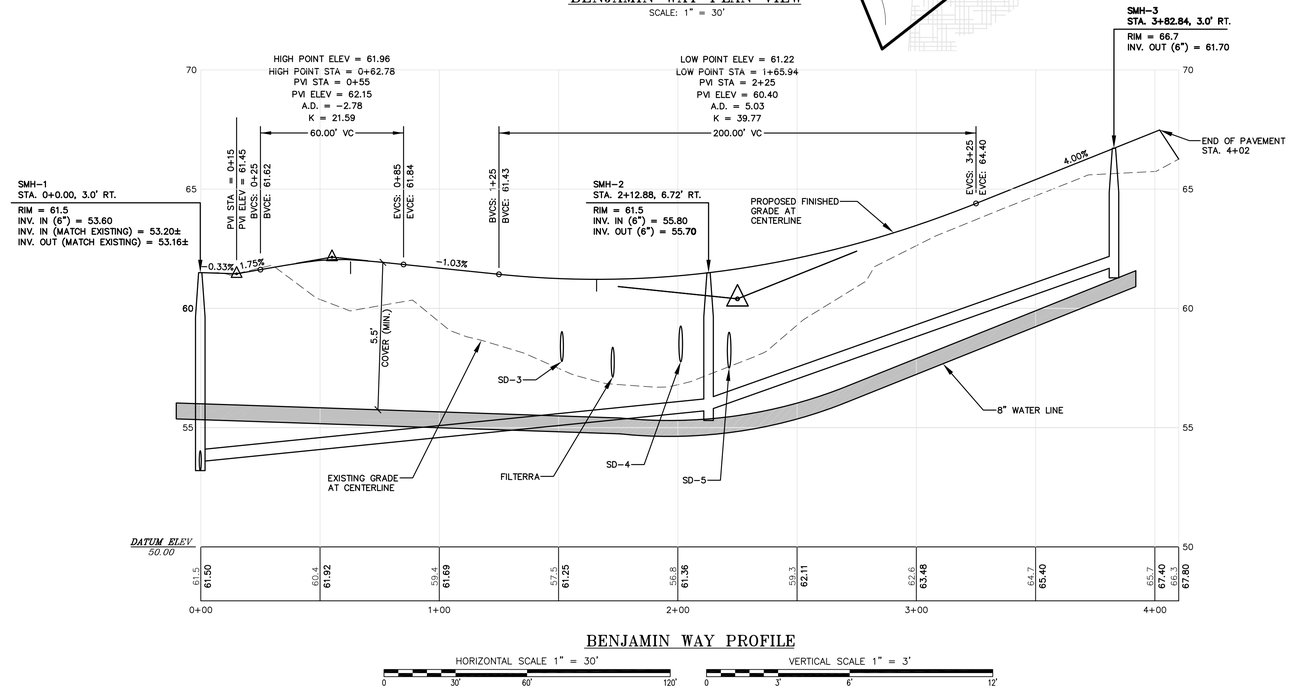


BENJAMIN WAY PLAN VIEW

SCALE: 1" = 30'



BENJAMIN WAY PROFILE

HORIZONTAL SCALE 1" = 30'

0 30' 60' 120'

VERTICAL SCALE 1" = 3'

0 3' 6' 12'

LEGEND

- BOUNDARY LINE
- EDGE OF PAVEMENT
- RIGHT-OF-WAY LINE
- ABUTTER
- EXISITNG EASEMENT
- BUILDING SETBACK
- EXISTING UTILITY POLE
- OHU — EXISTING OVERHEAD UTILITY
- EXISTING HYDRANT
- EXISTING HYDRANT
- W — W — EXISTING WATER LINE
- EXISTING SEWER MANHOLE
- S — S — EXISTING WATER LINE
- EXISTING TREE
- EXISTING TREE LINE
- WETLAND
- W — W — PROPOSED WATER LINE
- S — S — PROPOSED SEWER LINE
- G — G — PROPOSED DRAIN LINE
- PROPOSED GAS LINE
- PROPOSED OUTLET CONTROL STRUCTURE

CONSTRUCTION NOTES

1. ALL EXISTING UTILITY LOCATIONS SHOWN ARE APPROXIMATE AND HAVE BEEN DETERMINED BY SURFACE EVIDENCE AND/OR PREVIOUSLY GENERATED PLANS. NO GUARANTEE IS MADE THAT ALL UTILITIES ARE SHOWN OR WILL BE FOUND IN LOCATIONS INDICATED. THIS INFORMATION IS PROVIDED FOR REFERENCE AND THE CONTRACTOR SHALL VERIFY LOCATION OF ALL UTILITIES AND POINTS OF CONNECTION IN THE FIELD. CONTRACTOR SHALL BE RESPONSIBLE FOR REPAIR AND RESTORATION OF ALL UTILITIES DISTURBED DURING CONSTRUCTION AT NO EXTRA EXPENSE TO THE OWNER.
2. CONTRACTOR SHALL VISIT THE SITE AND FAMILIARIZE HIM OR HERSELF WITH ALL CONDITIONS AFFECTING THE PROPOSED WORK AND SHALL MAKE PROVISIONS AS TO THE COST THEREOF. CONTRACTOR SHALL BE RESPONSIBLE FOR FAMILIARIZING HIM OR HERSELF WITH ALL CONTRACT DOCUMENTS, FIELD CONDITIONS AND DIMENSIONS AND CONFORMING THAT THE WORK MAY BE ACCOMPLISHED AS SHOWN PRIOR TO PROCEEDING WITH CONSTRUCTION. ANY DISCREPANCIES SHALL BE BROUGHT TO THE ATTENTION OF THE ENGINEER PRIOR TO THE COMMENCEMENT OF WORK.
3. CONTRACTOR SHALL NOTIFY ENGINEER OF ALL PRODUCTS OR ITEMS NOTED AS "EXISTING" WHICH ARE NOT FOUND IN THE FIELD.
4. THE CONTRACTOR SHALL TAKE FULL RESPONSIBILITY FOR ANY CHANGES AND/OR DEVIATIONS OF APPROVED PLANS NOT AUTHORIZED BY THE ARCHITECT/ENGINEER AND/OR CLIENT/OWNER.
5. DETAILS ARE INTENDED TO SHOW END RESULT OF DESIGN. ANY MODIFICATION TO SUIT FIELD DIMENSIONS AND CONDITIONS SHALL BE SUBMITTED TO THE ENGINEER FOR REVIEW AND APPROVAL PRIOR TO ANY WORK.
6. ALL SUBSURFACE UTILITY LINES, SHOWN HEREON, ARE BASED SOLELY ON THE FIELD LOCATION OF VISIBLE STRUCTURES, SMH'S, CB'S, HYDRANTS, ETC. IN CONJUNCTION WITH DESIGN AND OR AS-BUILT PLANS SUPPLIED TO NORTHEAST CIVIL SOLUTIONS BY OTHERS. PRIOR TO ANY CONSTRUCTION, EXCAVATION, TEST BORINGS, DRILLING ETC. DIG SAFE MUST BE NOTIFIED AND A SITE IDENTIFICATION NUMBER, ALONG WITH A SAFE TO DIG DATE OBTAINED. THE SITE CONTRACTOR SHALL BE RESPONSIBLE FOR FIELD VERIFYING THE LOCATION, DEPTH AND MATERIAL OF ALL SUBSURFACE UTILITY LINES SHOWN HEREON, AND ON ANY AND ALL OTHERS LOCATED ON SITE WITHIN THE CONSTRUCTION AREA. CONTACT DIG-SAFE (888) DIG-SAFE PRIOR TO ANY EXCAVATION WORK.
7. COORDINATE ALL ELECTRICAL WORK WITH CENTRAL MAINE POWER PRIOR TO CONSTRUCTION.
8. ALL PAVEMENT MARKINGS AND PAINT STRIPING TO MEET THE STANDARDS OF THE LATEST EDITION OF THE MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES (MUTCD).
9. ALL WATER LINE WORK SHALL MEET PORTLAND WATER DISTRICT STANDARDS (PWD). COORDINATE ALL WORK WITH THE DISTRICT PRIOR TO CONSTRUCTION.

Revision:	By:	Date:	Change:
2	SMA	5/11/18	SUBMITTED FOR PRELIMINARY SITE PLAN/SUBDIVISION REVIEW
1	SMA	5/4/18	SUBMITTED FOR MDEP TIER 1 REVIEW

PROJECT NUMBER: 41041 | ACAD FILE: 41041-P&P.DWG | SCALE: 1" = 30' | DATE: MAY 1, 2018

Drawing Name:
PLAN & PROFILE – BENJAMIN WAY

Project Name:
PROPOSED CAPISIC MEADOWS SUBDIVISION
130 BANCROFT STREET, PORTLAND, MAINE 04102

Owner/Applicant:
WB GROUP, INC
130 BANCROFT STREET, PORTLAND, MAINE 04102

THIS PLAN IS FOR REVIEW PURPOSES ONLY AND IS NOT INTENDED FOR CONSTRUCTION OR RECORDING

STATE OF MAINE — ANTHONY P. PANCIOCCO JR. — No. 10941 — REGISTERED PROFESSIONAL ENGINEER — 5-11-18

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0 30' 60' 120'

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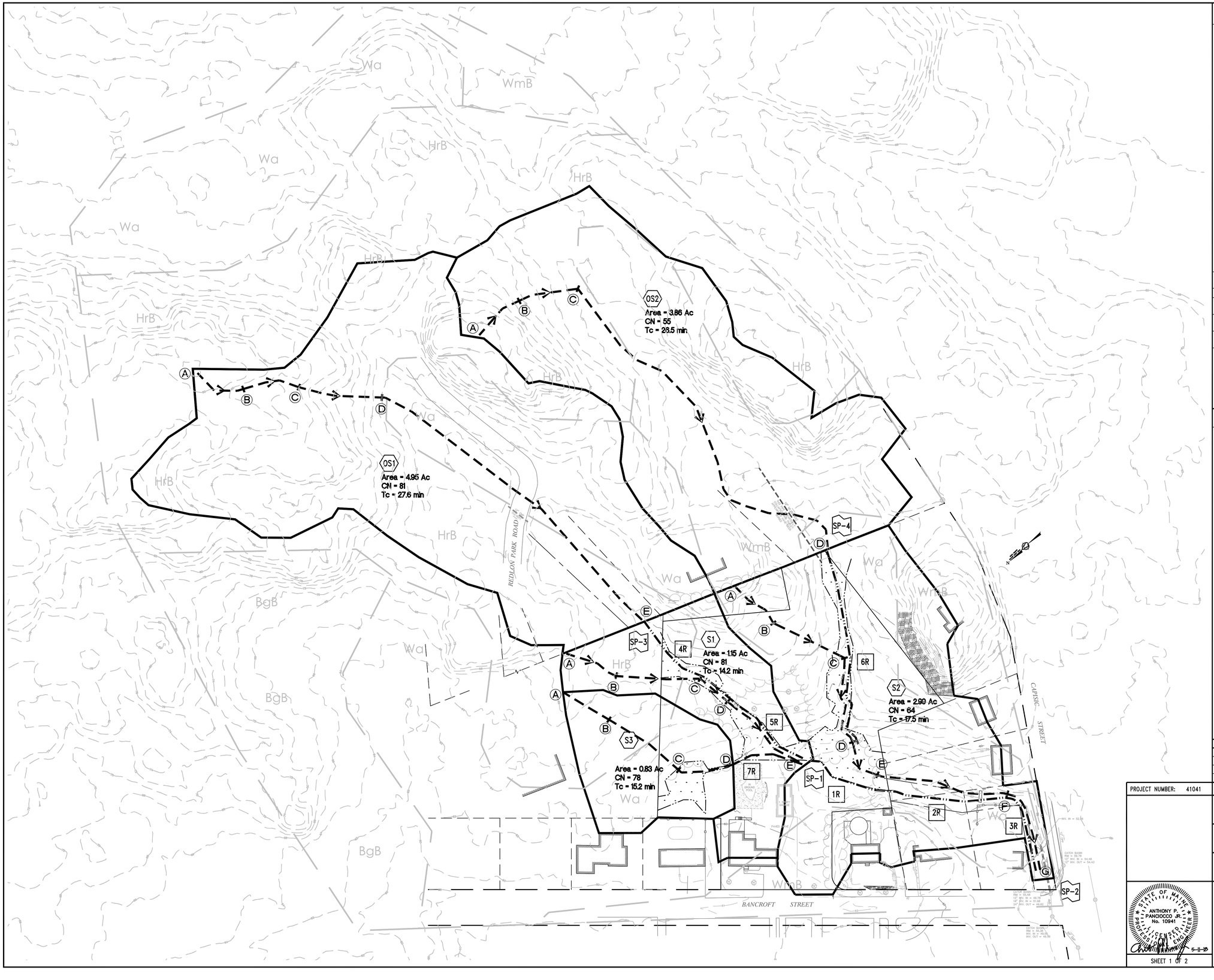

LEGEND

SP1	STUDY POINT
S1	SUBCATCHMENT
P1	POND
	PRE–DEVELOPMENT DRAINAGE SUBCATCHMENT
	TIME OF CONCENTRATION PATH
	SOIL BOUNDARY

SOILS LEGEND

SYMBOL	SOIL TYPE	HSG
HrB	HOLLIS FINE SANDY LOAM, 3%–8% SLOPES	D
Wa	WALPOLE FINE SANDY LOAM	A/D
WmB	WINDSOR LOAMY SAND, 0%–8% SLOPES	A

THE SOURCE OF THE SOIL TYPES AND BOUNDARIES IS THE NATIONAL COOPERATIVE SOIL SURVEY (NCSS).

NOTES

Tc PATH TABLE

SUBCAT	Tc PATH	FLOW	LENGTH	SLOPE (FT/FT)
OS1	A–B	SHEET	75	0.053
	B–C	SHALLOW CONC	81	0.049
	C–D	SHALLOW CONC	118	0.118
	D–E	SHALLOW CONC	483	0.014
OS2	A–B	SHEET	75	0.073
	B–C	SHALLOW CONC	85	0.094
	C–D	SHALLOW CONC	544	0.014
S1	A–B	SHEET	75	0.080
	B–C	SHALLOW CONC	117	0.017
	C–D	SHALLOW CONC	50	0.020
	D–E	SHALLOW CONC	121	0.024
S2	A–B	SHEET	75	0.080
	B–C	SHALLOW CONC	111	0.045
	C–D	CHANNEL FLOW	128	0.029
	D–E	SHALLOW CONC	59	0.016
	E–F	CHANNEL FLOW	184	0.005
	F–G	CHANNEL FLOW	123	0.008
S3	A–B	SHEET	75	0.053
	B–C	SHALLOW CONC	121	0.028
	C–D	SHALLOW CONC	77	0.006

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PROJECT NUMBER: 41041 | ACAD FILE: 41041–DRAINAGE.DWG | SCALE: 1" = 60' | DATE: MAY 1, 2018

Drawing Name:
PRE–DEVELOPMENT DRAINAGE AREA PLAN

Project Name:
PROPOSED CAPISIC MEADOWS SUBDIVISION
130 BANCROFT STREET, PORTLAND, MAINE 04102

Owner/Applicant:
WB GROUP, INC
130 BANCROFT STREET, PORTLAND, MAINE 04102

STATE OF MAINE — ANTHONY P. PANCIOCCO JR. — No. 10941 — LICENSED PROFESSIONAL ENGINEER — 5-11-18

SHEET 1 OF 2

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0 60' 120' 240'

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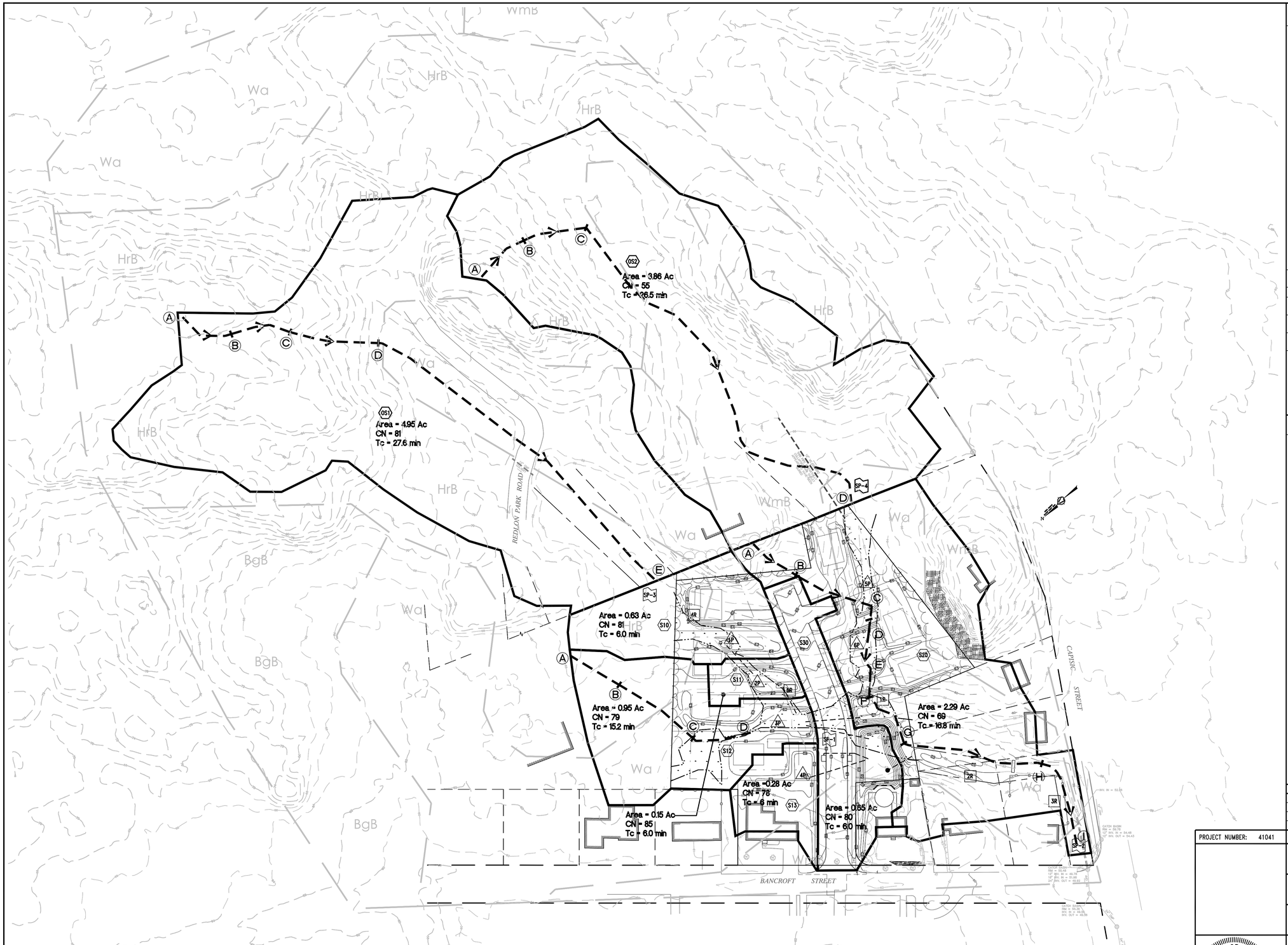

LEGEND

SP1	STUDY POINT
S1	SUBCATCHMENT
P1	POND
R1	REACH
━━━	POST–DEVELOPMENT DRAINAGE SUBCATCHMENT
- - - -	TIME OF CONCENTRATION PATH
———	SOIL BOUNDARY

SOILS LEGEND

SYMBOL	SOIL TYPE	HSG
HrB	HOLLIS FINE SANDY LOAM, 3%–8% SLOPES	D
Wa	WALPOLE FINE SANDY LOAM	A/D
WmB	WINDSOR LOAMY SAND, 0%–8% SLOPES	A

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NOTES

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	B–C	SHALLOW CONC	81	0.049
	C–D	SHALLOW CONC	118	0.118
	D–E	SHALLOW CONC	483	0.014
OS2	A–B	SHEET	75	0.073
	B–C	SHALLOW CONC	85	0.094
	C–D	SHALLOW CONC	544	0.014
10S	---	DIRECT	---	---
11S	---	DIRECT	---	---
12S	A–B	SHEET	75	0.053
	B–C	SHALLOW CONC	121	0.028
	C–D	CHANNEL FLOW	77	0.006
13S	---	DIRECT	---	---
20S	A–B	SHEET	75	0.080
	B–C	SHALLOW CONC	103	0.048
	C–D	PIPE	39	0.025
	D–E	SHALLOW CONC	59	0.016
	E–F	PIPE	33	0.030
	F–G	CHANNEL FLOW	69	0.029
	G–H	CHANNEL FLOW	184	0.005
	H–I	CHANNEL FLOW	123	0.008
30S	---	DIRECT	---	---

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Drawing Name:
POST–DEVELOPMENT DRAINAGE AREA PLAN

Project Name:
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130 BANCROFT STREET, PORTLAND, MAINE 04102

Owner/Applicant:
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STATE OF MAINE — ANTHONY P. PANCIOCCO JR. — No. 10941 — REGISTERED PROFESSIONAL ENGINEER — 5-11-18

SHEET 2 OF 2

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Northeast Civil Solutions
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tel 207.883.1000 fax 207.883.1001 e–mail / website info@northeastcivilsolutions.com www.northeastcivilsolutions.com

0 60' 120' 240'

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Memorandum
Planning and Urban Development Department
Planning Division

To: Sean Dundon, Chair and Members of the Portland Planning Board

From: Caitlin Cameron, Urban Designer

Date: July 13, 2018

Re: Recommendation to Table – 56 Hampshire Street (2017-294) Verdante

The applicant has requested that this item be tabled as they finalize the property boundaries and site plan. The Planning Staff recommends that this item be tabled to Tuesday, August 14, 2018 at 7:00 p.m.

PLANNING BOARD REPORT
PORTLAND, MAINE

Three Unit Condominium
4 Russell Street
Level III Subdivision and Site Plan Review
PL-000009-2018
New Day Farm, LLC, Applicant

Submitted to: Portland Planning Board: Public Hearing Date: July 17, 2018	Prepared by: Shukria Wiar, Planner Date: July 13, 2018

I. INTRODUCTION

Michael Tadema-Wielandt of Terradyn Consultants on behalf of New Day Farm, LLC has submitted a Level III Site Plan and Subdivision application for the construction of a four-story, three-unit residential building on an 1,899 square foot parcel located at 4 Russell Street in the West End. The project involves the construction of a residential building with ground level parking below the units on a surface parking lot at the corner of Russell and Hill Streets. It is surrounded by single and multifamily houses. The site is in the Residential R-6 zone.

Figure 1: Site of Proposed Development

This proposal is being reviewed as a final plan and subject to the Site Plan and Subdivision Ordinances of Land Use Code. The project will also be reviewed against the *R-6 Small Infill Development Design Principles & Standards* (Appendix 7 of the Design Manual) and the *Two-Family, Special Needs Independent Living Units, Multiple-Family, Lodging Houses, Bed and Breakfasts, and Emergency Shelters Standards* (Sections (d) and (l), and Appendix 2 of the Design Manual).

Notices were sent upon receipt for the public hearing of the application. Two hundred and twenty-six (226) notices were sent to area residents within 500 feet of the site and the interested party list for the public hearing. A notice also appeared in the July 9th and 10th editions of the *Portland Press Herald.*

Applicant Name	Jeffrey Rosenblatt of New Day Farm, LLC
Consultants	
Engineer	Michael Tadema-Wielandt, P.E., Terradyn Consultants, LLC
Surveyor	John Swan, Owen Haskell, Inc.
Architect	David Lloyd, Archetype Architects

Project Review

Review	*Applicable Standards*
Site Plan	14-526
Subdivision	14-491
Design Manual	R-6 Small Infill Development Design Principles & Standards (Appendix 7 of the Design Manual) and the Two-Family, Special Needs Independent Living Units, Multiple-Family, Lodging Houses, Bed and Breakfasts, and Emergency Shelters Standards (Sections (d) and (l), and Appendix 2 of the Design Manual)

II. PROJECT DATA

Existing Zoning	R-6 Residential
Tax Map	CBL: 034 F001
Existing Use	Gravel surface parking lot
Proposed Use	Condominium
Parcel Size	1,899 SF
Number of Units to be Demolished	None
Number of Affordable Units	The proposed units will be market rate.
Proposed Bedroom Mix	One efficiency Unit on the first floor, two two-bedroom on 2nd and 3rd floors
Building Footprint	1,199 SF
Building Floor Area	4,296 SF
Impervious Surface Area	1,439 SF
Parking Spaces	3 spaces on the first level
Bicycle Parking Spaces	2 spaces
Estimated Cost of Project	$816,240

III. EXISTING CONDITIONS

The property is currently developed with a paved surface parking area. The proposed building, vehicle maneuvering area, and patios will increase the on-site impervious area to approximately 2,095 square feet. The existing site is located on the southern corner of Hill and Russell Streets in Portland's West End neighborhood.

Figure 2: Existing Site

A brick sidewalk with granite curb exists along the site's Hill Street frontage, which will be the front of the building. There is no sidewalk along the site's Russell Street frontage, and the gravel parking lot connects directly to the street. Russell Street is a one-way street with a 20′ wide right-of-way and 13′ wide paved surface. There is a sidewalk across Russell Street from the site. There is no on-street parking on Russell Street, and there is limited on-street parking available on both sides of Hill Street. Cobra-head style street lights are located on two utility poles at the corner of Russell Street and Hill Street.

IV. PROPOSED DEVELOPMENT

The proposal, including floor plans and elevations, are included in the final plan set and have been revised to address staff concerns. The development project is proposed as new construction of a three-unit condominium building with one efficiency unit and two two-bedroom units. The building will be four stories high with a building height of 41 feet and building footprint of 1,199 SF footprint. At four stories high, the scale of this apartment building will be in balance with the residential uses of the street and neighborhood. The building will include a three-car garage on the first floor as well as the efficiency unit, a two-bedroom unit on the second floor and a two-bedroom unit on the third and fourth (mezzanine) floors. The building design also includes private roof decks for access by each unit.

The R-6 zone does not require parking spaces for the first three units. However, the applicant is proposing three parking spaces.

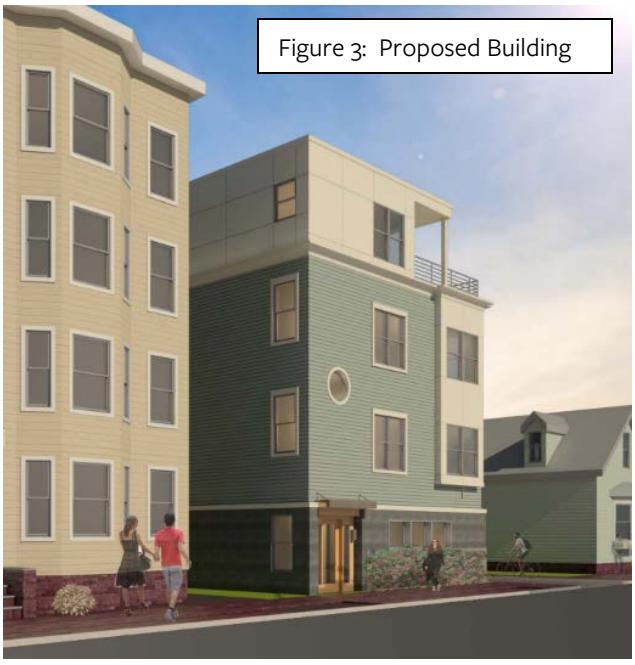
Figure 3: Proposed Building

The parking spaces will be under the building on the first floor. The main entrance to the building is at the front along the sidewalk on Hill Street; so, the address will need to be the Hill Street side for 911 purposes. Vehicle access is proposed from Russell Street. Two bicycle parking spaces are also proposed as part of this project; these spaces will be in the building on the first floor. A designated area for snow storage is located adjacent to the proposed building.

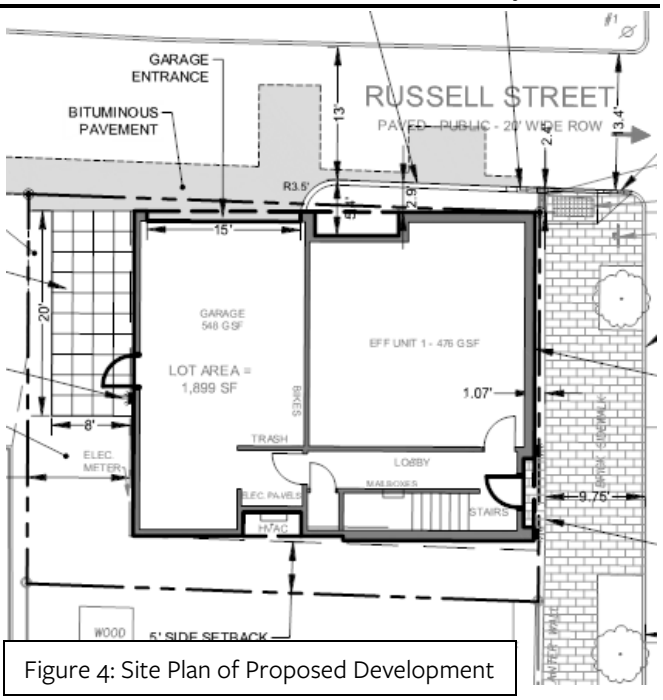

Figure 4: Site Plan of Proposed Development

V. PUBLIC COMMENT

As of the writing of this report, there has been one public comment submitted.

The applicant was not required to hold a neighborhood meeting since the subdivision is for three units only; project developments that have five or greater units or lots are required to hold a neighborhood meeting. Even though a neighborhood meeting was not required, the applicant still held a meeting on May 9th, 2018; one person attended the meeting.

VI. RIGHT, TITLE AND INTEREST AND FINANCIAL/TECHNICAL CAPACITY

a. The owner of the property is New Day Farm, Inc. The applicant has provided a copy of a warranty deed of sale, recorded at the Cumberland County Registry of Deeds (Book 32044 Page 36), which demonstrates their right, title and interest in the property.

b. The estimated cost of the development is $816,240. The applicant has submitted a letter from Androscoggin Bank, dated March 21, 2018, as demonstration of their financial and technical capacity to complete the proposed development.

VII. ZONING ASSESSMENT

The project site was granted a Practical Difficulty Variance by the Zoning Board of Appeals on July 13, 2017. The variance reduces the minimum lot size to 1,899 sf, increases the maximum lot coverage to 63.67%, and reduces the minimum lot area per dwelling unit to 633 sf for the purpose of constructing a three-family dwelling. A letter referencing this variance is included in Attachment W.

The property is located in the R-6 Residential Zone. The proposed residential building is a permitted use in the Residential R-6 zone. Under the R-6 zone all of the dimensional requirements are being met. For off street parking, Division 20 requires no parking for the first three units and one parking space per unit for residential uses after the first three in the R-6 zone. Even though parking is not required, the applicant is proposing three internal parking spaces as shown on the site plan. The staff finds the project is in conformance with this standard.

VIII. DEVELOPMENT REVIEW

A. SITE PLAN SUBMISSION REQUIREMENTS (Section 14-527) and SUBDIVISION PLAT AND RECORDING PLAT REQUIREMENTS (Section 14-496)

The applicant has submitted a recording plat. William Scott, City Surveyor, has reviewed and approved the plat. The final plat will need to be revised to reflect any waivers and conditions of approval that relate to the subdivision plan. Any waivers granted must be recorded at the Registry of Deeds within 90 days of a Planning Board decision.

B. SUBDIVISION (Section 14-497)

The proposed development has been reviewed by staff for conformance with the relevant review standards of Portland's Subdivision Ordinance and applicable regulations. Staff comments are listed below.

1. *Will Not Result in Undue Water and Air Pollution (Section 14-497 (a) 1), and Will Not Result in Undue Soil Erosion (Section 14-497 (a) 4)*

Lauren Swett, P.E. with Woodard and Curran Engineering, has reviewed the erosion and sediment control plan and is satisfied with the proposed plans. The staff finds the project is in conformance with this standard.

2. *Sufficient Water Available (Section 14-497 (a) 2 and 3)*
The project will be served by the existing utility services located in Russell Street. The applicant has submitted ability to serve letters for water and sewer demand from Portland Water District and the City Department of Public Services, respectively. The staff finds the project is in conformance with this standard.

3. *Will Not Cause Unreasonable Traffic Congestion (Section 14-497 (a) 5)*
Tom Errico, P.E. Ty Lin reviewed the proposal's details in regard to access and finds the project to be acceptable.

The proposed project is not anticipated to cause unreasonable traffic congestion. The staff finds the proposed project is in conformance with this standard.

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)*
Please refer to Paragraph VIII (B) 2, above.

5. *Scenic Beauty, Natural, Historic, Habitat and other Resources (Section 14-497 (a) 8)*
The proposal site is not within an historic district. It is in an urban neighborhood surrounded by a variety of residential building types. The proposed building does not impact the natural beauty of the area or adversely affect any significant wildlife habitat, rare or irreplaceable natural areas, or any public access to the shoreline. The staff finds the proposal in conformance with this standard.

6. *Comprehensive Plan (Section 14-497 (a) 9)*
The staff has identified the following goals and policies which are relevant to the proposed housing development and finds the proposal in conformance with the Comprehensive Plan:
   - Increase, preserve, and modify the overall supply of housing City-wide to meet the needs, preferences and financial capabilities of all Portland households
   - Encourage additional contextually-appropriate housing density in and proximate to neighborhood centers, concentrations of services, and transit nodes and corridors as a means of supporting complete neighborhoods
   - Pursue policies to enable people who work in Portland to have the option to live in Portland
   - Encourage quality, sustainable design in new housing development
   - Adopt affordable housing: pursue new opportunities for increased energy efficiency, increased densities, mixed incomes, and greater connectivity to surrounding neighborhoods

C. SITE PLAN STANDARDS (Section 14-526)

The proposed development has been reviewed by staff for conformance with the relevant review standards of Portland's site plan ordinance and applicable regulations. Staff comments are listed below.

1. *Transportation Standards*
   a. Impact on Surrounding Street Systems and Access and Circulation- see Subdivision, Paragraph VIII (B) (3), above.

   b. Construction Management Plan
   A description of the construction management plan has been submitted by the applicant. A site plan has also been submitted that shows the construction management on the site. All of the construction is proposed within the limits of the property lines with possible on-street parking for contractors. Tom Errico, Consultant Traffic Engineer, reviewed the plans and states:

   > *The general components of the construction management plan are acceptable. A condition of approval should note that specific details on sidewalk closure routings and closure of Russell Street shall be provided prior to issuance of a building permit.*

c. Sidewalks
Currently the sidewalk along the property is in brick and the applicant is proposing to install new brick sidewalk along their frontage on Hill Street. This site is in the brick district.

d. Public Transit Access
The public transit requirements do not apply to this project.

e. Parking
There are three parking spaces and these are located inside the garage of the building. The applicant had proposed an additional parking space on the pavers at the rear of the lot, away from the main street view on Hill Street. The revised site plan notes this area as a patio but the design has not changed from the original plan. The use of this patio as a fourth parking spaces goes not meet the driveway separation requirement. Staff has recommended that this area not be used as parking and recommends a street at the Russell Street line. Mr. Errico, reviewed the plans and states:

> *It is my understanding that a tree or landscaping will be installed along the paved patio area thus preventing vehicle storage. I concur with this requirement and suggest a condition of approval note that vehicle storage in the patio area is not permitted*.

f. Bicycle Parking
The proposal includes two bicycle parking spaces in the garage of the building, which meets the ordinance standard of two bicycle spaces per five vehicle spaces.

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 applicant is not proposing street trees on either Russell Street or Hill Street. According to the landscaped plan submitted, there are two existing street trees on Hill Street, of which one will be saved and one removed. Staff has recommended that a street tree be added on Russell Street at the patio location and replace the one that will be removed on Hill Street. With the installation of the two trees plus the existing one, the plan would meet City standards. The site will also have landscaping along the front of the building.

c. Water Quality, Storm Water Management and Erosion Control
Under Section 5 of the City of Portland Technical Manual, a Level III development project is required to submit a stormwater management plan pursuant to the regulations of MaineDEP Chapter 500 Stormwater Management Rules, including conformance with the Basic, General, and Flooding Standards. The proposed development disturbs approximately 3,500 square feet (approximately 0.1 acres). According to Section 4 of the City of Portland Technical Manual any site disturbing less than one acre is exempt from complying with the Basic and General Standards and acquiring a Stormwater Permit. Ms. Swett, P.E. with Woodard and Curran Engineering, has reviewed the drainage plan and stormwater report, and all of her recommendations have been met. Confirmation of ability to serve from PWD for water has been submitted as part of the application.

3. Public Infrastructure and Community Safety Standards

a. Consistency with Master Plans
See Subdivision, Paragraph VIII (B)6 above.

b. Public Safety and Fire Prevention
The Crime Prevention through Environmental Design (CPTED) standards in the site plan ordinance address the principles of natural surveillance, access control and territorial reinforcement so that the design of developments enhance the security of public and private spaces and reduce the potential for crime.

The applicant has introduced wall mounted lighting at all entrance ways. Wall mounted lighting will also be provided for the area by the parking garage. The entrances to the building will be well-lit and visible from the street to provide natural surveillance. All proposed lighting fixtures shall be full cut off; up lighting is prohibited.

c. Availability and Adequate Capacity of Public Utilities
The project will be served by the existing utility services located in Russell Street. Capacity letters for water and wastewater has been provided from Portland Water District and Department of Public Works, respectively.

4. Site Design Standards

a. Snow and Ice Loading
The applicant is proposing on-site snow storage and is labeled on the site plan. Snow storage will be provided on site.

b. View Corridors
This site is not within a Protected View Corridor as per the "View Corridor Protection Plan" approved by the Portland City Council in 2001.

c. Historic Resources
The site is just outside the 100-foot setback of the West End historic district; therefore, the project does not have to be reviewed by Historic Preservation.

d. Exterior Lighting
The proposal has noted wall mounted lighting along all the entrances that are full cutoffs.

e. Noise and Vibration
All heating, ventilation and air conditioning equipment (HVAC), air handling units (AHU), emergency generators, and similar equipment will have to be shown on the plans and meet state and federal emissions requirements. The mechanical equipment should be located to the interior of the site, away from abutting residential properties and be screened from view from any public street and from adjacent sites by structure walls, evergreen landscaping, fencing, masonry wall or a combination thereof. This information will have to be submitted for review as part of the building permit.

f. Signage and Wayfinding
This standard does not apply to the proposal.

g. Zoning Related Design Standards
A design review according to the *City of Portland Design Manual* Standards was performed for the proposed new construction of a three-family dwelling at 4 Russell Street. The review was performed by Caitlin Cameron, Urban Designer, Matthew Grooms, Planner, and Shukria Wiar, Planner, all within the Planning Division of the Department of Planning & Urban Development. The project was reviewed against the *R-6 Small Infill Development Design Principles & Standards* (Appendix 7 of the Design Manual).

Design Review Criteria:
The project was reviewed with the Alternative Design Review which has the following criteria:

a. Proposed design is consistent with all of the Principle Statements
b. The majority of the Standards within each Principle are met
c. The guiding principle for new construction under the alternative design review is to be compatible with the surrounding buildings in a two-block radius in terms of size, scale, materials, and siting, as well as the general character of the established neighborhood, thus Standards A-1 through A-3 shall be met.
d. The design plan is prepared by an architect registered in the State of Maine.

Findings of the Design Review: The project meets all of the criteria above and **passes** the design

review. Comments for the specific standards are provided in Attachment 4.

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 development.

X. PROPOSED MOTIONS

1. SUBDIVISION PLAT

On the basis of the application, plans, reports, and other information submitted by the applicant, findings and recommendations contained in Planning Board Report for application #09-2018 relevant to the Subdivision Ordinance, and other regulations, as well as the Planning Board deliberations and the testimony presented at the Planning Board hearings, the Planning Board finds the following:

That the plan (is/is not) in conformance with the subdivision standards of the land use code, subject to the following conditions:

1. The Subdivision Plat shall be finalized to the satisfaction of the Planning Authority, Department of Public Works and Corporation Counsel; and

2. That the Declaration of Condominium and associated documents shall be submitted for review and approval by Corporation Counsel prior to the issuance of certificate of occupancy; and

3. That the recording plat shall be revised noting all conditions for review and approval by the Planning Authority prior to recording.

2. LEVEL III SITE PLAN

On the basis of the application, plans, reports, and other information submitted by the applicant, findings and recommendations contained in Planning Board Report for application #09-2018 relevant to the Site Plan Ordinance, and other regulations, as well as the Planning Board deliberations and the testimony presented at the Planning Board hearings, the Planning Board finds the following:

That the plan (is/is not) in conformance with the site plan standards and all other applicable provisions of the land use code, subject to the following conditions:

A. To be met prior to applying for a building permit:
   1. The applicant shall submit a revised site plan for review and approval by the Planning Authority that shows two street trees shall be planted at the site; one between the patio area and Russell Street, and one to replace the tree removed on Hill Street; and

   2. The applicant shall submit a revised site plan and subdivision plat for review and approval by the Planning Authority shall note that in the patio area, at the rear of the property, shall not be used as a vehicle parking space.

B. To be met prior to the issuance of a building permit:
   1. That the specific details on sidewalk closure routings and closure of Russell Street shall be provided for review and approval in the Construction Management Plan; and

C. To be met prior to the issuance of a certificate of occupancy:
   1. That the final license for landscaping in Russell Street for review and approval by the Corporation Counsel.

ATTACHMENTS:

Staff Review Comments

1. Traffic Engineering Review (Tom Errico, T Y Lin), comments dated 07.11.2018
2. Civic Engineer Review, Lauren Swett, dated 07.12.2018
3. Urban Designer Review, Caitlin Cameron, dated 07.13.2018

Applicant's Submittal

A. Development Description
B. Right, Title and Interest
C. State and Federal Permits
D. Land Ordinance Review
E. 4 Russell Street - Level III Preliminary Application-signed
F. Russell Street - Checklist- Level 2 and 3
G. Easements or Other Burdens
H. Technical and Financial Capacity
I. Construction Management Plan
J. Natural Features
K. Stormwater Management
L. Consistency with City Master Plans
M. Utilities
N. Solid Waste
O. Fire Safety
P. Conformity with Applicable Design Standards
Q. Verification of Proposed HVAC Equipment
R. 2018-6-8-Wiar-Comment Response
S. 2018-7-11-Revisions
T. EXT LIGHT FIXTURE
U. Neighborhood Meeting-4 Russell Street
V. Wastewater Capacity Authorization 2018-07-07 4 Russell Street
W. ZBA Decision Letter

Plans

Plan 1	C-1.0 Cover
Plan 2	C-1.1 General Notes
Plan 3	C-2.0 Boundary & Topographic Survey
Plan 4	C-2.1 Recording Plat
Plan 5	C-2.2 Existing and Demo Plan
Plan 6	C-2.3 Construction Management Plan
Plan 7	C-3.0 Site
Plan 8	C-4.0 Grading Drainage & Erosion
Plan 9	C-4.0 Grading Drainage & Erosion
Plan 10	Plan10 - C-4.1 Esc Notes
Plan 11	C-5.0 Utility
Plan 12	C-6.0 Details
Plan 13	C-6.1 Details
Plan 14	L-1 Landscape Plan
Plan 15	P-1.0 Photometrics Plan
Plan 16	A1-01 -First and Second Floor Plans
Plan 17	A1-02 - Third Floor and Mezzanine Plans
Plan 18	A2-01 -Building Elevations
Plan 19	A2-01 -Building Elevations-Colored
Plan 20	A3-01 - Building Sections
Plan 21	4 Russell – Rendering
Plan 22	4 Russell St - Rendering

Portland Maine | Yes. Google's good here.

Shukria Wiar <shukriaw@portlandmaine.gov>

Hill and Russell Street Project - Final Traffic Comments

Tom Errico <thomas.errico@tylin.com> Wed, Jul 11, 2018 at 3:48 PM
To: Shukria Wiar <shukriaw@portlandmaine.gov>
Cc: Keith Gray <kgray@portlandmaine.gov>, Bruce Hyman <bhyman@portlandmaine.gov>, Jeremiah Bartlett <JBartlett@portlandmaine.gov>, "Jeff Tarling (JST@portlandmaine.gov)" <JST@portlandmaine.gov>

Hi Shukria – I find the project to be acceptable from a traffic perspective with the following comments.

- It is my understanding that a tree or landscaping will be installed along the paved patio area thus preventing vehicle storage. I concur with this requirement and suggest a condition of approval note that vehicle storage in the patio area is not permitted.

- The general components of the construction management plan are acceptable. A condition of approval should note that specific details on sidewalk closure routings and closure of Russell Street shall be provided prior to issuance of a building permit.

If you have any questions, please contact me.

Best regards,

Thomas A. Errico, PE
Senior Associate
Traffic Engineering Director
TY LIN INTERNATIONAL
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Twitter | Facebook | LinkedIn | Google+

"One Vision, One Company"

Portland Maine Yes. Google's good here.

Shukria Wiar <shukriaw@portlandmaine.gov>

Russel Street

Lauren Swett <lswett@woodardcurran.com> Fri, Jul 13, 2018 at 6:45 AM
To: Shukria Wiar <shukriaw@portlandmaine.gov>

Hi Shukria,

The Applicant has addressed all of my comments on this one, and I don't have any additional comments. I've gone in and marked all my comments as resolved, and the project as approved in Energov.

Let me know if you need anything else from me on this one.

Thanks,

Lauren

Lauren Swett, P.E.*

Technical Manager

Woodard & Curran

41 Hutchins Drive

Portland, Maine 04102

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Planning and Urban Development Department
Planning Division

Subject: R-6 Small Infill Design Review – 4 Russell Street

Written by: Caitlin Cameron, Urban Designer

Date of Review: Thursday, July 12, 2018

A design review for the proposed new construction of a three-family dwelling at 4 Russell Street was performed by Caitlin Cameron, Urban Designer, Shukria Wiar, Planner, and Matt Grooms, Planner. The project was reviewed against the *R-6 Small Infill Development Design Principles & Standards* (Appendix 7 of the Design Manual).

Findings of the Design Review:
The proposed design **does not meet** all the R-6 design principles and standards. The Planning Authority under an Alternative Design Review may approve a design not meeting one or more of the individual standards provided that all of the conditions listed below are met:

A. The proposed design is consistent with all of the Principle Statements.
B. The majority of the Standards within each Principle are met.
C. The guiding principle for new construction under the alternative design review is to be compatible with the surrounding buildings in a two block radius in terms of size, scale, materials, and siting, as well as the general character of the established neighborhood, thus Standards A-1 through A-3 shall be met.
D. The design plan is prepared by an architect registered in the State of Maine.

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

Principle A Overall Context – see below.

- *A-1 Scale and Form:* The building scale is similar in height to the neighboring multi-family building at four stories. Forms in this context are predominantly vertically proportioned with one and half, two and a half simple massing and simple roof forms (gable, mansard, or flat roof). The massing and forms proposed are generally vertical in proportion but have some massing variation at the fourth floor that sets it apart from the simpler, more traditional forms. The three-story mass is emphasized and the building includes features such as a bay and flat roof.
- *A-2 Composition of Principal Facades:* The composition of the street-facing façade takes on some traditional characteristics and symmetry. Elements are placed according to use and include some articulation and variation with bay window, massing change at the 4th floor, cornice line and materials that emphasize the three-story mass.
- *A-3 Relationship to the Street:* The building placement is closer to the street than the surrounding buildings given the small lot size – this is especially noticeable on Russell

Street where all other buildings on this side of the street are the backs of buildings and are set back from the street. Neighboring buildings on Hill Street are slightly setback from sidewalk to allow for stoops, plantings, provide privacy, and room for the bay window. Throughout the neighborhood, buildings are consistently set back from the street to accommodate the bays – in this case, the building is near the street and the bay on Hill Street is very shallow so as to not encroach.

Principle B Massing – Met – The proposed massing in some ways reflects or reinforces the traditional building character of the neighborhood, especially the multi-family, triple-decker form. The building is next to a four-story, multi-family building and places its tallest massing interior to the site next the adjacent taller building.

- *B-1 Massing:* The building design emphasizes the three-story mass similar to traditional multi-family massing. The fourth floor has a smaller footprint and was adjusted to be interior to the lot away from the small-scale Russell Street. This massing is appropriate given the four-story building adjacent and allows the three-story massing to be on Russell Street.
- *B-2 Roof Forms:* Flat roofs are found in the context on multi-family buildings.
- B-3 Main Roofs and Subsidiary Roofs: The third floor roof line is emphasized.
- *B-4 Roof Pitch:* One roof pitch – flat roof. Flat roof has a cornice/trim.
- *B-5 Façade Articulation:* The project employs three of the required articulation elements – covered entry, recessed entry, bay window (though very shallow).
- *B-6 Garages:* Garage is integrated into the building design with at least one floor of living space above it.

Principle C Orientation to the Street – Met - The project is oriented to the street with a street-facing door. Living space is also on the ground floor with windows facing both streets.

- *C-1 Entrances:* The entry is street-facing and emphasized with side lights, recess, covered entry.
- *C-2 Visual Privacy:* Visual privacy is adequately addressed; ground floor windows are higher than 48" above adjoining sidewalk grade.
- *C-3 Transition Spaces:* The project uses a covered entry and vestibule. The building does not follow the established pattern of giving buffer space from the street by setting the building back a couple feet given the small lot size. The door is recessed and the ground floor living space windows are raised to provide the privacy.

Principle D Proportion and Scale – Met – Overall, the building has a vertical proportion similar to the predominant character found in the context.

- *D-1 Windows:* The majority of windows are rectangular and vertically proportioned. A special, round accent window is provided at stair.
- *D-2 Fenestration:* The 12% fenestration requirement is met on street-facing facades.
- *D-3 Porches:* The roof level balcony meets the standard area at least 6' deep and 48 sf feet. No other balconies or porches face the streets.

Principle E Balance – Met - The building façade composition includes local and overall symmetry.

- *E-1 Window and Door Height:* The majority of window and door head heights align along a common horizontal datum.
- *E-2 Window and Door Alignment:* The majority of windows stack so that centerlines of windows are in vertical alignment.

- *E-3 Symmetricality:* Overall and local symmetry are employed.

Principle F Articulation – Met - The project has articulation through material texture, bay window, trim, deck details, and recessed entrance with canopy.

- *F-1 Articulation:* Surface articulation is provided by material texture, trim, cornice line at third floor, bay window, and the deck railing will create shadow lines on front façade. There is also a recessed alcove on the ground floor on Russell Street.
- *F-2 Window Types:* Three window types and sizes are used on each the façade.
- *F-3 Visual Cohesion:* The visual cohesion of the façade is good.
- *F-4 Delineation between Floors:* The floors are delineated by fenestration patterns, material changes, deck railing, and trim.
- *F-5 Porches, etc.:* There is one deck/balcony on the roof of the street-facing façade that is the result of the massing of the building, the deck brings emphasis to the third floor roof line. Railings are used to provide articulation and shadow lines to the front façade.
- *F-6 Main Entries:* The main entry faces the street and is emphasized with a a recess and a canopy but does not include a stoop due to the accessible grade.
- *F-7 Articulation Elements:* The roof overhang is at least 6"; trim appears to be at least 4" in width; the façade offsets (bay window) is at least 12", trim at both roof lines.

Principle G Materials – Met - The material choices are harmonious with the character-defining materials and architectural features of the neighborhood – shingle, wood trim, masonry base.

- *G-1 Materials:* The residential context is predominantly clapboards with occasional shingle or brick. The proposal uses shingle on the upper floors with masonry ground floor. Panel is a secondary material, colors correspond to neighboring residential buildings. Green screen is also provided – only recommended if will be viable.
- *G-2 Material and Façade Design:* The materials are placed appropriately to the façade design and their nature. Panel is only used as a secondary material at the bay and 4th floor.
- *G-3 Chimneys:* Not applicable.
- *G-4 Window Types:* Three window types used on each street-facing facade.
- *G-5 Patios and Plazas:* A patio is proposed using concrete pavers.

1 DEVELOPMENT DESCRIPTION

1.1 OVERVIEW

New Day Farm, LLC intends to construct a 4-story, 3-unit residential building on a 1,899 square foot parcel located at 4 Russell Street in Portland, Maine. The site is identified as Lot 1, Block D, on the City of Portland Assessors' Map 54. The site is currently developed with a gravel parking area.

1.2 PROJECT PURPOSE AND NEED

The proposed project includes redevelopment of a previously developed lot in an area that has utility infrastructure in place and will provide residential units that are compatible with the existing neighborhood.

Parking for the development will be located within the enclosed garage on the first floor with access from Russell Street. The ground floor also houses utilities and an efficiency unit. Two additional residential units are located on the second and third floors. The three residential units will be accessed from the Hill Street frontage.

1.3 EXISTING CONDITIONS

The existing site is located on the southern corner of Hill and Russell Streets in Portland's West End neighborhood and is developed with a gravel parking area. Nearly the entire site is covered with impervious surface. Underground utilities in Russell and Hill Streets include water, gas, and sewer. Overhead power and telecom services are on poles located on Russell Street.

A brick sidewalk with granite curb exists along the site's Hill Street frontage. There is no sidewalk along the site's Russell Street frontage, and the gravel parking lot connects directly to the street. Russell Street is a one-way street with a 20' wide right-of-way and 13' wide paved surface. There is a sidewalk across Russell Street from the site. There is no on-street parking on Russell Street, and there is limited on-street parking available on both sides of Hill Street. Cobra-head style street lights are located on two utility poles at the corner of Russell Street and Hill Street.

Russell and Hill Streets abut the site to the north, and residential uses abut the site to the east, south and west. The site is currently accessed from Russell Street and Hill Street. The street conditions in the vicinity of the Project Site are:

Street Name	Description	On-street Parking	Sidewalk	Notes
Hill Street	Approximately 40' wide paved way with two-way traffic in a 60' wide public ROW.	Yes. Parallel parking on both sides of the street.	Brick both sides	Sidewalk is new in front of the site
Russell Street	Approximately 13' wide paved way with one-way traffic in a 20' wide public ROW.	No.	Brick north side	

The site has an elevation change of less than 5’ across the approximately 50’ long parcel. It generally slopes to the northern property boundary. Photographs of the existing site are provided in Attachment 1-A.

1.4 PROPOSED DEVELOPMENT

The development program includes the following components:

1.4.1 ON-SITE

A new four-story building (three-stories plus a mezzanine as the fourth-story) with a footprint of 1,199 square feet will be constructed on the site. The first floor will feature one efficiency unit, a utility room, a lobby & stairwell for the residential units, and enclosed parking. The second floor will feature a two-bedroom unit approximately 1,070 GSF, and the third floor will feature a two-bedroom unit with fourth floor mezzanine approximately 1,623 GSF. The total number of residential units in the building is 3. The total building floor area is 4,296 square feet. The proposed building is within the R6 zone. Elevation views and perspective renderings of the proposed building are provided in Attachment 1-B.

The residential spaces will be accessed from the Hill Street frontage, and the enclosed parking will be accessed from Russell Street. Within the enclosed parking area there will be bicycle storage and a solid waste storage area. The mail slots for all three units will be located in the lobby adjacent to the stairs, as shown on the architectural plans.

1.4.2 OFF-SITE IMPROVEMENTS

The applicant is proposing improvements to the narrow area between the site and the Russell Street travel way. The Russell Street travel way is currently undefined with no curb. The travel way will be defined by extending the existing granite curb line from the intersection with Hill Street along the southeastern side of the road in front of the site to create a 2’ to 3’ wide landscaped esplanade between the building and the road. This will protect the building and help define the garage access location into the building.

1.5 TRAFFIC

The 3-unit condominium project is expected to generate approximately 2 vehicle trips during the PM peak hour and approximately 18 vehicle trips on a weekday. However, one of the units is an efficiency unit so this estimate is conservative. The project proximity to places of work and entertainment will also encourage walking and alternative modes of transportation, and therefore the number of trips per day will likely be less than estimated. The relatively small amount of traffic that will be generated by the project is not expected to have a significant effect on the surrounding street network.

1.6 PARKING

The proposed project is not required to have any parking spaces per ordinance requirements in the R6 zone. In this zone no parking is required for the first 3 units. However, the project includes a small enclosed garage that will provide 3 parking spaces for the residents (one space per unit). Additionally, a proposed patio on the west side of the building has been designed to be used as an overflow parking space that would be accessed from Russell Street. This patio will be accessible from the building through a door into the garage. Two bicycle parking spaces are also provided in the garage, as required.

1.7 UTILITIES AND STORMWATER

The proposed project will include the installation of new utility services to the building. All new utility services will be provided from the existing utilities available within Russell and Hill Streets. The proposed locations of the new utility services are shown on the Utility Plan (Sheet C-5.0). More information on proposed utility services is provided in Section 11 of this application.

Post-development stormwater runoff will closely follow existing runoff patterns. Runoff from the building roof will be collected in a gutter system and dispersed at the ground level on site. The gutter system will outlet onto a crushed stone area to disperse the stormwater and prevent erosion. The proposed project results in a decrease in impervious area. More information on stormwater runoff from the site is provided in Section 9 of this application.

1.8 ATTACHMENTS

Attachment 1-A – Existing Site Photographs
Attachment 1-B – Building Elevation Views & Renderings

ATTACHMENT 1-A

Existing Site Photographs

PHOTO 1 – FROM HILL STREET, STANDING EAST OF THE SITE, FACING WEST

PHOTO 2 –FROM RUSSELL STREET, STANDING WEST OF THE SITE, FACING EAST

Photos taken on 3/15/2018 from Google Earth Pro by Adrienne Fine of Terradyn Consultants, LLC

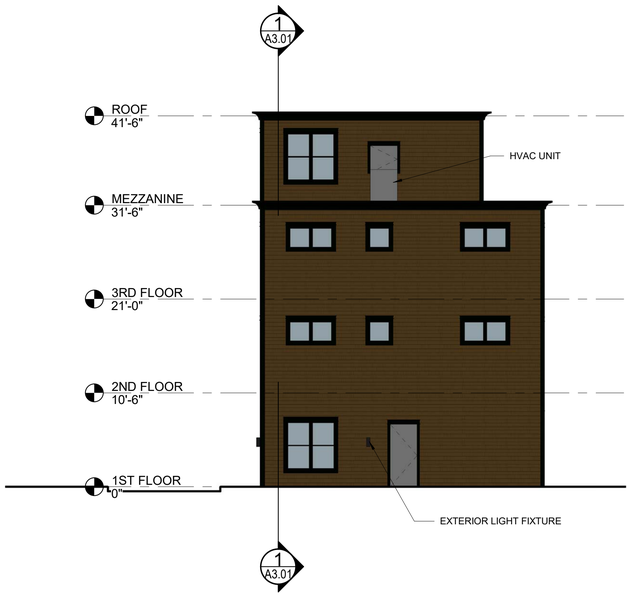
PHOTO 3 –FROM THE INTERSECTION OF HILL AND RUSSELL STREETS, FACING SOUTHWEST

ATTACHMENT 1-B

Building Elevation Views & Perspective Renderings

1 EAST ELEVATION
1/8" = 1'-0"

2 NORTH ELEVATION
1/8" = 1'-0"



3 WEST ELEVATION
1/8" = 1'-0"

4 SOUTH ELEVATION
1/8" = 1'-0"

Prepared For:
Owner
Address
City, State

Consultant:

Architect:
ARCHETYPE architects
48 Union Wharf Portland, Maine 04101
(207) 772-6022ARCHETYPE@ARCHETYPEPA.COM

Project:
4 RUSSELL ST
PORTLAND, ME 04102

Revisions:

Scale: 1/8" = 1'-0"

Date: JANUARY 19

BUILDING ELEVATIONS

A2.01

2 Right, Title and Interest

2.1 OVERVIEW

The applicant and owner is New Day Farm, LLC by deed recorded in the Cumberland County Registry of Deeds in book 32044, page 36. A copy of the property deed is attached in attachment 2-A.

2.2 ATTACHMENTS

Attachment 2-A – Property Deed

ATTACHMENT 2-A

Title, Right, or Interest Documentation

QUITCLAIM DEED WITHOUT COVENANT
(Maine Statutory Short Form)

DR. JEFFREY ROSENBLATT ("Grantor"), FOR CONSIDERATION PAID, grants to **NEW DAY FARM, LLC**, a Maine limited liability company having a mailing address of 11 McQuillian's Hill Drive, Gorham, Maine 04038 ("Grantee"), certain real property located in the City of Portland, County of Cumberland, State of Maine, and more particularly described on Exhibit A attached hereto and made a part hereof by reference.

Meaning and intending to convey the same premises conveyed by Deed from 66 Bramhall Realty LLC to 119 Gannett Drive Associates, LLC dated March 21, 2012 and recorded in the Cumberland County Registry of Deeds in Book 29480, Page 232.

WITNESS my hand and seal this 26th day of January, 2015.

Witness

Dr. Jeffrey Rosenblatt

STATE OF MAINE
COUNTY OF CUMBERLAND, ss. January 26, 2015

PERSONALLY APPEARED the above-named Dr. Jeffrey Rosenblatt and acknowledged the foregoing instrument to be his free act and deed.

Before me,

~~Notary Public~~/Attorney-at-Law
Name: Richard N. Bryant, Esq.
My Commission Expires:

EXHIBIT A

A certain lot or parcel of land situated at the intersection of Hill Street and Russell Street located in the City of Portland, County of Cumberland and State of Maine and more particularly described as follows:

Beginning at the intersection of the Southwesterly sideline of Hill Street and the Southeasterly sideline of Russell Street;

Thence S 36° 00' 00" E along said Hill Street 38.00 feet to land now or formerly of Elizabeth F. Sheriff;

Thence S 55° 38' 00" W along said Sheriff land 50.00 feet to land now or formerly of Martin J. Joyce et al.;

Thence N 36° 00' 00" W along said Joyce land 38.00 feet to said Southeasterly sideline of Russell Street;

Thence N 55° 38' 00" E along said sideline of Russell Street 50.00 feet to the point of beginning, containing 1900 square feet and being delineated on a plan entitled "Plan of Land in Portland, Maine for Maine Cardiology Assoc." by Owen Haskell, Inc.

Bearings are magnetic based upon the year 1850 ±.

Received
Recorded Register of Deeds
Jan 23,2015 03:00:59P
Cumberland County
Nancy A. Lane

3 STATE AND FEDERAL PERMITS

The development is subject to Site Plan and Subdivision approval by the City of Portland and Building Permit(s) are also required. No additional State or Federal Permits are required.

4 LAND ORDINANCE REVIEW

4.1 OVERVIEW

The property currently lies within the City of Portland R6 zone. The following Space and Bulk requirements apply to the R6 Zone:

	R6 Zone Summary Dimensional and Parking Requirements Applied to 4 Russell Street		
Zoning Requirements	R6	Variance*	Provided
Minimum Lot Size	2,000 sf	1,899 sf	1,899 sf
Minimum Lot Area per Dwelling Unit	725 sf	633 sf	633 sf
Minimum Front Yard	5 ft or avg. depth of adjacent front yards	-	Approx. 0.80 ft – in line with adjacent buildings on Hill St (Hill St)
Minimum Side Yard	5 ft, or none on a side street	-	5 ft and 0 ft along Russell St
Minimum Rear Yard	10 ft	-	10 ft
Maximum lot coverage	60%	63.67%	63.1%
Maximum Structure Height	45 ft	-	43.1 ft
Parking	1 space per unit, first 3 units exempt = 0 spaces		3 spaces
Bicycle Parking	2 spaces per 5 units = 2 spaces		2 spaces

*The project site was granted a Practical Difficulty Variance by the Zoning Board of Appeals on July 13, 2017. The variance reduces the minimum lot size to 1,899 sf, increases the maximum lot coverage to 63.67%, and reduces the minimum lot area per dwelling unit to 633 sf for the purpose of constructing a three-family dwelling. A letter referencing this variance is included in this section.

4.2 SHORELAND ZONING

The site is not located within the Shoreland Zoning District.

4.3 ATTACHMENTS

Attachment 4-A: Practical Difficulty Variance Letter

ATTACHMENT 4-A

Practical Difficulty Variance

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

Permitting and Inspections Department
Michael A. Russell, MS, Director

Ann Machado, Zoning Administrator

July 24, 2017

New Day Farm, LLC
c/o Richard N. Bryant
Van Meer & Belanger
215 Commercial St.
Portland, ME 04101

Re: 4 Russell Street, CBL 054-D-001, R-6 Residential Zone

Dear Mr. Bryant:

On July 13, 2017 the Zoning Board of Appeals voted 5-0 (Bartels absent) to grant a Practical Difficulty Variance for the above-referenced vacant lot, to reduce the minimum lot size to 1,899 square feet, to increase the maximum lot coverage from 60% to 63.67%, and to reduce the minimum lot area per dwelling unit to 633 square feet, for the purpose of constructing a three-family dwelling. I am enclosing a copy of the Board's decision.

Now that the variance has been granted, you will need to apply for a building permit for the project (application: http://www.portlandmaine.gov/DocumentCenter/Home/View/2310). Before applying for the building permit, the project will also require Site Plan approval through the Department of Planning and Urban Development. Please contact that Department directly for more details on the Site Plan approval process.

Under Section 14-474(f) of the ordinance and the board's decision, you have twenty-four months from the date of the meeting (July 13, 2017), to obtain the Site Plan and permit approvals and to start construction, or your Zoning Board approval will expire.

I am also enclosing the Certificate of Variance Approval. **The original must be recorded in the Cumberland County Registry of Deeds within 90 days of the date it was signed.** Failure to record the Certificate will result in it being voided. Our office must be provided with a copy of the recorded Certificate of Variance showing the recorded book and page before a building permit can be approved.

Appeals from decisions of the Board may be filed in Superior Court in accordance with Rule 80B of the Maine Rules of Civil Procedure.

Should you have any questions, please contact me at (207) 874-8695 or cstacey@portlandmaine.gov.

Sincerely,

Christina Stacey
Zoning Specialist

CITY OF PORTLAND

CERTIFICATE OF VARIANCE APPROVAL

I, Kent Avery, the duly appointed Chair of the Board of Appeals for the City of Portland, Cumberland County and State of Maine, hereby certify that on the 13th day of July, 2017, the following variance was granted pursuant to the provisions of 30-A M.R.S.A. Section 4353(5) and the City of Portland's Code of Ordinances.

1. **Current Property Owner: New Day Farm, LLC**

2. **Property: 4 Russell Street, Portland, ME** **CBL: 054-D-001**
   Cumberland County Registry of Deeds, **Book: 32044 Page: 36**
   Last recorded deed in chain of Title: **01/23/2015**

3. **Variance and Conditions of Variance**:
   To grant relief from section 14-139(a) of the Land Use Ordinance to reduce the required minimum lot size from two thousand (2,000) square feet to one thousand eight hundred ninety-nine (1,899) square feet, to increase the maximum required lot coverage from 60 percent to 63.67 percent and to reduce the minimum lot area per dwelling unit from seven hundred twenty-five (725) square feet to six hundred thirty-three (633) square feet.

IN WITNESS WHEREOF, I have hereto set my hand and seal this 18 th day of July, 2017

, Chair of
City of Portland Zoning Board,
Kent Avery (Printed or Typed Name)

STATE OF MAINE
Cumberland, ss.

Then personally appeared the above-named Kent Avery and acknowledged the above certificate to be his free act and deed in his capacity as Chair of the Portland Board of Appeals, with his signature witnessed on July 18, 2017.

(Printed or Typed Name)
Notary Public
My term expires

Tricia L. Chayer
Notary Public, State of Maine
My Commission Expires January 25, 2022

PURSUANT TO 30-A M.R.S.A. SECTION 4353(5), THIS CERTIFICATE MUST BE RECORDED BY THE PROPERTY OWNER IN THE CUMBERLAND COUNTY REGISTRY OF DEEDS WITHIN 90 DAYS FROM FINAL WRITTEN APPROVAL FOR THE VARIANCE TO BE VALID. FURTHERMORE, THIS VARIANCE IS SUBJECT TO THE LIMITATIONS SET FORTH IN SECTION 14-474 OF THE CITY OF PORTLAND'S CODE OF ORDINANCES.

McCall
Harrison
Avery
Kadstaficas
Zamboni

CITY OF PORTLAND, MAINE
ZONING BOARD OF APPEALS

R-6 Residential Zone
Practical Difficulty Variance Appeal

DECISION

Date of public hearing: July 13, 2017

Name and address of Appellant: New Day Farm, LLC
c/o Richard N. Bryant
Van Meer & Belanger
215 Commercial Street
Portland, Maine 04101

Location of property under appeal: 4 Russell Street
CBL 054 D001001

For the Record:

Names and addresses of witnesses (proponents, opponents and others):

Richard Bryant, Esq. - Van Meer & Belanger
Jeff Rosenblatt

Robert Haines
Holm Avenue

Exhibits admitted (e.g. renderings, reports, etc.):

Application, Exhibits, Google Earth image

Findings of Fact and Conclusions of Law:

The applicant is seeking a practical difficulty variance from the requirements of City of Portland Code of Ordinances § 14-139(a), which requires:

1. Minimum lot size of 2,000 sf;
2. Maximum lot coverage of 60%; and
   Minimum lot area per dwelling unit of 725 sf.

The applicant seeks a variance decreasing the minimum lot size to 1,899 sq. ft., increasing the maximum lot coverage to 63.67%, and reducing the minimum lot area per dwelling unit to 633 sq. ft.

The Board of Appeals has jurisdiction to hear and grant or deny applications for practical difficulty variances pursuant to § 14-473(c)(3).

Findings:

The board of appeals may grant a variance from the dimensional standards when strict application of the provisions of the ordinance would create a practical difficulty, and the applicant meets the requirements of § 14-473(c)(3)(a).

1. The application is for a variance from dimensional standards of the Land Use Ordinance, which is defined as those provisions that "relate to lot area, lot coverage, frontage, and setback requirements." §§ 14-473(c)(3)(a), 14-473(c)(3)(b)(1).

   Satisfied ✓ Not Satisfied ____

   Reasons and supporting facts:

   Applicant seeks variance from minimum lot size, maximum lot coverage and minimum lot per dwelling unit

2. Strict application of the provisions of the ordinance would create a practical difficulty, which is defined as a "case where strict application of the dimensional standards of the ordinance to the property for which a variance is sought would both preclude a use of the property which is permitted in the zone in which it is located and also would result in significant economic injury to the applicant." §§ 14-473(c)(3)(a), 14-473(c)(3)(b)(2).

   Significant economic injury exists where, "the value of the property if the variance were denied would be substantially lower than its value if the variance were granted. To satisfy this standard, the applicant need not prove that denial of the variance would mean the practical loss of all beneficial use of the land." § 14-473(c)(3)(b)(3).

   Satisfied ✓ Not Satisfied ____

   Reasons and supporting facts:

   Unless min lot size & min. ~~dwell~~ lot area per dwelling unit - it is not economically feasible to develop the lot. No use is allowed @ less than 2000 SQ feet - significant injury. Going from 60-63 to 70% lot coverage is minimal. Residential use appears to be the best use.

3. The need for a variance is due to the unique circumstances of the property, and not to the general conditions in the neighborhood. § 14-473(c)(3)(a)(1).

   Satisfied ✓ Not Satisfied ____

   Reasons and supporting facts:

   The lot is one of the 2 smallest lots in the immediate neighborhood. It is the only vacant parcel in the ~~lot~~ neighborhood. Property is a square lot as opposed to rectangle - the shape of most lots in the neighborhood.

4. The granting of the variance will not produce an undesirable change in the character of the neighborhood and will not have an unreasonably detrimental effect on either the use or fair market value of abutting properties. § 14-473(c)(3)(a)(2).

Satisfied ✓ Not Satisfied ____

Reasons and supporting facts:

Residential neighborhood - proposed residential use. Fits into what is around it. Dense neighborhood + building will fit into the density.

5. The practical difficulty is not the result of action taken by the applicant or a prior owner. § 14-473(c)(3)(a)(3).

Satisfied ✓ Not Satisfied ____

Reasons and supporting facts:

No evidence it was due to applicant or prior owner.
Applicant purchased a ~~vacant~~ lot.

6. No other feasible alternative is available to the applicant, except a variance. § 14-473(c)(3)(a)(4).

Satisfied ✓ Not Satisfied ____

Reasons and supporting facts:

Based on R-6 standards, no feasible alternative to a variance. Due to economics, a 3 unit is not feasible. Variance is needed to achieve it.

7. The granting of a variance will not have an unreasonably adverse effect on the natural environment. § 14-473(c)(3)(a)(5).

Satisfied ✓ Not Satisfied ____

Reasons and supporting facts:

~~Not~~ Dense residential neighborhood adding 3 unit building won't change that. No Public Comment stating natural environment would be impacted.

8. The property is not located, in whole or in part, within a shoreland area, as defined in 38 M.R.S. § 435, nor within a shoreland zone or flood hazard zone, as defined in this article. § 14-473(c)(3)(a)(6).

Satisfied ✓ Not Satisfied ____

Reasons and supporting facts:

Not within either shoreland zones or flood hazard zone

Decision: Katsiaficas, Larsson

___ Option 1: The Board finds that the applicant has satisfactorily met all of the standards for a practical difficulty variance and GRANTS the variance without limitation. for period of 2 years

___ Option 2: Pursuant to § 14-473(d), the Board may impose conditions on a practical difficulty variance. The Board finds that the applicant has met all of the standards described above, however, reasonable conditions are necessary to prevent injurious effects upon other property and improvements in the vicinity or upon public facilities and services, and it GRANTS the variance SUBJECT TO THE FOLLOWING CONDITIONS:

____ Option 3: The Board finds that the applicant has NOT satisfactorily met the standards for a practical difficulty variance and DENIES the variance.

Dated: 7-13-17

Board Chair

Level III – Preliminary and Final Site Plans
Development Review Application
Portland, Maine

Planning and Urban Development Department
Planning Division

Portland's Planning and Urban Development Department coordinates the development review process for site plan, subdivision and other applications under the City's Land Use Code. Attached is the application form for a Level III: Preliminary or Final Site Plan. Please note that Portland has delegated review from the State of Maine for reviews under the Site Location of Development Act, Chapter 500 Stormwater Permits, and Traffic Movement Permits.

Level III: Site Plan Development includes:

- New structures with a total floor area of 10,000 sq. ft. or more except in Industrial Zones.
- New structures with a total floor area of 20,000 sq. ft. or more in Industrial Zones.
- New temporary or permanent parking area(s) or paving of existing unpaved parking areas for more than 75 vehicles.
- Building addition(s) with a total floor area of 10,000 sq. ft. or more (cumulatively within a 3 year period) except in Industrial Zones.
- Building addition(s) with a total floor area of 20,000 sq. ft. or more in Industrial Zones.
- A change in the use of a total floor area of 20,000 sq. ft. or more in any existing building (cumulatively within a 3 year period).
- Multiple family development (3 or more dwelling units) or the addition of any additional dwelling unit if subject to subdivision review.
- Any new major or minor auto business in the B-2 or B-5 Zone, or the construction of any new major or minor auto business greater than 10,000 sq. ft. of building area in any other permitted zone.
- Correctional prerelease facilities.
- Park improvements: New structures greater than 10,000 sq. ft. and/or facilities encompassing 20,000 sq. ft. or more (excludes rehabilitation or replacement of existing facilities); new nighttime outdoor lighting of sports, athletic or recreation facilities not previously illuminated.
- Land disturbance of 3 acres or more (includes stripping, grading, grubbing, filling or excavation).

Portland's development review process and requirements are outlined in the Land Use Code (Chapter 14), Design Manual and Technical Manual.

Planning Division
Fourth Floor, City Hall
389 Congress Street
(207) 874-8719
planning@portlandmaine.gov

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

I. Project Information (Please enter n/a on those fields that are not applicable)

Project Name:	4 Russell Street
Proposed Development Address:	4 Russell Street
Project Description:	3-unit residential development, 3-stories with mezzanine 4th story
Chart/Block/Lot:	Map 54, Block D, Lot 1
Preliminary Plan	X
Final Plan	

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

APPLICANT

Name:	Jeffrey Rosenblatt
Business Name:	New Day Farm, LLC
Address:	156 Sheridan Street, Unit 3A
City/State:	Portland, ME
Zip Code:	04101
Work #:	
Home #:	
Cell #:	
Fax #:	
E-mail:	jrosedeb@gmail.com

OWNER

Name:	New Day Farm, LLC
Address:	156 Sheridan Street, Unit 3A
City/State:	Portland, ME
Zip Code:	04101
Work #:	
Home #:	
Cell #:	
Fax #:	
E-mail:	

AGENT/REPRESENTATIVE

Name:	Michael Tadema-Wielandt, P.E., Terradyn Consultants, LLC
Address:	565 Congress Street, Suite 310
City/State:	Portland, ME
Zip Code:	04101
Work #:	
Home #:	
Cell #:	207-632-9010
Fax #:	
E-mail:	mtw@terradynconsultants.com

BILLING (to whom invoices will be forwarded to)

Name:	New Day Farm, LLC
Address:	156 Sheridan Street, Unit 3A
City/State:	Portland, ME
Zip Code:	04101
Work #:	
Home #:	
Cell #:	
Fax #:	
E-mail:	jrosedeb@gmail.com

ENGINEER

Name:	Michael Tadema-Wielandt, P.E., Terradyn Consultants, LLC
Address:	565 Congress Street, Suite 310
City/State:	Portland, ME
Zip Code:	04101
Work #:	
Home #:	
Cell #:	207-632-9010
Fax #:	
E-mail:	mtw@terradynconsultants.com

SURVEYOR

Name:	John Swan, Owen Haskell, Inc.
Address:	390 U.S. Route One
City/State:	Falmouth, ME
Zip Code:	04105
Work #:	207-774-0424
Home #:	
Cell #:	
Fax #:	
E-mail:	jswan@owenhaskell.com

ARCHITECT

Name:	David Lloyd, Archetype, P.A.
Address:	48 Union Wharf
City/State:	Portland, ME
Zip Code:	04101
Work #:	207-772-6022
Home #:	
Cell #:	
Fax #:	
E-mail:	lloyd@archetypepa.com

ATTORNEY

Name:	Richard Bryant, Van Meer & Belanger PA
Address:	215 Commercial Street, 4th Floor
City/State:	Portland, ME
Zip Code:	04101
Work #:	207-871-7500
Home #:	
Cell #:	
Fax #:	
E-mail:	

DESIGNATED PERSON(S) FOR UPLOADING INTO e-PLAN

Name:	Michael Tadema-Wielandt, Terradyn Consultants
E-mail:	mtw@terradynconsultants.com
Name:	Adrienne Fine, Terradyn Consultants
E-mail:	adrienne@terradynconsultants.com
Name:	
E-mail:	

III. APPLICATION FEES

LEVEL III DEVELOPMENT (check applicable review)

☑	Less than 50,000 sq. ft.	$750.00
☐	50,000 – 100,000 sq. ft.	$1,000.00
☐	100,000 – 200,000 sq. ft.	$2,000.00
☐	200,000 – 300,000 sq. ft.	$3,000.00
☐	Over 300,000 sq. ft.	$5,000.00
☐	Parking lots over 100 spaces	$1,000.00
☐	After-the-fact Review	$1,000.00 + applicable application fee above

PLAN AMENDMENTS (check applicable review)

☐	Planning Staff Review	$250.00
☐	Planning Board Review	$500.00

OTHER REVIEWS (check applicable review)

☐	Traffic Movement	$1,500.00
☐	Stormwater Quality	$250.00
☑	Subdivision	$500.00 + applicable fee for lots/units below
	# of Subdivision Lots/Units [3] x $25.00 each	$ 75.00
☐	Site Location	$3,500.00 + applicable fee for lots/units below
	# of Site Location Lots/Units [ ] x $200.00 each	$
☐	Change of Use	
☐	Flood Plain	
☐	Shoreland	
☐	Design Review	
☐	Housing Replacement	
☐	Historic Preservation	
	TOTAL APPLICATION FEE DUE:	$ 1,325.00

IV. FEES ASSESSED AND INVOICED SEPARATELY

- Notices to abutters (receipt of application, workshop and public hearing meetings) ($.75 each)
- Legal Ad in the Newspaper (% of total ad)
- Planning Review ($52.00 hour)
- Legal Review ($75.00 hour)
- Third Party Review (all outside reviews or analysis, eg. Traffic/Peer Engineer, are the responsibility of the applicant and will be assessed and billed separately)

V. PROJECT DATA (Please enter n/a on those fields that are not applicable)

TOTAL AREA OF SITE	1,899	sq. ft.
PROPOSED DISTURBED AREA OF THE SITE	1,899	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)	1,599	sq. ft.
Impervious Area (Total Proposed)	1,439	sq. ft.
Building Ground Floor Area and Total Floor		
Building Footprint (Total Existing)	0	sq. ft.
Building Footprint (Total Proposed)	1,199	sq. ft.
Building Floor Area (Total Existing)	0	sq. ft.
Building Floor Area (Total Proposed)	4,296	sq. ft.
ZONING		
Existing	R6	
Proposed, if applicable	R6	
LAND USE		
Existing	gravel parking lot	
Proposed	Residential	
RESIDENTIAL, IF APPLICABLE		
# of Residential Units (Total Existing)	0	
# of Residential Units (Total Proposed)	3	
# of Lots (Total Proposed)	3	
# of Affordable Housing Units (Total Proposed)	0	
PROPOSED BEDROOM MIX		
# of Efficiency Units (Total Proposed)	1	
# of One-Bedroom Units (Total Proposed)	0	
# of Two-Bedroom Units (Total Proposed)	2	
# of Three-Bedroom Units (Total Proposed)	0	
PARKING SPACES		
# of Parking Spaces (Total Existing)	approx. 6	
# of Parking Spaces (Total Proposed)	3	
# of Handicapped Spaces (Total Proposed)	0	
BICYCLE PARKING SPACES		
# of Bicycle Spaces (Total Existing)	0	
# of Bicycle Spaces (Total Proposed)	2	
ESTIMATED COST OF THE PROJECT	$816,240	

VI. APPLICANT SIGNATURE

By digitally signing the attached document(s), you are signifying your understanding this is a legal document and your electronic signature is considered a ***legal signature*** per Maine state law.

I hereby certify that I am the Owner of record of the named property, or that the owner of record authorizes the proposed work and that I have been authorized by the owner to make this application as his/her authorized agent. I agree to conform to all applicable laws of this jurisdiction. In addition, if a permit for work described in this application is issued, I certify that the Planning Authority and Code Enforcement's authorized representative shall have the authority to enter all areas covered by this permit at any reasonable hour to enforce the provisions of the codes applicable to this permit.

This application is for a Level III Site Plan review. It is not a permit to begin construction. An approved site plan, a Performance Guarantee, Inspection Fee, Building Permit, and associated fees will be required prior to construction. Other Federal, State or local permits may be required prior to construction, which are the responsibility of the applicant to obtain.

Signature of Applicant:	
Date:	16 MAR 2018

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

Portland, Maine Yes. Life's good here.

Planning & Urban Development Department

LEVEL II and LEVEL III APPLICATION SUBMISSION CHECKLIST

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

Please confirm by electronically checking the boxes to the left

Tab 1 – General Application Documents

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

LEVEL II AND LEVEL III SITE PLAN STANDARDS AND SUBMISSION CHECKLIST

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

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

Tab 2 - TRANSPORTATION

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

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

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

Tab 5 - PUBLIC INFRASTRUCTURE AND SAFETY

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

Tab 6 - SITE DESIGN

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

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

Level II and Level III Site Plan Checklist

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

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

Must be in compliance with Technical Manual, Section 13

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

☑ **Existing Conditions**

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

☑ **Proposed Site Plan**

- Ground floor area, and grade elevations for all buildings

☑ **Access, Circulation, and Parking**

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

☑ **Site Considerations**

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

☑ **UTILITY PLAN** including:

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

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

5 EASEMENTS OR OTHER BURDENS

5.1 OVERVIEW

Owen Haskell, Inc. completed a boundary and topographic survey of the site in June of 2016. There are no easements or other burdens associated with the site.

6 TECHNICAL AND FINANCIAL CAPACITY

6.1 TECHNICAL CAPACITY

The applicant has assembled a highly qualified team of professionals to plan, permit, and develop construction documents for the project. The Team is working under the direction of New Day Farm, LLC as Project Developers. The Team services will be provided by the following companies and their respective team leaders:

6.2 CONSULTANT TEAM

Civil Engineer	Michael Tadema-Wielandt, P.E. Terradyn Consultants, LLC 565 Congress Street Portland, ME 04101 (207) 632-9010 – Cell (207) 221-1317 – Fax mtw@terradynconsultants.com
Surveyor	John Swan Owen Haskell, Inc. 390 US Route 1, Unit 10 Falmouth, Maine 04105 (207) 774-0424 – Work (207) 774-0511 – Fax jswan@owenhaskell.com
Architect	David Lloyd Archetype, PA 48 Wharf Street Portland, ME 04101 (207) 772-6022 – Work (207) 772-4056 – Fax lloyd@archetypepa.com

6.3 EXPERIENCE OF PROJECT TEAM

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

The applicant, New Day Farm, LLC, has experience in the development and management of residential projects of this scale. New Day Farm, LLC developed the Sheridan Street Apartments project, a 5-unit residential development located on Munjoy Hill in Portland, in 2014.

6.4 FINANCIAL CAPACITY

The applicant has the capacity to finance the proposed project. A letter of financial capacity for the project is contained in Attachment 6-A.

6.5 CONSTRUCTION COST ESTIMATE

The project has an overall construction cost estimate of $816,240. This construction cost value is considered preliminary and subject to change as building design and project layout is refined, etc.

6.6 ATTACHMENTS

Attachment 6-A – Letter of Financial Capacity

ATTACHMENT 6-A

Letter of Financial Capacity

Androscoggin Bank

3/21/2018

To Whom it May Concern,

Dr. Rosenblatt has been a longtime valued customer of Androscoggin Bank. We have informally reviewed the details of the proposed Portland construction project. With the information we have received and given the longstanding relationship with Dr. Rosenblatt, we feel a formal request for financing of the project would be favorably viewed by our credit team.

Please feel free to reach out directly with any questions.

Best Regards,

Androscoggin Bank

Robert Westhoven
VP/Commercial Lending
Androscoggin Bank
30 Lisbon St.
Lewiston, ME 04243-1407
Phone 207-376-3638 Fax 1-207-376-3555
rwesthoven@androscogginbank.com

Member FDIC EQUAL HOUSING LENDER

7 CONSTRUCTION MANAGEMENT PLAN

The following information is provided in accordance with the City of Portland Code of Ordinances Chapter 14 Land Use, Section 14-527(g)(1).

7.1 CONSTRUCTION MANAGEMENT PLAN

New Day Farm, LLC is seeking to commence construction of 4 Russell Street during the summer of 2018 and complete work by the winter of 2018. The construction will involve site work and new building construction. The attached construction plan outlines the anticipated timeline and sequence of activities.

7.2 ATTACHMENTS

Attachment 7-A – Construction Management Plan

ATTACHMENT 7-A

Construction Management Plan

CONSTRUCTION MANAGEMENT PLAN

Project:
4 Russell Street
Portland, Maine 04102

Applicant:
New Day Farm, LLC
156 Sheridan Street, Unit 3A
Portland, Maine 04101

Prepared By:
Terradyn Consultants, LLC
565 Congress Street, Suite 310

Construction Manager:
To be determined

A. Construction Management Principles

The following narrative provides an overview of the construction management principles that the Applicant has identified to minimize impacts from the construction of 4 Russell Street, such as noise, vibrations, ground movement, truck traffic, and other construction related factors to the surrounding buildings and communities.

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

Prior to scheduling a preconstruction meeting and the issuance of any city required permits, the Applicant and Contractor shall meet all of the requirements contained in Section 14-530. Development review fees and post approval requirements and 14-532. General requirements and enforcement of Portland's Land Use Code.

Other permits, as applicable, include

1. **Street Opening and Street Occupancy Permits:** Construction activity in the public right-of-way are controlled by Chapter 25 and sewer and stormwater system connections are controlled by Chapters 24 and 32 of the Land Use Code. All required permits shall be obtained through the Department of Public Works and the requests shall conform with the approved construction management plan.
2. **Blasting:** Blasting, if required, shall conform with all measures of Article VIII. Regulation of Explosives in the Land Use Code and Section 3.7 Standards for Blasting and Regulation of Explosives in Portland's Technical Manual.

C. Construction Administration and Communication

The Applicant and Contractor will work diligently to implement a communication strategy as outlined below. The communication strategy is intended to ensure that all construction operations are performed in accordance with all agreements, ordinances and special permits applicable to this project. The Construction Manager will work closely with adjacent abutters, businesses and all parties informed, as far in advance as possible, of scheduled work, particularly work anticipated to cause significant noise, vibrations, or dust.

The following person is designated the Contact Person and will be available 24 hours in the event of an emergency:

CONTACT PERSON:
To be determined

Construction Signage shall be posted at the site with Contact Information for the Contractor. Construction site signage shall be removed at project completion.

D. Construction Schedule

1. The contractor shall submit a schedule or time line for the construction project, including any Phasing, prior to construction.
2. Hours of Construction: Construction may occur during the daytime hours as defined in Section 17-18 of the City Code (Construction Activities) and Section 25-129 of the City Code (Noise, dust and debris).
3. Extended Hours or Night Work: Pursuant to Section 17-18, this section does not apply to emergency utility work or "Situations where the public works authority or the office of building inspections determines that the construction activity is of a unique character which cannot reasonably be completed or performed during the permitted hours and which is not of a recurring nature, provided that prior to engaging in such activity the contractor or his representatives gives notice of the time and scope of such proposed activity, the notice to be given in a manner approved by the public works authority."
4. Material Deliveries: Delivery of materials shall take place during the Hours of Construction listed above and shall be stored on the project site in the locations noted on the Construction Management Plan (Sheet C-2.3).

E. Security & Public Safety

1. The Contractor shall erect the temporary barriers and access gates shown on the Construction Management Plan (Sheet C-2.3) with the intent of separating pedestrian and vehicle circulation from the construction site.
2. The Applicant or Contractor shall purchase and install a knox padlock from the Portland Fire Department to allow access by the Portland Fire Department at the primary access gate.

3. Structures undergoing construction, alteration, or demolition operations, including those in underground locations, shall comply with NFPA 1 Chapter 16. *Safeguarding Construction, Alteration, and Demolition Operations.*
4. Fire Safety Program. An overall construction of demolition fire safety program shall be developed. Essential items to be emphasized include the following:
    - Good Housekeeping
    - On-site security
    - Installation of new fire protection systems as construction progresses
    - Preservation of existing systems during demolition
    - Organization and training of an on-site fire brigade
    - Development of a pre-fire plan with the local fire department
    - Rapid communication
    - Consideration of special hazards resulting from previous occupancies
    - Protection of existing structures and equipment from exposure fires resulting from construction, alteration, and demolition operations
5. Blasting, if required, shall conform with all measures of Article VIII. Regulation of Explosives in the Land Use Code and Section 3.7 Standards for Blasting and Regulation of Explosives in Portland's Technical Manual.
6. Any temporary security lighting fixtures shall feature full cutoff optics to reduce light trespass onto abutting properties.

F. Construction Permitting and Traffic Control Plans

1. Construction Activity in Public Streets: Construction activity in the public right-of-way is controlled by Chapter 25 Article VII of the City Code of Ordinances. Required licenses and permits, restrictions on activity, and fees & area are outlined in that Chapter. Rules and Regulations for Excavation Activity are available through the Street Opening Clerk at the Department of Public Works. At no time can construction activity including delivery vehicles close or block streets or affect public safety access without prior notice and approval of the Department of Public Works.
2. Public Sidewalk Closures: The Hill Street sidewalk in front of the site will be reconstructed where disturbed as part of the proposed project. This section of sidewalk will be closed for the duration of the building construction, and signage will be posted as shown on the Construction Management Plan.
3. Sewer, Water, and Stormwater: Sewer and stormwater system connections are controlled by Chapters 24 and 32 of the City Code of Ordinance. Required permits for new connections and/or abandonment of existing connections are available through the Street Opening Clerk at the Department of Public Works. Rules and Regulations for these utility systems are available through the City Engineer's office of the Department of Public Works and in Section II of the Technical Manual. Sewer and water system connections within Russell Street are expected to result in temporary closure of the 13' wide one-way street for up to two days.

4. Work within City Right of Way: Construction activity that impacts the existing public street system must be controlled to protect the safety of the construction workers and all modes of the traveling public.

   Construction operations shall provide for the safe passage of the public through or along the construction work zone. On a case-by-case basis, the Contractor may be allowed to close a street and/or detour a mode of traffic when absolutely necessary for safety. The Contractor shall employ the appropriate techniques and devices as called for in the latest edition of the Manual on Uniform Traffic Control Devices (MUTCD). In addition:

   - Construction speed signing may be used as needed to slow traffic
   - Traffic Control signs shall not be placed where they are an obstruction to bicycles or pedestrians.
   - In extreme situations, flaggers may be required.
   - Police detail is required at lighted intersections and may be requested by the City's transportation engineer or his designee.

   All existing modes of travel in work zone area shall be accommodated if impacted by the activity. The safe passage of pedestrians, bicyclists, transit providers, and motorists are of equal importance when planning out the work zone; no pre-existing travel mode may be eliminated without the express approval of the Department of Public Works.

   - Traffic control bicycle and pedestrian facilities or routes through work zones shall be maintained until the bicycle and pedestrian facilities or routes are ready for safe operation. Traffic control will not be removed to allow auto travel at the expense of bicycle and pedestrians.
   - Barrier systems utilized to separate the construction activity from the public street and /or sidewalk shall not inhibit sight distances, particularly for visibility of pedestrians and bicyclists.
   - ADA compliance shall be maintained.

   Use of public parking spaces or the blockage of any portion of sidewalk for the purpose of construction activity shall require an occupancy permit and appropriate fee as assessed by the Department of Public Works.

G. Site Management and Controls

The contractor shall be responsible for maintaining the site in a safe condition and including the following:

1. A solid waste dumpster shall be located on site for the disposal of trash and debris.

2. The Hill Street and Russell Street right of way shall be swept regularly to control the tracking of mud onto adjacent public streets.
3. Dust controls: The construction shall comply with Portland's requirements under Section 25-129 on Noise, dust and debris.
4. Noise: The construction shall comply with Portland's requirements under Section 17-18 of the City Code and Section 25-129 on Noise, dust and debris.
5. Rodent Control will be provided, if applicable, by a professional exterminator and consistent with Chapter 22 of the City Code.
6. Snow Removal: Pursuant to Section 25-173 Contractors to ensure a safe means of travel within the work zone.
    1) Snow/ice removal or commence automatically from (1" of snow and up) or Ice
    2) Remove snow as needed within the work zone, including parking spaces & not to block any driveways or site lines with the piles of snow.
    3) Clear all walks & ramps with the work zone
    4) Sand or Salt as needed
    5) Clear all basin or drainage to help snow melt
    6) This would include Monday-Friday Sat/Sunday/Holidays

H. Erosion Control and Preservation of Trees

1. The Contractor shall install all erosion and sedimentation controls as depicted on the approved erosion and sedimentation control plan prior to the pre-construction meeting for inspection by the City. The Contractor shall regularly inspect the control measures, no less than weekly and after significant storm events, and maintain any installed temporary or permanent stormwater management systems in working order. The Contractor shall document all inspection activities and corrective actions and be prepared to provide these documents for inspection by the City, Maine Department of Environmental Protection or the U.S. Environmental Protection Agency upon request.
2. The Contractor shall maintain all tree and landscaping preservation measures as depicted on the Landscape Plan (Sheet L-1) within the area of construction.
3. The storage of materials shall be located in the areas depicted on the Construction Management Plan (Sheet C-2.3) and avoid being located under/near trees.

I. Construction Staging and Deliveries

1. A location for material storage and lay down is shown on the Construction Management Plan. Additional areas may be utilized as available as long as they do not interfere with material deliveries.

J. Parking During Construction

1. Construction Parking: Construction workers shall utilize off-site parking for the duration of construction.

8 NATURAL FEATURES

8.1 OVERVIEW

The development site has been entirely developed and does not contain any significant natural features including wetlands, vernal pools or other protected resources or wildlife habitats.

9 STORMWATER MANAGEMENT

The following information is provided in accordance with the City of Portland Code of Ordinances Chapter 14 Land Use, Section 14-526(b)(3).

9.1 OVERVIEW

The existing project site is entirely developed and relatively flat. Stormwater runoff from the project site drains overland across the northern property boundary towards the Russell Street and Hill Street intersection. The Russell Street and Hill Street intersection generally drains northwest toward Ellsworth Street and an existing city stormwater system located in Hill Street.

Post development stormwater runoff will generally follow existing patterns. Runoff from the proposed building roof will be collected in a gutter system and discharged on site onto a crushed stone apron to dissipate flows and reduce erosion. This stormwater will then flow overland to Hill and Russell Streets as it does today. Impervious patio areas and the driveway apron to the garage will drain to Hill and Russell Streets as these areas do today.

The existing project site contains approximately 1,599 square feet of impervious surface. Redevelopment of the project site will result in a decrease of approximately 160 square feet of impervious area and a total impervious surface of 1,439 square feet. Therefore, the project is not required to meet the General or Flooding Standards. Redevelopment of non-roof area is approximately 240 sf of impervious surface, therefore the project does not meet the threshold for redevelopment standards.

The project is not expected to cause ponding, flooding, or erosion problems on or downstream of the site. The relatively small amount of runoff entering the city’s storm drain network is not expected to overburden the system.

10 CONSISTNECY WITH CITY MASTER PLANS

10.1 OVERVIEW

Our office is not aware of any applicable Master Plans created for the project site.

11 UTILITIES

11.1 OVERVIEW

The proposed project will involve installation of new utility services to the building. All new utility services will be provided from the franchise utilities available within Russell and Hill Streets. The proposed locations of the new utility services are shown on the Utility Plan (Sheet C-5.0).

11.2 WATER SUPPLY

The proposed project will receive its water supply from the Portland Water District's (PWD) public water supply system. Separate fire and domestic services will be installed to the building from PWD's existing main in Russell Street. Terradyn Consultants received an ability to serve letter from PWD on February 21, 2018.

11.2.1 Total Project Water Usage

The total average daily water demand for the proposed project is estimated to be 480 gallons per day, based on design flows published in the State of Maine Subsurface Wastewater Disposal Rules.

1 x 1 Bedroom Residential Units at 120 gpd/unit	= 120 gpd
2 x 2 Bedroom Residential Units at 180 gpd/unit	= 360 gpd
	Total = 480 gpd

11.3 WASTEWATER DISPOSAL

The proposed project will be connected to the Portland Water District's and City of Portland's wastewater collection and conveyance systems. The City of Portland Wastewater Capacity Application has been completed and will be forwarded to Brad Roland of the City's Water Resources Department.

The overall project is anticipated to generate an average daily flow of approximately 480 gpd. Based on the existing sewer system in the area, there appears to be adequate capacity to handle these projected flow amounts.

11.4 ELECTRICITY SUPPLY

CMP currently maintains overhead and underground utilities in the area. Electric utilities for the project will be installed underground from Pole #2 on Russell Street, to the southwest of the site.

11.5 ATTACHMENTS

Attachment 11-A – Correspondence with Utilities

ATTACHMENT 11-A

Correspondence with Utilities

Portland Water District

FROM SEBAGO LAKE TO CASCO BAY

February 21, 2018

Adrienne Fine
Terradyn Consultants
565 Congress Street Suite 310
Portland, ME 04102

Re: 4 Russell Street, PO
Ability to Serve with PWD Water

Dear Ms. Fine:

The Portland Water District has received your request for an Ability to Serve Determination for the noted site submitted on February 9, 2018. Based on the information provided per plans dated February 6, 2018, we can confirm that the District will be able to serve the proposed project as further described in this letter. **Please note that this letter constitutes approval of the water system as currently designed. Any changes affecting the approved water system will require further review and approval by PWD.**

Conditions of Service

The following conditions of service apply:

- A new 6-inch fire service and 2-inch domestic service may be installed from the water main in Russell Street. The service should enter through the properties frontage on Russell Street at least 10-feet from any side property lines.

- Please note that only one meter and one bill will be associated to each domestic service line. This one master meter would be located in a common space that all tenants could gain access to if necessary.

Prior to construction, the owner or contractor will need to make an appointment to complete a service application form and pay all necessary fees. The appointment shall be requested through MEANS@pwd.org or by calling 207-774-5961 ext. 3199. Please allow (3) business days to process the service application paperwork. PWD will guide the applicant through the new development process during the appointment.

Existing Site Service

According to District records, the project site does not currently have existing water service.

Water System Characteristics

According to District records, there is an 6-inch diameter cement lined cast iron water main in Russell Street and a public fire hydrant located approximately 200 feet from the site. The most recent static pressure reading was 50 psi on January 23, 2018.

Public Fire Protection

The installation of new public hydrants to be accepted into the District water system will most likely not be required. It is your responsibility to contact the Portland Fire Department to ensure that this project is adequately served by existing and/or proposed hydrants.

Domestic Water Needs

The data noted above indicates there should be adequate pressure and volume of water to serve the domestic water needs of your proposed project.

Private Fire Protection Water Needs

You have indicated that this project will require water service to provide private fire protection to the site. Please note that the District does not guarantee any quantity of water or pressure through a fire protection service. Please share these results with your sprinkler system designer so that they can design the fire protection system to best fit the noted conditions. If the data is out of date or insufficient for their needs, please contact MEANS to request a hydrant flow test and we will work with you to get more complete data.

Should you disagree with this determination, you may request a review by the District's Internal Review Team. Your request for review must be in writing and state the reason for your disagreement with the determination. The request must be sent to MEANS@PWD.org or mailed to 225 Douglass Street, Portland Maine, 04104 c/o MEANS. The Internal Review Team will undertake review as requested within 2 weeks of receipt of a request for review.

If the District can be of further assistance in this matter, please let us know.

Sincerely,
Portland Water District

Robert A. Bartels, P.E.
Senior Project Engineer

12 SOLID WASTE

12.1 OVERVIEW

The project will generate solid waste both during construction and on an on-going basis after construction is complete. Estimates of solid waste generation, recycling rates, and procedures for the transport and disposal of solid waste that will be generated by the operation of the proposed development are provided below.

The following amount of solid waste associated with the construction and operation of the development have been estimated:

- 29 cubic yards of construction debris related to the new building construction activities (excluding volume of recycled materials).

- 102 pounds per week of solid waste will be generated by the operation of the development. Assuming that 50% of the waste is recycled, it is estimated that the project will generate 1.33 tons of recyclable waste and 1.33 tons of non-recyclable waste per year.

12.2 SOLID WASTE GENERATED DURING THE BUILDING CONSTRUCTION

Approximately 29 cubic yards of construction debris is expected to be generated during construction. Assuming that 80% of construction debris is recycled, construction of the project will generate approximately 5.8 c.y. of non-recyclable waste.

The waste stream will be transported and disposed of at the following locations:

Hazardous Materials:	WMI Crossroads Facility in Norridgewock, Maine
Mixed Construction Material:	Riverside Recycling Facility in Portland, Maine; WMI Crossroads Facility in Norridgewock, Maine or Juniper Ridge in Old Town, Maine (Contractor option)
Separated Wood Construction Debris:	KTI Biofuels in Lewiston, Maine
Separated Metal/Ferrous Material:	One Steel Recycling Inc. in Arundel or Oakland, Maine

The collection, transfer, disposal, and payment of all fees for solid wastes shall be the responsibility of the Contractor, with all waste transferred by a licensed non-hazardous waste transporter.

12.3 SOLID WASTE GENERATED FROM THE OPERATION OF THE DEVELOPMENT

Approximately 102 pounds of solid waste and recyclable material is expected to be generated every week by the residents of the project. The operational solid waste and recyclable material will be collected by the City of Portland in accordance with Chapter 12 of the City Code.

12.4 ATTACHMENTS

Attachment 12-A – Computations of Types and Volumes of Solid Wastes for Construction Project

ATTACHMENT 12-A

Computations of Types of Volumes of Solid Wastes

ATTACHMENT 12-A

SOLID WASTES COMPUTATIONS AND DISPOSAL

A. NEW BUILDING CONSTRUCTION:

Basis of Estimate: 10 c.y./1,500 s.f. of finished space

Area: Approximately 4,296 square feet of finished space

Solid Waste: Approximately 96 c.y.

Other Wastes Associated with Other Site Construction: Cardboard from packaging etc.: Limited Quantity

Total: 29 c.y. before recycling

Net: 5.8 c.y. if 80% of the material is recycled

Disposition:
Assume 10 percent is concrete which can be sent to the approved aggregate recycling facilities operated by Shaw Bros. or R.J. Grondin and Sons for processing into recycled aggregate.

Assume 70 percent is wood or metal which can be transported to KTI Biofuels in Lewiston (for wood) or One Steel Recycling in Oakland, Maine for metals.

Approximately 83 cubic yards of mixed construction debris that will be hauled to the Riverside Recycling Facility in Portland, WMI Crossroads facility in Norridgewock, Maine or the Juniper Ridge Facility in Old Town, Maine.

The contractor should provide dumpsters designated by material type and identify recycling methods and disposal sites prior to construction. All haulers must have a current non-hazardous waste haul license.

B. OPERATIONAL SOLID WASTE:

RESIDENTIAL USE:

Basis of Estimate: 17 pounds/wk per individual. Estimate of 2 individuals per residential unit. From Table 14-1 of the CEQR Technical Manual from January 2014 Edition; Source: New York City Department of Sanitation.

Number of individuals: 6

Solid Waste: Approximately 102 pounds/week

13 FIRE SAFETY

13.1 OVERVIEW

The applicant and project team will provide the Portland Fire Department with the information required in the PFD Site Review Checklist, as well as a basic review of NFPA 1 and City of Portland Technical Standards related to public safety.

The project site will be accessed from Russell Street and Hill Street, which are improved with a 13’ wide paved surface and a 40’ wide paved surface respectively. A 6” cast iron water main owned by the Portland Water District currently exists in Russell Street, and the closest fire hydrant is located on the southwestern side of Hill Strete at the intersection of Hill Street and Ellsworth Street, approximately 170’ from the site.

Two sides of the proposed building will be fully accessible from Russell and Hill Streets. The proposed building will be fully sprinkled in compliance with all applicable codes.

14 CONFORMITY WITH APPLICABLE DESIGN STANDARDS

14.1 OVERVIEW

This project conforms to all applicable Site Plan Standards of Section 14-526 of the city's Land Use Ordinance as described in the following narrative.

(a) Transportation Standards

1. Impact on Surrounding Street Systems:

   The project will not have a significant impact on the surrounding street system. Vehicles will access the site and parking areas from existing access points and the estimated number of new vehicle trips generated by the project is insignificant compared to existing trips on surrounding streets.

2. Access and Circulation:

   a. Site Access and Circulation

      (i) Pedestrian access to the site will be provided via the re-constructed existing sidewalk along Hill Street. There will also be a pedestrian entrance into the building from the patio behind the garage that can be accessed from Russell Street. Door controlled access will be provided at each of the building entry locations.

      (ii) The project will use existing points of access.

      (iii) Drive up features are not proposed

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

   b. Loading and Servicing

      (i) Delivery or service vehicles are expected to be infrequent and may temporarily use on-street parking on Hill Street.

   c. Sidewalks.

      (i) The existing sidewalk along the Hill Street frontage will be reconstructed if disturbed as part of this project. All sidewalk improvements shall conform to the City of Portland Technical Manual as shown on the project drawings. There is currently no sidewalk on the Russell Street frontage, and there is no available space within the right-of-way to construct one.

(ii) The sidewalk ramp at the corner of Hill and Russell Streets will be constructed in accordance with City of Portland Technical Design Standards.

(iii) There are no proposed on-site walkways. The primary building entrance is on the Hill Street sidewalk. The second building entrance at the back of the building exits onto the proposed patio area that connects to Russell Street.

3. Public Transit Access:

Metro Bus Route 8 runs west on Congress Street in the proximity of the project site. The nearest bus stop to the project is along Bramhall Street at Maine Medical Center, approximately 470' southwest of the site. The project does not meet the minimum threshold to require a new transit facility.

4. Parking:

a. Location and Required Number of Vehicle Parking Spaces:

(i) The project requires zero parking spaces because the first three units are exempt from parking requirements. However, three parking spaces are provided in the enclosed garage on the first floor of the building. The garage will be accessed from Russell Street. Additionally, the patio behind the building will be designed as an overflow parking space accessed from Russell Street.

(ii) A parking study is not required for this project.

(iii) The proposed parking spaces are enclosed within the building to provide parking for residents in the building. Although no parking spaces are required per ordinance, one space per unit is provided in an enclosed garage so the parking will not take up site area beyond that of the building, and it will not be visible from the street or abutting sites.

(iv) The dimensions of the 3 parking spaces in the enclosed garage meet the City of Portland compact space parking requirements of 8' wide and 15' long. No ADA spaces are provided.

(v) Three proposed on-site parking spaces are located in an enclosed garage. The patio that can functions as overflow parking will be constructed of pavers.

b. Location and Required Number of Bicycle Parking Spaces:

(i) The project requires 2 bicycle parking spaces for every 5 dwelling units, or 2 spaces. Bicycle parking spaces will be provided in the garage.

c. Motorcycles and Scooter Parking:

(i) Dedicated motorcycle/scooter parking is not provided.

d. Snow Storage:

(i) In the event that the patio / fourth parking space is plowed during the winter months there will be an adequate area for snow storage behind the building next to the patio. There is no other surface parking area or need for snow storage on the site.

(ii) Snow will not be stored in parking areas, and no bio-retention is proposed.

5. Transportation Demand Management (TDM):

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

(b) Environmental Quality Standards

1. Preservation of Significant Natural Features:

a. The development site has been entirely developed and does not contain any significant natural features including wetlands, vernal pools or other protected resources or wildlife habitats.

b. Not applicable

c. Not applicable

2. Landscaping and Landscaping Preservation:

a. Landscape Preservation.

(i) One street tree is located along the site's Hill Street frontage that will be preserved. Approximately 5 trees are located along the southeastern property line adjacent to the abutting property. These trees are of poor quality and overgrown and will be removed. Vegetative plantings of an appropriate size will replace these trees on the project site. New plantings will be provided as shown on the Landscape Plan.

(ii) The existing trees are not salvageable due to their location proximity to the proposed building.

(iii) The existing street tree on Hill Street will be protected during construction.

(iv) Waiver: 5 of the trees to be removed along the property line with the southeastern abutter are overgrown trees that would have a negative impact on the proposed structures and are encroaching upon the existing abutting building. These trees will be replaced with appropriate plantings at a scale that is appropriate for the site, as specified by the landscape architect.

(v) The project is not in the Shoreland Zone

b. Site Landscaping.

(i) Landscaped Buffers:

(a) Not applicable.

(b) Plantings are proposed in the front, side, and rear zoning setback areas, as specified on the Landscape Plan.

(c) Not applicable.

(d) Vegetated buffers between the proposed building and surrounding residential development is specified on the Landscape Plan.

(ii) Parking Lot Landscaping:

(a) Not applicable. The onsite parking area is below the proposed building.

(b) Not applicable.

(c) Not applicable.

(d) Not applicable.

(e) Not applicable.

(iii) Street Trees

(a) The existing street tree along Hill Street will be protected. The proposed project is 3 units, so 3 street trees are required per the Technical Manual. One of these 3 trees will be satisfied by protecting the existing street tree.

(b) There is no space for the 2 additional street trees along the project site's frontage. Russell Street is a narrow street with no space in the right-of-way for additional plantings. Hill Street already has street trees in the sidewalk in front of the project site. Additional plantings along the project site's frontage are proposed to provide landscaping visible from the right-of-way. These plantings are specified on the Landscape Plan.

3. Water Quality, Stormwater Management and Erosion Control:

a. Stormwater:

The existing project site contains approximately 1,599 square feet of impervious surface. Redevelopment of the project site will result in a decrease of approximately 160 square feet of impervious area and a total impervious surface of 1,439 square feet. Therefore, the project is not required to meet the General or Flooding Standards. The non-roof redeveloped impervious area is approximately 240 square feet, so the project does not meet the threshold for redevelopment standards.

Post development stormwater runoff will follow existing patterns. Runoff from the proposed roof will be captured in a gutter system and outlet on site onto a stone apron to provide stormwater dissipation and prevent erosion control.

(i) The project will not result in flooding of adjacent lots.

(ii) Runoff volumes and rates will not increase onto adjacent lots.

(iii) Volumes and rates of stormwater runoff into the Russell Street and Hill Street rights of way are expected to decrease. The project will not create ponding, flooding, or other drainage problems within Russell Street or Hill Street.

(iv) Volumes and rates of stormwater runoff into the city's storm drain network are expected to be similar to existing volumes and rates. The project will not create problems downstream or exceed the capacity of the system.

b. The project will result in a decrease in impervious surface and is not required to meet the General or Flooding Standards.

c. Not Applicable. The project is not located in a watershed of an urban impaired stream.

d. Not applicable.

e. The project will be served by both a public wastewater system and public drainage system. The project will not pose a risk of groundwater contamination.

f. Wastewater will flow to the public sewer system, which is adequately sized for the project flows.

(c) Public Infrastructure and Community Safety Standards.

1. Consistency with City Master Plans:

a. The project has been designed to be consistent with the City of Portland Land Use Ordinance and off-premises infrastructure.

b. Not applicable.

2. Public Safety and Fire Prevention:

a. The site has been designed to promote safety and security for residents and their guests. Access to the residential lobby and parking area will utilize keyed entry. Site lighting will provide added security.

b. Emergency vehicle access will be via Russell Street (13’ wide paved surface) and Hill Street (40’ wide paved surface).

c. An existing fire hydrant is located on the southwest side of Hill Street at the Hill and Ellsworth Street intersection. The proposed building will also feature sprinklers for fire suppression.

3. Availability and Adequate Capacity of Public Utilities:

a. The project will be served by new water and sewer utilities. An ability to serve letter was received from the Portland Water District, and a Wastewater Capacity Application has been forwarded to Brad Roland at the City of Portland.

b. Overhead electrical and telecommunications utilities exist along Russell and Hill Streets. The project site will be served by underground utilities from Pole #2 located southwest of the site on Russell Street.

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

d. The project will be connected to the public sewer system within Russell Street.

e. The sanitary sewer and stormwater collection systems were designed to comply with City standards.

f. A solid waste storage areas will be provided in the enclosed garage at the first floor of the building.

(d) Site Design Standards

1. Massing, Ventilation and Wind Impact:

a. The bulk, location and height of the proposed building will not result in adverse impacts to abutting properties.

b. The bulk, location and height of the proposed building will not substantially reduce the value or utility of adjacent structures.

c. HVAC systems will be located on the rear wall of the building, on the southeast side, and will not be visible from the street. Venting is proposed to be directed away from public spaces and adjacent residential sites.

2. Shadows:

a. The project is not expected to cause shadows on publically available open space, or have an adverse effect on vegetation as a result of shadows cast from the proposed building.

3. Snow and Ice Loading:

a. The proposed building will have a flat roof. Accumulated snow and ice will not fall onto adjacent properties or public ways.

4. View Corridors:

a. The project site is located outside of any protected view corridors.

5. Historic Resources:

a. The development is not within a designated historic district and does not affect designated landmarks.

b. Not Applicable

c. There are no known archaeological resources on the site.

6. Exterior Lighting:

a. Site Lighting

(i) Exterior site lighting will be provided by building mounted lights along sidewalks and in parking areas. All fixtures will feature full cut-off optics to prevent unintended light pollution. Proposed lighting is shown on the Lighting Photometric Plan (Sheet P-1).

b. Architectural and Specialty Lighting:

(i) No architectural or specialty lighting is proposed.

(ii) No up-lighting is proposed.

c. Street Lighting

(i) No street lighting is proposed

7. Noise and Vibration:

Noise levels are expected to meet the permitted levels for the R6 Zone.

a. HVAC and Mechanical Equipment

(i) HVAC equipment will be located on southeastern wall of the building and will meet all applicable state and federal emissions requirements. The units will not be visible from Hill or Russell Streets, or adjacent sites.

(ii) No emergency generator is proposed for this project.

8. Signage and Wayfinding:

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

(i) The project is not subject to a Certificate of Appropriateness.

(ii) Not applicable. No commercial or directional traffic signage is proposed as part of the project.

(iii) Not applicable. No on-site directional traffic signage is proposed as part of the project.

(iv) Not applicable. No waiver is required.

9. Zoning Related Design Standards:

a. The project is not located within a historic zone.

15 VERIFICATION OF PROPOSED HVAC EQUIPMENT

15.1 OVERVIEW

The following manufacturer cut sheets verify that all proposed HVAC and manufacturing equipment meets applicable state and federal emissions requirements.

15.2 ATTACHMENTS

Attachment 15-A – HVAC Equipment Cut Sheets

ATTACHMENT 15-A

HVAC Equipment Cut Sheets

Bagel Shop on Roof of Front entrance

Electrical Data

Table 141. Electrical characteristics — power exhaust (cooling and gas/electric)

Tons	Volts	Phase	hp	rpm	FLA	LRA
3-5	208-230	1	0.33	1075	2.2	3.9
3-5	460	1	0.33	1075	1.1	2.0
3-5	575	1	0.33	1075	1.0	1.8
6-10	208-230	1	0.87	1075[a]	5.7	13.6
6-10	460	1	0.87	1075[a]	3.3	6.8
6-10	575	1	0.87	1075[a]	2.3	5.4

(a) Two speed.

Table 142. Electrical characteristics - inducer motor

Unit Model Number	Stages	hp	rpm	Volts	Phase	LRA
YSC(036-060)G**(L,M,X,Y)	1	1/35	3000	208-230	1	0.6
YSC(036-060)G**(H,Z)	1	1/15	3300	208-230	1	0.4
YSC072F**(L,M,X,Y) YSC(090-102)F**(L,X)	1	1/35	3000	208-230	1	0.6
YSC072F**(H,Z) YSC(090-102)F**(M,H,Y,Z) YSC120F	2	1/15	2800/3350	208-230	1	0.4

Table 143. Unit wiring - high efficiency

Tons	Unit Model Number	Voltage Range	Standard Indoor Fan Motor		Optional Belt Drive Indoor Fan Motor[a]	
			MCA	Max Fuse Size or Max Circuit Breaker	MCA	Max Fuse Size or Max Circuit Breaker
3	T/YHC036E1	187-253	28.3	45	(a)	(a)
3	T/YHC036E3	187-253	20.6	30	19.6	25
3	T/YHC036E4	414-506	11.0	15	10.3	15
3	YHC036EW	517-633	7.9	15	7.2	15
4	T/YHC048F1	187-253	37.3	50	(a)	(a)
4	T/YHC048E_F3	187-253	27.2	40	24.6	35
4	T/YHC048E_F4	414-506	12.8	15	11.3	15
4	YHC048FW	517-633	9.8	15	8.5	15
5	T/YHC060F1	187-253	41.4	60	(a)	(a)
5	T/YHC060E_F3	187-253	30.0	45	27.4	40
5	T/YHC060E_F4	414-506	13.8	20	12.3	15
5	YHC060E_FW	517-633	10.2	15	8.9	15
6	T/YHC072E_F3	187-253	32.3	50	33.6	50
6	T/YHC072E_F4	414-506	15.1	20	15.7	20
6	YHC072E_FW	517-633	12.7	15	13.5	20
6	T/YHC074F3	187-253	37.4	50	—	—
6	T/YHC074F4	414-506	18.7	25	—	—
7½	T/YHC092F3	187-253	42.4	50	—	—
7½	T/YHC092F4	414-506	20.7	25	—	—
7½	YHC092FW	517-633	15.6	20	—	—
8½	T/YHC102F3	187-253	42.0	50	—	—

1 of These (outdoor) for Bagel Low Ceiling Area

Submittal Data Sheet

4 PORT HP, DUCTLESS OD 3 TON

4MXS36NMVJU

FEATURES

- Up to 18.9 SEER / Up to 12.7 EER / Up to 12.5 HSPF
- High-efficiency inverter driven swing compressor
- Low ambient cooling to 5°F / -4°F with optional drain pan heater
- Specialized drain pan design for improved cold climate drainage

BENEFITS

- 12 Year limited parts warranty with online registration
- 5 Year limited parts warranty for commercial applications
- High efficiency cooling and heating operation provides utility bill savings
- Multiple indoor unit style options: wall mounted, floor standing, ceiling cassette, slim duct
- May qualify for regional utility rebates and incentives
- Compatible with optional Daikin ENVi Wi-Fi capable Smart Control

(Daikin's products are subject to continuous improvements. Daikin reserves the right to modify product design, specifications and information in this data sheet without notice and without incurring any obligations)

Submittal Data Sheet

4 PORT HP, DUCTLESS OD 3 TON

4MXS36NMVJU

PERFORMANCE			
Outdoor Unit Model No.	4MXS36NMVJU	Outdoor Unit Name:	4 PORT HP, DUCTLESS OD 3 TON
Type:	Heat Pump	Rated Cooling Conditions:	Indoor (°F DB/DB): 80 / 67 Ambient (°F DB/WB): /
Rated Cooling Capacity (Btu/hr):	36,000	Rated Heating Conditions:	Indoor (°F DB/WB): / Ambient (°F DB/WB): /
Max/Min Cooling Capacity (Btu/hr):	38,000 /	Rated Piping Length(ft):	25
Cooling Input Power (kW):		Rated Height Difference (ft):	49.00
Rated Heating Capacity (Btu/hr):	36,000	SEER (Non-Ducted/Ducted):	17.70 / 14.00
Max/Min Heating Capacity (Btu/hr):	43,000 /	HSPF (Non-Ducted/Ducted):	12.2 / 8.2
Heating Input Power (kW):		Heating COP (Non-Ducted/Ducted):	4.5 / 3.5

OUTDOOR UNIT DETAILS			
Power Supply (V/Hz/Ph):	208-230 / 60 / 1	Compressor Type:	Inverter
Power Supply Connections:	L1, L2, Ground	Capacity Control Range (%):	-
Min. Circuit Amps MCA (A):	19.75	Airflow Rate (H) (CFM):	2,613
Max Overcurrent Protection (MOP) (A):	20.00	Gas Pipe Connection (inch):	1/2
Max Starting Current MSC(A):	17.50	Liquid Pipe Connection (inch):	1/4
Rated Load Amps RLA(A):	17.5	Sound Pressure (H) (dBA):	54
Dimensions (HxWxD) (in):	29 x 34-1/4 x 12-5/8	Sound Power Level (dBA):	
Net Weight (lb):	139		

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DAIKIN

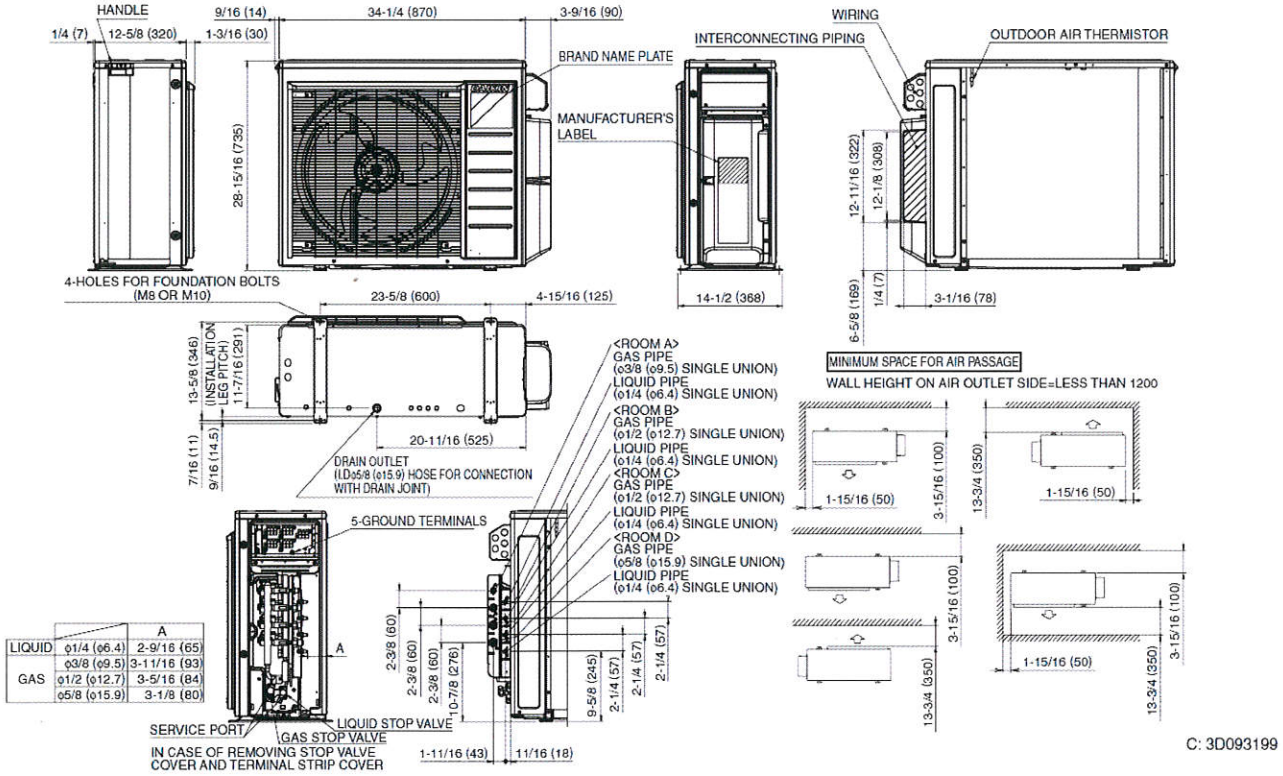
Submittal Data Sheet

4 PORT HP, DUCTLESS OD 3 TON

4MXS36NMVJU

SYSTEM DETAILS			
Refrigerant Type:	R-410A	Cooling Operation Range (°F DB):	14 - 115
Holding Refrigerant Charge (lbs):	6.2	Heating Operation Range (°F WB):	5 - 72
Additional Charge (lb/ft):	0.01	Max. Pipe Length (Vertical) (ft):	
Pre-charge Piping (Length) (ft):		Cooling Range w/Baffle (°F DB):	-
Max. Pipe Length (Total) (ft):	230	Heating Range w/Baffle (°F WB):	-
Max Height Separation (Ind to Ind ft):	49		

DIMENSIONAL DRAWING



C: 3D093199

(Daikin's products are subject to continuous improvements. Daikin reserves the right to modify product design, specifications and information in this data sheet without notice and without incurring any obligations)

(2) of these (indoor)
In Low Ceiling Area.

Submittal Data Sheet
FTXS18LVJU
FTXS18LVJU

FEATURES

- Intelligent eye occupancy sensor
- Weekly timer for programmable comfort
- Low ambient heat operation down to 0° F
- Titanium apatite photocatalytic air purifying
- 12 year limited parts and compressor warranty with online registration

BENEFITS

- Quiet operation

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DAIKIN

Submittal Data Sheet

FTXS18LVJU

FTXS18LVJU

PERFORMANCE

Indoor Unit Model No.	FTXS18LVJU	Indoor Unit Name:	FTXS18LVJU
Type:	Wall Mounted	Rated Cooling Conditions:	Indoor (°F DB/WB): 80 / 67 Ambient (°F DB/WB): 95 / 75
Rated Cooling Capacity (Btu/hr):	18,000	Rated Heating Conditions:	Indoor (°F DB/WB): 70 / 70 Ambient (°F DB/WB): 47 / 43
Sensible Capacity (Btu/hr):		Rated Piping Length(ft):	
Cooling Input Power (kW):	0.040	Rated Height Separation (ft):	
Rated Heating Capacity (Btu/hr):	21,600		
Heating Input Power (kW):	0.04		

INDOOR UNIT DETAILS

Power Supply (V/Hz/Ph):	208-230 / 60 / 1	Airflow Rate (H/M/L/SL) (CFM):	583/385/360/360
Power Supply Connections:	L1, L2, Ground	Moisture Removal (Gal/hr):	1.0
Min. Circuit Amps MCA (A):		Gas Pipe Connection (inch):	1/2
Max Overcurrent Protection (MOP) (A):		Liquid Pipe Connection (inch):	1/4
Dimensions (HxWxD) (in):	13 x 45-11/16 x 16-7/8	Condensate Connection (inch):	5/8
Panel (HxWxD) (in):		Sound Pressure (H/M/L/SL) (dBA):	46/33/33/33
Net Weight (lb):	31	Sound Power Level (dBA):	62
Panel Weight (lb):		Ext. Static Pressure (Rated/Max) (inWg):	0.00 / 0.00

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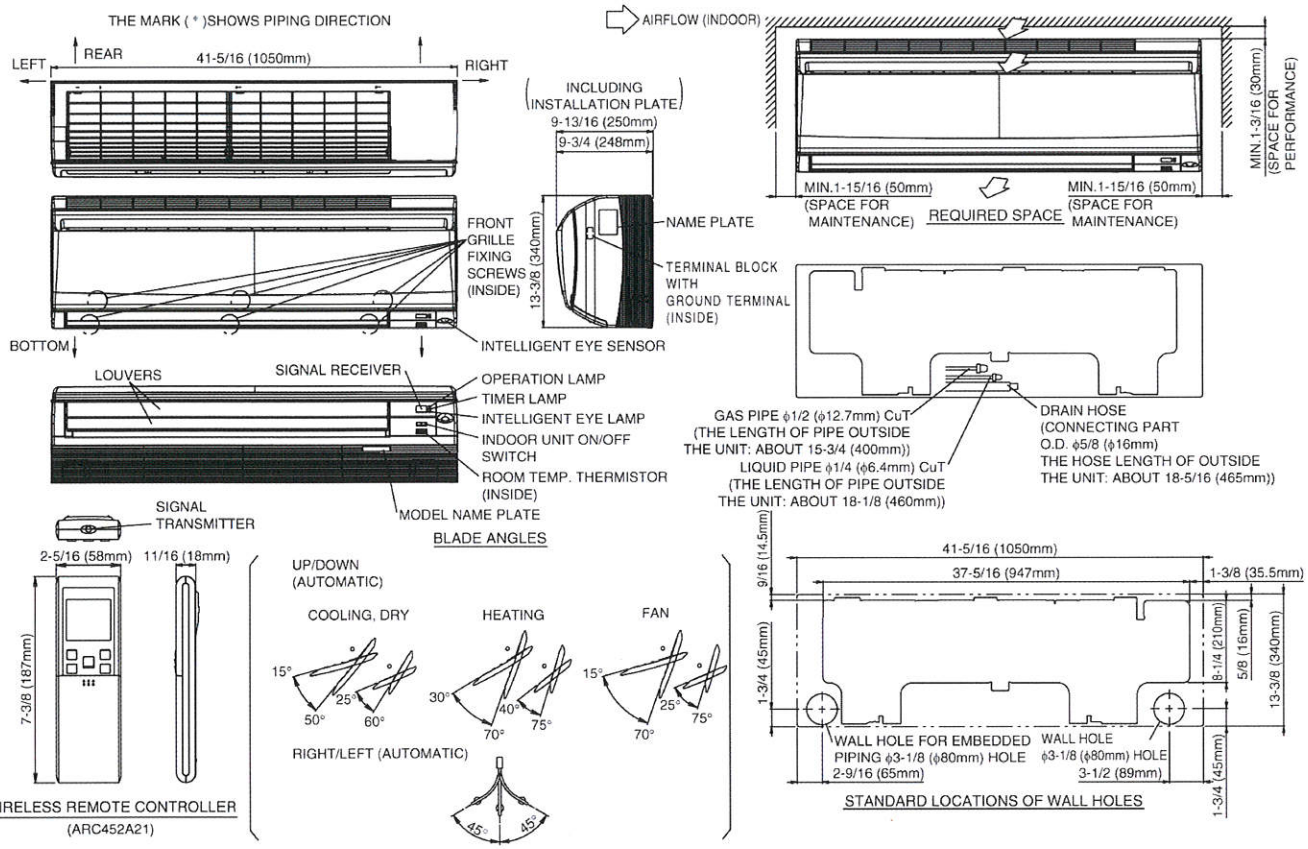
Submittal Data Sheet
FTXS18LVJU
FTXS18LVJU

DIMENSIONAL DRAWING

FTXS15,18_LVJU



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June 8, 2018

Shukria Wiar, Planner
Planning Division
City of Portland
389 Congress Street
Portland, ME 04101

Subject: **Response to Comments – Level III Development Review**
4 Russell Street

Dear Shukria:

Terradyn Consultants, LLC is pleased to provide responses to comments for the proposed 3-unit residential development located 4 Russell Street. We received written comments from staff on May 30, 2018. We have reviewed the comments and prepared the additional information and responses below.

CIVIL ENGINEERING COMMENTS

Comment 1: The Construction Management Plan notes that contractor parking shall be off-site. Note that on-street parking may not be utilized for contractor parking.

Response: A note has been added to the attached Construction Management Plan and to sheet C-2.3 of the plan set.

Comment 2: In accordance with the City of Portland Technical Manual, the Applicant is required to provide appropriate snow storage. The snow storage locations shall be sited outside of existing and proposed drainage courses.

Response: The snow storage location has been labeled on sheet C-3.0 of the plan set.

Comment 3: The Applicant should review grading along the rear of the building and along the southwest side of the building and provide additional spot grades or flow arrows. It appears that flow may be directed towards the building.

Response: Additional spot grades and flow arrows have been added to the grading plan, sheet C-4.0 of the plan set, to clarify stormwater flow directions.

Comment 4: The Applicant is proposing to reconstruct the sidewalk along Hill Street. Details for the reconstruction of the associated ADA ramp should also be provided.

Response: Additional information and spot grades have been added to the site and grading plans to clarify the existing and reconstructed ADA ramp. ADA ramp details have been added to sheet C-6.0 of the plan set.

Comment 5: In accordance with the City of Portland Technical Manual, the submitted boundary survey shall be stamped by a Professional Land Surveyor licensed to practice in the State of Maine.

Response: A signed and stamped survey has been resubmitted.

Comment 6: Details should be provided for utility connections in the street.

Response: Utility connection details have been added to sheet C-6.1 of the plan set.

PLANNING AND ZONING COMMENTS

Comment 1: The address will need to be from Hill Street instead of Russell Street since the front door is being proposed from Hill Street now.

Response: Comment received.

Comment 2: Flush curbing and pavers are not allowed in the right-of-way. The pavers will need to be pulled back to the property line, as well as the curbing.

Response: The flush curbing and pavers have been removed from the right-of-way. This area is now proposed to be paved to provide access to the site.

Comment 3: What is the average height of the building?

Response: Updated architectural elevations and renderings are provided with this comment response. The building elevation from Archetype dated May 22, 2018 shows the roof at 41’-6”.

Comment 4: Submit the following:

- Zoning Analysis and how this project is meeting these standads.
- Subdivision Plat
- Lighting and Photometric Plan.
- Waivers being requested.

Response: Answers to the following:

- The Zoning Analysis is provided on sheet C-1.1 of the plan set in the Dimensional Requirements table. This information is also within Section 4 – Land Ordinance Review, which was provided with the original submission.
- A Subdivision Plat is included with this response to comments.
- A Lighting and Photometric Plan is included with this response to comments.
- No waivers are being requested.

ARCHITECTURAL UPDATES

The following architectural update information was provided by Archetype PA and the changes can be seen on the updated architectural rendering and building elevations included with this response to comments.

- The fourth level has been delineated from the floors below with the use of a trim overhang and siding change.

- The extension of the ground floor east wall has been eliminated and a fence is proposed here to provide privacy for the patio area.

- The bay window has been modified so that it overhangs the owner's property and not he City property. The bay is under the overhang trim which is 10-inches in depth.

- This is a challenging site because of its small size, so the building was not set further back from the property line. There is a 10-inch set back shown on the east elevation.

- The deck railing on the east wall now runs straight across to the fourth floor wall.

CLOSURE

In addition to the information provided above, revised site plans and architectural elevations and renderings have been prepared and will be uploaded to the city's electronic plan review system. We trust that the above responses and attached materials address the comments and provide the necessary additional information for the Planning Board to approve the project. We look forward to meeting with the Planning Board and participating in the upcoming public hearing on the project. Please contact me at (207) 632-9010 or mtw@terradynconsultants.com if you have any questions or require additional information.

Sincerely,
TERRADYN CONSULTANTS LLC

Michael E. Tadema-Wielandt, P.E.
Vice President

Enclosures:
Construction Management Plan

cc. New Day Farm, LLC
David Lloyd, Archetype

CONSTRUCTION MANAGEMENT PLAN

Project:
4 Russell Street
Portland, Maine 04102

Applicant:
New Day Farm, LLC
156 Sheridan Street, Unit 3A
Portland, Maine 04101

Prepared By:
Terradyn Consultants, LLC
565 Congress Street, Suite 310

Construction Manager:
To be determined

A. Construction Management Principles

The following narrative provides an overview of the construction management principles that the Applicant has identified to minimize impacts from the construction of 4 Russell Street, such as noise, vibrations, ground movement, truck traffic, and other construction related factors to the surrounding buildings and communities.

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

Prior to scheduling a preconstruction meeting and the issuance of any city required permits, the Applicant and Contractor shall meet all of the requirements contained in Section 14-530. Development review fees and post approval requirements and 14-532. General requirements and enforcement of Portland's Land Use Code.

Other permits, as applicable, include

1. **Street Opening and Street Occupancy Permits:** Construction activity in the public right-of-way are controlled by Chapter 25 and sewer and stormwater system connections are controlled by Chapters 24 and 32 of the Land Use Code. All required permits shall be obtained through the Department of Public Works and the requests shall conform with the approved construction management plan.
2. **Blasting:** Blasting, if required, shall conform with all measures of Article VIII. Regulation of Explosives in the Land Use Code and Section 3.7 Standards for Blasting and Regulation of Explosives in Portland's Technical Manual.

C. Construction Administration and Communication

The Applicant and Contractor will work diligently to implement a communication strategy as outlined below. The communication strategy is intended to ensure that all construction operations are performed in accordance with all agreements, ordinances and special permits applicable to this project. The Construction Manager will work closely with adjacent abutters, businesses and all parties informed, as far in

advance as possible, of scheduled work, particularly work anticipated to cause significant noise, vibrations, or dust.

The following person is designated the Contact Person and will be available 24 hours in the event of an emergency:

CONTACT PERSON:
To be determined

Construction Signage shall be posted at the site with Contact Information for the Contractor. Construction site signage shall be removed at project completion.

D. Construction Schedule

1. The contractor shall submit a schedule or time line for the construction project, including any Phasing, prior to construction.
2. Hours of Construction: Construction may occur during the daytime hours as defined in Section 17-18 of the City Code (Construction Activities) and Section 25-129 of the City Code (Noise, dust and debris).
3. Extended Hours or Night Work: Pursuant to Section 17-18, this section does not apply to emergency utility work or "Situations where the public works authority or the office of building inspections determines that the construction activity is of a unique character which cannot reasonably be completed or performed during the permitted hours and which is not of a recurring nature, provided that prior to engaging in such activity the contractor or his representatives gives notice of the time and scope of such proposed activity, the notice to be given in a manner approved by the public works authority."
4. Material Deliveries: Delivery of materials shall take place during the Hours of Construction listed above and shall be stored on the project site in the locations noted on the Construction Management Plan (Sheet C-2.3).

E. Security & Public Safety

1. The Contractor shall erect the temporary barriers and access gates shown on the Construction Management Plan (Sheet C-2.3) with the intent of separating pedestrian and vehicle circulation from the construction site.
2. The Applicant or Contractor shall purchase and install a knox padlock from the Portland Fire Department to allow access by the Portland Fire Department at the primary access gate.
3. Structures undergoing construction, alteration, or demolition operations, including those in underground locations, shall comply with NFPA 1 Chapter 16. *Safeguarding Construction, Alteration, and Demolition Operations.*

4. Fire Safety Program. An overall construction of demolition fire safety program shall be developed. Essential items to be emphasized include the following:
    - Good Housekeeping
    - On-site security
    - Installation of new fire protection systems as construction progresses
    - Preservation of existing systems during demolition
    - Organization and training of an on-site fire brigade
    - Development of a pre-fire plan with the local fire department
    - Rapid communication
    - Consideration of special hazards resulting from previous occupancies
    - Protection of existing structures and equipment from exposure fires resulting from construction, alteration, and demolition operations
5. Blasting, if required, shall conform with all measures of Article VIII. Regulation of Explosives in the Land Use Code and Section 3.7 Standards for Blasting and Regulation of Explosives in Portland's Technical Manual.
6. Any temporary security lighting fixtures shall feature full cutoff optics to reduce light trespass onto abutting properties.

F. Construction Permitting and Traffic Control Plans

1. Construction Activity in Public Streets: Construction activity in the public right-of-way is controlled by Chapter 25 Article VII of the City Code of Ordinances. Required licenses and permits, restrictions on activity, and fees & area are outlined in that Chapter. Rules and Regulations for Excavation Activity are available through the Street Opening Clerk at the Department of Public Works. At no time can construction activity including delivery vehicles close or block streets or affect public safety access without prior notice and approval of the Department of Public Works.
2. Public Sidewalk Closures: The Hill Street sidewalk in front of the site will be reconstructed where disturbed as part of the proposed project. This section of sidewalk will be closed for the duration of the building construction, and signage will be posted as shown on the Construction Management Plan.
3. Sewer, Water, and Stormwater: Sewer and stormwater system connections are controlled by Chapters 24 and 32 of the City Code of Ordinance. Required permits for new connections and/or abandonment of existing connections are available through the Street Opening Clerk at the Department of Public Works. Rules and Regulations for these utility systems are available through the City Engineer's office of the Department of Public Works and in Section II of the Technical Manual. Sewer and water system connections within Russell Street are expected to result in temporary closure of the 13' wide one-way street for up to two days.
4. Work within City Right of Way: Construction activity that impacts the existing public street system must be controlled to protect the safety of the construction workers and all modes of the traveling public.

Construction operations shall provide for the safe passage of the public through or along the construction work zone. On a case-by-case basis, the Contractor may be allowed to close a street and/or detour a mode of traffic when absolutely necessary for safety. The Contractor shall employ the appropriate techniques and devices as called for in the latest edition of the Manual on Uniform Traffic Control Devices (MUTCD). In addition:

- Construction speed signing may be used as needed to slow traffic
- Traffic Control signs shall not be placed where they are an obstruction to bicycles or pedestrians.
- In extreme situations, flaggers may be required.
- Police detail is required at lighted intersections and may be requested by the City's transportation engineer or his designee.

All existing modes of travel in work zone area shall be accommodated if impacted by the activity. The safe passage of pedestrians, bicyclists, transit providers, and motorists are of equal importance when planning out the work zone; no pre-existing travel mode may be eliminated without the express approval of the Department of Public Works.

- Traffic control bicycle and pedestrian facilities or routes through work zones shall be maintained until the bicycle and pedestrian facilities or routes are ready for safe operation. Traffic control will not be removed to allow auto travel at the expense of bicycle and pedestrians.
- Barrier systems utilized to separate the construction activity from the public street and /or sidewalk shall not inhibit sight distances, particularly for visibility of pedestrians and bicyclists.
- ADA compliance shall be maintained.

Use of public parking spaces or the blockage of any portion of sidewalk for the purpose of construction activity shall require an occupancy permit and appropriate fee as assessed by the Department of Public Works.

G. Site Management and Controls

The contractor shall be responsible for maintaining the site in a safe condition and including the following:

1. A solid waste dumpster shall be located on site for the disposal of trash and debris.
2. The Hill Street and Russell Street right of way shall be swept regularly to control the tracking of mud onto adjacent public streets.

3. Dust controls: The construction shall comply with Portland's requirements under Section 25-129 on Noise, dust and debris.
4. Noise: The construction shall comply with Portland's requirements under Section 17-18 of the City Code and Section 25-129 on Noise, dust and debris.
5. Rodent Control will be provided, if applicable, by a professional exterminator and consistent with Chapter 22 of the City Code.
6. Snow Removal: Pursuant to Section 25-173 Contractors to ensure a safe means of travel within the work zone.
    1) Snow/ice removal or commence automatically from (1" of snow and up) or Ice
    2) Remove snow as needed within the work zone, including parking spaces & not to block any driveways or site lines with the piles of snow.
    3) Clear all walks & ramps with the work zone
    4) Sand or Salt as needed
    5) Clear all basin or drainage to help snow melt
    6) This would include Monday-Friday Sat/Sunday/Holidays

H. Erosion Control and Preservation of Trees

1. The Contractor shall install all erosion and sedimentation controls as depicted on the approved erosion and sedimentation control plan prior to the pre-construction meeting for inspection by the City. The Contractor shall regularly inspect the control measures, no less than weekly and after significant storm events, and maintain any installed temporary or permanent stormwater management systems in working order. The Contractor shall document all inspection activities and corrective actions and be prepared to provide these documents for inspection by the City, Maine Department of Environmental Protection or the U.S. Environmental Protection Agency upon request.
2. The Contractor shall maintain all tree and landscaping preservation measures as depicted on the Landscape Plan (Sheet L-1) within the area of construction.
3. The storage of materials shall be located in the areas depicted on the Construction Management Plan (Sheet C-2.3) and avoid being located under/near trees.

I. Construction Staging and Deliveries

1. A location for material storage and lay down is shown on the Construction Management Plan. Additional areas may be utilized as available as long as they do not interfere with material deliveries.

J. Parking During Construction

1. Construction Parking: Construction workers shall utilize off-site parking for the duration of construction. On-street parking may not be utilized for contractor parking.

July 11, 2018

Shukria Wiar, Planner
Planning Division
City of Portland
389 Congress Street
Portland, ME 04101

Subject: **Revisions – Level III Development Review**
4 Russell Street

Dear Shukria:

Terradyn Consultants, LLC is pleased to provide this summary of project revisions resulting from City staff architectural comments. The architectural design of the proposed 4 Russell Street building has been updated, and as a result the civil site plans were also updated. These updates are summarized below and can be seen on the revised architectural and civil plans.

ARCHITECTURAL UPDATES

The following architectural update information was provided by Archetype PA and the changes can be seen on the updated architectural rendering and building elevations included with this response to comments. The architecture was updated based on staff review comments.

- We have flipped the stair locations from the north side of Hill Street to the South Side. This allowed us to address staff concern on the four-story façade along Russell street. The 4th story, technically a mezzanine, is now set back off Russell Street, yielding a three-story façade as the prominent architectural element.
- The front door entry is now set back 10 inches and the entry doorway is a white oak.
- A small canopy is over the entry and defines it but does not go over the City property.
- The ground faced block now returns on the south side.
- The colors have been adjusted, the base shingle will be a grey green and the trim a cream color, these colors will integrate better into the neighborhood.
- The fenestration on Russell has been adjusted with the design changes.
- We appreciate staff comments and believe they all worked toward a better architectural interplay with the neighborhood.

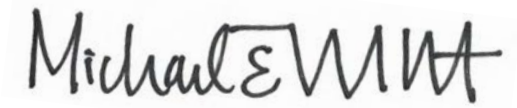
CIVIL ENGINEERING UPDATES

As a result of the architectural updates, the civil site plans have been revised accordingly. The one significant change to the site plans is the elimination of the fence and patio area previously proposed at the northeast corner of the site. This is the result of the first floor residential unit moving from the back (east side) of the building to the front (west side).

CLOSURE

Revised site plans and architectural elevations and renderings have been prepared and will be uploaded to the city's electronic plan review system. We trust that the above responses and attached materials address the architectural comments and provide the necessary additional information for the Planning Board to approve the project. We look forward to meeting with the Planning Board and participating in the upcoming public hearing on the project. Please contact me at (207) 632-9010 or mtw@terradynconsultants.com if you have any questions or require additional information.

Sincerely,
TERRADYN CONSULTANTS LLC

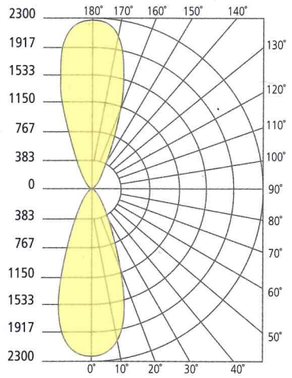


Michael E. Tadema-Wielandt, P.E.
Vice President

cc. New Day Farm, LLC
David Lloyd, Archetype

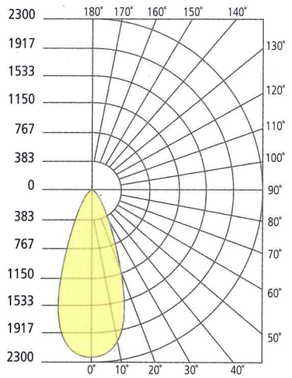
TEGEL 12 UP/DOWN

Total Lumen Output:	2346
Total Power:	29.2
Luminaire Efficacy:	80.2
Color Temp:	3000K
CRI:	80+
BUG Rating:	B1-U5-G0



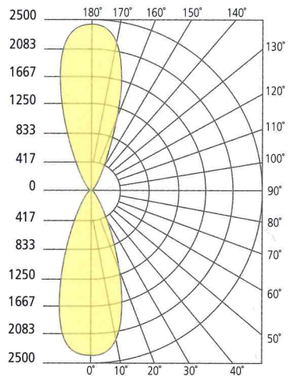
TEGEL 12 DOWN

Total Lumen Output:	1212
Total Power:	15.6
Luminaire Efficacy:	77.7
Color Temp:	3000K
CRI:	80+
BUG Rating:	B1-U0-G0



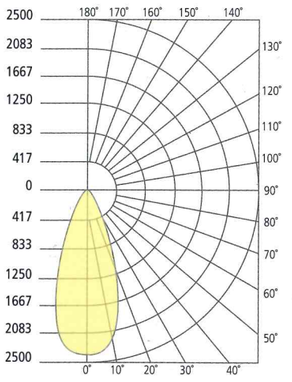
TEGEL 18 UP/DOWN

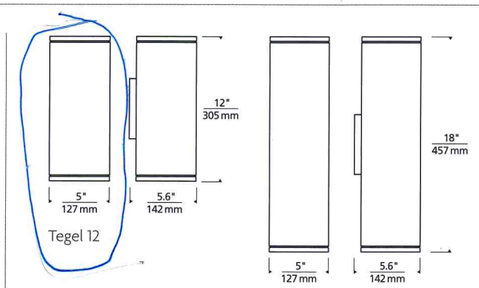
Total Lumen Output:	2419
Total Power:	29.9
Luminaire Efficacy:	80.6
Color Temp:	3000K
CRI:	80+
BUG Rating:	B1-U5-G0



TEGEL 18 DOWN

Total Lumen Output:	1212
Total Power:	15.6
Luminaire Efficacy:	77.7
Color Temp:	3000K
CRI:	80+
BUG Rating:	B1-U0-G0

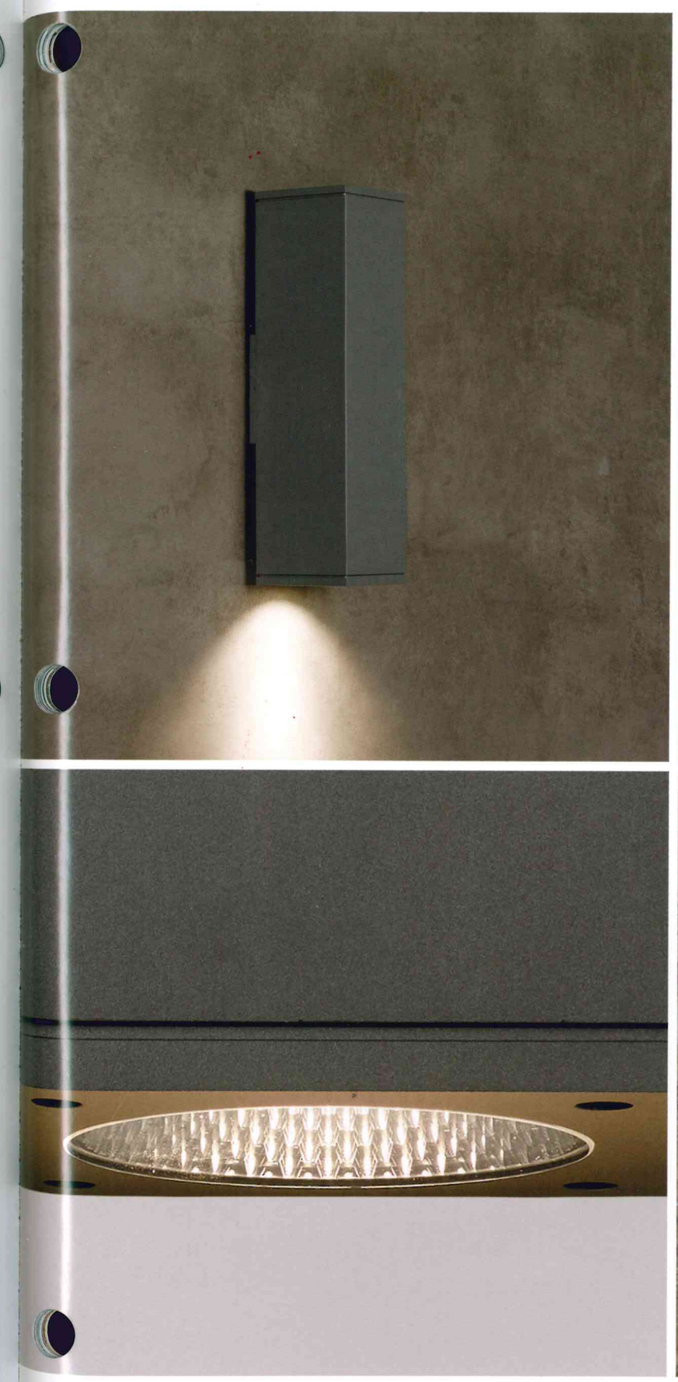


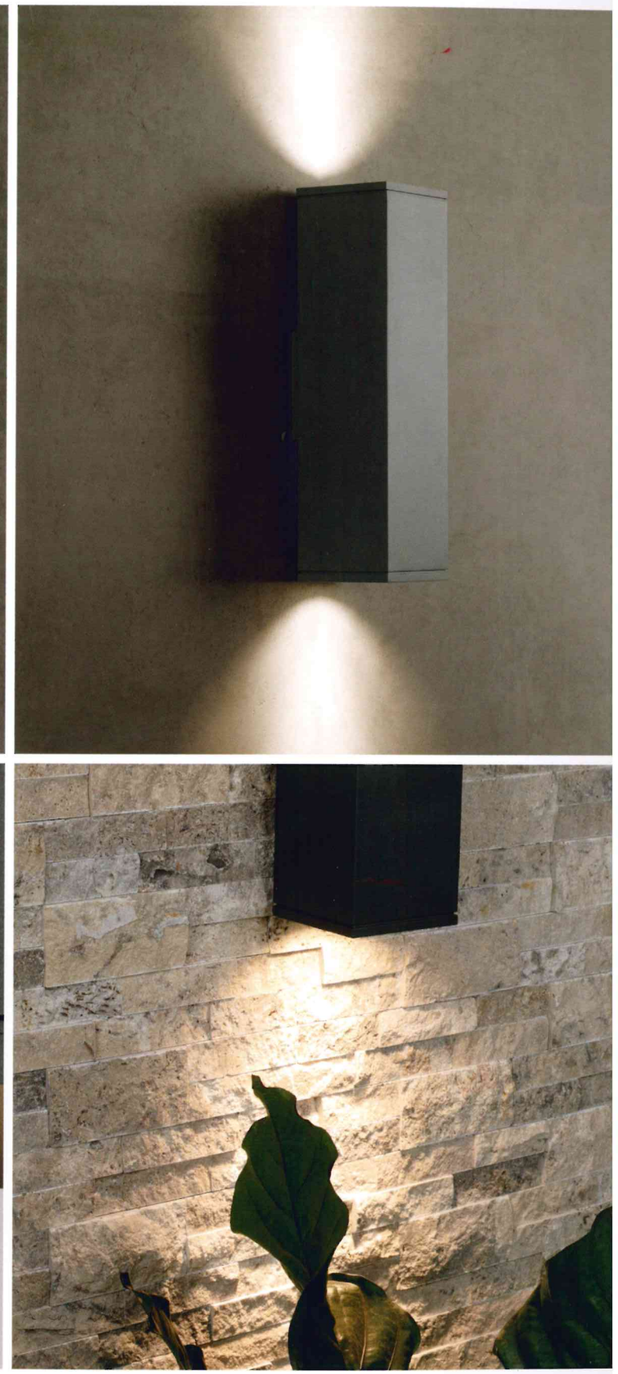


TEGEL WALL

700OWTEG	CRI/CCT	LENGTH	BEAM SPREAD*	LENS	FINISH	FUNCTION	VOLTAGE	OPTIONS
	830 80 CRI, 3000K **840** 80 CRI, 4000K	**12** 12" **18** 18"	**N** 10° NARROW **W** 36° WIDE **NN** 10° UP AND DOWN **WW** 36° UP AND DOWN **NW** 10° AND 36°	**C** CLEAR	**Z** BRONZE **Y** GRAY **H** CHARCOAL	**DO** DOWNLIGHT ONLY **UD** UPLIGHT / DOWNLIGHT	**UNV** 120V–277V	NONE **PC** BUTTON PHOTOCONTROL **LF** IN-LINE FUSE **SP** SURGE PROTECTION **PCLF** BUTTON PHOTOCONTROL & IN-LINE FUSE **PCSP** BUTTON PHOTOCONTROL & SURGE PROTECTION **LFSP** IN-LINE FUSE & SURGE PROTECTION **PCLFSP** BUTTON PHOTOCONTROL, IN-LINE FUSE & SURGE PROTECTION

*N, W = DOWNLIGHT ONLY (DO); NN, WW, NW = UP AND DOWNLIGHT ONLY (UD)





A R C H E T Y P E

April 24, 2018

Dear Neighbor:

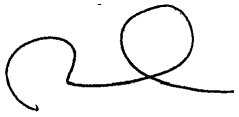
Please join us for a neighborhood meeting as we share plans for the construction of a three story three-unit residential building with garage parking located at 4 Russell Street, Portland Maine.

Meeting Location: Reiche Community School, (Large Room) 166 Brackett Street, Portland, ME
Meeting Date: Wednesday May 9, 2018
Meeting Time: 6:30 PM

(The City code requires that property owners within 500 feet of the proposed development and residents on an "interested parties list", be invited to participate in a neighborhood meeting. A sign-in sheet will be circulated, and minutes of the meeting will be taken. Both the sign-in sheet and minutes will be submitted to the Planning Board.)

If you have any questions, please email David Lloyd, lloyd@archetypepa.com.

Sincerely,



David Lloyd
Maine Licensed Architect

Note:
Under Section 14-32(C) and 14-524(a)d of the City Code of Ordinances, an applicant for a Level III development, subdivision of over five lots/units, or zone change is required to hold a neighborhood meeting within 30 days of submitting a preliminary application or 21 days of submitting a final site plan application, if a preliminary plans was not submitted. The neighborhood meeting must be held at least seven days prior to the Planning Board public hearing on the proposal. Should you wish to offer additional comments on this proposed development, you may contact the Planning Division at 874-8721 or send written correspondence to the Planning and Urban Development Department, Planning Division 4th Floor, 389 Congress Street Portland, ME 04101 or by email: to bab@portlandmaine.gov

48 Union Wharf, Portland, Maine 04101 (207) 772–6022• Fax (207) 772–4056

Archetype, P.A.
48 Union Wharf
Portland, ME 04101

Place
Stamp
Here

«AddressBlock»

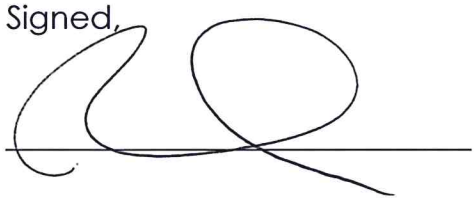
Neighborhood Meeting Certification

4 Russell Street

I, David Lloyd hereby certify that a neighborhood meeting was held on May 9, 2018 at The Reiche Community School, 166 Brackett Street @ 6:30 PM.

I also certify that on April 25, 2018 invitations were mailed to all addresses on the mailing list provided by the Planning Division, including property owners within 500 feet of the proposed development and the residents on the "interested parties" list.

Signed,



May 10, 2018

Attached to this certification are
1. Copy of the invitation sent
2. Sign-in sheet
3. Meeting minutes

Sign in Sheet
4 Russell Street

	Name	Address
1	JEN SKILLINGS	66 STATE ST
2		
3		
4		
5		
6		
7		
8		
9		
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11		
12		
13		
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16		
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24		
25		
26		

Neighborhood Meeting Notes

4 Russell Street

May 9, 2018

Presenters:

David Lloyd Architect, Archetype Architects

Jeffrey Rosenblatt, Owner

Michael E. Tadema-Wielandt, Terradyn Consultants LLC

David Lloyd and Jeffery Rosenblatt started the presentation of the project. After a couple of minutes, the one person who attended realized he was in the wrong meeting and left. We waited until 6:45 and then left.

End of Notes

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

Christopher C. Branch, P.E.
Director of Public Works

Date: July 7, 2018

Re: Wastewater Capacity Authorization

Address: 4 Russell Street
Applicant: New Day Farm, LLC – Jeffrey Rosenblatt

Planner: Shukria Wiar

Anticipated Wastewater Flow:

Estimate of Anticipated Design Flows				
Development	Unit Size	Number of Units	Gallons per Day per Unit	Total Gallons per Day
Proposed flow				
Multiple Family Dwelling Units	1-Bedroom	1	120	120
Multiple Family Dwelling Units	2-Bedroom	2	180	360
			Net Change	**+ 480**
*Values based on STATE OF MAINE: SUBSURFACE WASTEWATER DISPOSAL RULES, most recent edition				

Comments:
The Department of Public Works, which includes the Water Resource Division, have reviewed and determined that the downstream sewers from the project address have the capacity to convey the estimated dry weather wastewater flows which will be generated from this development.

You are reminded that the sewers you are proposing to connect into convey both sanitary and stormwater (Combined Sewer) and therefore a backflow preventer is suggested.

If the City can be of further assistance, please contact me at all 874-8840 or brad@portlandmaine.gov

Sincerely,
CITY OF PORTLAND

Bradley A. Roland, P.E.
Senior Project Engineer

CC:
Jeffrey Levine, Director, Department of Planning and Urban Development, City of Portland
Stuart O'Brien, Planning Director, Department of Planning and Urban Development, City of Portland

Barbara Barhydt, Development Review Services Mgr., Dep't. of Planning and Urban Development, City of Portland

Keith Gray, City Engineer/Engineering Manager, Portland Department of Public Works

Nancy Gallinaro, Water Resources Manager, Portland Department of Public Works
Ben Pearson, Compliance Coordinator, Portland Department of Public Works
John Emerson, Wastewater Coordinator, Portland Department of Public Works

Lauren Swett, Woodard & Curran, DPW Development Review
Scott Firmin, Director of Wastewater, Portland Water District
Charlene Poulin, Wastewater Chief Operator – Systems

Permitting and Inspections Department
Michael A. Russell, MS, Director

Ann Machado, Zoning Administrator

July 24, 2017

New Day Farm, LLC
c/o Richard N. Bryant
Van Meer & Belanger
215 Commercial St.
Portland, ME 04101

Re: 4 Russell Street, CBL 054-D-001, R-6 Residential Zone

Dear Mr. Bryant:

On July 13, 2017 the Zoning Board of Appeals voted 5-0 (Bartels absent) to grant a Practical Difficulty Variance for the above-referenced vacant lot, to reduce the minimum lot size to 1,899 square feet, to increase the maximum lot coverage from 60% to 63.67%, and to reduce the minimum lot area per dwelling unit to 633 square feet, for the purpose of constructing a three-family dwelling. I am enclosing a copy of the Board's decision.

Now that the variance has been granted, you will need to apply for a building permit for the project (application: http://www.portlandmaine.gov/DocumentCenter/Home/View/2310). Before applying for the building permit, the project will also require Site Plan approval through the Department of Planning and Urban Development. Please contact that Department directly for more details on the Site Plan approval process.

Under Section 14-474(f) of the ordinance and the board's decision, you have twenty-four months from the date of the meeting (July 13, 2017), to obtain the Site Plan and permit approvals and to start construction, or your Zoning Board approval will expire.

I am also enclosing the Certificate of Variance Approval. **The original must be recorded in the Cumberland County Registry of Deeds within 90 days of the date it was signed.** Failure to record the Certificate will result in it being voided. Our office must be provided with a copy of the recorded Certificate of Variance showing the recorded book and page before a building permit can be approved.

Appeals from decisions of the Board may be filed in Superior Court in accordance with Rule 80B of the Maine Rules of Civil Procedure.

Should you have any questions, please contact me at (207) 874-8695 or cstacey@portlandmaine.gov.

Sincerely,

Christina Stacey
Zoning Specialist

CITY OF PORTLAND

CERTIFICATE OF VARIANCE APPROVAL

I, Kent Avery, the duly appointed Chair of the Board of Appeals for the City of Portland, Cumberland County and State of Maine, hereby certify that on the 13th day of July, 2017, the following variance was granted pursuant to the provisions of 30-A M.R.S.A. Section 4353(5) and the City of Portland's Code of Ordinances.

1. **Current Property Owner: New Day Farm, LLC**

2. **Property: 4 Russell Street, Portland, ME** **CBL: 054-D-001**
   Cumberland County Registry of Deeds, **Book: 32044 Page: 36**
   Last recorded deed in chain of Title: **01/23/2015**

3. **Variance and Conditions of Variance**:
   To grant relief from section 14-139(a) of the Land Use Ordinance to reduce the required minimum lot size from two thousand (2,000) square feet to one thousand eight hundred ninety-nine (1,899) square feet, to increase the maximum required lot coverage from 60 percent to 63.67 percent and to reduce the minimum lot area per dwelling unit from seven hundred twenty-five (725) square feet to six hundred thirty-three (633) square feet.

IN WITNESS WHEREOF, I have hereto set my hand and seal this 18 th day of July, 2017

, Chair of
City of Portland Zoning Board,
Kent Avery (Printed or Typed Name)

STATE OF MAINE
Cumberland, ss.

Then personally appeared the above-named Kent Avery and acknowledged the above certificate to be his free act and deed in his capacity as Chair of the Portland Board of Appeals, with his signature witnessed on July 18, 2017.

(Printed or Typed Name)
Notary Public
My term expires

Tricia L. Chayer
Notary Public, State of Maine
My Commission Expires January 25, 2022

PURSUANT TO 30-A M.R.S.A. SECTION 4353(5), THIS CERTIFICATE MUST BE RECORDED BY THE PROPERTY OWNER IN THE CUMBERLAND COUNTY REGISTRY OF DEEDS WITHIN 90 DAYS FROM FINAL WRITTEN APPROVAL FOR THE VARIANCE TO BE VALID. FURTHERMORE, THIS VARIANCE IS SUBJECT TO THE LIMITATIONS SET FORTH IN SECTION 14-474 OF THE CITY OF PORTLAND'S CODE OF ORDINANCES.

SITE DEVELOPMENT PLANS
FOR
4 RUSSELL STREET
PORTLAND, MAINE
JUNE 2018
PERMIT DOCUMENTS

APPLICANT/OWNER:
NEW DAY FARM, LLC
156 SHERIDAN STREET, UNIT 3A
PORTLAND, MAINE 04101

PROJECT PARCEL SITE
CITY OF PORTLAND TAX ASSESSOR'S MAP, BLOCK, & LOT NUMBERS

MAP	BLOCK	LOT
54	D	1

SHEET INDEX

C-1.0	COVER SHEET
C-1.1	GENERAL NOTES & LEGEND
1	BOUNDARY & TOPOGRAPHIC SURVEY
C-2.1	RECORDING PLAT
C-2.2	EXISTING CONDITIONS & DEMOLITION PLAN
C-2.3	CONSTRUCTION MANAGEMENT PLAN
C-3.0	SITE PLAN
C-4.0	GRADING, DRAINAGE & EROSION CONTROL PLAN
C-4.1	EROSION & SEDIMENT CONTROL NOTES
C-5.0	UTILITY PLAN
C-6.0	SITE & DRAINAGE DETAILS
C-6.1	UTILITY DETAILS
L-1	LANDSCAPE PLAN
P-1	LIGHTING PHOTOMETRIC PLAN

LOCATION MAP
SCALE: 1"=500'

PERMITS

TYPE OF PERMIT	GOVERNING BODY	STATUS
SITE PLAN/SUBDIVISION APPROVAL	CITY OF PORTLAND PLANNING AUTHORITY CITY HALL, 389 CONGRESS STREET PORTLAND, ME 04101 TEL. 207.874.8722	SUBMITTED 3/16/2018
BUILDING PERMIT	CITY OF PORTLAND CODE ENFORCEMENT OFFICE CITY HALL, 389 CONGRESS STREET PORTLAND, ME 04101 TEL. 207.874.8900	TO BE SUBMITTED BY BUILDING CONTRACTOR
UTILITY / STREET OPENING	CITY OF PORTLAND PUBLIC SERVICES DIVISION 55 PORTLAND STREET PORTLAND, ME 04101 TEL. 207.874.8801	TO BE FILED BY SITE CONTRACTOR

UTILITIES

SEWER/STORM
CITY OF PORTLAND
PUBLIC SERVICES DIVISION
55 PORTLAND STREET
PORTLAND, MAINE 04102
207.874.8850

WATER
PORTLAND WATER DISTRICT
22 DOUGLASS STREET
P.O. BOX 3553
PORTLAND, MAINE 04104
207.774.5961

ELECTRIC
CENTRAL MAINE POWER COMPANY
162 CANCO ROAD
PORTLAND, ME 04103
(207) 842-2367

TELEPHONE
FAIRPOINT COMMUNICATIONS
5 DAVIS FARM ROAD
P.O. BOX 11560
PORTLAND, MAINE 04103
888.984.1515

NATURAL GAS
UNITIL
376 RIVERSIDE INDUSTRIAL PARKWAY
PORTLAND, MAINE 04103
866.933.3821

DIG SAFE SYSTEM, INC.
TEL. 1-888-DIG-SAFE (344-7233)
WWW.DIGSAFE.COM

PREPARED BY:

CIVIL ENGINEER:
TERRADYN CONSULTANTS, LLC
565 CONGRESS STREET, SUITE 310
PORTLAND, MAINE 04101
207.926.5111
CONTACT: MICHAEL TADEMA-WIELANDT

ARCHITECT:
ARCHETYPE ARCHITECTS
48 UNION WARF
PORTLAND, ME 04101
207.772.6022
CONTACT: DAVID LLOYD

SURVEYOR:
OWEN HASKELL, INC.
309 U.S. ROUTE ONE, UNIT 10
FALMOUTH, MAINE 04105
207.774.0424
JOHN SWAN

PRELIMINARY - NOT FOR CONSTRUCTION

STATE OF MAINE
MICHAEL E. TADEMA-WIELANDT
No. 13131
LICENSED PROFESSIONAL ENGINEER

P.E.: MICHAEL E. TADEMA-WIELANDT
DATE: 6-8-2018

NO.	DATE	REVISIONS	APP'D BY
2	6-8-2018	REVISED PER STAFF COMMENTS AND RE-SUBMITTED	MTW
1	3-16-2018	SUBMITTED TO PLANNING BOARD FOR APPROVAL	MTW

TERRADYN CONSULTANTS, LLC
Civil Engineering - Land Planning - Stormwater Design - Environmental Permitting
565 CONGRESS STREET
SUITE 310
PORTLAND, ME 04102
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P.O. BOX 339
111 ELDERBERRY LANE
NEW GLOUCESTER, ME 04260

SHEET DESCRIPTION
4 RUSSELL STREET
4 RUSSELL STREET
PORTLAND, ME 04102
COVER SHEET

PREPARED FOR
NEW DAY FARM, LLC
156 SHERIDAN STREET, UNIT 3A
PORTLAND, ME 04101

DATE:	2/6/2018
SCALE:	AS NOTED
DESIGNED:	ARF
JOB NO:	1743
FILE:	1743-COVER.DWG
SHEET	C-1.0

GENERAL NOTES:

1. THIS PROJECT IS SUBJECT TO THE TERMS AND CONDITIONS OF ALL REGULATIONS ADMINISTERED BY THE LOCAL UTILITY COMPANIES AND THE CITY OF PORTLAND.
2. THE CONTRACTOR SHALL REFER TO THE ARCHITECTURAL PLANS FOR EXACT LOCATIONS AND DIMENSIONS OF THE ENTRANCES, EXITS, PRECISE BUILDING DIMENSIONS, AND EXACT BUILDING UTILITY ENTRANCE POINTS.
3. ALL RE□UIRED AND NECESSARY INSPECTIONS AND/OR CERTIFICATIONS RE□UIRED BY CODES AND/OR UTILITY SERVICE COMPANIES SHALL BE PERFORMED PRIOR TO ANNOUNCED BUILDING POSSESSION AND THE FINAL SERVICE CONNECTIONS.
4. 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 (1-888-DIGSAFE). IT SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR TO RELOCATE ALL EXISTING UTILITIES WHICH CONFLICT WITH THE PROPOSED IMPROVEMENTS SHOWN ON THE PLANS, AT NO EXTRA EXPENSE TO THE OWNER.
5. 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 ONSITE INSPECTIONS OF THE OWNER OR THEIR REPRESENTATIVES AT NO ADDITIONAL COST TO THE OWNER.
6. 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.
7. ALL MATERIALS AND CONSTRUCTION METHODS SHALL CONFORM TO PROJECT CONTRACT SPECIFICATIONS, AND THE CITY OF PORTLAND TECHNICAL MANUAL STANDARDS, WHICHEVER IS MORE STRINGENT.
8. TOPOGRAPHIC AND BOUNDARY SURVEY INFORMATION WAS PROVIDED BY OWEN HASKELL, INC. BENCHMARK = CITY BENCHMARK: 3' O/S MONUMENT AT THE NORTHEAST CORNER OF MELLEN AND CUMBERLAND STREET, ELEVATION 74.46, CITY DATUM. BEARINGS ARE BASED ON MAINE STATE PLANE COORDINATE SYSTEM MAINE WEST NAD83.
9. FEMA MAP COMMUNITY PANEL NUMBER 230051 0013 B. THE SITE IS LOCATED IN A C ZONE.
10. THE PROPERTY SHOWN ON THIS PLAN MAY BE DEVELOPED AND USED ONLY AS DEPICTED IN THIS APPROVED PLAN. ALL ELEMENTS AND FEATURES OF THE PLAN AND ALL THE PROPERTY WHICH APPEARS IN THE RECORD OF THE PLANNING BOARD PROCEEDINGS ARE CONDITIONS OF THE APPROVAL. NO CHANGE FROM THE CONDITIONS OF APPROVALS IS PERMITTED UNLESS AN AMENDED PLAN IS FIRST SUBMITTED TO AND APPROVED BY THE PLANNING AUTHORITY.
11. ALL SIGNAGE SHALL CONFORM TO THE STANDARDS FOR SIZE, HEIGHT, LOCATION AND REFLECTIVITY SET FORTH IN THE MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES (MUTCD).
12. ALL CURB SHALL CONFORM TO THE FOLLOWING SPECIFICATIONS AS NOTED ON THE PLANS: GRANITE CURB SHALL MEET THE RE□UIREMENTS OF M□in□DOT SPECIFICATIONS 609.03 AND CITY OF PORTLAND TECHNICAL STANDARDS.
13. ALL DIMENSIONING UNLESS OTHERWISE NOTED IS TO THE FACE OF CURB OR FACE OF BUILDING.
14. THE FACILITY IS SERVICED BY PUBLIC WATER, SEWER, AND UNDERGROUND POWER. THE PROJECT INCLUDES UPDATES TO THE POWER SERVICE INCLUDING THE INSTALLATION OF NEW UNDERGROUND SYSTEM. SEE SITE ELECTRICAL PLANS FOR DETAILS.
15. THE CONTRACTOR IS RE□UIRED TO NOTIFY THE CITY OF PORTLAND PUBLIC WORKS INSPECTION SERVICES DIVISION (874-8300 EXT. 8838), CODE ENFORCEMENT OFFICE AND DEVELOPMENT REVIEW COORDINATOR IN WRITING THREE (3) DAYS PRIOR TO THE BEGINNING OF CONSTRUCTION. A PRE-CONSTRUCTION MEETING MAY BE RE□UIRED TO INCLUDE THE PUBLIC WORKS AUTHORITY OR DEVELOPMENT REVIEW COORDINATOR.
16. AN APPROVED SET OF PLANS AND ALL APPLICABLE PERMITS MUST BE AVAILABLE AT THE CONSTRUCTION SITE.
17. WARNING SIGNS, MARKERS, BARRICADES OR FLAGMEN MUST BE EMPLOYED ON ADJACENT STREETS AS NECESSARY. THE CONTRACTOR SHALL COORDINATE AND SEEK APPROVAL FROM THE PUBLIC SERVICE DIVISION FOR THE PLACEMENT/PARKING OF E□UIPMENT WITHIN THE PUBLIC RIGHT OF WAY.
18. CONSTRUCTION DEBRIS SHALL BE CONTAINERIZED AND DISPOSED OF IN ACCORDANCE WITH THE CITY OF PORTLAND'S SOLID WASTE ORDINANCE CHAPTER 12. ALL DEMOLITION MATERIAL FROM THE PROJECT SITES SHALL BE TAKEN TO THE RIVERSIDE RECYCLING FACILITY OR AS OTHERWISE DIRECTED PENDING THE RESULTS OF A HAZARDOUS BUILDING MATERIALS SURVEY AS AUTHORIZED AND COORDINATED BY THE OWNER. ALL SALVAGED MATERIAL WITHIN THE PUBLIC R.O.W.(SIDEWALKS, BRICKS, GRANITE CURB) NOT REUSED SHALL BE DISPOSED OF AS DIRECTED BY THE PORTLAND PUBLIC SERVICES DEPARTMENT AT NO EXTRA COST TO THE OWNER.
19. ANY DAMAGE TO PUBLIC OR PRIVATE PROPERTY RESULTING FROM CONSTRUCTION ACTIVITIES SHALL BE REPAIRED BY THE CONTRACTOR AT THEIR EXPENSE.
20. PROPERTY MARKERS AND STREET LINE MONUMENTS SHALL BE PROPERLY PROTECTED AT ALL TIMES DURING CONSTRUCTION TO INSURE INTEGRITY. IF DISTURBED THEY SHALL BE REPLACED BY A SURVEYOR REGISTERED IN THE STATE OF MAINE AT THE CONTRACTOR'S EXPENSE.
21. THE OWNER SHALL BE RESPONSIBLE TO COORDINATE THE PERFORMANCE OF A HAZARDOUS MATERIALS INSPECTION OF THE PROPERTY.
22. A STREET OPENING PERMIT MUST BE OBTAINED FROM THE CITY OF PORTLAND PUBLIC WORKS DEPARTMENT PRIOR TO BEGINNING ANY WORK WITHIN THE CITY RIGHT-OF-WAY. ALL WORK WITHIN THE PUBLIC RIGHT OF WAY SHALL BE COMPLETED IN CONFORMANCE TO THE CITY'S RULES AND REGULATIONS FOR EXCAVATION ACTIVITIES IN PUBLIC RIGHT OF WAYS.
23. CONTRACTOR MUST MAINTAIN THROUGH TRAFFIC ON ADJACENT STREETS AT ALL TIMES.
24. ALL METHODS AND MATERIALS USED IN THE CONSTRUCTION OF THE IMPROVEMENTS IDENTIFIED HEREIN SHALL CONFORM TO THE CITY OF PORTLAND CONSTRUCTION AND TECHNICAL STANDARDS AND SPECIFICATIONS AND/OR CURRENT M□in□DOT STANDARDS AND SPECIFICATIONS, WHICHEVER IS MORE STRINGENT.
25. RECORD DRAWINGS MUST INCLUDE ALL BURIED UTILITIES INCLUDING, BUT NOT LIMITED TO, BENDS, APPURTENANCES, AND OTHER FEATURES, TO BE LOCATED IN THE FIELD BY GIS AND RECORDED AS AN AS-BUILT PLAN BY THE CONTRACTOR AT THE END OF THE PROJECT. THIS PLAN SHALL ALSO BE PROVIDED TO THE OWNER.
26. THE CONTRACTOR SHALL REFER TO THE ARCHITECTURAL DRAWINGS PREPARED BY ARCHETYPE ARCHITECTS FOR EXACT LOCATIONS AND DIMENSIONS OF THE ENTRANCES, EXIT PORCHES, PRECISE BUILDING DIMENSIONS AND EXACT BUILDING UTILITY ENTRANCE POINTS.
27. ALL RE□UIRED AND NECESSARY INSPECTIONS AND/OR CERTIFICATIONS RE□UIRED BY CODES AND/OR UTILITY SERVICE COMPANIES SHALL BE PERFORMED PRIOR TO ANNOUNCED BUILDING POSSESSION AND THE FINAL SERVICE CONNECTIONS.
28. CONTRACTORS SHALL NOTIFY OPERATORS WHO MAINTAIN UNDERGROUND UTILITIES IN THE AREA OF PROPOSED EXCAVATION OR BLASTING AT LEAST THREE (3) BUT NOT MORE THAN (30) DAYS PRIOR TO COMMENCEMENT OF EXCAVATION OR DEMOLITION. CONTRACTORS SHALL BE RESPONSIBLE FOR COMPLIANCE WITH THE RE□UIREMENTS OF 23 MRSA 3360-A.

GRADING AND DRAINAGE NOTES:

1. ALL STORM DRAIN PIPE SHALL BE SMOOTH BORE INTERIOR PROVIDING A MANNINGS ROUGHNESS COEFFICIENT OF n = 0.013 OR LESS. UNLESS A SPECIFIC PIPE MATERIAL IS CALLED FOR ON THE CONTRACT DRAWINGS. PVC PIPING SHALL NOT BE USED IN AREAS OF EXPOSED SUNLIGHT.
2. SLOPE PROTECTION IS TO BE PROVIDED PER THE DESIGN PLANS AND MAY INCLUDE RIPRAP, SOD OR MULCH.
3. THE CONTRACTOR SHALL EXERCISE EXTREME CAUTION DURING EARTHWORK OPERATIONS TO INSURE THAT DISTURBANCE TO ANY STEEP SLOPE AREAS ARE MINIMIZED TO THE EXTENT PRACTICABLE.
4. THE CONTRACTOR IS HEREBY CAUTIONED THAT ALL SITE FEATURES SHOWN ARE BASED ON FIELD OBSERVATIONS BY THE SURVEYOR AND BY INFORMATION PROVIDED BY OTHERS. THE INFORMATION IS NOT TO BE RELIED ON AS BEING EXACT OR COMPLETE. THE CONTRACTOR SHALL CONTACT DIG SAFE (1-888-DIGSAFE) AT LEAST THREE (3) BUT NOT MORE THAN THIRTY (30) DAYS PRIOR TO COMMENCEMENT OF EXCAVATION OR DEMOLITION TO VERIFY HORIZONTAL AND VERTICAL LOCATION OF ALL UTILITIES.
5. ALL PAVING WITHIN THE PUBLIC R.O.W. SHALL BE PERFORMED IN ACCORDANCE WITH THE CITY OF PORTLAND RULES AND REGULATIONS FOR EXCAVATION ACTIVITIES IN THE PUBLIC R.O.W.
6. NO HOLES, TRENCHES OR STRUCTURES SHALL BE LEFT OPEN OVERNIGHT IN ANY EXCAVATION ACCESSIBLE TO THE PUBLIC OR IN PUBLIC RIGHTS-OF-WAY.
7. THE CONTRACTOR SHALL TAKE FULL RESPONSIBILITY FOR ANY CHANGES AND DEVIATION OF APPROVED PLANS NOT AUTHORIZED BY THE ARCHITECT/ENGINEER AND/OR CLIENT/OWNER.
8. CONTRACTOR SHALL INCORPORATE PROVISIONS AS NECESSARY IN CONSTRUCTION TO PROTECT EXISTING STRUCTURES AND PHYSICAL FEATURES THAT ARE OUTSIDE THE SCOPE OF WORK. THE CONTRACTOR SHALL MAINTAIN SITE STABILITY DURING CONSTRUCTION TO AVOID EROSION AND SEDIMENT TRANSPORT. CONTRACTOR SHALL RESTORE ALL AREAS TO A FINAL STABILIZED CONDITION AS DIRECTED BY DESIGN DRAWINGS.
9. CONTRACTOR SHALL VERIFY ALL DIMENSIONS AND CONDITIONS IN THE FIELD PRIOR TO FABRICATION AND ERECTION OF ANY MATERIAL. ANY UNUSUAL CONDITIONS SHALL BE REPORTED TO THE ENGINEER.
10. EXTERIOR GRADES AROUND PROPOSED STRUCTURE SHALL BE COORDINATED WITH FINAL BUILDING PLANS AND PROVIDE FOR ALL ACCESS OPENINGS.
11. SUBGRADE FILL PLACED BENEATH ALL PERMANENT PAVEMENT, SIDEWALK OR CONCRETE SURFACES EXCLUDING ANY BUILDING AREAS, SHALL BE GRANULAR BORROW. SUBGRADE FILL PLACED BENEATH ALL LANDSCAPE AREAS EXCEPT THOSE ADJACENT THE FOUNDATION SYSTEMS MAY BE A COMMON BORROW MATERIAL SUITABLE FOR EMBANKMENT CONSTRUCTION, FREE FROM FROZEN MATERIAL, PERISHABLE RUBBLE, PEAT, ORGANICS, ROCKS LARGER THAN 12" IN DIAMETER, VEGETATION AND OTHER MATERIAL UNSUITABLE FOR ROADWAY AND SUBGRADE CONSTRUCTION. EXCAVATED ON-SITE MATERIALS MAY BE USED FOR FILL PROVIDED THE MATERIAL IS FREE FROM UNSUITABLE MATERIAL DESCRIBED IN THIS NOTE AND UPON APPROVAL OF THE ENGINEER. EXCAVATED ONSITE MATERIALS MAY NOT BE USED AS COMPACTED STRUCTURAL FILL BENEATH THE BUILDING AREAS OR AS FOUNDATION BACKFILL. GRANULAR BORROW AND COMMON BORROW SHALL COMPLY WITH M□in□DOT SPECIFICATIONS.
12. ALL FILLS SHALL BE PLACED IN LAYERS NOT MORE THAN 12" LOOSE DEPTH AND COMPACTED BY HEAVY COMPACTION E□UIPMENT. MINIMUM COMPACTION SHALL BE 95% OF MAXIMUM DENSITY ASTM 1557, MODIFIED AND FIELD DENSITY ASTM D2922 (NUCLEAR METHODS).
13. 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.

CONSTRUCTION MANAGEMENT NOTES:

1. ALL CONSTRUCTION SHALL COMPLY WITH 2009 NFPA 1 CHAPTER 16 SAFE GUARDS DURING BUILDING CONSTRUCTION, ALTERATION AND DEMOLITION OPERATIONS.
2. ANY CUTTING AND WELDING WORK PERFORMED ONSITE SHALL RE□UIRE A "HOT WORK" PERMIT FROM THE PORTLAND FIRE DEPARTMENT.
3. THE GENERAL CONTRACTOR SHALL POST EMERGENCY CONTACT INFORMATION ON THE PROJECT SITE PROPERTY DURING CONSTRUCTION IN THE EVENT OF AN AFTER HOURS EMERGENCY. THIS CONTACT INFORMATION SHALL ALSO BE PROVIDED TO THE PORTLAND FIRE DEPARTMENT.
4. IF THE SITE IS SECURED BY TEMPORARY OR PERMANENT FENCING WITH LOCKED GATES, THEN THE APPLICANT OR ASSIGNED REPRESENTATIVE SHALL PURCHASE A KNOX PADLOCK FROM THE PORTLAND FIRE DEPARTMENT TO ALLOW ACCESS BY THE PORTLAND FIRE DEPARTMENT.
5. STREETS SHALL MAINTAIN A 20' WIDTH FOR FIRE DEPARTMENT ACCESS AT ALL TIMES.
6. FIRE HYDRANTS SHALL NOT BE BLOCKED OR ENCLOSED BY FENCING. A 3' CLEARANCE SHALL BE MAINTAINED AT ALL TIMES AROUND FIRE HYDRANTS.

UTILITY NOTES:

1. ALL RE□UIRED UTILITIES SERVING THE PROJECT SHALL BE COORDINATED BETWEEN THE SITE WORK CONTRACTOR AND DIVISION 22/26 CONTRACTOR(S). THE SITE WORK CONTRACTOR SHALL BE RESPONSIBLE TO EXTEND ALL PROPOSED UTILITIES TO WITHIN FIVE (5) FEET OF THE BUILDING TO A LOCATION COORDINATED WITH THE MECHANICAL AND ELECTRICAL SUBCONTRACTORS. THE BUILDING CONTRACTOR SHALL BE RESPONSIBLE FOR ALL UTILITIES WITHIN FIVE (5) FEET AND INSIDE THE BUILDING OR UNDER SLAB.
2. THE CONTRACTOR SHALL COORDINATE THE INSTALLATION OF AND/OR RELOCATION OF OVERHEAD AND UNDERGROUND TELEPHONE WITH FAIRPOINT COMMUNICATIONS. CONTRACTOR SHALL BE RESPONSIBLE FOR CONDUITS, PULL WIRES, TRENCHING AND BACKFILLING NECESSARY TO COMPLETE THE WORK.
3. THE CONTRACTOR SHALL COORDINATE THE INSTALLATION OF ELECTRIC SERVICE WITH CENTRAL MAINE POWER, THE TELECOMMUNICATIONS SERVICE WITH FAIRPOINT COMMUNICATIONS, AND THE CABLE SERVICE WITH TIME WARNER CABLE. ALL WORK SHALL CONFORM TO THE PROJECT SPECIFICATIONS OR UTILITY COMPANY STANDARDS, WHICHEVER IS MORE STRINGENT.
4. ADJUST ALL MANHOLES, CATCH BASINS, CURB BOXES, ETC. WITHIN LIMITS OF WORK TO FINISH GRADE AT NO ADDITIONAL EXPENSE TO THE OWNER.
5. ALL UNDERGROUND CONDUITS SHALL HAVE NYLON PULL ROPES TO FACILITATE PULLING CABLES.
6. THE CONTRACTOR SHALL OBTAIN, PAY FOR, AND COMPLY WITH ALL RE□UIRED PERMITS, ARRANGE FOR ALL INSPECTIONS, AND SUBMIT COPIES OF ACCEPTANCE CERTIFICATES TO THE OWNER PRIOR TO COMPLETION OF THE PROJECT.
7. THE CONTRACTOR SHALL PROVIDE AND INSTALL ALL BOXES, FITTINGS, CONNECTORS, COVER PLATES AND OTHER MISCELLANEOUS ITEMS NOT NECESSARILY DETAILED ON THE DRAWINGS TO RENDER INSTALLATION OF UTILITIES COMPLETE AND OPERATIONAL, AT NO EXTRA EXPENSE TO THE OWNER.
8. A 10 FOOT MINIMUM EDGE TO EDGE HORIZONTAL SEPARATION SHALL BE PROVIDED BETWEEN ALL WATER AND SANITARY SEWER LINES. A 12 INCH OUTSIDE TO OUTSIDE VERTICAL SEPARATION SHALL BE PROVIDED AT ALL WATER AND SANITARY SEWER CROSSINGS.
9. THE CONTRACTOR SHALL PROVIDE TEMPORARY SERVICES AS RE□UIRED TO PROVIDE CONTINUOUS SERVICE TO THE JOBSITE. TEMPORARY SERVICES SHALL COMPLY WITH ALL FEDERAL, STATE, LOCAL AND UTILITY COMPANY STANDARDS. COORDINATE ALL TEMPORARY SERVICES WITH UTILITY COMPANY, OWNER, AND AFFECTED BUSINESSES.
10. ALL SANITARY SERVICES AND APPURTENANCES SHALL BE CONSTRUCTED IN ACCORDANCE WITH THE CURRENT STANDARDS AND SPECIFICATIONS OF THE CITY OF PORTLAND PUBLIC WORKS DEPARTMENT. ALL SANITARY SERVICES AND APPURTENANCES TO BE ABANDONED SHALL BE PROPERLY RECORDED WITH PORTLAND PUBLIC WORKS ENGINEERING DEPARTMENT. A DIGITAL VIDEOTAPE SHALL BE MADE OF SANITARY SEWER SYSTEMS TO BE UTILIZED PRIOR TO CONSTRUCTION□UPSTREAM PIPES INTENDED FOR ABANDONMENT SHALL BE INSPECTED TO VERIFY THAT THEY NO LONGER SERVE OTHER FACILITIES.

PERMITTING NOTES:

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

DIMENSIONAL RE□UIREMENTS (R6 ZONE)			
STANDARD	R6	VARIANCE	PROVIDED
MIN. LOT SIZE	2,000 SF	1,899 SF	1,899 SF
MIN. LOT AREA PER DWELLING UNIT	725 SF	633 SF	633 SF
MIN. FRONT YARD	5 FT OR AVG. DEPTH OF ADJACENT FRONT YARDS	-	APPROX. 0.80 FT - IN LINE WITH ADJACENT BUILDINGS ON HILL ST (HILL ST)
MIN. SIDE YARD	5 FT, OR NONE ON A SIDE STREET	-	5 FT AND 0 ALONG RUSSELL STREET
MIN. REAR YARD	10 FT	-	10 FT
MAX. STRUCTURE HEIGHT	45 FT	-	41.5 FT
MAX. LOT COVERAGE	60%	63.67%	63.1%
MIN. LOT WIDTH	20 FT	-	38 FT
LANDSCAPED OPEN SPACE	20%	-	24.2%
PARKING	1 SPACE PER UNIT, FIRST 3 UNITS EXEMPT (0 SPACES)	-	3 SPACES
BICYCLE PARKING	2 SPACES PER EVERY 5 UNITS (2 SPACES)	-	2 SPACES

LEGEND

- EXISTING PROPERTY LINE
- PROJECT SITE BOUNDARY
- EXISTING SETBACK LINE
- PROPOSED EASEMENT
- 124 EXISTING MINOR CONTOUR
- 124 EXISTING MAJOR CONTOUR
- 124 PROPOSED CONTOUR
- SD EXISTING STORMDRAIN
- SD PROPOSED STORMDRAIN
- S EXISTING SANITARY SEWER
- S PROPOSED SANITRY SEWER
- W EXISTING WATER LINE
- W PROPOSED WATER LINE
- UD EXISTING UNDERDRAIN
- UD PROPSED UNDERDRAIN
- OHE EXISTING OVERHEAD ELECTRIC & TELEPHONE
- OHE PROPOSED OVERHEAD ELECTRIC & TELEPHONE
- UGE EXISTING UNDERGROUND ELECTRIC & TELEPHONE
- UGE PROPOSED UNDERGROUND ELECTRIC & TELEPHONE
- EXISTING EDGE OF PAVEMENT
- PROPOSED EDGE OF PAVEMENT
- EXISTING EDGE OF GRAVEL
- PROPOSED EDGE OF GRAVEL
- EXISTING CURB
- PROPOSED CURB
- PROPOSED FENCE
- SF SILT FENCE
- TP-A TEST PIT
- EXISTING VALVE
- PROPOSED VALVE
- EXISTING HYDRANT
- EXISTING LIGHT POLE
- PROPOSED LIGHT POLE
- EXISTING UTILITY POLE
- EXISTING CATCH BASIN
- PROPOSED CATCH BASIN
- EXISTING DRAIN MANHOLE
- PROPOSED DRAIN MANHOLE
- EXISTING SEWER MANHOLE
- PROPOSED SEWER MANHOLE
- 30.20 EXISTING SPOT GRADE
- 30.20 PROPOSED SPOT GRADE
- SURVEY CONTROL POINT
- EXISTING MONUMENT
- EXISTING IRON PIPE
- EXISTING SIGN
- PROPOSED SIGN
- EXISTING BUILDING
- PROPOSED BUILDING
- PROPOSED CONCRETE
- PROPOSED PAVEMENT
- PROPOSED BRICK

STATE OF MAINE
MICHAEL E. TADEMA-WIELANDT
No. 12697
LICENSED PROFESSIONAL ENGINEER

P.E.: MICHAEL E. TADEMA-WIELANDT
DATE: 3-16-2018

NO.	DATE	DESCRIPTION	BY
1	3-16-2018	SUBMITTED TO PLANNING BOARD FOR APPROVAL	MTW
		REVISIONS	APP'D

TERRADYN CONSULTANTS, LLC
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SHEET DESCRIPTION
4 RUSSELL STREET
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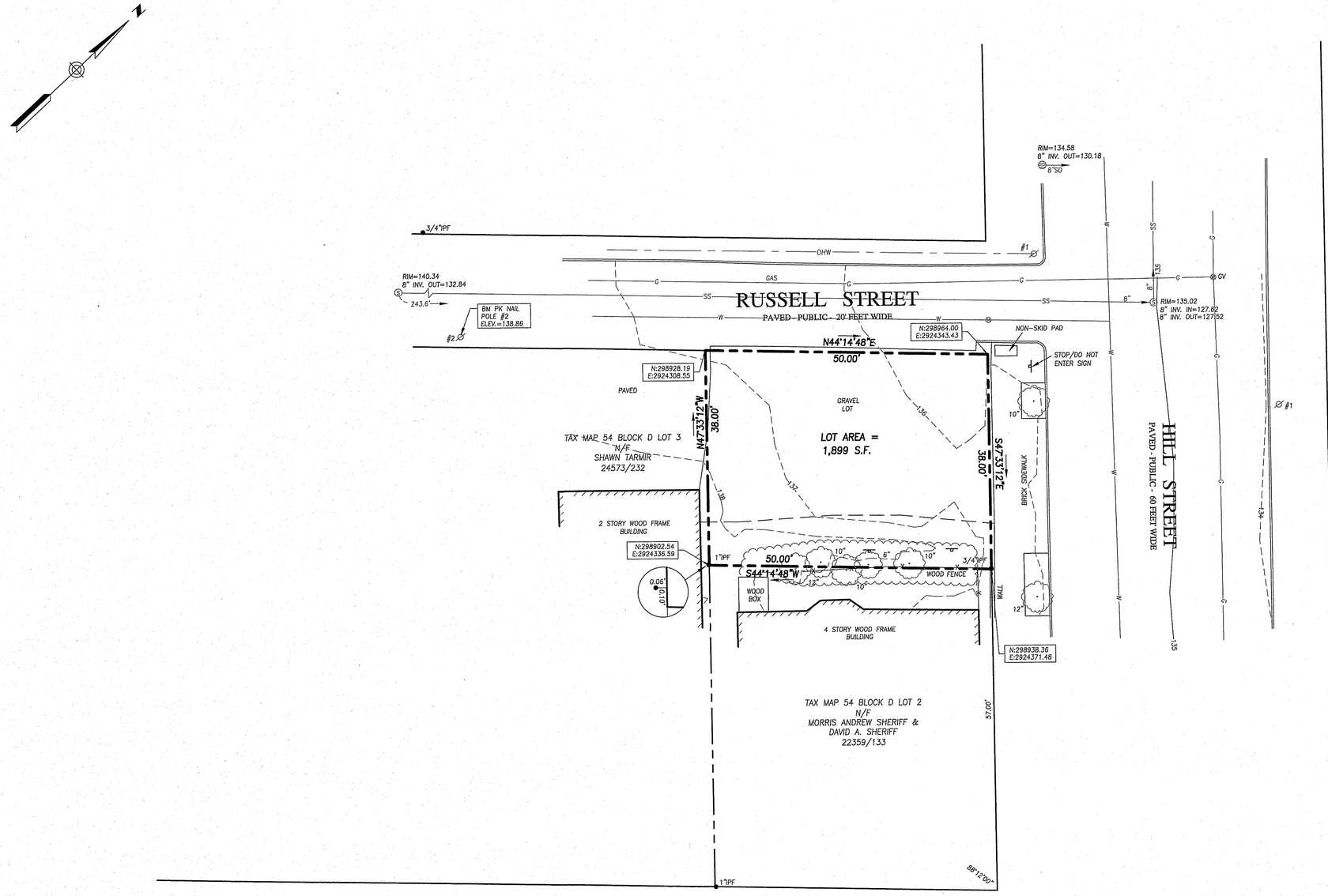
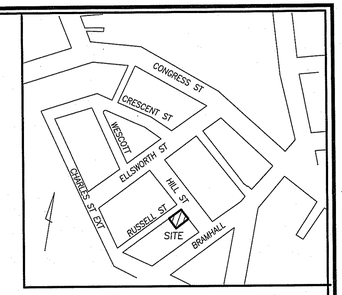
PORTLAND, ME 04102
GENERAL NOTES & LEGEND

PREPARED FOR
NEW DAY FARM, LLC
156 SHERIDAN STREET, UNIT 3A
PORTLAND, ME 04101

DATE:	2/6/2018
SCALE:	AS NOTED
DESIGNED:	ARF
JOB NO:	1743
FILE: 1562-COVER.DWG	
SHEET	C-1.1

PRELIMINARY - NOT FOR CONSTRUCTION





LOCATION MAP

N.T.S.

LEGEND

- IRON PIPE OR ROD FOUND
- MONUMENT FOUND
- UTILITY POLE
- MANHOLE
- SIGN
- CATCH BASIN
- GAS VALVE
- WATER VALVE OR SHUTOFF
- LIGHT POLE
- DECIDUOUS TREE
- FENCE
- CURB
- OHW — OVERHEAD WIRES
- W — WATER LINE
- G — GAS LINE
- SD — STORM DRAIN
- SS — SANITARY SEWER
- 125 — 1' CONTOUR
- N/F — NOW OR FORMERLY
- 000/000 — DEED BOOK AND PAGE

UTILITY NOTE

THE UNDERGROUND UTILITIES SHOWN HAVE BEEN LOCATED FROM FIELD SURVEY INFORMATION AND EXISTING DRAWINGS. THE SURVEYOR MAKES NO GUARANTEES THAT THE UNDERGROUND UTILITIES SHOWN COMPRISE ALL SUCH UTILITIES IN THE AREA, EITHER IN SERVICE OR ABANDONED. THE SURVEYOR FURTHER DOES NOT WARRANT THAT THE UNDERGROUND UTILITIES SHOWN ARE IN THE EXACT LOCATION INDICATED ALTHOUGH HE DOES CERTIFY THAT THEY ARE LOCATED AS ACCURATELY AS POSSIBLE FROM INFORMATION AVAILABLE. THE SURVEYOR HAS NOT PHYSICALLY LOCATED THE UNDERGROUND UTILITIES. CALL 1-888-DIGSAFE AT LEAST THREE BUSINESS DAYS BEFORE PERFORMING ANY CONSTRUCTION. DUE TO OSHA CONFINED SPACE REQUIREMENTS, ALL INVERTS AND PIPE SIZES MUST BE VERIFIED PRIOR TO ANY CONSTRUCTION.

GRAPHIC SCALE

0 5' 10' 20' 40'

PLAN REFERENCES

1. "CONDOMINIUM PLAT, RUSSELL STREET FLATS CONDOMINIUM, 11 RUSSELL STREET, PORTLAND, MAINE MADE FOR RECORD OWNER MICHAEL J. FRIEDLAND" APRIL 15, 2014 BY OWEN HASKELL, INC.

2. "PLAN OF LAND IN PORTLAND, MAINE FOR MAINE CARDIOLOGY ASSOC." DATED SEPTEMBER 9, 1980 BY OWEN HASKELL, INC.

3. CITY OF PORTLAND STREET BLUE SHEETS.

GENERAL NOTES

1. OWNER OF RECORD: NEW DAY FARM, LLC
   TAX MAP 54 BLOCK D LOT 1
   C.C.R.D. BOOK 32044 PAGE 36

2. BEARINGS ARE BASED ON MAINE STATE PLANE COORDINATE SYSTEM MAINE WEST NAD83. CITY POINTS T124-26-1262 & T124-26-1248 HELD.

3. ELEVATIONS BASED ON CITY DATUM. CITY BENCHMARK: 3' O/S MONUMENT AT THE NORTH EAST CORNER OF MELLEN AND CUMBERLAND STREET ELEVATION = 74.46 LB836 PAGE 48.

4. THE PROPERTY IS LOCATED IN THE CITY OF PORTLAND R6 ZONE.

CERTIFICATE

OWEN HASKELL, INC. HEREBY CERTIFIES THAT THIS PLAN IS BASED ON, AND THE RESULT OF, AN ON THE GROUND FIELD SURVEY AND THAT TO THE BEST OF OUR KNOWLEDGE, INFORMATION AND BELIEF, IT CONFORMS TO THE BOARD OF LICENSURE FOR PROFESSIONAL LAND SURVEYORS CURRENT STANDARDS OF PRACTICE.

6-9-18
DATE

JOHN W. SWAN, PLS NO. 1038

STATE OF MAINE
JOHN W. SWAN
1038
PROFESSIONAL LAND SURVEYOR

REV.	1	6-7-16	ADJUST ELEVATIONS

BOUNDARY & TOPOGRAPHIC SURVEY

AT

4 RUSSELL STREET, PORTLAND, MAINE

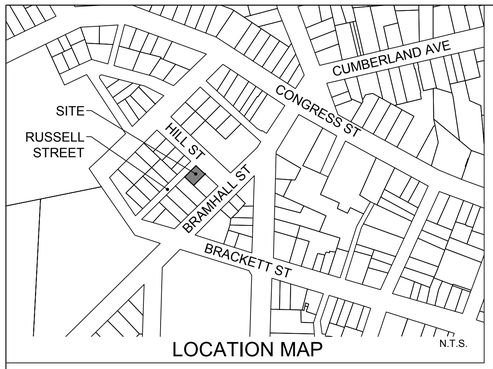
MADE FOR

NEW DAY FARM, LLC

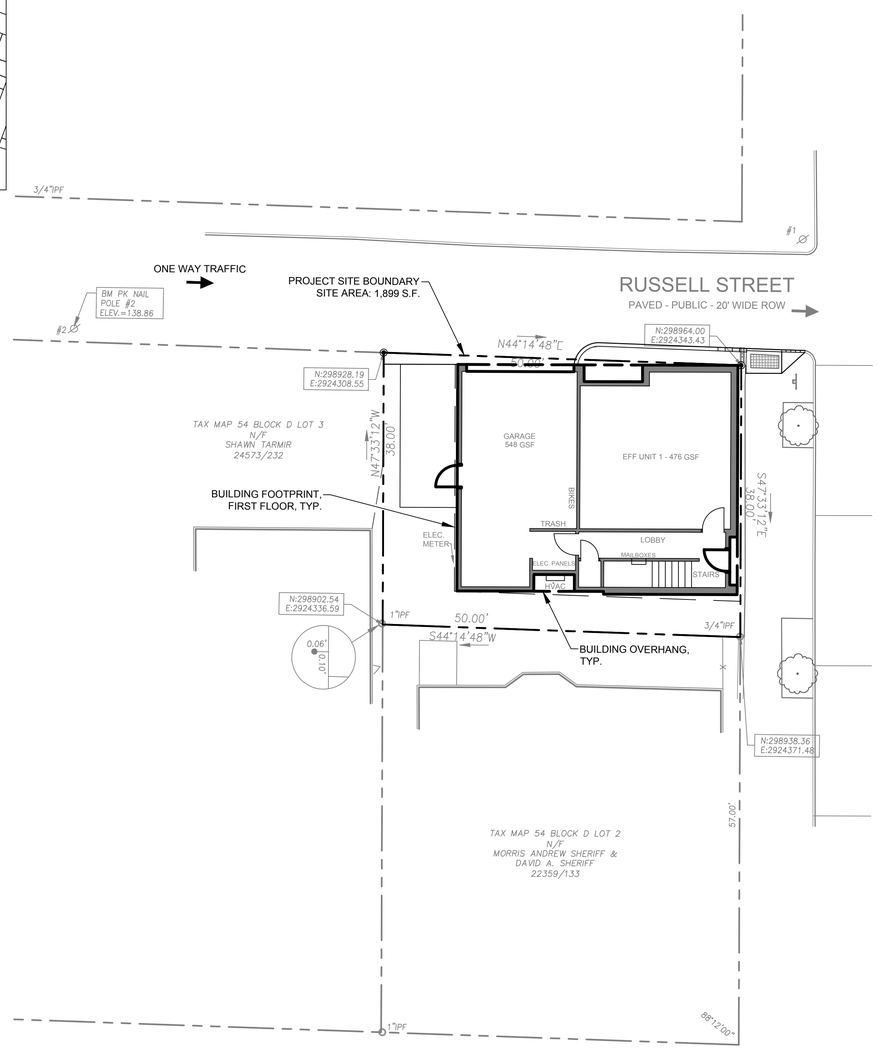
156 SHERIDAN STREET, UNIT 3A, PORTLAND, MAINE

OWEN HASKELL, INC.
PROFESSIONAL LAND SURVEYORS
390 U.S. ROUTE ONE, FALMOUTH, ME 04105 (207) 774-0424

Drawn By	RS	Date	Job No.
Trace By	JLW	JUNE 1, 2016	2016-138P
Check By	JWS	Scale	Drwg. No.
Book No.	1145	1" = 10'	1



LOCATION MAP



GENERAL NOTES:

1. OWNER OF RECORD: NEW DAY FARM, LLC
   TAX MAP 54 BLOCK D LOT 1
   BOOK 32044 PAGE 36
2. APPLICANT: NEW DAY FARM, LLC
   TAX MAP 54 BLOCK D LOT 1
   BOOK 32044 PAGE 36
3. CIVIL ENGINEER: TERRADYN CONSULTANTS, LLC
   565 CONGRESS STREET, SUITE 310
   PORTLAND, ME 04101
4. ARCHITECT: ARCHETYPE ARCHITECTS
   48 UNION WARF
   PORTLAND, ME 04101
5. SURVEYOR: OWEN HASKELL, INC.
   390 US ROUTE ONE, SUITE 310
   FALMOUTH, ME 04105
6. ZONING DISTRICT: R-6 RESIDENTIAL ZONE
7. TOPOGRAPHIC AND BOUNDARY SURVEY INFORMATION WAS PROVIDED BY OWEN HASKELL, INC. CITY BENCHMARK = 3' O/S MONUMENT AT THE NORTH EAST CORNER OF MELLEN AND CUMBERLAND STREET, ELEVATION 74.46 LB836 PAGE 48, NGVD 1929 DATUM.
8. BEARINGS AND COORDINATES ARE BASED ON MAINE STATE PLANE COORDINATE SYSTEM WEST ZONE NAD 83. CITY POINTS T124-26-1262 & T124-26-1248 HELD.
9. FEMA MAP COMMUNITY PANEL NUMBER 230051 0013 B. THE SITE IS LOCATED IN A C ZONE.
10. THE FACILITY IS SERVICED BY PUBLIC WATER, SEWER, AND UNDERGROUND POWER.

PLAN REFERENCES:

1. "CONDOMINIUM PLAT, RUSSELL STREET FLATS CONDOMINIUM, 11 RUSSELL STREET, PORTLAND, MAINE MADE FOR RECORD OWNER MICHAEL J. FRIEDLAND" APRIL 15, 2014 BY OWEN HASKELL, INC.
2. "PLAN OF LAND IN PORTLAND, MAINE FOR MAINE CARDIOLOGY ASSOC." DATED SEPTEMBER 9, 1980 BY OWEN HASKELL, INC.
3. CITY OF PORTLAND STREET BLUE SHEETS.

WAIVERS:

NO WAIVERS ARE REQUESTED FOR THIS PROJECT.

CONDITIONS OF APPROVAL:

1. TBD

LEGEND

- EXISTING PROPERTY LINE
- PROJECT SITE BOUNDARY
- EXISTING EDGE OF PAVEMENT
- PROPOSED EDGE OF PAVEMENT
- EXISTING CURB
- PROPOSED CURB
- PROPOSED FENCE
- EXISTING IRON PIPE
- PIN TO BE SET
- EXISTING BUILDING
- PROPOSED BUILDING

GRAPHIC SCALE

10 0 5 10 20 40

(IN FEET)
1 inch =10 ft.

STATE OF MAINE
CUMBERLAND COUNTY REGISTRY OF DEEDS
RECEIVED _____, 20___
AT ___h _____m ____M. AND RECORDED IN
PLAN BOOK _____ PAGE _____

ATTEST _____ REGISTER

APPROVAL- CITY OF PORTLAND
PLANNING BOARD

_____ DATE

_____ CHAIRPERSON

PRELIMINARY - NOT FOR CONSTRUCTION

STATE OF MAINE
MICHAEL E. TADEMA-WIELANDT
No. 10121
REGISTERED PROFESSIONAL ENGINEER

PLS:	P.E.: MICHAEL E. TADEMA-WIELANDT
DATE:	DATE: 7-11-2018

NO.	DATE	REVISIONS	APP'D BY
3	7-11-2018	REVISED PER STAFF COMMENTS AND RE-SUBMITTED	MTW
2	6-8-2018	REVISED PER STAFF COMMENTS AND RE-SUBMITTED	MTW
1	3-16-2018	SUBMITTED TO PLANNING BOARD FOR APPROVAL	MTW

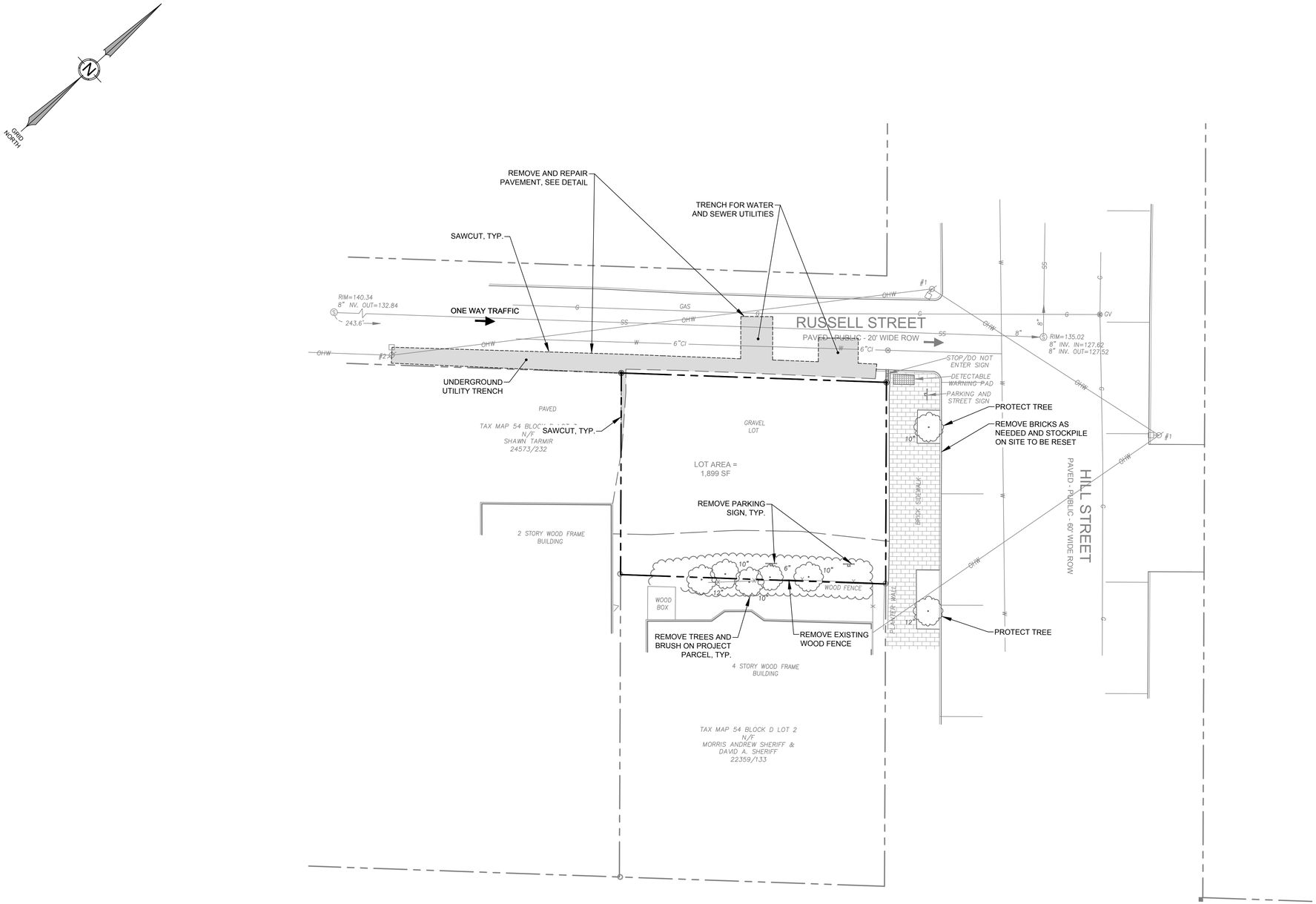
TERRADYN CONSULTANTS, LLC
565 CONGRESS STREET
SUITE 310
PORTLAND, ME 04102
OFFICE: (207) 926-5111 FAX: (207) 221-1317
www.terradynconsultants.com
P.O. BOX 339
111 ELDERBERRY LANE
NEW GLOUCESTER, ME 04260

Civil Engineering - Land Planning - Stormwater Design - Environmental Permitting

SHEET DESCRIPTION
4 RUSSELL STREET
4 RUSSELL STREET
PORTLAND, ME 04102
RECORDING PLAT

PREPARED FOR
NEW DAY FARM, LLC
156 SHERIDAN STREET, UNIT 3A
PORTLAND, ME 04101

DATE:	2/6/2018
SCALE:	1"=10'
DESIGNED:	ARF
JOB NO:	1743
FILE:	1743-B.DWG
SHEET	C-2.1



GRAPHIC SCALE

10 0 5 10 20 40

(IN FEET)
1 inch = 10 ft.

PRELIMINARY - NOT FOR CONSTRUCTION

STATE OF MAINE
MICHAEL E. TADEMA-WIELANDT
REGISTERED PROFESSIONAL ENGINEER

P.E.: MICHAEL E. TADEMA-WIELANDT
DATE: 6-8-2018

NO.	DATE	REVISIONS	APP'D BY
2	6-8-2018	REVISED PER STAFF COMMENTS AND RE-SUBMITTED	MTW
1	3-16-2018	SUBMITTED TO PLANNING BOARD FOR APPROVAL	MTW

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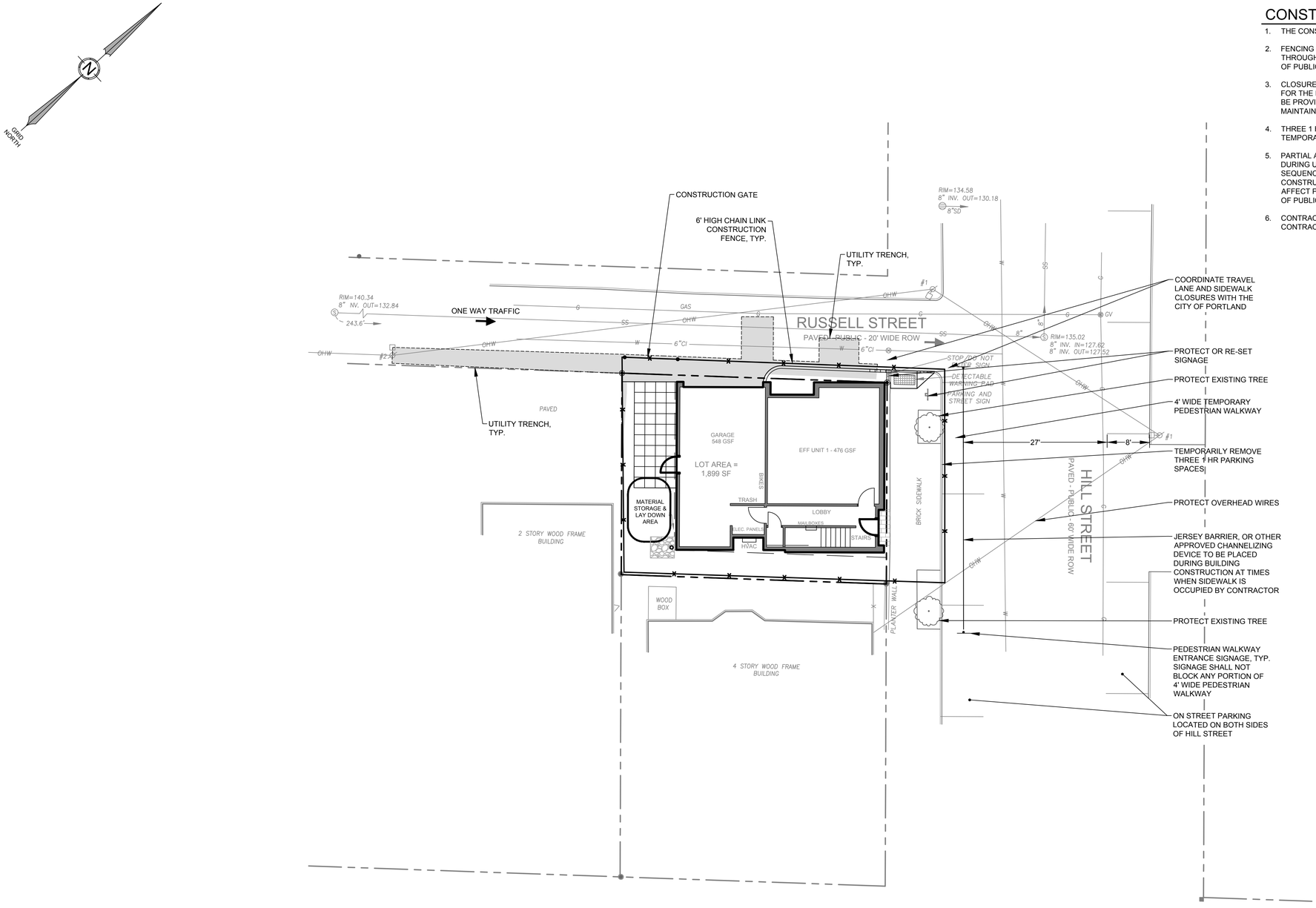
PORTLAND, ME 04102
OFFICE: (207) 926-5111 FAX: (207) 221-1317
www.terradynconsultants.com

Civil Engineering - Land Planning - Stormwater Design - Environmental Permitting

SHEET DESCRIPTION
4 RUSSELL STREET
4 RUSSELL STREET
PORTLAND, ME 04102
EXISTING CONDITIONS AND DEMOLITION PLAN

PREPARED FOR
NEW DAY FARM, LLC
156 SHERIDAN STREET, UNIT 3A
PORTLAND, ME 04101

DATE:	2/6/2018
SCALE:	1"=10'
DESIGNED:	ARF
JOB NO:	1743
FILE:	1743-B.DWG
SHEET	C-2.2



CONSTRUCTION MANAGEMENT NOTES:

1. THE CONSTRUCTION GATE SHALL SWING INTO THE PROJECT SITE
2. FENCING AROUND THE PERIMETER OF THE CONSTRUCTION WORK ZONE WILL BE MAINTAINED THROUGHOUT BUILDING CONSTRUCTION, UNLESS OTHERWISE APPROVED BY THE DEPARTMENT OF PUBLIC WORKS.
3. CLOSURE OF THE HILL STREET SIDEWALK DIRECTLY IN FRONT OF THE SITE WILL BE REQUIRED FOR THE DURATION OF BUILDING CONSTRUCTION. A TEMPORARY WALKWAY AND SIGNAGE SHALL BE PROVIDED AS SHOWN DURING SIDEWALK CLOSURES. ADA ACCESSIBILITY SHALL BE MAINTAINED AT ALL TIMES.
4. THREE 1 HOUR PARKING SPACES ALONG HILL STREET DIRECTLY IN FRONT OF THE SITE WILL BE TEMPORARILY REMOVED WHILE THE TEMPORARY PEDESTRIAN WALKWAY IS IN PLACE.
5. PARTIAL AND/OR FULL TRAVEL LANE CLOSURES OF RUSSELL STREET WILL BE NECESSARY DURING UNDERGROUND UTILITY INSTALLATION. THIS WORK SHALL BE SCHEDULED AND SEQUENCED TO MINIMIZE THE DURATION OF ANY STREET OCCUPANCY. AT NO TIME CAN CONSTRUCTION ACTIVITY INCLUDING DELIVERY VEHICLES CLOSE OR BLOCK STREETS OR AFFECT PUBLIC SAFETY ACCESS WITHOUT PRIOR NOTICE AND APPROVAL OF THE DEPARTMENT OF PUBLIC WORKS.
6. CONTRACTOR PARKING SHALL BE OFF-SITE. ON-STREET PARKING MAY NOT BE UTILIZED FOR CONTRACTOR PARKING.

GRAPHIC SCALE

10 0 5 10 20 40

(IN FEET)
1 inch =10 ft.

PRELIMINARY - NOT FOR CONSTRUCTION

STATE OF MAINE
MICHAEL E. TADEMA-WIELANDT
No. 10121
REGISTERED PROFESSIONAL ENGINEER

P.E.: MICHAEL E. TADEMA-WIELANDT
DATE: 7-11-2018

NO.	DATE	REVISIONS	BY
1	3-16-2018	SUBMITTED TO PLANNING BOARD FOR APPROVAL	MTW
2	6-8-2018	REVISED PER STAFF COMMENTS AND RE-SUBMITTED	MTW
3	7-11-2018	REVISED PER STAFF COMMENTS AND RE-SUBMITTED	MTW

Civil Engineering - Land Planning - Stormwater Design - Environmental Permitting

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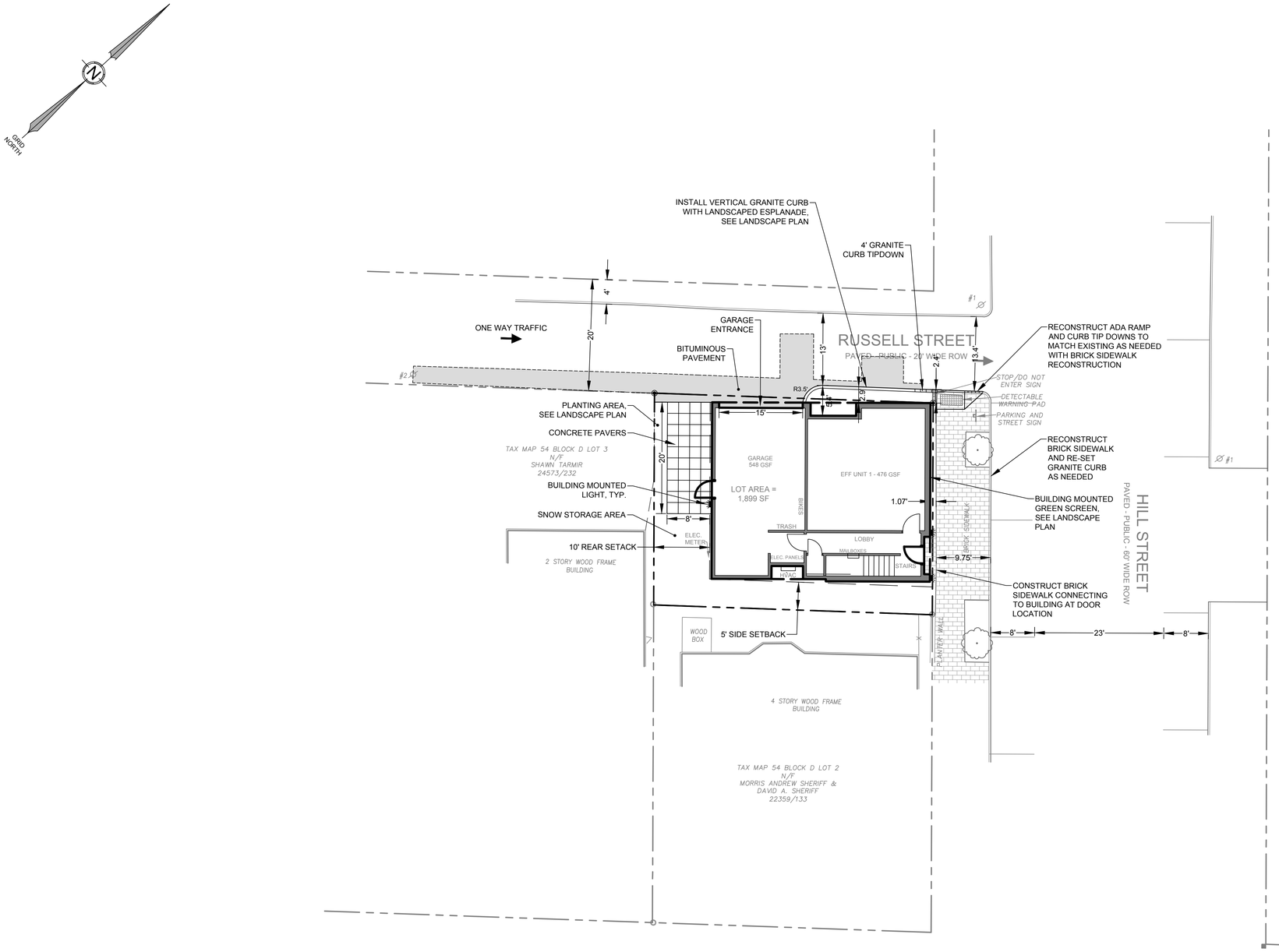
OFFICE: (207) 926-5111 FAX: (207) 221-1317
www.terradynconsultants.com
565 CONGRESS STREET
SUITE 310
PORTLAND, ME 04102

SHEET DESCRIPTION
4 RUSSELL STREET
4 RUSSELL STREET
PORTLAND, ME 04102
CONSTRUCTION MANAGEMENT PLAN

PREPARED FOR
NEW DAY FARM, LLC
156 SHERIDAN STREET, UNIT 3A
PORTLAND, ME 04101

DATE:	2/6/2018
SCALE:	1"=10'
DESIGNED:	ARF
JOB NO:	1743
FILE:	1743-B.DWG
SHEET	C-2.3



GRAPHIC SCALE

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(IN FEET)
1 inch = 10 ft.

PRELIMINARY - NOT FOR CONSTRUCTION

STATE OF MAINE
MICHAEL E. TADEMA-WIELANDT
No. 10121
REGISTERED PROFESSIONAL ENGINEER

P.E.: MICHAEL E. TADEMA-WIELANDT
DATE: 7-11-2018

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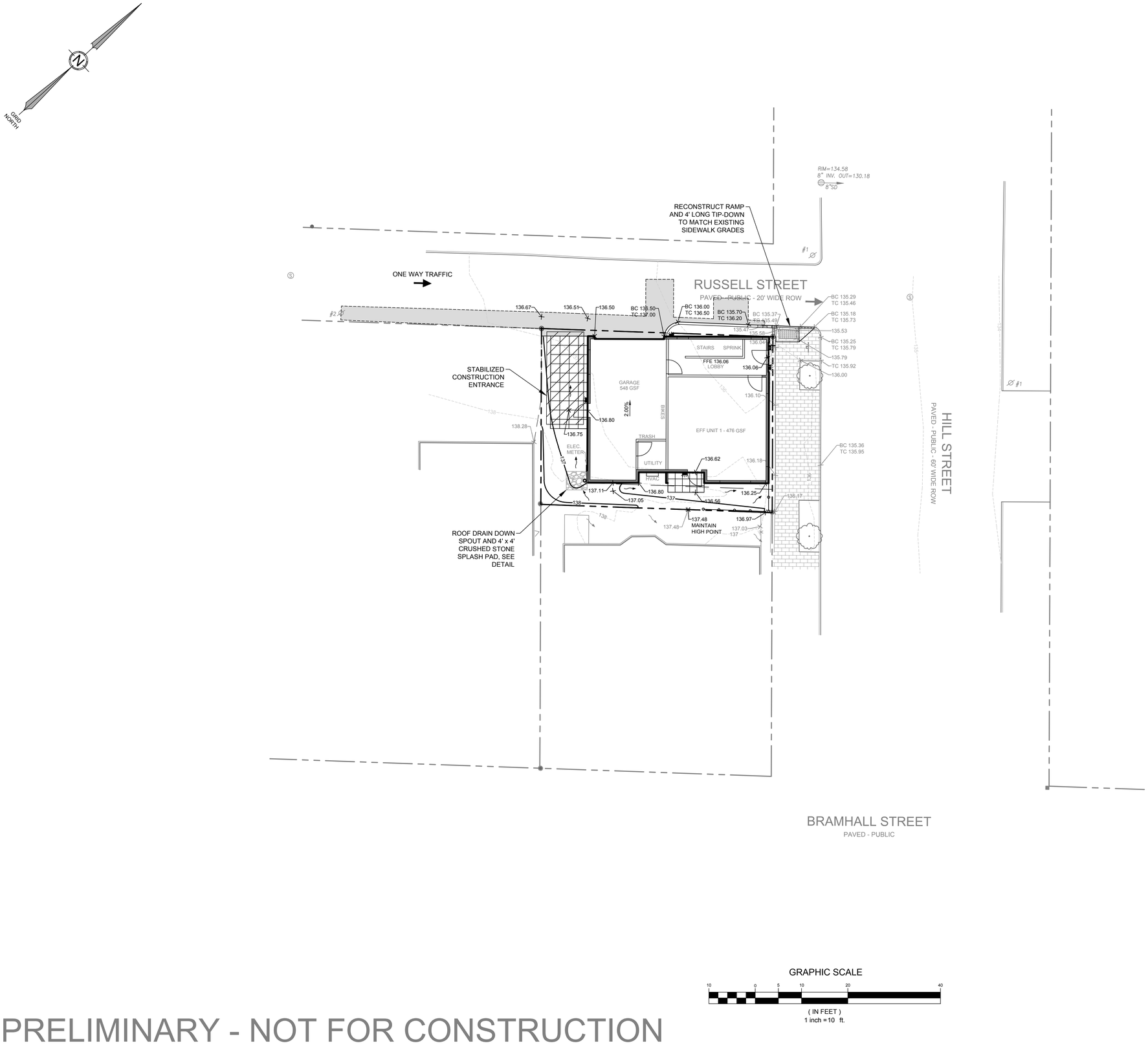
565 CONGRESS STREET
SUITE 310
PORTLAND, ME 04102

SHEET DESCRIPTION
4 RUSSELL STREET
4 RUSSELL STREET
PORTLAND, ME 04102
SITE PLAN

PREPARED FOR
NEW DAY FARM, LLC
156 SHERIDAN STREET, UNIT 3A
PORTLAND, ME 04101

DATE:	2/6/2018
SCALE:	1"=10'
DESIGNED:	ARF
JOB NO:	1743
FILE:	1743-B.DWG
SHEET	C-3.0



GRAPHIC SCALE

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(IN FEET)
1 inch =10 ft.

PRELIMINARY - NOT FOR CONSTRUCTION

STATE OF MAINE
MICHAEL E. TADEMA-WIELANDT
No. 10121
REGISTERED PROFESSIONAL ENGINEER

P.E.: MICHAEL E. TADEMA-WIELANDT
DATE: 6-8-2018

NO.	DATE	REVISIONS	APP'D BY
1	3-16-2018	SUBMITTED TO PLANNING BOARD FOR APPROVAL	MTW
2	6-8-2018	REVISED PER STAFF COMMENTS AND RE-SUBMITTED	MTW

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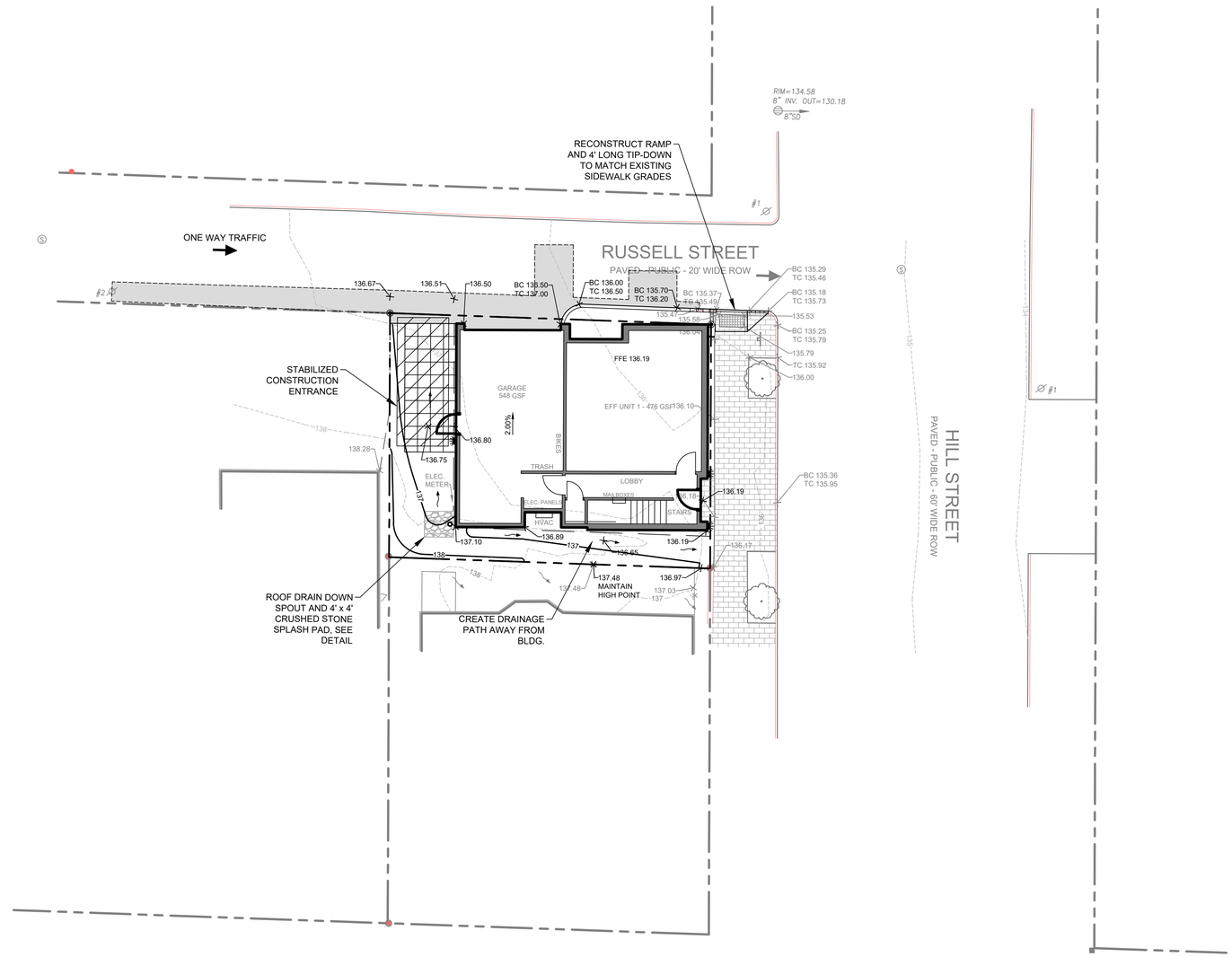
www.terradynconsultants.com
565 CONGRESS STREET
SUITE 310
PORTLAND, ME 04102

Civil Engineering - Land Planning - Stormwater Design - Environmental Permitting

SHEET DESCRIPTION
4 RUSSELL STREET
4 RUSSELL STREET
PORTLAND, ME 04102
GRADING, DRAINAGE & EROSION CONTROL PLAN

PREPARED FOR
NEW DAY FARM, LLC
156 SHERIDAN STREET, UNIT 3A
PORTLAND, ME 04101

DATE:	2/6/2018
SCALE:	1"=10'
DESIGNED:	ARF
JOB NO:	1743
FILE:	1743-B.DWG
SHEET	C-4.0



GRAPHIC SCALE

10 0 5 10 20 40

(IN FEET)
1 inch = 10 ft.

PRELIMINARY - NOT FOR CONSTRUCTION

STATE OF MAINE
MICHAEL E. TADEMA-WIELANDT
NO. 12079
LICENSED PROFESSIONAL ENGINEER

P.E.: MICHAEL E. TADEMA-WIELANDT
DATE: 7-11-2018

NO.	DATE	REVISIONS	APP'D BY
3	7-11-2018	REVISED PER STAFF COMMENTS AND RE-SUBMITTED	MTW
2	6-8-2018	REVISED PER STAFF COMMENTS AND RE-SUBMITTED	MTW
1	3-16-2018	SUBMITTED TO PLANNING BOARD FOR APPROVAL	MTW

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OFFICE: (207) 926-5111 FAX: (207) 221-1317
www.terradynconsultants.com
565 CONGRESS STREET
SUITE 310
PORTLAND, ME 04102

SHEET DESCRIPTION
4 RUSSELL STREET
4 RUSSELL STREET
PORTLAND, ME 04102

GRADING, DRAINAGE & EROSION CONTROL PLAN

PREPARED FOR
NEW DAY FARM, LLC
156 SHERIDAN STREET, UNIT 3A
PORTLAND, ME 04101

DATE:	2/6/2018
SCALE:	1"=10'
DESIGNED:	ARF
JOB NO:	1743
FILE:	1743-B.DWG
SHEET	C-4.0

EROSION AND SEDIMENT CONTROL PLAN

Pre-Construction Phase
A [illegible] 38 [illegible] § 480-[illegible]. [illegible]

BMP Construction Phase
A. Sediment barriers. [illegible]

B. Construction entrance: [illegible]

C. Riprap: [illegible]

D. Temporary stabilization. [illegible]

E. Vegetated [illegible]

Permanent stabilization defined
A. [illegible] 90% [illegible]

B. [illegible]

C. [illegible]

D. Riprap. [illegible]

E. Agricultural [illegible]

F. Paved areas. [illegible]

G. Ditches, channels, and swales: [illegible]

General Construction Phase
[illegible]

A. [illegible]

B. [illegible]

C. Erosion control [illegible]

D. [illegible]

E. [illegible]

F. [illegible]

G. [illegible] 3 inch[illegible]

H. [illegible]

I. [illegible] 8 inch[illegible]

J. [illegible]

K. [illegible]

L. Fi[illegible]

M. S[illegible]

N. A[illegible]

O. R[illegible] 30 [illegible]

Permanent Stabilization
[illegible]

Seeding and Fertilization
A. Grade [illegible]

B. A[illegible] 18.4 [illegible] 1,000 [illegible] 10-20-20 [illegible] 138 [illegible] 1,000 [illegible]

C. W[illegible] 4 inch[illegible]

E. In[illegible]

F. P[illegible] 45 [illegible] 35% [illegible]

G. F[illegible] 3 [illegible]/1,000 [illegible] 35% [illegible] 6% [illegible] 24% [illegible] 10% [illegible] 20% [illegible] 5% [illegible]

I. A[illegible]

J. A[illegible]

Winter Construction Phase
[illegible] 15, [illegible]

A. [illegible] 90% [illegible]

B. [illegible]

C. [illegible] (150 [illegible] 1,000 [illegible])

D. [illegible] 8 % [illegible]

E. [illegible] 3 %.

F. [illegible]

G. Winter [illegible] 1 [illegible]

H. An[illegible] 100 [illegible]

I. [illegible] 7 [illegible]

J. [illegible]

K. If [illegible] 1 inch [illegible]

L. [illegible]

M. [illegible] 1, [illegible]

Maintenance and Inspection Phase
A. [illegible]

B. A [illegible]

Dewatering
A [illegible]

Housekeeping

1. Spill prevention. [illegible]

NOTE: [illegible] 1-800-482-0777 [illegible] 24 [illegible] 1-800-452-4664 [illegible]

2. Groundwater protection. [illegible]

3. Fugitive sediment and dust. [illegible]

4. Debris and other materials. [illegible]

NOTE: [illegible]

5. Excavation de-watering. [illegible] 3 [illegible]/1,000 [illegible]

NOTE: [illegible] in the "Maine Erosion and Sediment Control BMPs, Maine Department of Environmental Protection."

6. Authorized Non-storm water discharges. [illegible]

(a) [illegible]

(b) [illegible]

(c) [illegible]

(d) [illegible] 3 [illegible]

(e) [illegible]

(f) [illegible]

(g) [illegible]

(h) [illegible]

(i) [illegible]

(j) [illegible] 5 [illegible]

(k) [illegible]

(l) [illegible]

7. Unauthorized non-storm water discharges. [illegible]:

(a) [illegible]

(b) [illegible]

(c) [illegible]

(d) [illegible]

PRELIMINARY - NOT FOR CONSTRUCTION

STATE OF MAINE
MICHAEL E. TADEMA-WIELANDT
No. 11567
LICENSED
PROFESSIONAL ENGINEER

P.E.: MICHAEL E. TADEMA-WIELANDT
DATE: 3-16-2018

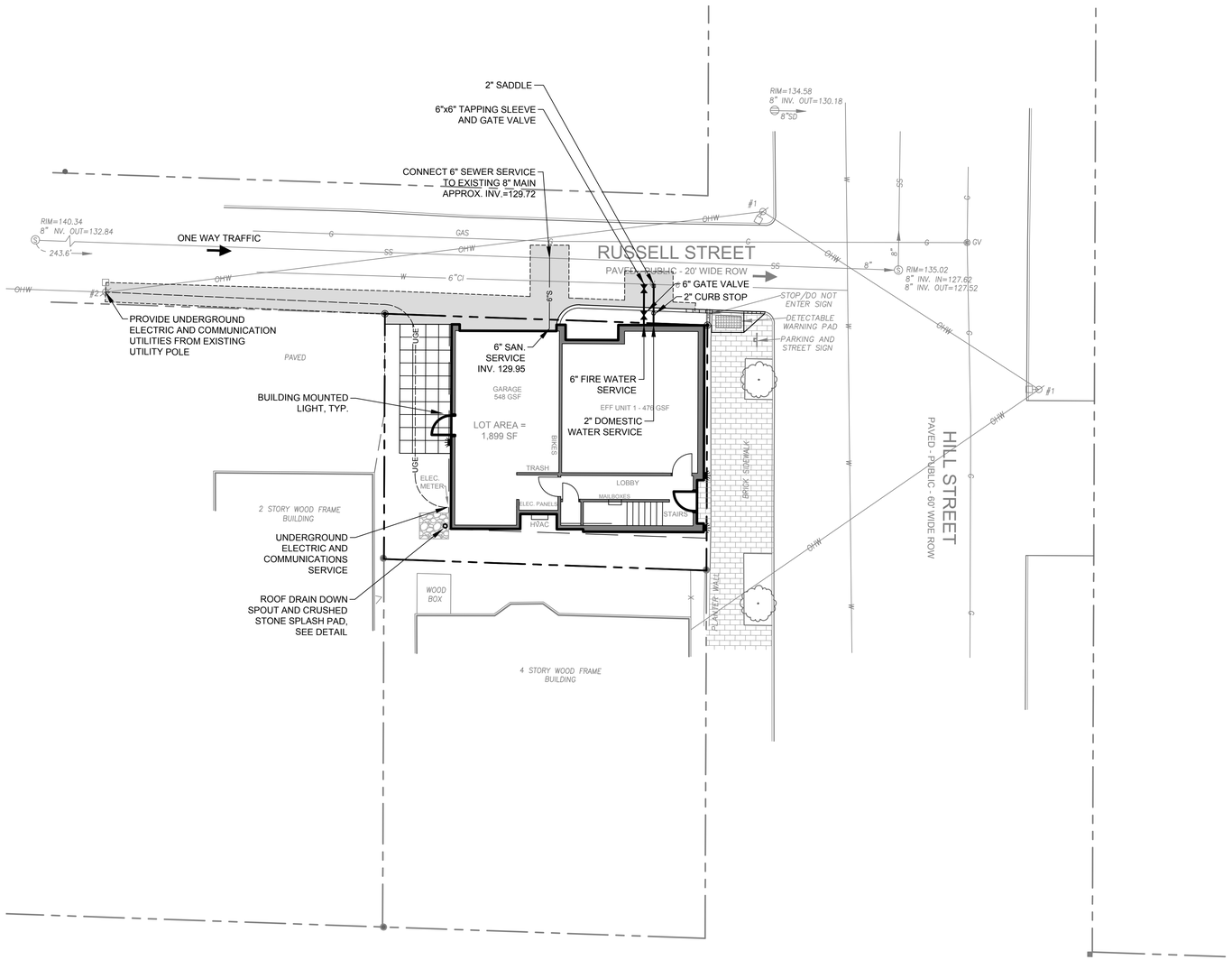
NO.	DATE	REVISIONS	APP'D BY
1	3-16-2018	SUBMITTED TO PLANNING BOARD FOR APPROVAL	MTW

TERRADYN CONSULTANTS, LLC
P.O. BOX 339
111 ELDERBERRY LANE
NEW GLOUCESTER, ME 04260
565 CONGRESS STREET
SUITE 310
PORTLAND, ME 04102
OFFICE: (207) 926-5111 FAX: (207) 221-1317
www.terradynconsultants.com
Civil Engineering - Land Planning - Stormwater Design - Environmental Permitting

SHEET DESCRIPTION
4 RUSSELL STREET
4 RUSSELL STREET
PORTLAND, ME 04102
EROSION & SEDIMENT CONTROL NOTES

PREPARED FOR
NEW DAY FARM, LLC
156 SHERIDAN STREET, UNIT 3A
PORTLAND, ME 04101

DATE:	2/6/2018
SCALE:	N.T.S.
DESIGNED:	ARF
JOB NO:	1743
FILE: 1704-DETAILS.DWG	
SHEET	C-4.1



GRAPHIC SCALE

10 0 5 10 20 40

(IN FEET)
1 inch = 10 ft.

PRELIMINARY - NOT FOR CONSTRUCTION

STATE OF MAINE
MICHAEL E. TADEMA-WIELANDT
REGISTERED PROFESSIONAL ENGINEER

P.E.: MICHAEL E. TADEMA-WIELANDT
DATE: 7-11-2018

NO.	DATE	REVISIONS	APP'D BY
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565 CONGRESS STREET
SUITE 310
PORTLAND, ME 04102

SHEET DESCRIPTION
4 RUSSELL STREET
4 RUSSELL STREET
PORTLAND, ME 04102
UTILITY PLAN

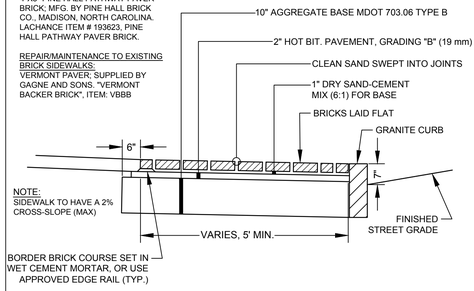
PREPARED FOR
NEW DAY FARM, LLC
156 SHERIDAN STREET, UNIT 3A
PORTLAND, ME 04101

DATE:	2/6/2018
SCALE:	1"=10'
DESIGNED:	ARF
JOB NO:	1743
FILE:	1743-B.DWG
SHEET	C-5.0

BRICKS TO BE USED:

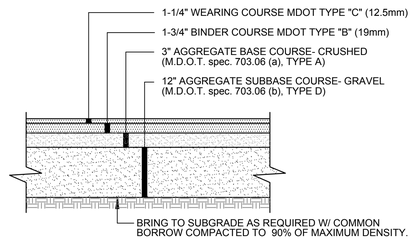
NEW CONSTRUCTION:
4"X8" PINE HALL PATHWAY PAVER BRICK, MFG. BY PINE HALL BRICK CO., MADISON, NORTH CAROLINA. LACHANCE ITEM # 193623, PINE HALL PATHWAY PAVER BRICK.

REPAIR/MAINTENANCE TO EXISTING BRICK SIDEWALKS:
VERMONT PAVER; SUPPLIED BY GAGNE AND SONS. "VERMONT BACKER BRICK", ITEM: VBBB



BRICK SIDEWALK WITH BITUMINOUS BASE

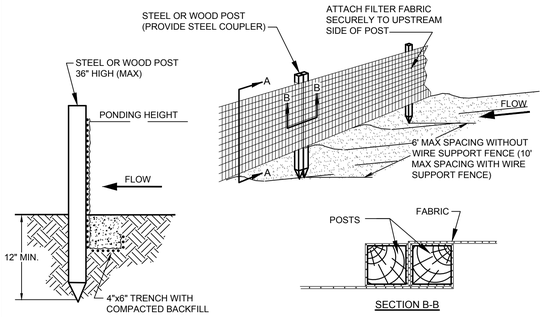
NOT TO SCALE



NOTES:
1. MDOT TYPE D AGGREGATE GRADATION SHALL BE MODIFIED FOR A MAXIMUM 4" STONE AND LIMIT #200 SIEVE TO 5% PASSING.

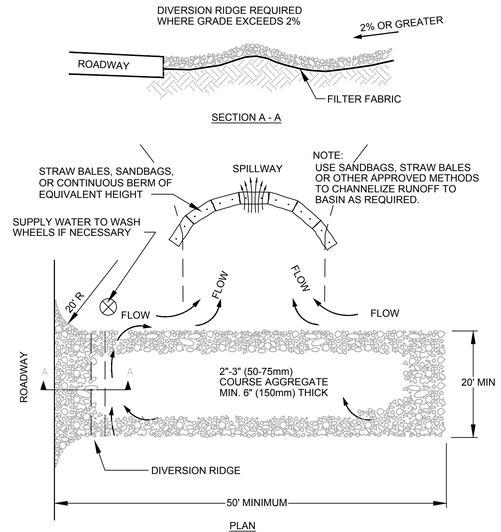
TYP. DRIVEWAY PAVEMENT SECTION

NOT TO SCALE



SILT FENCE

NOT TO SCALE



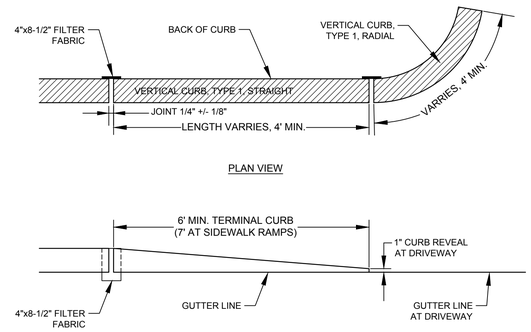
NOTES:
1. THE ENTRANCE SHALL BE MAINTAINED IN A CONDITION THAT WILL PREVENT TRACKING OR FLOWING OF SEDIMENT ONTO PUBLIC RIGHT-OF-WAYS. THIS MAY REQUIRE TOP DRESSING, REPAIR AND/OR CLEAN OUT OF ANY MEASURES USED TO TRAP SEDIMENT.

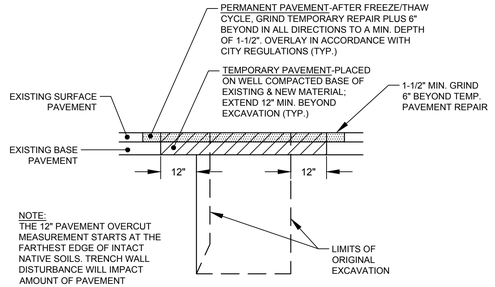
2. WHEN NECESSARY, WHEELS SHALL BE CLEANED PRIOR TO ENTRANCE ONTO PUBLIC RIGHT-OF-WAY.

3. 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.

STABILIZED CONSTRUCTION ENTRANCE

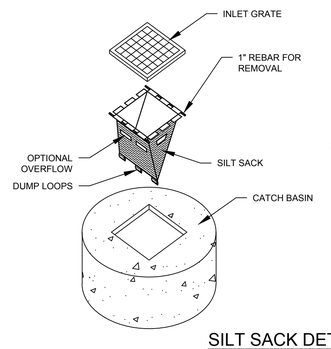
NOT TO SCALE





TYP. EXCAVATION IN CITY RIGHT OF WAY

NOT TO SCALE

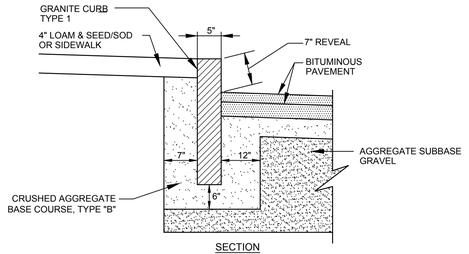


NOTES:
1. SILT SACKS TO BE INSTALLED IN ALL CATCH BASINS RECEIVING RUNOFF FROM DISTURBED AREA

2. SILT SACK TO BE MAINTAINED UNTIL TRIBUTARY ARE IS FULLY STABILIZED

SILT SACK DETAIL

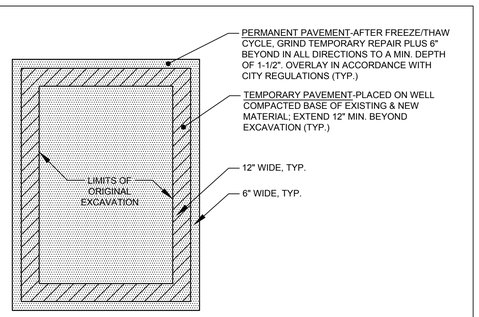
NOT TO SCALE



NOTES:
1. MIN. LENGTH OF STRAIGHT CURB STONES: 4', MAX. LENGTH: 8'
2. CIRCULAR CURB REQ. FOR RADIUS LESS THAN 50'
3. BASE GRAVEL SHALL BE COMPACTED TO A FIRM EVEN SURFACE PRIOR TO SETTING OF CURB.

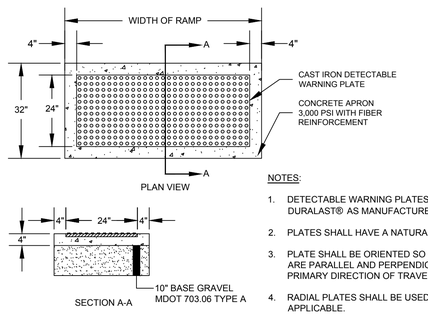
VERTICAL GRANITE CURB

NOT TO SCALE



PLAN VIEW OF MINOR EXCAVATION PAVEMENT REPAIR

NOT TO SCALE

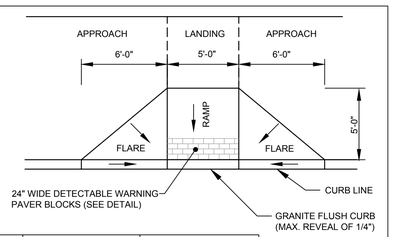


NOTES:
1. DETECTABLE WARNING PLATES TO BE DURALAST® AS MANUFACTURED BY EJ.
2. PLATES SHALL HAVE A NATURAL FINISH
3. PLATE SHALL BE ORIENTED SO THAT THE DOMES ARE PARALLEL AND PERPENDICULAR TO THE PRIMARY DIRECTION OF TRAVEL
4. RADIAL PLATES SHALL BE USED WHERE APPLICABLE.

DETECTABLE WARNING PLATE DETAIL

NOT TO SCALE

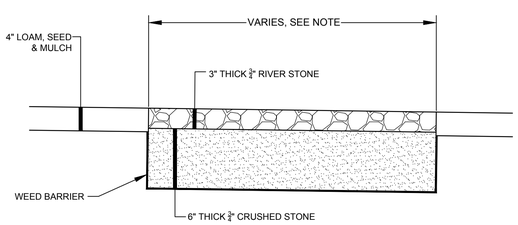
NOTES:
1. RAMPS SHALL BE CONSTRUCTED IN ACCORDANCE WITH THE AMERICANS WITH DISABILITIES ACT (ADA).
2. ALL RAMPS SHALL HAVE DETECTABLE WARNINGS THE FULL DEPTH AND WIDTH OF THE RAMP PER SECTION 4.29 OF THE ADA.
3. A TACTILE WARNING STRIP IS REQUIRED WHERE RAMP ABUTS AN AREA USED BY VEHICLES.



DESIGN ELEMENT	SLOPE IN DIRECTION OF TRAVEL	CROSS SLOPE
APPROACH	8.33% MAXIMUM	2%
LANDING	2%	2%
RAMP	8.33% MAXIMUM	MATCH STREET GRADE
FLARE	10% MAXIMUM AT CURB	-
SIDEWALK	MATCH STREET GRADE	2%

TYPICAL HANDICAP RAMP

NOT TO SCALE



STONE AREA NOTE:
STONE SPLASH PAD: DIMENSIONS 4' x 4'
STONE AREA SURROUNDING PATIO: EXTENTS AS SHOWN ON LANDSCAPE PLAN

STONE SITE AREAS

NOT TO SCALE

PRELIMINARY - NOT FOR CONSTRUCTION

STATE OF MAINE
MICHAEL E. TADEMA-WIELANDT
LICENSED PROFESSIONAL ENGINEER

P.E.: MICHAEL E. TADEMA-WIELANDT
DATE: 6-8-2018

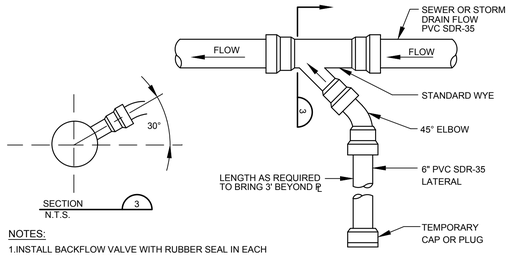
NO.	DATE	REVISIONS	APP'D BY
1	3-16-2018	SUBMITTED TO PLANNING BOARD FOR APPROVAL	MTW
2	6-8-2018	REVISED PER STAFF COMMENTS AND RE-SUBMITTED	MTW

TERRADYN CONSULTANTS, LLC
Civil Engineering - Land Planning - Stormwater Design - Environmental Permitting
P.O. BOX 339
111 ELDERBERRY LANE
NEW GLOUCESTER, ME 04260
OFFICE: (207) 926-5111 FAX: (207) 221-1317
www.terradynconsultants.com
565 CONGRESS STREET
SUITE 310
PORTLAND, ME 04102

SHEET DESCRIPTION
4 RUSSELL STREET
4 RUSSELL STREET
PORTLAND, ME 04102
SITE & DRAINAGE DETAILS

PREPARED FOR:
NEW DAY FARM, LLC
156 SHERIDAN STREET, UNIT 3A
PORTLAND, ME 04101

DATE:	2/6/2018
SCALE:	N.T.S.
DESIGNED:	ARF
JOB NO:	1743
FILE: 1743-DETAILS.DWG	
SHEET	C-6.0



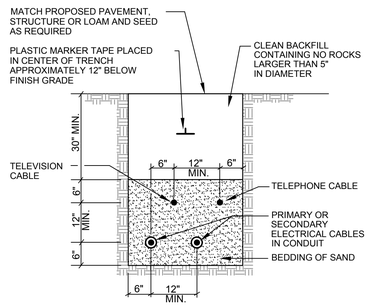
NOTES:

1.INSTALL BACKFLOW VALVE WITH RUBBER SEAL IN EACH FOUNDATION DRAIN SERVICE.

2. IF SUMP PUMP IS UTILIZED INSTALL CHECK VALVE AT SUMP PUMP.

SEWER / FOUNDATION DRAIN SERVICE CONNECTION

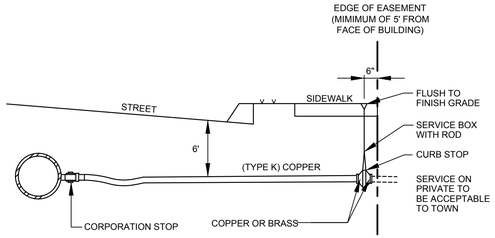
NOT TO SCALE



CABLES TO BE ENCASED IN SCHEDULE 40 PVC CONDUIT WHEN RUN BENEATH PAVED AREAS.

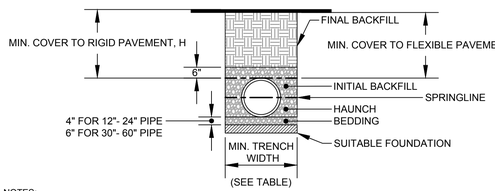
TYPICAL UNDERGROUND CABLE INSTALLATION

NOT TO SCALE



TYPICAL WATER SERVICE CONNECTION

NOT TO SCALE



NOTES:

1. ALL PIPE SYSTEMS SHALL BE INSTALLED IN ACCORDANCE WITH ASTM D2321, "STANDARD PRACTICE FOR UNDERGROUND INSTALLATION OF THERMOPLASTIC PIPE FOR SEWERS AND OTHER GRAVITY FLOW APPLICATIONS", LATEST ADDITION

2. MEASURES SHOULD BE TAKEN TO PREVENT MIGRATION OF NATIVE FINES INTO BACKFILL MATERIAL, WHEN REQUIRED.

3. FOUNDATION: WHERE THE TRENCH BOTTOM IS UNSTABLE, THE CONTRACTOR SHALL EXCAVATE TO A DEPTH REQUIRED BY THE ENGINEER AND REPLACE WITH SUITABLE MATERIAL AS SPECIFIED BY THE ENGINEER. AS AN ALTERNATIVE AND AT THE DISCRETION OF THE DESIGN ENGINEER, THE TRENCH BOTTOM MAY BE STABILIZED USING A GEOTEXTILE MATERIAL.

4. BEDDING: SUITABLE MATERIAL SHALL BE CLASS I, II OR III. THE CONTRACTOR SHALL PROVIDE DOCUMENTATION FOR MATERIAL SPECIFICATION TO ENGINEER. UNLESS OTHERWISE NOTED BY THE ENGINEER, MINIMUM BEDDING THICKNESS SHALL BE 4" (100mm) FOR 4"-24" (100mm-600mm); 6" (150mm) FOR 30"-60" (750mm-900mm).

5. INITIAL BACKFILL: SUITABLE MATERIAL SHALL BE CLASS I, II OR III IN THE PIPE ZONE EXTENDING NOT LESS THAN 6" ABOVE CROWN OF PIPE. THE CONTRACTOR SHALL PROVIDE DOCUMENTATION FOR MATERIAL SPECIFICATION TO ENGINEER. MATERIAL SHALL BE INSTALLED AS REQUIRED IN ASTM D2321, LATEST EDITION.

6. MINIMUM COVER: MINIMUM COVER, H, IN NON-TRAFFIC APPLICATIONS (GRASS OR LANDSCAPE AREAS) IS 12" FROM THE TOP OF PIPE TO GROUND SURFACE. ADDITIONAL COVER MAY BE REQUIRED TO PREVENT FLOATION. FOR TRAFFIC APPLICATIONS, MINIMUM COVER, H, IS 12" UP TO 48" DIAMETER PIPE AND 24" OF COVER FOR 54"-60" DIAMETER PIPE, MEASURED FROM TOP OF PIPE TO BOTTOM OF FLEXIBLE PAVEMENT OR TO TOP OF RIGID PAVEMENT.

RECOMMENDED MINIMUM TRENCH WIDTHS

PIPE DIAM.	MIN. TRENCH WIDTH
4"	21"
6"	23"
8"	26"
10"	28"
12"	30"
15"	34"
18"	39"
24"	48"
30"	56"
36"	64"
42"	72"
48"	80"
54"	88"
60"	96"

MINIMUM RECOMMENDED COVER BASED ON VECHICLE LOADING CONDITIONS

PIPE DIAM.	SURFACE LIVE LOADING CONDITION	
	H-25	HEAVY CONSTRUCTION (75T AXLE LOAD) *
12" - 48"	12"	48"
54" - 60"	24"	60"

* VEHICLES IN EXCESS OF 75T MAY REQUIRE ADDITIONAL COVER

7. INSULATION: RIGID INSULATION SHALL BE PROVIDED FOR PIPES WITH LESS THAN 4' OF COVER IN ACCORDANCE WITH THE FOLLOWING TABLE:

COVER OVER PIPE	INSULATION THICKNESS
12" - 24"	3"
24" - 36"	2"
36" - 48"	1"
48"+	NONE

TYPICAL TRENCH DETAIL

NOT TO SCALE

PRELIMINARY - NOT FOR CONSTRUCTION

STATE OF MAINE
MICHAEL E. TADEMA-WIELANDT
LICENSED PROFESSIONAL ENGINEER

P.E.: MICHAEL E. TADEMA-WIELANDT

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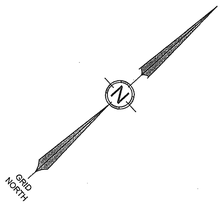
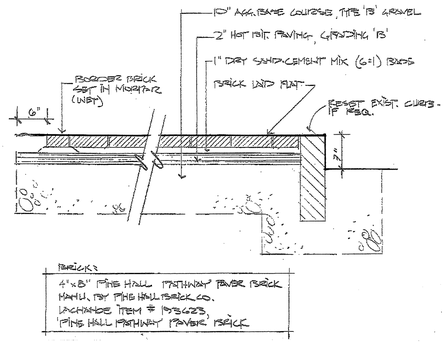
PORTLAND, ME 04102
UTILITY DETAILS

PREPARED FOR
NEW DAY FARM, LLC
158 SHERIDAN STREET, UNIT 3A
PORTLAND, ME 04101

DATE:	2/6/2018
SCALE:	N.T.S.
DESIGNED:	ARF
JOB NO:	1743
FILE: 1704-DETAILS.DWG	

SHEET C-6.1

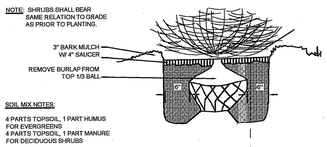




BRICK PAVING DETAIL

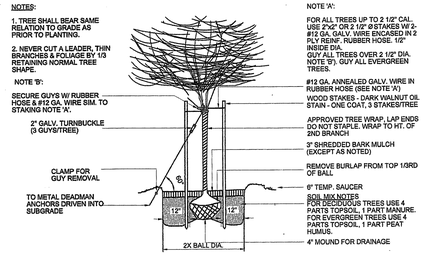
1 / L-1

CITY OF PORTLAND TYP DETAIL FOR WALK RECONSTRUCTION



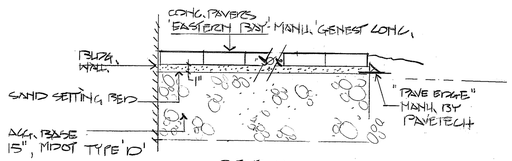
SHRUB PLANTING DETAIL

2 / L-1



TREE PLANTING DETAIL

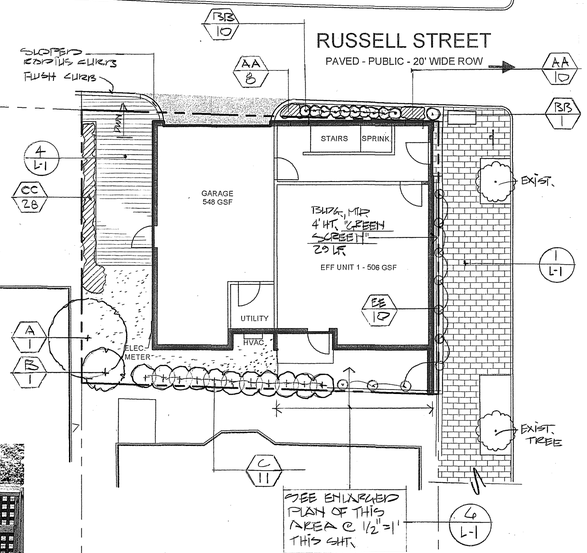
3 / L-1



CONCRETE PAVER DETAIL

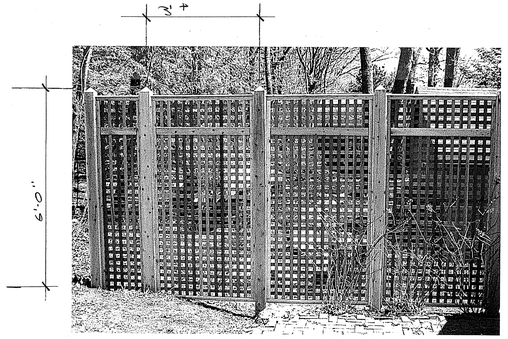
4 / L-1

NTS



SITE PLAN

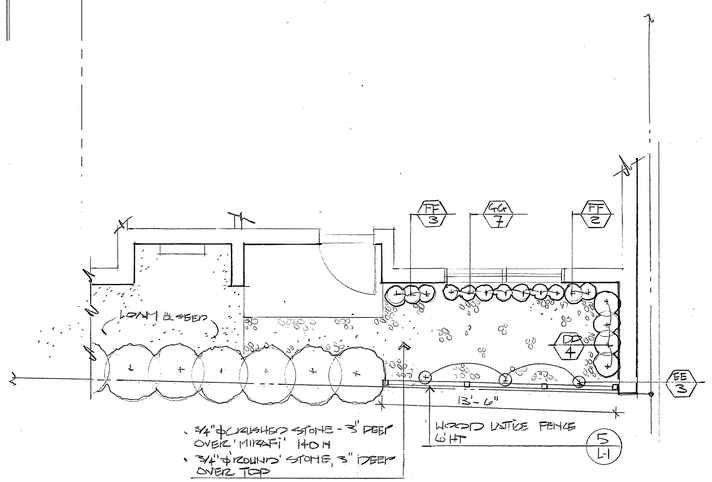
SCALE : 1" = 10'-0"



WOOD LATTICE PANEL fence

5 / L-1

NTS



ENLARGED SITE DETAIL PLAN

6 / L-1 — 1/2"=1'-0"

GRAPHIC SCALE

10 0 5 10 20 40

(IN FEET)
1 inch = 10 ft.

PLANT LIST

TREES & SHRUBS

KEY	COMMON & BOTANICAL NAME	SIZE	ROOT	QTY	NOTES
A	JAPANESE STEWARTIA S. PSEUDOCAMELLIA	1 ½ " Cal.	B&B	1	
B	SHASTA VIBURNUM V. PLICATUM Var. TOMENTOSUM 'SHASTA'	3'-4' HT.	B&B	1	
C	SHASTA VIBURNUM V.PLICATUM VAR. Tomentosum 'Summer Snowflake'	#5	B&B	11	

PERENNIALS & VINES

			QTY	NOTES
AA	AJUGA REPTANS ' BLACK SCALLOP'	-------	18	
BB	SWITCH GRASS PANICUM VIRGATUM ' Shenandoah'	-------	11	"
CC	DAYLILY VAR. HEMEROCALLIS	PTD	28	BLOOM IN JULY THRU SEPT 18" O.C.
DD	HOSTA 'BIG DADDY'	-------	4	
EE	CLIMBING HYDRANGEA H. ANOMALA PETIOLARIS	CONT.	10	
FF	LADY FERN FILIX-FEMINA	-------	5	
GG	MAIDEN HAIR FERN ADIANTUM PEDATUM	-------	7	

PLANTING NOTES

1. The contractor shall supply all plants in quantities sufficient to complete the work shown on plan. Any discrepancies between quantities shown on plant list and those required by this drawing shall not entitle contractor to additional remuneration.
2. Any plant substitutions must be approved by the owner.
3. Any tree or shrub which comes over or under any utility shall be relocated on the site by the landscape architect.
4. All lawn areas to have 6" of topsoil unless noted otherwise.
5. All trees and shrubs shall be placed in the designated areas as shown on the plan and before planting shall be approved by the landscape architect.
6. The contractor shall relocate any tree or shrub as directed by the landscape architect.
7. All plant material installed shall meet the specifications of the American Standard for Nursery Stock (latest edition) as set forth by the American Association of Nurserymen.
8. The landscape contractor shall replace or repair to original condition any and all utilities, paving, curbing, etc., damaged as a result of their operations at no additional cost to the owner.

PRELIMINARY - NOT FOR CONSTRUCTION

Anthony Muench Landscape Architect
94 Commercial Street Portland, Maine 04101 207.761.6621
amuench@maine.rr.com

REGISTERED LANDSCAPE ARCHITECT — ANTHONY MUENCH — No. 7 — 3-16-18 — State of Maine

DATE:

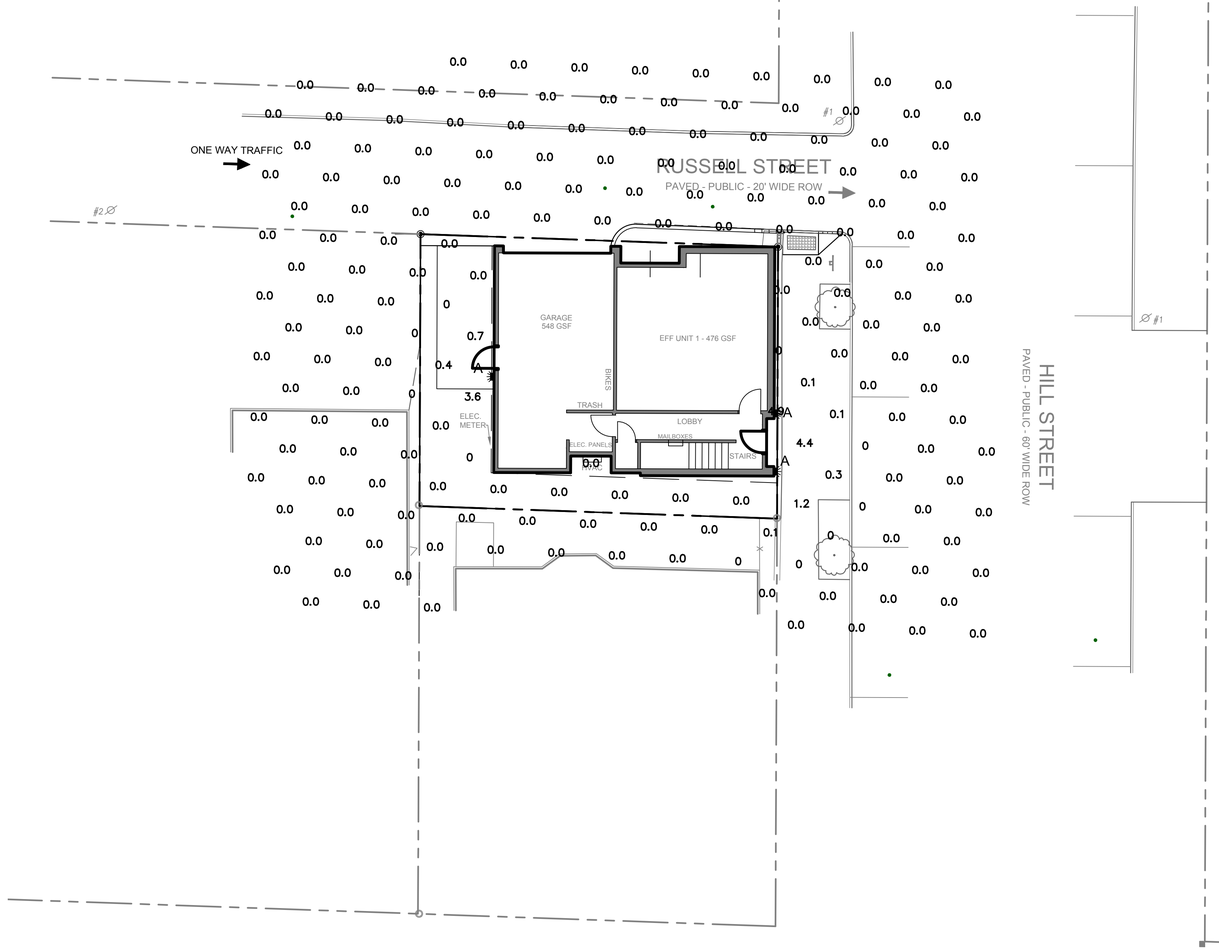
NO.	DATE	REVISIONS	BY
1	3-16-18	SUBMITTED TO PLANNING BOARD FOR APPROVAL	MTW

TERRADYN CONSULTANTS, LLC
Civil Engineering - Land Planning - Stormwater Design - Environmental Permitting
565 CONGRESS STREET SUITE 310 PORTLAND, ME 04102
P.O. BOX 339 115 FERNBERRY LANE NEW GLOUCESTER, ME 04260
OFFICE: (207) 926-5111 FAX: (207) 221-1317
www.terradynconsultants.com

SHEET DESCRIPTION
4 RUSSELL STREET
4 RUSSELL STREET PORTLAND, ME 04102
LANDSCAPE PLAN

PREPARED FOR
NEW DAY FARM, LLC
156 SHERIDAN STREET, UNIT 3A PORTLAND, ME 04101

DATE:	2/6/2018
SCALE:	1"=10'
DESIGNED:	ARF
JOB NO:	1743
FILE:	1743 BASE.DWG
SHEET	L-1



LIGHT FIXTURE TABLE						
LABEL	LIGHT FIXTURE	MANUFACTURER	MANUFACTURERS ID	NUMBER OF LIGHTS	MOUNTING HEIGHT	MOUNTING LOCATION
A	TEGEL 12 WALL SCONCE	TECH LIGHTING	700WTEG-830-12-N-C-H-DO-UNV	3	6'	WALL

NOTES:
1. LIGHTING PLAN PREPARED USING DESIGN MASTER PHOTOMETRICS SOFTWARE
2. ONLY PROPOSED LIGHTING FIXTURES ARE MODELED
3. DEPRECIATION FACTOR FOR LED IS 0.90
4. SEE ARCHITECTURAL PLANS FOR BUILDING MOUNTED LIGHT LOCATIONS.

GRAPHIC SCALE

10 0 5 10 20 40

(IN FEET)
1 inch = 10 ft.

PRELIMINARY - NOT FOR CONSTRUCTION

TEGEL 12 WALL SCONCE

TECH LIGHTING

Understated modern design characterizes Tegel outdoor LED wall sconces. Providing well-controlled up and down lighting, or down light only, these wall sconces provide accent and ambient illumination. The option of three finish choices ensures this design profile successfully blends with all architectural aesthetics.

High quality LM80-tested LEDs
for consistent long-life performance and color

Outstanding protection against the elements:
- Marine-grade powder coat finishes
- Stainless Steel mounting hardware
- Impact-resistant, UV stabilized frosted acrylic lensing

Up light and down light options, with 10° and 36° beam spread options

SPECIFICATIONS

DELIVERED LUMENS	2346 Up-Downlight / 1232 Downlight
WATTS	29.2 Up-Downlight / 15.6 Downlight
VOLTAGE	Universal 120V-277V, with integral transient 2.5kV surge protection (driver)
DIMMING	0-10, ELV
LIGHT DISTRIBUTION	Symmetric Up/Down Lighting, or Down Only
MOUNTING OPTIONS	Wall
OPTICS	10° and 36°
PERFORMANCE OPTIONS	Photocontrol / In-Line Fuse / Surge Protector
CCT	3000K or 4000K
CRI	80+
COLOR BINNING	3 Step
BUG RATING	Up-Downlight B1-U5-G0 / Downlight B1-U0-G0
DARK SKY	Compliant (Downlight)
WET LISTED	IP65
GENERAL LISTING	ETL
CALIFORNIA TITLE 24	Can be used to comply with CEC 2016 Title 24 Part 6 for outdoor use. Registration with CEC Appliance Database not required.
START TEMP	-20°C
FIELD SERVICEABLE LED	Yes
CONSTRUCTION	Aluminum
HARDWARE	Stainless Steel
FINISH	Marine Grade Powder Coat
LED LIFETIME	L70, 70,000 Hours
WARRANTY*	5 Years

* Visit techlighting.com for specific warranty limitations and details.

TEGEL 12
shown in bronze

TEGEL 12
shown in charcoal

TEGEL 12
shown in gray

ORDERING INFORMATION

700WTEG CRI/CCT | LENGTH | BEAM SPREAD* | LENS | FINISH | FUNCTION | VOLTAGE | OPTIONS

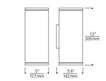
- CRI/CCT: 830 80 CRI, 3000K; 840 80 CRI, 4000K
- LENGTH: 12 12"
- BEAM SPREAD*: N 10° NARROW; W 36° WIDE; NN 10° UP AND DOWN; WW 36° UP AND DOWN; NW 10° AND 36°
- LENS: C CLEAR
- FINISH: Z BRONZE; N CHARCOAL; Y GRAY
- FUNCTION: DO DOWNLIGHT ONLY; UO UPLIGHT DOWNLIGHT
- VOLTAGE: UNV 120V-277V
- OPTIONS: NONE; PC BUTTON PHOTOCONTROL; LF IN-LINE FUSE; SP BUTTON PHOTOCONTROL & IN-LINE FUSE; PCLF BUTTON PHOTOCONTROL & SURGE PROTECTION; PCSP IN-LINE FUSE & SURGE PROTECTION; LFSP BUTTON PHOTOCONTROL, IN-LINE FUSE & SURGE PROTECTION; PCLFSP

*N, W = DOWNLIGHT ONLY (DO); NN, WW, NW = UP AND DOWNLIGHT ONLY (UO)

techlighting.com

TEGEL 12 WALL SCONCE

TECH LIGHTING



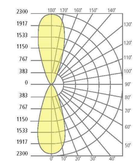
Tegel 12

PHOTOMETRICS*

*For latest photometrics, please visit www.techlighting.com/OUTDOOR

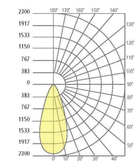
TEGEL 12 UP/DOWN

Total Lumen Output:	2346
Total Power:	29.2
Luminaire Efficacy:	80.3
Color Temp:	3000K
CRI:	80+
BUG Rating:	B1-U5-G0



TEGEL 12 DOWN

Total Lumen Output:	1232
Total Power:	15.6
Luminaire Efficacy:	77.7
Color Temp:	3000K
CRI:	80+
BUG Rating:	B1-U0-G0



PROJECT INFO

FIXTURE TYPE & QUANTITY	JOB NAME & INFO	NOTES

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TECH LIGHTING
GENERATION BRANDS
7400 Linder Avenue, Skokie, Illinois 60077
T 847.410.4400 F 847.410.4500

techlighting.com

STATE OF MAINE
MICHAEL E. TADEMA-WIELANDT
LICENSED PROFESSIONAL ENGINEER

P.E.: MICHAEL E. TADEMA-WIELANDT
DATE: 7-11-2018

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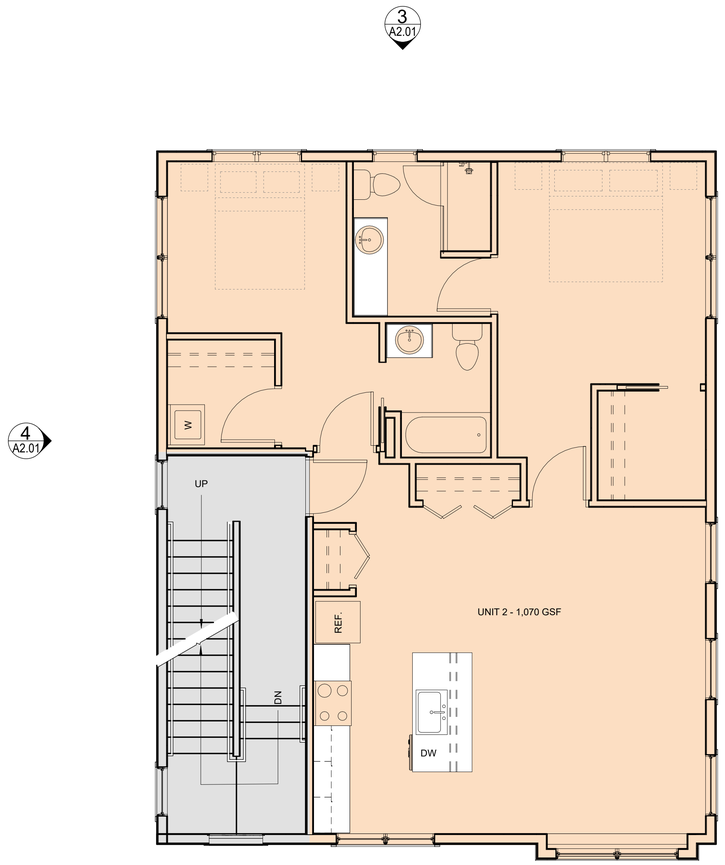
DATE:	2/6/2018
SCALE:	1"=10'
DESIGNED:	ARF
JOB NO:	1743
FILE:	1743-Photometrics.DWG
SHEET	P-1.0

AREA TOTALS	GROSS	NET
FIRST FLOOR	1208 SF	1071 SF
UNIT	494 SF	443 SF
GARAGE	523 SF	469 SF
CIRCULATION	192 SF	159 SF
SECOND FLOOR	1222 SF	1125 SF
UNIT	1035 SF	962 SF
CIRCULATION	186 SF	163 SF
THIRD FLOOR	1222 SF	1172 SF
UNIT	1099 SF	1026 SF
CIRCULATION	123 SF	100 SF
MEZZANINE	514 SF	323 SF
TOTAL	4166 SF	



2 | 2ND FLOOR
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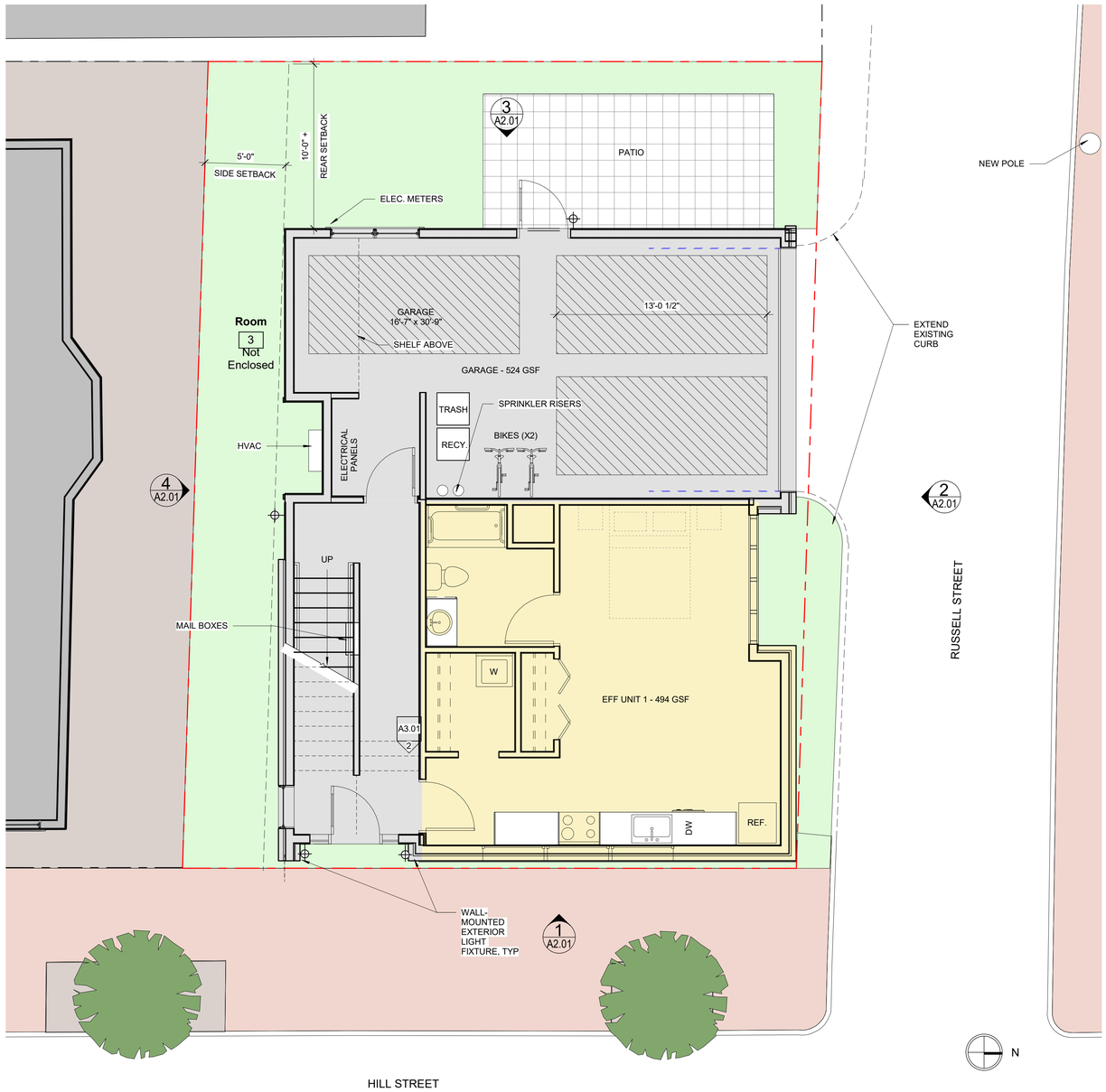


1 | 1ST FLOOR
1/4" = 1'-0"

Prepared For:

Consultant:

Architect:
ARCHETYPE
architects
48 Union Wharf Portland, Maine 04101
(207) 772-6022 ARCHETYPE@ARCHETYPEPA.COM

Project:
4 RUSSELL ST
PORTLAND, ME 04102

Revisions:

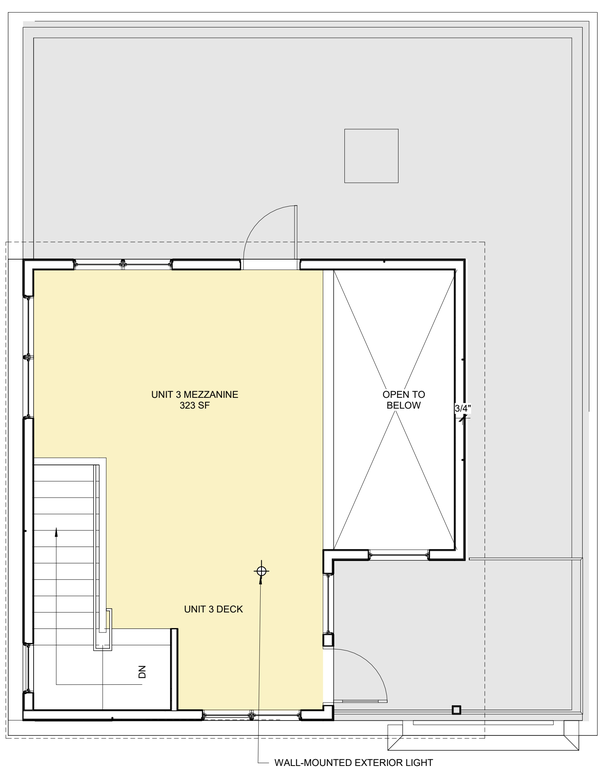
Scale: 1/4" = 1'-0"

Date: MAY 22, 2018

FIRST AND SECOND FLOOR PLANS

A1.01

AREA TOTALS	GROSS	NET
FIRST FLOOR	1208 SF	1071 SF
UNIT	494 SF	443 SF
GARAGE	523 SF	469 SF
CIRCULATION	192 SF	159 SF
SECOND FLOOR	1222 SF	1125 SF
UNIT	1035 SF	962 SF
CIRCULATION	186 SF	163 SF
THIRD FLOOR	1222 SF	1172 SF
UNIT	1099 SF	1026 SF
CIRCULATION	123 SF	100 SF
MEZZANINE	514 SF	323 SF
TOTAL	4166 SF	



2 MEZZANINE
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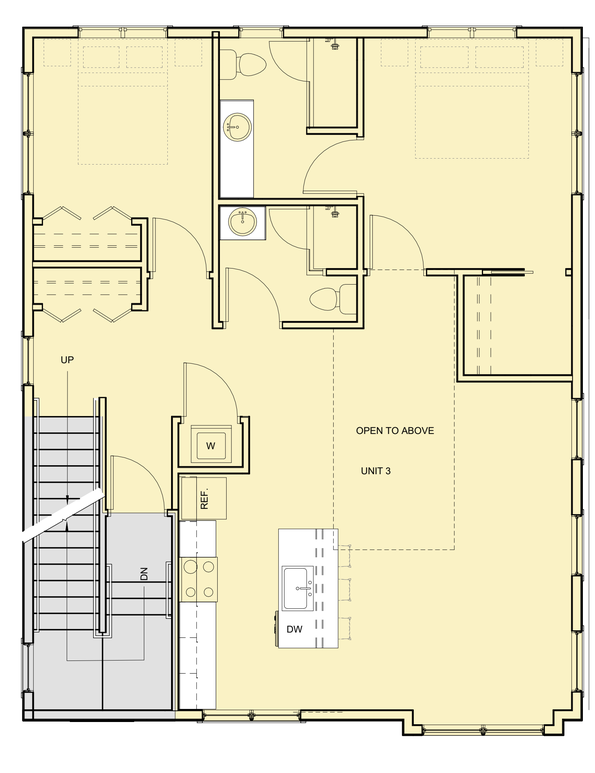

1 3RD FLOOR
1/4" = 1'-0"

Prepared For:

Address
City, State

Consultant:

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Revisions:

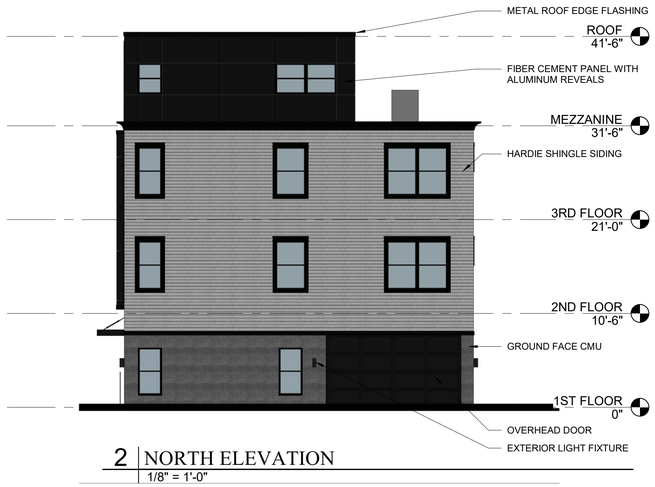
Scale: 1/4" = 1'-0"

Date: MAY 22, 2018

THIRD FLOOR AND
MEZZANINE PLANS

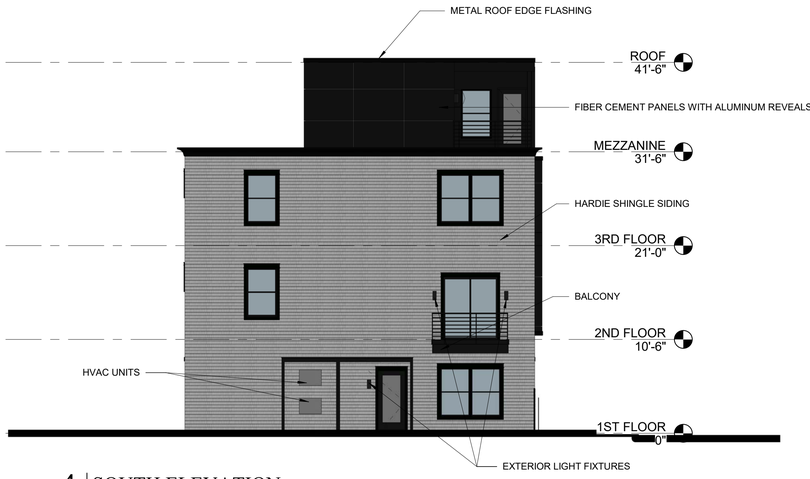
A1.02

1 EAST ELEVATION
1/8" = 1'-0"



2 NORTH ELEVATION
1/8" = 1'-0"

3 WEST ELEVATION
1/8" = 1'-0"



4 SOUTH ELEVATION
1/8" = 1'-0"

Prepared For:
Address
City, State

Consultant:

Architect:
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Project:
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PORTLAND, ME 04102

Revisions:

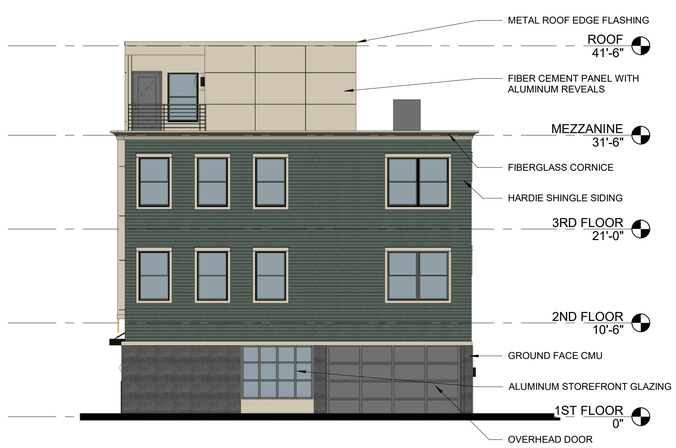
Scale: 1/8" = 1'-0"

Date: MAY 22, 2018

BUILDING ELEVATIONS

A2.01

1 EAST ELEVATION
1/8" = 1'-0"



2 NORTH ELEVATION
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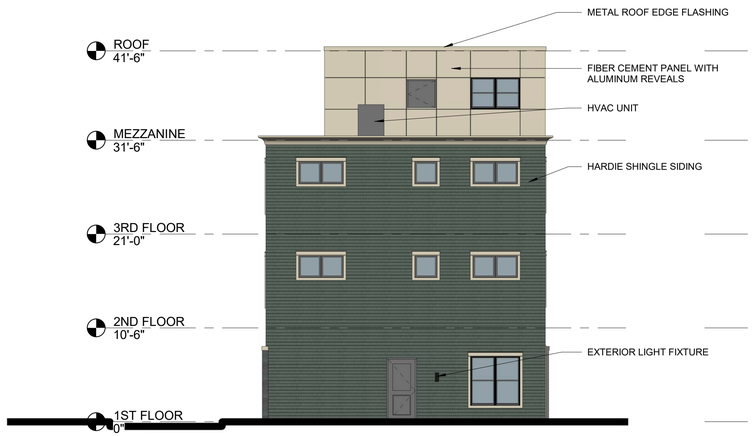

3 WEST ELEVATION
1/8" = 1'-0"

4 SOUTH ELEVATION
1/8" = 1'-0"

Prepared For:
Address
City, State

Consultant:

Architect:
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Project:
4 RUSSELL ST
PORTLAND, ME 04102

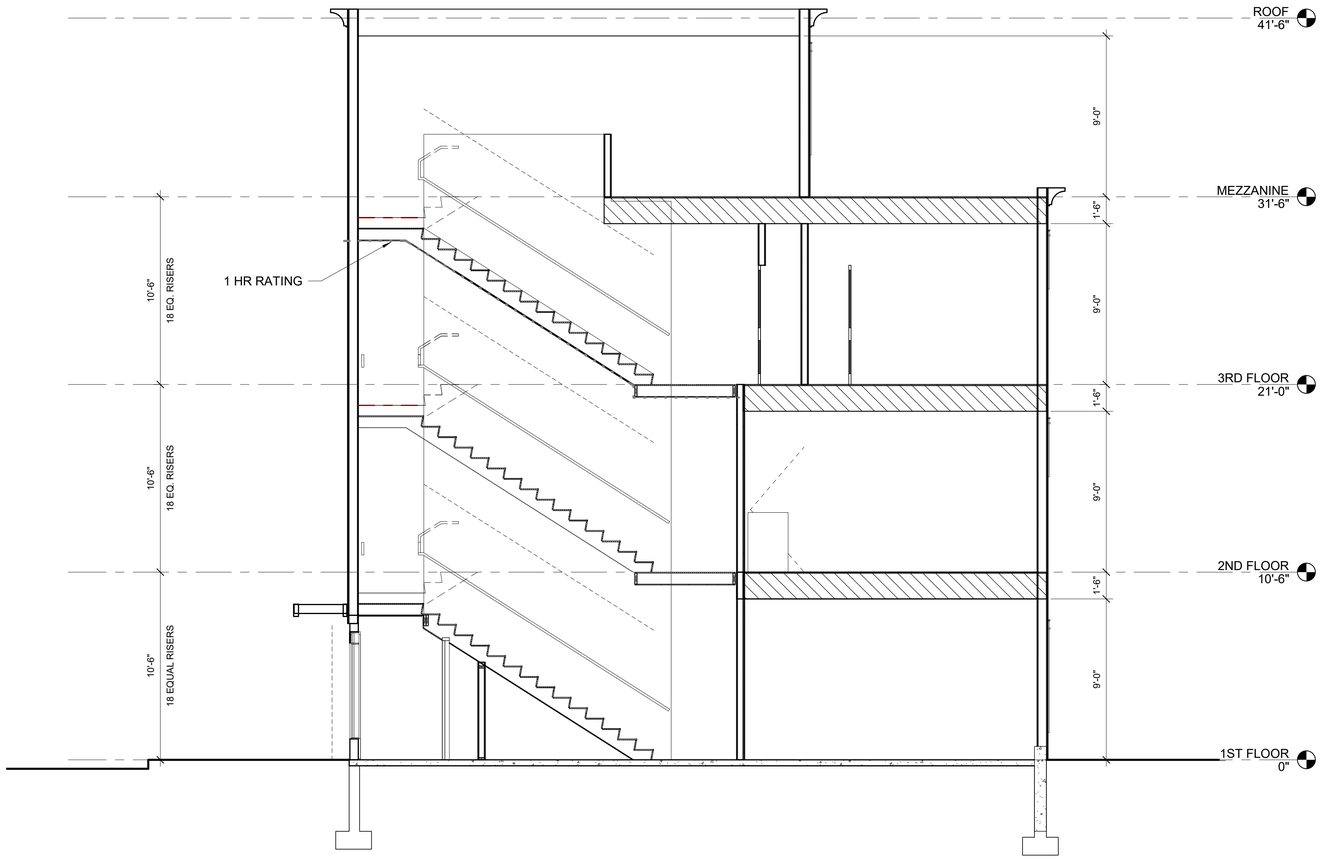
Revisions:

Scale: 1/8" = 1'-0"

Date: MAY 22, 2018

BUILDING ELEVATIONS

A2.01



1 | Section 1
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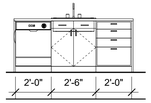
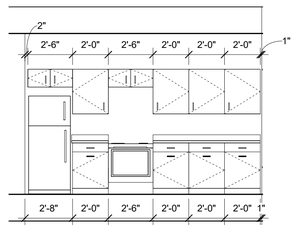
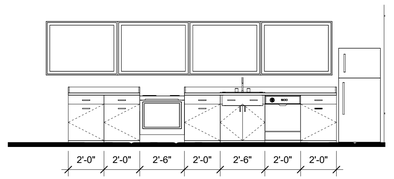


4 | SECOND/THIRD FLOOR KITCHEN ELEVATION B
1/4" = 1'-0"



3 | SECOND/THIRD FLOOR KITCHEN ELEVATION A
1/4" = 1'-0"



2 | FIRST FLOOR KITCHEN
1/4" = 1'-0"

Architect:
ARCHETYPE architects
48 Union Wharf Portland, Maine 04101
(207) 772-6022 ARCHETYPE@ARCHETYPEPA.COM

Consultant:

Prepared For:
Owner
Address
City, State

Project:
4 RUSSELL ST
PORTLAND, ME 04102

Revisions:

Scale: 1/4" = 1'-0"

Date: JANUARY 19

BUILDING SECTIONS

A3.01

PLANNING BOARD REPORT
PORTLAND, MAINE

Hotel Portland, Thompson's Point
7A Thompson's Point
Level III Site Plan
2017-241
Forefront Hoteliers, LLC, Applicant

Submitted to: Portland Planning Board: Public Hearing Date: July 17, 2018	Prepared by: Shukria Wiar, Planner Date: July 13, 2018

I. INTRODUCTION

Forefront Hoteliers, LLC, has requested a Level III site plan review for a construction of a multistory restaurant and hotel building with associated parking, utilities and stormwater management. The project includes the development of Lot 6 of the previously approved Forefront at Thompson's Point Subdivision Plan at Thompsons' Point. The hotel will be a 148 room, full service hotel. The total development area consists of 1.15 acres. The site's approved master development plan called for an educational development on this site but a hotel was always a part of the overall Thompson's Point master plan. A time line of the multiple reviews and approvals for this site is below, as background information.

Figure 1: Arial of Propose Site

This development is being reviewed by the Planning Board for compliance with the site plan standards. The project is also subject to the B-5 and B-5b Urban Commercial Business Zones standards in the City's Design Manual, which addresses shared infrastructure, the location of buildings to the street, and location of parking lots.

The Planning Board considered the preliminary submission at a workshop on March 22, 2018. The Board members supported the proposed location of the new building but noted there were a number of concerns listed below and staff has worked with the applicant to address these concerns. The applicant summarized the Board's comments and their responses to each comment. Below is an excerpt from the Applicant's staff comments response letter:

> Comment 1: A board member requested to see a night time rendering with downlighting as it might be seen from the highway.
>
> Applicant's Response: A night-time rendering has been prepared by Opechee Construction Design-Build Firm and enclosed in Attachment W.
>
> Comment 2: A board member requested to see an elevation/rendering of the easterly façade having some type of storefront level presence (restaurant/bar entrance, canopies over doorways, etc.).

Applicant's Response: An updated rendering has been prepared by Opechee Construction Design-Build Firm showing the easterly façade as it matches the most current draft floor plan and is enclosed in Attachment Plan 29.

Comment 3: Board members felt a modification to the westerly elevation would help provide a sense of arrival and added interest to the side of the building first seen from an approaching vehicle.

Applicant's Response: An updated rendering has been prepared by Opechee Construction Design-Build Firm showing the westerly façade improvements and is enclosed in Attachment D. The proposed painted graphic on the westerly façade will provide an improvement to its visual appearance as well as helpful wayfinding.

Staff Response: Caitlin Cameron, Urban Designer, states "...the Planning Board previously commented that the side façade facing the street should increase the amount of fenestration or other elements for legibility and wayfinding. No changes have been proposed to the building design other than the addition of signage on the side. Applicant addressed this in narrative response saying adding windows to the side elevation is not possible.

Comment 4: Board members requested a more detailed picture of how deliveries would work.

Applicant's Response: Delivery and Service areas for the hotel have been separated into smaller areas around the Thompson's Point Campus based on type of delivery. We believe this approach will provide more convenience for delivery vehicles and reduce the impact of deliveries for Hotel Portland and Brick South patrons. Designated "Commercial Loading Zones" will be signed and striped proximate to the destination of the anticipated deliverable. Site plan improvements for delivery and service vehicles are shown on the enclosed Plan Sheet C-3.0 and summarized in the list below.

Type 1 - Hotel Services Delivery Items (i.e. linen, large furniture delivery, pool/utility services, etc.)
Type 1 deliveries will occur on the westerly side of the building. The parallel parking stalls will be restriped with chevrons and signed for Commercial Vehicles Only. This location is proximate to the hotel service elevator and the back of house support staff offices and laundry room.

Type 2 - Trash/Recyclable Enclosure
Type 2 service will also occur on the westerly side of the building in the existing dumpster enclosure. This will be a shared service with the Brick South Event Venue. Smaller trash receptacles will be temporarily stored inside or in the space between Brick South and Hotel Portland east of the buildings

Type 3 - Food & Beverage Delivery
Type 3 deliveries will occur on the northerly side of the Brick South Venue in a re-configured area of the existing parking lot. This re-configured area will provide a 12' wide parallel parking stall with a length sized to accommodate two single-unit box trucks or one tractor trailer truck at a time. The sidewalk will be widened from 8 ft wide to 14 ft wide in this area. This "on-street" delivery location is the most proximate location to the proposed hotel and existing Brick South kitchen services with-out permitting vehicles into the pedestrian alley or courtyard space. This delivery area will function the same as on-street commercial zones in the downtown area.

Comment 5: Board members recommended a site wide wayfinding plan is explored.

Applicant's Response: The applicant is dedicated to improving wayfinding around the site as part of the ongoing TDM initiatives and at the request of the existing tenants and visitors alike; therefore, this issue is currently being addressed in collaboration with all the other users of Thompson's Point including but not limited to Children's Museum and Theatre of Maine, Brick North Tenants, and Portland Trails. The applicant proposes to have a campus wide way-finding plan available for staff review prior to the occupancy of the hotel.

Comment 6: A board member requested clarification to the amount of available parking on the panhandle.

Applicant's Response: The "Panhandle" is estimated to have the capacity for 325-400 vehicles depending on how much of the lot is actively managed. The applicant has given a notice of termination to Concord Coach Lines for the previously discussed parking lease. The termination of this lease will free all "Panhandle" parking spaces by 5/31/2019 and in advance of the hotel opening.

Comment 7: A board member requested the city review a coordinated construction sequencing plan between the CMTM and the Hotel.

Applicant's Response: The applicant has submitted a detailed preliminary construction management plan including an approximate schedule to complete based on a start date. In good faith the applicant is open to sharing a coordinated schedule to the extent practicable with the information available at the time of construction; however, the CMTM schedule is out of the hotel applicants control. The hotel and CMTM projects on Thompson's Point are located on a private road and outside of the public ROW; therefore, the project areas can be shut down to the public as the projects require. The applicant requests that this project is approved without condition because the construction management plan as submitted meets the ordinance.

Staff Response: Based on an email from Bo Kennedy, Applicant's Engineer, "construction on the CMTM, hotel, and CMTM Phase 1 (roadway) are anticipated to start mid-September 2018 after the summer concert series is complete. The roadway will be substantially complete this fall (2018) providing a complete circuitous route around the point and around the lots under construction as well as additional paved parking. Lot 6 (hotel) including ped alley and Lot 7 (CMTM) will be under construction for approximately 12 months (open fall 2019)".

Comment 8: A board member requested to see a plan or summary of the total number of bike racks current and anticipated on all of Thompson's Point.

Applicant's Response: Currently, the existing site substantially exceeds the minimum ordinance requirements for bike racks with a total of 52 spaces. As shown on page 19 of the updated TDM plan dated 03-30-2018 the site will have a minimum of 74 onsite bicycle spaces upon completion of the hotel and CMTM projects. It is noted that, this is a minimum number of spaces because tenants have elected to add additional racks for use by their employees which have not been accounted for in the statistics above.

Comment 9: A board member requested further examination of the potential use of Sewall Street in the TDM plan.

Applicant's Response: Suggestions for formalizing and enhancing existing uses with-in the Sewall Street ROW included in the recently updated TDM document comes as a result of feedback to our management and planning team from the general public and independent transportation consultant. The applicant is receptive to this feedback but will defer to city staff on its viability and implementation.

A total of 283 notices were sent to property owners within 500 feet of the site and a legal ad ran in the Portland Press Herald on July 9th and 10th, 2018.

Applicant: Chris Thompson, Forefront Hoteliers, LLC
Consultants: Bo Kennedy, P.E., Placemaker Partners, LLC; Keith A. Kelly, Architect – Opechee Associates; Charlie Marchese, Surveyor, Sebago Technics.

II. REQUIRED REVIEWS

Review	Applicable Standards
Site Plan	Section 14-526
Design Review	B-5 and B-5b Urban Commercial Business Zones Design Standards

III. PROJECT DATA

Existing Zoning	B-5
Existing Use	Vacant Lot
Proposed Use	Hotel and Restaurant
Parcel Size	1.15 acres (26.26 acres for Thompson's Point)

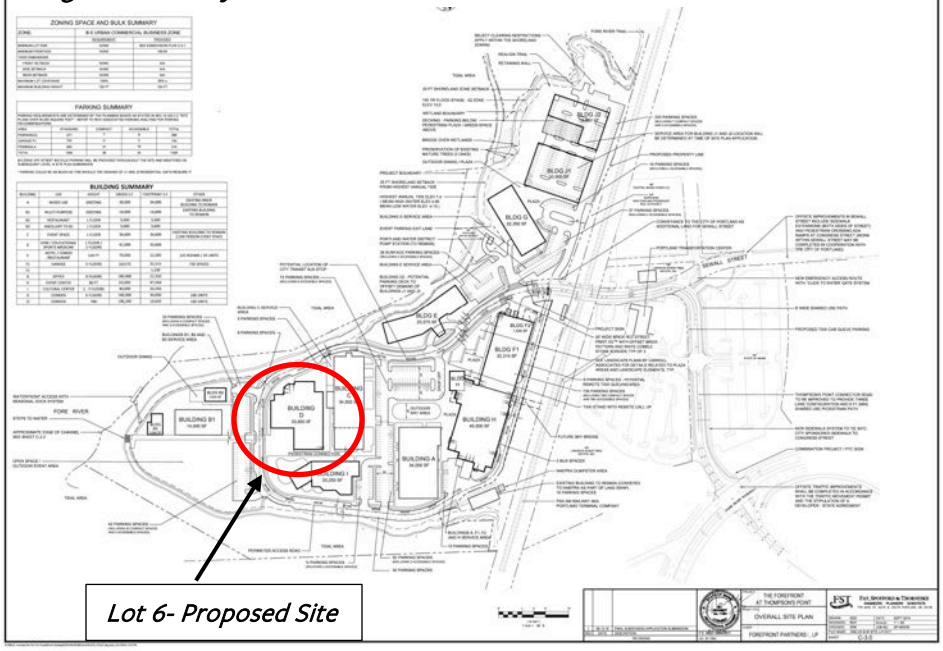
	Existing	Proposed	Net Change
Building Footprint	0 SF	19,000 SF	19,000 SF
Building Floor Area	0 SF	90,000 SF	90,000 SF
Impervious Surface Area	76,939 SF	63,124 SF	13,815 SF

Parking Spaces (on site) - Proposed Onsite - On the Proposed Loop Road - Per Zoning Requirement	 0 Unknown 0	 5 (1 Handicapped) 8 None Required	 5 8
Bicycle Parking Spaces	0	8	8
Estimated Cost of Project	$18 Million		

IV. BACKGROUND

Thompson's Point consists of 30+ acres immediately adjacent to the Portland Transportation Center, on a peninsula of land that extends into the Fore River. It has been a continuously occupied industrial site, and in recent years has begun its transition to a mixed-use destination, hosting events at the southern tip of the peninsula and securing new tenants to support the redevelopment of the property. Bound by railroad tracks to the north, surrounded by the Fore River on three sides, it is currently occupied by existing buildings, and a mixture of long term and temporary uses. The site also includes an extension of the Fore River trail. Zoned B-5 (urban commercial mixed-use zone), it is immediately adjacent to residential, industrial, business and resource protection zones. Its size, proximity to both the natural resource of the Fore River and the transit resources of the Portland Transportation Center, and its location at the intersection of a variety of urban contexts make this a unique development site in Portland.

Figure 2- January 2016 Amended Subdivision Plan



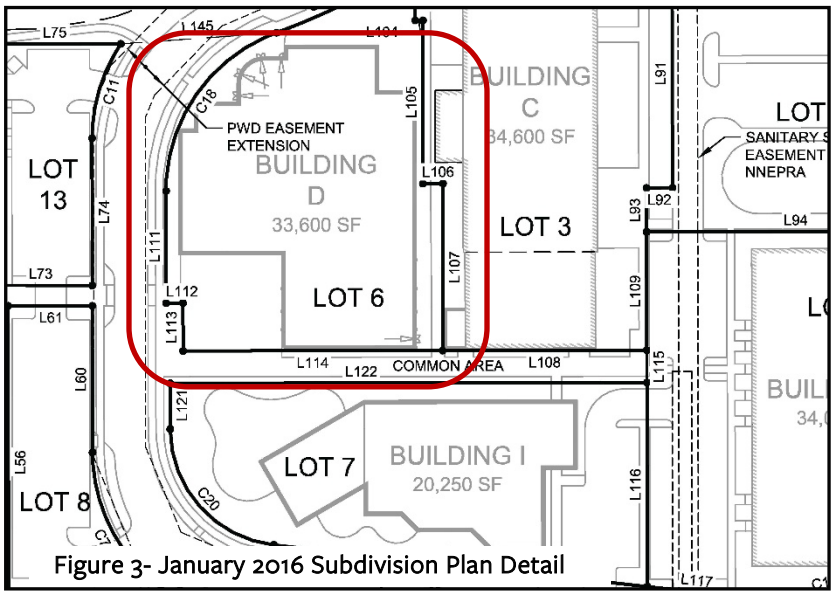


Figure 3- January 2016 Subdivision Plan Detail

Thompson's Point has been the site of a number of approvals since an initial proposal in 2012. Initially, the site was approved for 600,000 square feet of a mix of uses as a Level III site plan and subdivision, but a Master Development Plan (MDP) was approved in March of 2014 reimagined the 30+ acre site and superseding, subsequently, the 2012 Level III site plan approval. The MDP approval established a cohesive development, allowing for multiple development phases over an extended time frame of six years, with possibilities for extension. An approval of a MDP requires subsequent site plan and subdivision applications with specific construction proposals towards fulfillment of the overarching approval.

The 2014 MDP approved a host of different uses, consistent with the B-5 zone, including: office, restaurant, retail, educational and cultural uses, an event center, gym and medical office, outdoor stage, boat launch, hotel, parking garage, and residential condominiums.

A revised overall site plan and subdivision plan was approved by the Planning Board in January 2016, and depicts the

most recent site layout, which didn't alter MDP approved uses, total parking, overall site circulation configuration or permitted total square feet of building area. The MDP approval is meant to provide a flexible framework for larger sites to develop over multiple phases and multiple years and is not intended to conclusively fix locations of buildings or locations of uses within the site. The layout approved in the MDP is important for understanding of site plan intent and impacts, including those related to site circulation, infrastructure, stormwater management, and initial design concepts, but the need for submission of site plans for each phase of development assures that the particulars of each will be reviewed under full site plan standards, and reviewed for overall consistency with the MDP. The proposed building and the configuration of parking on lot 6 is consistent with the MDP approval in building location, and general site configuration and circulation.

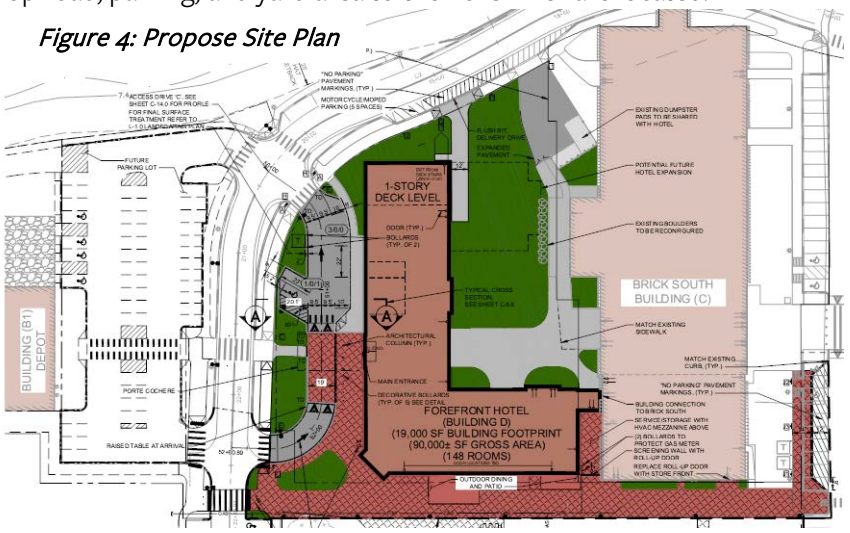
V. EXISTING CONDITIONS

The hotel project parcel is designated as Lot 6 on the approved Subdivision Plat (Plan 1). The total site area is 1.15 acres (50,094 SF) and currently vacant, open lot. The site is bordered by the Brick North building to the west and to the south of the site, future Children's Museum development (Lot 7) is located. The depot and concert grounds are located to the east. To the site's north side, the loop road, parking, and yard area to the Fore River are located.

VI. PROPOSED DEVELOPMENT

The proposal is for Hotel Portland, which is a 148-room hotel, with associated parking spaces and the common pedestrian corridor through the overall development. The building will be connected to the southeast corner of Brick North. The loop road in front of the building has been constructed and will be utilized by the Lot 6 development. The road is a continuation of the private road on Thompson's Point. The site plan includes a 76,939 SF building and onsite parking for five vehicles near the building. Hotel Portland is a four-story building with a porte cochere that is oriented to the street.

Figure 4: Propose Site Plan



Below are the elevations of the proposed building. The development will also include new utilities including water, sanitary, drainage, power, and/or communications extensions, and landscaping.

Figure 5: Front Elevation

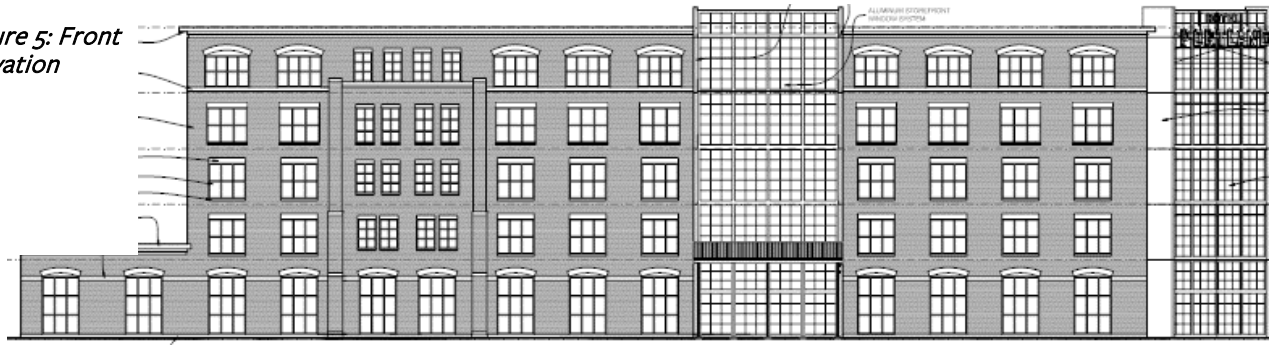


Figure 6: East Elevation – View Corridor

The site layout is consistent with the overall master development plan approval – it is generally consistent with the approved layout of buildings, circulation infrastructure, open spaces, and uses, cumulative lot coverage, parking and circulation. The overall proposed site circulation remains closely aligned to the originally approved master development plan.

VII. PUBLIC COMMENT

No comments have been received to date. A neighborhood meeting was held on January 3, 2018 and approximately seven members of the public attended (Attachment O).

VIII. RIGHT, TITLE, & INTEREST

The applicant has submitted letters of rights to proceed based upon past evidence of Right, Title & Interest. The owner of the property is Forefront Hoteliers, LLC and the deed, recorded at the Cumberland County Registry of Deeds (Book 30781 Page 282), which demonstrates their right, title and interest in the property.

IX. FINANCIAL & TECHNICAL CAPACITY

A financial letter from Bangor Savings Bank, dated 10.31.2017, attesting to the Forefront Hotelier, LLC's ability to complete the project.

X. ZONING ANALYSIS

Thompson's Point lies in the B-5 zone and is also subject to shoreland and floodplain regulations under the city's land use code. The application complies with floodplain and shoreland requirements. The building is not in the floodplain. Shoreland setbacks are a requires minimum 25' for structures from the annual mean high tide line. There are areas on the site plan where the road hugs the 25' line, on the allowable side of that boundary; the proposed activity meets shoreland requirements.

The project meets the requirements of the B-5 zone use and dimensional standards. The B-5 zone allows for a wide range of commercial and mixed uses and encourages urban patterns of development. There are no lot coverage limits or applicable setbacks in the B-5, and there is a height limit of 120 feet. The proposed building has an average height of 55".

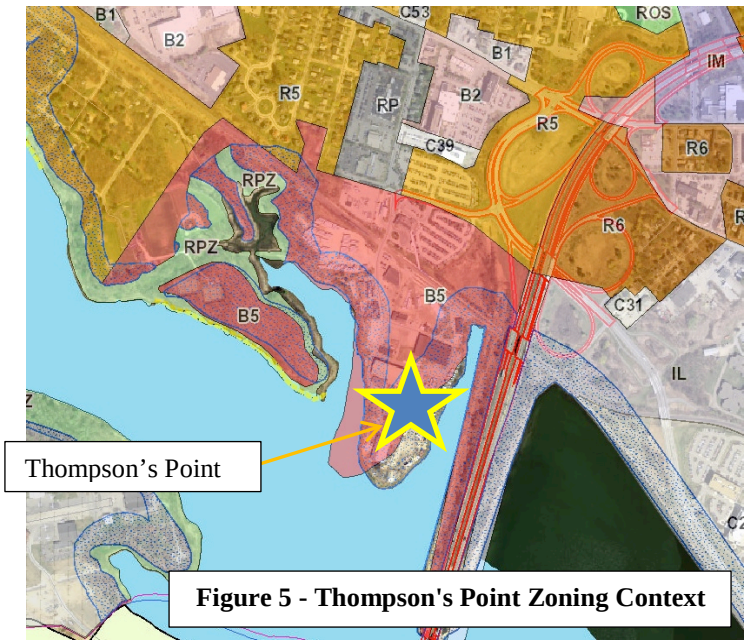


Figure 5 - Thompson's Point Zoning Context

XI. SITE PLAN REVIEW

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.

A. Transportation Standards

1. Impact on Surrounding Street Systems

As part of the overall master plan for the Point, a traffic movement permit (TMP)was obtained to address impacts on the surrounding street systems. Tom Errico, Consultant Traffic Engineer states the following in regard to the TMP:

> *The applicant should confirm that the queue detection loops required on the I-295 ramps to Congress Street and Fore River Parkway as part of the Traffic Movement Permit have been installed. If not the applicant shall comply with the TMP.*

The master plan also has an approved Transportation Demand Management Plan (TDM) for managing and reducing traffic trips and parking demand. Included in the applicant's application is an update to the approved Transportation Demand Management (Attachment P). A number of improvements to the surrounding street system have been completed on the Point since the approval of the master plan, thus creating ample conditions to allow the Lot 6 site development to proceed.

2. Access and Circulation

a. Site Access and Circulation

Thompson's Point's relatively isolated peninsula geography has provided access challenges for this site, off-set by its access to multiple forms of transit served at the Portland Transportation Center. As part of the master plan for the Point, there has been extensive coordination between the applicant and the City of Portland to establish a safe and efficient system for all users. Served by Thompson's Point Connector Road, the approved master plan provides for vehicle, transit, bicycle and pedestrian access.

The applicant has worked previously with fire safety and City officials to produce an access and circulation that is easy and safe for all vehicular and pedestrian users for the overall site.

The project has been reviewed and evaluated for compliance with the approved master development plan. Mr. Errico's finds the current application acceptable.

b. Loading and Servicing

Formal loading docks have not been proposed for the site plan, but a service area has been designated on the rear side of the proposed building; this will allow the hotel and restaurant to utilize the area for delivery vehicles.

Mr. Errico's states the following in regard to loading:

It is noted in the application that some off-hour truck deliveries may occur along the east side of the hotel. The applicant should provide specific details on deliveries and the type of trucks anticipated.

Status: The applicant has noted that some infrequent deliveries may occur during off-peak time periods. I find this condition to be reasonable but want to emphasize that truck activity should not occur during time periods when pedestrian activity is significant. The plans also appear to depict a loading zone north of Brick South and I would suggest that be signed accordingly.

c. Sidewalks

Existing sidewalks are on one side of the newly constructed road (Plan 5). The site will also be connected to the 20' pedestrian alley between the site, Brick South, and the future Children's Museum building to the south. As part of the project, the applicant is proposing to have an outdoor dining and patio area for the restaurant within this pedestrian corridor. According to the applicant, the barrier "enclosing the outdoor dining area will be semi-permanent. Some elements are anticipated to mark the corners and key support location and likely be fixed in their location. While the gaps can be removed during winter months for ease of snow clearing". The plans have been revised to show a twenty (20) feet corridor with reduced dining area. Staff do have concerns about any potential pinch points along this corridor due to the outdoor dining areas. Mr. Errico reviewed the proposed pedestrian corridor and finds it acceptable but proposes monitoring of the dining area:

I generally find the site plan to be reasonably acceptable. I do suggest that the pedestrian corridor maintain a minimum width of 20 feet (net width when including the Museum site). This may require some adjustment to the landscape areas. I would also suggest that the crosswalk leading to the "Point" be widened to the width of the crosswalk opposite the hotel.

Status: The plans have been modified and I generally find them to be acceptable. The crosswalk has been widened as requested. I would note that the outdoor dining area should be monitored as it relates to providing adequate space for pedestrian platoons and adjusted in the future if deemed problematic.

Overall site circulation includes sidewalks, crosswalks and trail connections throughout Lot 6 and the entire Thompson's Point site.

3. Public Transit Access

The development is served by the existing transit service at Portland Transportation Center. There is no additional transit facility included as part of this site plan.

4. Parking

a. Location and Number of Parking Spaces

Five surface parking spaces are part of the proposed hotel development, which will be for patrons. The applicant has submitted a parking analysis (Attachment P), in which a parking demand of 63 parking spaces is calculated for the project. The parking demand analysis goes on to state that:

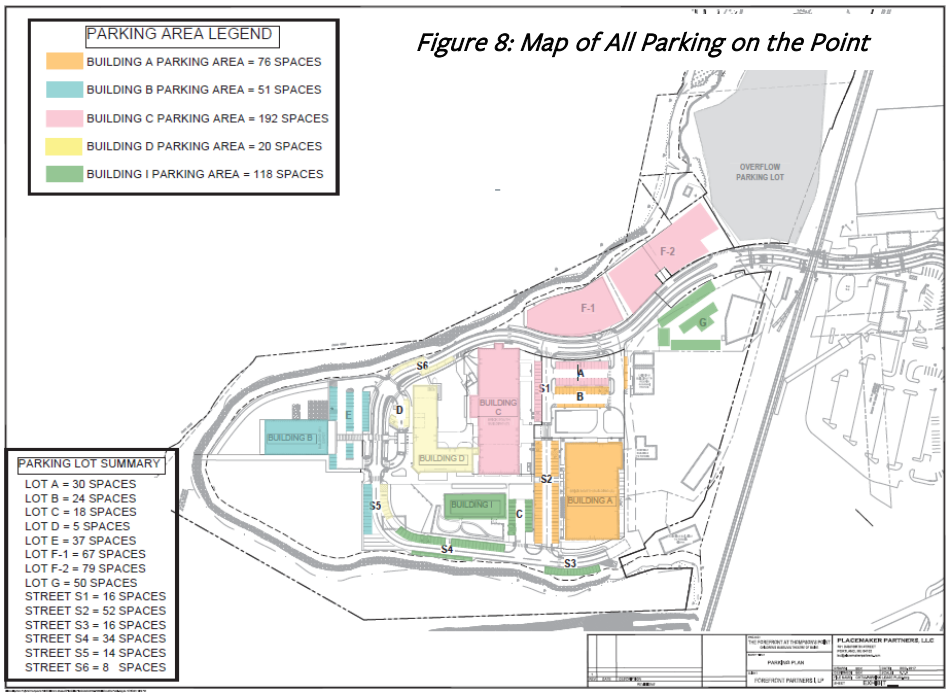
> *because of the type of hotel and its location, we expect that a significant number of guests will utilize Amtrak's Downeaster service and Concord Coach Lines' service, or will fly into the Portland Jetport and utilize taxis, Uber/Lyft, etc.*

Mr. Errico's traffic and parking review provided the following comments on the parking analysis that accompanied the site plan application, all the comments pertaining parking has been, see below:

> *The applicant should provide a summary of how parking for the hotel will be managed (including location of the parking supply) during both event and non-event time periods.*
>
> ***Status: The applicant has provided details on managing hotel parking (valet parking with flexible parking locations). I find the response to be reasonable and would note that the Event Management Plans will be important to ensuring adequate parking during events. I have no further comment.***
>
> *How many parking spaces are expected to be required for the Hotel?*
>
> ***Status: The applicant has provided an estimate of 63 parked vehicles. I generally find this estimate to be low and not consistent with other hotel projects in Portland. However, given substantial parking supply opportunities, site management and TDM strategies, parking should be sufficient following completion of the hotel.***
>
> *During non-event time periods, where would those spaces be likely located? I understand that it may change over time.*
>
> ***Status: The applicant has noted parking locations will vary and be valet serviced. I find their response to be reasonable. I have no further comment.***
>
> *During event time periods would the same area be designated for hotel vehicles? (The Event Management Plan does not speak to on-site parking for businesses)*
>
> ***Status: The applicant notes employing a flexible parking supply/management system. Parking should be sufficient following completion of the hotel and will be a function of site parking management practices.***

In addition, with these parking spaces, there are on-street parking spaces that will also be provided along the new constructed looped street. The overall site layout contains an adequate number of parking spaces, meeting the City's dimensional requirements. According to the applicant, the Thompson's Point site has over 700 existing shared use surface parking spaces. The map of the parking layout for the site is on the right.

Figure 8: Map of All Parking on the Point



b. Location and number of bicycle parking

Four bicycle spaces are required, with eight being provided by the applicant,

will be located nearby the hotel entrances.

c. Transportation Demand Management

A Transportation Demand Management (TDM) Plan was approved in September 2011 and reapproved as part of the Point's Master Development Plan in 2013; and an amendment to the TDM was completed in November of 2015. Forefront Partners has submitted an updated Thompson's Point TDM Plan, which is being reviewed as a separate application by Bruce Hyman, the City's Transportation Program Manager, and Nell Donaldson, Senior Planner. Mr. Hyman has provided an update on the TDM review in his email dated 07.13.2018, Attachment 4.

B. Environmental Quality Standards

1. Preservation of Significant Natural Features

Preservation of significant natural features is being met through maintaining a 25' buffer from the annual mean high tide, as required by shoreland regulations.

2. Landscaping and Landscape Preservation

This lot is a vacant site with no existing vegetation. Landscaped islands and landscaping along the front of the hotel are proposed as part of the development. The rear of the building will be lawn with landscaping along the access road, see landscape plan (Plans 27).

3. Water Quality/Storm Water Management/Erosion Control

The site is currently almost entirely impervious, with no stormwater treatment. There was an overall stormwater management plan that has been reviewed and approved for the Point site as a whole. The applicant has submitted a stormwater management and erosion control plan for this site and meets City's standards as outlined in Section 5 of the Technical Manual, as well as the standards required by the MaineDEP Site Location and Development Permit.

Lauren Swett, Consultant Civil Engineer, commented in her peer review of the revisions presented, are acceptable, with the following additional comments:

a) Basic Standard: Plans, notes, and details have been provided to address erosion and sediment control requirements, inspection and maintenance requirements, and good housekeeping practices in accordance with Appendix A, B, & C of MaineDEP Chapter 500. Please provide the following information:
b) General Standard: The project is required to meet the general standard, providing treatment for new impervious surface in accordance with Maine DEP Chapter 500 standards. The project is providing treatment for the entire project area as well as additional area on the site through the use of a Focal Point system and a Jelly Fish system.
c) Flooding Standard: Thompson's Point has previously received waivers of the Flooding standard. This waiver remains in effect for this project.

With the exception of necessary stormwater discharges, all structures and paved surfaces will be set 25 feet back from high water at the shoreline, as consistent with Shoreland Zoning regulations.

C. Public Infrastructure and Community Safety Standards

a. Consistency with Related Master Plans

The Plan is consisted with the Master Development Plan for the development and is consistent with the City's Comprehensive Plan.

b. Public Safety and Fire Prevention

The proposal has been reviewed for public safety and fire prevention and has been found to allow for emergency response vehicles to move around all areas of the site. It provides for new and existing fire hydrants. A review of fire protection provisions for the site, have been submitted and meets the public safety requirements for the site, except that the "*overhanging canopy, at the front of the hotel must maintain a minimum height of 13'6""*.

c. Availability and Capacity of Public Utilities

The applicant has provided letters indicating the capacity to serve for water, sewer, gas, and power. All utility work has been reviewed with conformance with the city's Technical Manual, including all stormwater

management standards. Trash will be stored in dumpsters, eventually to be served by a contracted waste management company.

D. Site Design Standards

1. Massing, Ventilation, and Wind Impact

These standards are concerned primarily with bulk, location, or height of buildings incurring health, safety, unsafe wind conditions, and direct impact of buildings on abutters. Since the site is private and the proposed buildings do not have direct abutters, these standards are not applicable to this site.

2. Shadows

As in the massing standards in 1, above, these standards are concerned with impacts on direct abutters, and are not applicable.

3. Snow and Ice Loading

On-site snow storage will be accommodated along the perimeter of the site, as well as limited snow storage along the west end of the parking areas. In addition, there will be snow removal and off-site disposal.

4. View Corridors

This standard is in regard to impacts on public view corridors and is not applicable.

5. Historic Resources

The property is not in an historic district and contains no designated landmarks. There are no known archeological resources on site.

6. Exterior Lighting

Lighting information has been submitted as Plan 26 and are consistent to the fixtures previously approved. Fixture labelled "H" shall only be downward and not upward; up lighting is prohibited. The proposed lighting shall all be full cutoff.

7. Noise and Vibration

The proposal does not anticipate exceeding current noise levels for the permanent uses on the site.

8. Signage and Wayfinding

All signage being proposed will be reviewed and approved by the Department of Permit and Inspections separately.

9. Zoning-Related Design Standards

Zoning-related design standards encourage dense, mixed-use development, and attractive pedestrian environments. The Design Manual standards for the B-5 zone encourages shared circulation, parking and transportation infrastructure wherever possible, and several standards for building orientation towards public streets. Caitlin Cameron, Urban Designer, Shukria Wiar, Planner, Nell Donaldson, Senior Planner reviewed the project against design standards. Ms. Cameron states the following in reference to development on the Point:

> *Thompson's Point has an anomalous site in that it is an isolated campus on the water without an urban context or street connectivity to the city. Therefore, some of the standards of the B-5 are harder to apply in this case due to the unusual lots that vary in size, orientation, and relationship to the private vehicular road. The Master Development Plan created a layout that orients buildings to an interior pedestrian alley that essentially acts as a circulation spine through the site.*

Ms. Cameron has found the proposal to be in general compliance, however, there is recommended improvement under a couple of the standards have not been met. Excerpt from Ms. Cameron memo is below:

> *(c) B-5 and B-5b Urban Commercial Business Zones Standard (1) a. Shared Infrastructure*
>
> Staff Comment: The project will share a pedestrian walkway, sidewalks, and new road and on-street parking with surrounding developments of Thompson's Point. Staff continue to be concerned about the encroachment of the outdoor dining into the pedestrian alley, impeding circulation, clear line of sight.
>
> *Standard (1) b. Buildings and Uses shall be located close to the street . . .Corner lots shall fill into the corner*

and shall provide an architectural presence and focus to mark the corner.

Staff Comment: The building is oriented to create visibility and long views to traffic passing on I-295. This orientation comes at the cost of the vehicular experience of the building which, on approach, sees the back of house and side views of the building. To address this condition, the Planning Board previously commented that the side façade facing the street should increase the amount of fenestration or other elements for legibility and wayfinding. No changes have been proposed to the building design other than the addition of signage on the side. Applicant addressed this in narrative response saying adding windows to the side elevation is not possible.

Standard (1) d. Parking lots shall be located to the maximum extent practicable toward the rear . . .

Staff Comment: The parking is provided in a shared parking lot behind the buildings. Parking between the street and building has been reduced – there remain five temporary surface spaces between the hotel building and the road for drop-off, hotel check-in, and ADA accessible spaces – staff would prefer to see these minimized or screened from the sidewalk/street as much as possible.

XIV. STAFF RECOMMENTATIONS

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 the Portland Hotel at Thompson's Point.

XV. PROPOSED MOTIONS

A. 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 July 17, 2018 for application 2017-241 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, subject to the following conditions of approval:

A. Prior to the issuance of a building permit:

1. The applicant shall provide a full construction management plan for review and approval by the Planning Authority and Department of Public Works; and

2. The outdoor dining area shall be monitored as it relates to providing adequate space for pedestrian platoons and shall be adjusted in the future if deemed problematic; and

3. The proposed loading zone north of Brick South shall be signed accordingly; and

4. The developer/contractor/subcontractor must comply with conditions of the construction stormwater management plan and sediment and erosion control plan based on City standards and state guidelines. The owner/operator of the approved stormwater management system, and all assigns. shall comply with the conditions of Chapter 32 Stormwater including Article III, Post Construction Stormwater Management, which specifies the annual inspections and reporting requirements. A maintenance agreement for the stormwater drainage system, as attached, or in substantially the same form, shall be submitted for review by Corporation Counsel. Once approved, the document shall be signed and recorded at the Cumberland County Registry of Deeds prior to the issuance of a building permit. Please submit final copies to both the Department of Planning and Urban Development and the Department of Public Works; and

5. The applicant shall confirm that the queue detection loops required on the I-295 ramps to Congress Street and Fore River Parkway as part of the Traffic Movement Permit, have been installed. If not, the applicant shall comply with the Traffic Movement Permit.

B. Monitoring Condition:

1. The truck activity shall not occur during time periods when pedestrian activity is significant.

XVI. ATTACHMENTS

PLANNING BOARD REPORT ATTACHMENTS

1. Traffic Engineer Reviews, dated 07.11.2018
2. Civil Engineer Review, dated 07.13.2018
3. Urban Designer Review, dated 07.11.2018
4. Transportation Program Manager, 07.13.2018

APPLICANT'S SUBMITTALS

A. Cover Letter, Dated 09.25.2017
B. Cover Letter, Dated 10.31.2017
C. Hotel Level III Final Application Form
D. 2017-0712-Wac-Boring Plan-F1
E. Level III Submission Supporting Narrative
F. Conformity with Applicable Design Standards
G. Supplemental Stormwater Memorandum for Hotel
H. Updated Trip Generation Revised 09-13-17
I. Utility Correspondence
J. Right, Tittle and Interest and Agent Letter
K. State, Federal, FAA, Historic Permits
L. Financial and Technical Capacity
M. TDM Annual Report 2018.01.23
N. Interim TDM Update 9.19.2017
O. Neighborhood Meeting Minutes Hotel
P. Cover Letter & Parking Assessment
Q. Final Draft TP TDM Report with Appendices
R. Re_ Hotel Portland - letter of response # 2
S. Letter of responses 2018.06.08 LOR # 4
T. Letter of responses LOR 3 2018.03.09
U. West Facade W Signage
V. East Facade W Awnings
W. Night Time Rendering

PLANS

PLAN 1 C-1.0 Cover Sheet
PLAN 2 C-1.1 General Notes and Legend
PLAN 3 C-2.0 Existing Conditions
PLAN 4 C-2.1 Demolition and Removals Plan
PLAN 5 C-3.0 Site Layout Plan
PLAN 6 C-4.0 Utility Plan
PLAN 7 C-5.0 Grading and Drainage Plan
PLAN 8 C-5.1 Stormwater Management Plan - 1
PLAN 9 C-5.2 Stormwater Management Plan - 2
PLAN 10 C-6.0 Erosion Control Plan
PLAN 11 C-7.0 Stormwater Details – Jellyfish Systems
PLAN 12 C-7.1 Stormwater Details - Subsurface Water Quality Volume Storage
PLAN 13 C-7.3 Stormwater Details – FocalPoint Separator Row
PLAN 14 C-7.4 Stormwater Details - FocalPoint System Details
PLAN 15 C-8.0 Pavement Sections and Sidewalk Details
PLAN 16 C-8.1 Curbing and Sidewalk Details
PLAN 17 C-8.2 Parking and Traffic Control Details
PLAN 18 C-8.3 Stormwater Details
PLAN 19 C-8.4 Stormwater and Sanitary Sewer Details
PLAN 20 C-8.5 Erosion and Sediment Control Details
PLAN 21 C-8.6 Erosion and Sediment Control Details
PLAN 22 C-8.7 Water and Gas Service Details
PLAN 23 C-8.8 Typical Section

PLAN 24	C-9.0 Fire Safety Compliance Plan
PLAN 25	C-14.0 Access Drive Profiles
PLAN 26	E0.0 Photometric Lighting Plan
PLAN 27	L-1.0 Landscape Plan
PLAN 28	General Construction Management Plan
PLAN 29	A-1 Building Elevations E-N
PLAN 30	A-1 Building Elevations
PLAN 31	A-2 Floor Plan-First
PLAN 32	A-3 Floor Plans -Upper
PLAN 33	A-3.1 Floor Plan-Second

Portland Maine | Yes. Google's good here.

Shukria Wiar <shukriaw@portlandmaine.gov>

Thompson's Point Hotel - Final Traffic Comments

Tom Errico <thomas.errico@tylin.com> Thu, Jul 12, 2018 at 7:48 AM
To: Shukria Wiar <shukriaw@portlandmaine.gov>
Cc: Keith Gray <kgray@portlandmaine.gov>, Bruce Hyman <bhyman@portlandmaine.gov>, Jeremiah Bartlett <JBartlett@portlandmaine.gov>, "Jeff Tarling (JST@portlandmaine.gov)" <JST@portlandmaine.gov>

Hi Shukria – I have reviewed the application materials and offer the following final comments as a status update of previous traffic comments.

- The applicant has conducted a trip generation analysis and I find the conclusion that the MaineDOT Traffic Movement Permit trip generation threshold will not be exceeded to be acceptable. I would note that this conclusion does not approve the methods used in the trip generation analysis for future site plan applications.

Status: I have no further comment.

- The applicant should provide a summary of how parking for the hotel will be managed (including location of the parking supply) during both event and non-event time periods.

Status: The applicant has provided details on managing hotel parking (valet parking with flexible parking locations). I find the response to be reasonable and would note that the Event Management Plans will be important to ensuring adequate parking during events. I have no further comment.

- I generally find the site plan to be reasonably acceptable. I do suggest that the pedestrian corridor maintain a minimum width of 20 feet (net width when including the Museum site). This may require some adjustment to the landscape areas. I would also suggest that the crosswalk leading to the “Point” be widened to the width of the crosswalk opposite the hotel.

Status: The plans have been modified and I generally find them to be acceptable. The crosswalk has been widened as requested. I would note that the outdoor dining area should be monitored as it relates to providing adequate space for pedestrian platoons and adjusted in the future if deemed problematic.

- It is noted in the application that some off-hour truck deliveries may occur along the east side of the hotel. The applicant should provide specific details on deliveries and the type of trucks anticipated.

Status: The applicant has noted that some infrequent deliveries may occur during off-peak time periods. I find this condition to be reasonable but want to emphasize that truck activity should not occur during time periods when pedestrian activity is significant. The plans also appear to depict a loading zone north of Brick South and I would suggest that be signed accordingly.

- How many parking spaces are expected to be required for the Hotel?

Status: The applicant has provided an estimate of 63 parked vehicles. I generally find this estimate to be low and not consistent with other hotel projects in Portland. However, given substantial parking supply opportunities, site management and TDM strategies, parking should be sufficient following completion of the hotel.

- During non-event time periods, where would those spaces be likely located? I understand that it may change over time.

Status: The applicant has noted parking locations will vary and be valet serviced. I find their response to be reasonable. I have no further comment.

- During event time periods would the same area be designated for hotel vehicles? (The Event Management Plan does not speak to on-site parking for businesses)

Status: The applicant notes employing a flexible parking supply/management system. Parking should be sufficient following completion of the hotel and will be a function of site parking management practices.

- **The applicant should confirm that the queue detection loops required on the I-295 ramps to Congress Street and Fore River Parkway as part of the Traffic Movement Permit have been installed. If not the applicant shall comply with the TMP.**

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: Shukria Wiar, Planner
FROM: Lauren Swett, P.E.
DATE: July 13, 2018
RE: Thompson's Point Forefront Hotel Peer Review, Level III Site Plan

---

Woodard & Curran has reviewed the Level III Site Plan Application for the proposed Forefront Hotel at Thompson's Point in Portland, Maine. The project involves construction of a 5-story, 148 room hotel with a restaurant and bar.

Documents Reviewed by Woodard & Curran

- Response to Comments Letter and attachments, dated June 8, 2018, prepared by Placemaker Partners, LLC, on behalf of Forefront Hoteliers, LLC.
- Revised Engineering Plans, Sheets C-3.0, C-6.0, C-9.0; dated June 8, 2018, prepared by Placemaker Partners, LLC, on behalf of Forefront Hoteliers, LLC.

Comments

1) 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:
   a) Basic Standard: Plans, notes, and details have been provided to address erosion and sediment control requirements, inspection and maintenance requirements, and good housekeeping practices in accordance with Appendix A, B, & C of MaineDEP Chapter 500. Please provide the following information:
   b) General Standard: The project is required to meet the general standard, providing treatment for new impervious surface in accordance with Maine DEP Chapter 500 standards. The project is providing treatment for the entire project area as well as additional area on the site through the use of a Focal Point system and a Jelly Fish system.
   c) Flooding Standard: Thompson's Point has previously received waivers of the Flooding standard. This waiver remains in effect for this project.

All comments have been addressed at this time.

Please contact our office if you have any questions.

Planning and Urban Development Department
Planning Division

Subject:	B-5 Design Review – Forefront Hotel, 1 Thompsons Point
Written by:	Caitlin Cameron, Urban Designer
Date of Review:	Tuesday, June 26, 2018

The project at 1 Thompson's Point for the Forefront Hotel was reviewed according to the *City of Portland Design Manual* section *B-5 and B-5b Urban Commercial Business Zone* Design Standards by Caitlin Cameron, Urban Designer, Shukria Wiar, Planner, and Matt Grooms, Planner.

Design Review Comments*: (concerns are marked in red)*

- Project includes lawn space in the alley – this is not appropriate or viable and should be eliminated. Same for the landscaped space between the road and the entry drive – understory plantings with curb or hardscape will be more viable in these locations.

Thompson's Point has an anomalous site in that it is an isolated campus on the water without an urban context or street connectivity to the city. Therefore, some of the standards of the B-5 are harder to apply in this case due to the unusual lots that vary in size, orientation, and relationship to the private vehicular road. The Master Development Plan approved a layout that orients buildings to an interior pedestrian alley that essentially acts as a circulation spine through the site.

(c) B-5 and B-5b Urban Commercial Business Zones

Standard (1) a. Shared Infrastructure – The project will share a pedestrian walkway, sidewalks, and new road and on-street parking with surrounding developments of Thompson's Point. Staff continue to be concerned about the encroachment of the outdoor dining into the pedestrian alley, impeding circulation, clear line of sight.

Standard (1) b. Buildings and Uses shall be located close to the street . . .Corner lots shall fill into the corner and shall provide an architectural presence and focus to mark the corner. – The building is oriented to create visibility and long views to traffic passing on I-295. This orientation comes at the cost of the vehicular experience of the building which, on approach, sees the back of house and side views of the building. To address this condition, the Planning Board previously commented that the side façade facing the street should increase the amount of fenestration or other elements for legibility and wayfinding. No changes have been proposed to the building design other than the addition of signage on the side. Applicant addressed this in narrative response saying adding windows to the side elevation is not possible.

Standard (1) c. Buildings shall be oriented toward the street . . . – The L-shaped building places the corner at the intersection of the pedestrian alley and the vehicular road. The corner and hotel entrance are each emphasized with a glass "tower" design feature. The porte cochere, hotel entrance, and long façade of the L-shaped building face towards the vehicular street and south towards the water and orient to I-295.

Standard (1) d. Parking lots shall be located to the maximum extent practicable toward the rear . . . The parking is provided in a shared parking lot behind the buildings. Parking between the street and building has been reduced – there remain five temporary surface spaces between the hotel building and the road for drop-off, hotel check-in, and ADA accessible spaces – staff would prefer to see these minimized or screened from the sidewalk/street as much as possible.

Portland Maine | Yes. Google's good here.

Shukria Wiar <shukriaw@portlandmaine.gov>

Thompson's Point Transportation Demand Management Planning: Status Report

Bruce Hyman <bhyman@portlandmaine.gov> Fri, Jul 13, 2018 at 11:05 AM
To: Shukria Wiar <shukriaw@portlandmaine.gov>

Good morning, Shukria,

The Forefront at Thompson's Point has submitted updated materials for their evolving TDM planning. The original TDM Plan envisioned a somewhat different development program and time-line for full build-out in 2011. City staff received an updated and fully restructured TDM report in January 2018 and a revised Draft TDM Plan in March 2018 was submitted responsive to staff comments.

Last week, staff received a complete set of existing and near-term 'Tenant Snapshots' that provide:

- individual tenant overview
- tenant-specific TDM initiatives
- Thompson's Pt requested support from the businesses
- employee profiles
- customer profiles.

As part of its Traffic Movement Permit, Thompson's Point was permitted for a maximum of 734 AM peak vehicle trips and 1091 PM peak vehicle trips. It is estimated that current tenants create 141 AM peak vehicle trips and 246 PM peak vehicle trips. With the addition of the Hotel (under review now) and the Childrens' Museum (under construction) it is estimated that this weekday AM peak traffic will increase to 246 vehicle trips and 354 PM peak vehicle trips once both are fully operational. This is will be below its permitted weekday peak trip levels.

Current parking on-site is approximately 700 spaces (200 paved/500 unpaved) with that number anticipated to increase to 1,300 spaces at full build-out.

The overall TDM program establishes a vehicle trip reduction target of 10% with an additional 5% reduction after the Hotel and Childrens' Museum are operating for a period of time.

Multimodal goals are for 10% of employee trips and 45% of visitor trips to the site will be multi-modal (walk, bike, transit, carpooling, Uber/Lyft). Specific marketing and outreach strategies for each of these "Priority Groups (employees and visitors) are provided for each tenant in the Snapshots.

The TDM plan provides a specific process to monitor and reassess parking and vehicle trip reduction targets annually based on their effectiveness.

A new full-time general manager for the site that is also the TDM Coordinator has been hired and has experience in implementing TDM strategies.

Overall, city staff are very supportive of the innovative approach reflected in this latest TDM Plan that is based on best-practices research the Forefront's TDM consultants have conducted at similar sites nationally. Staff looks forward to discussing these latest draft documents with them in the coming weeks.

I have attached the draft Tenant Snapshot for the Hotel Portland. Please don't hesitate to contact me if you or the Board have any questions.

Bruce
--
Bruce Hyman
Transportation Program Manager
Transportation Division

Department of Planning & Urban Development
389 Congress Street
Portland, Maine 04101
(207) 874-8717 phone

bhyman@portlandmaine.gov
http://www.portlandmaine.gov/1363/Transportation-Division
Yes! Transportation's Good Here ....

ThompsonsPtTDM_HotelPortland-DraftTenantSnapshot_ Mar30-2018.pdf
172K

Appendix A: Hotel Portland Tenant Snapshot

TENANT TDM SNAPSHOT

Company Information

Company Name: Forefront Hoteliers, LLC

Website: www.hotelportland.com

TDM Contact: Shari Young

Ph: 603.559.2606

Email: shari@northernhospitality.com

Business profile and additional comments: Hotel Portland is a 148 room full serve hotel, part of the Tribute by Marriott portfolio.

Sq. ft.: 90,000

# of emplys: 20+/-

Estimated customer volumes:

	U 50	50-200	200-500	500+
Daily:		☑		
Special events:		☑		

Employee Focused TDM Information

Modal Split
Employee Commute Methods

Transportation Mode

				OTHER / COMMENTS
SOV	☑ 45	PUBLIC	☑ 5	Estimate based on other hotels under management.
CARPOOL	☑ 10	BIKE	☑ 5	
TAXI (UBER, LYFT)	☑ 30	FOOT	☑ 5	

Employee Focused TDM Initiatives

		% ADOPTION
Initiative 1:	METRO ride to work (target)	10
Initiative 2:	Bike to work	2
Initiative 3:	Carpool	10

DETAILED DESCRIPTIONS ON PAGE 2

Customer Focused TDM Information

Modal Split
Customer Commute Methods

Transportation Mode

				OTHER / COMMENTS
SOV	☑ 20	PUBLIC	☑ 5	Estimates based on other hotel properties under management.
CARPOOL	☑ 65	BIKE		
TAXI (UBER, LYFT)	☑ 10	FOOT		

Customer Focused TDM Initiatives

		% ADOPTION
Initiative 1:	Promote use of Amtrak Downeaster	
Initiative 2:	Promote use of water taxi/shuttle to and	
Initiative 3:	Promote METRO use to and from	

DETAILED DESCRIPTIONS ON PAGE 2

Customer Information - Check all that apply

Age Groups

		OTHER / COMMENTS
U 21	☑ 10	Forecasted.
21 - 35	☑ 35	
36 - 59	☑ 35	
60 +	☑ 20	

Details

				OTHER / COMMENTS
FAMILIES	☑	SCHOOLS	☑	All apply as part of hotel guest profile.
LARGE GROUPS	☑	BUSINESSES	☑	
LOCAL	☑	NON-PROFITS	☑	
OUT OF STATE	☑	GOVERNMENT	☑	

You may fill out by using an updated version of Adobe Reader and saving a copy, or by printing and returning to the Thompson's Point TDM Coordinator.

TDM Coordinator - Chelsea O'Reilly
Thompson's Point. 501 Danforth Street. Portland, ME 04102
917.254.7587 chelsea@thompsonspointmaine.com

TENANT TDM SNAPSHOT

Employee Focused TDM Initiatives

Initiative 1:

Hotel Portland will actively encourage its employees who live on or near a transit line (METRO, South Portland, Shuttlebus/ZOOM, Lakes Region Explorer, etc.). We will pay half the cost of annual rider passes for our FTE employees, and/or offer other promotional benefits such as free concert tickets, raffling off vacation time to multi-modal employees, etc.

Initiative 2:

Hotel Portland will actively encourage bicycling/walking to work by offering a METRO or other transit pass to employees who bicycle to work at least 50% of the time, as well as offering one free annual bicycle maintenance visit to a bike shop, free concert tickets and other promotional items.

Initiative 3:

Hotel will participate in GoMaine efforts to encourage carpooling and provide free concert tickets and other offerings to employees who carpool at least 50% of the time.

Future initiatives, TDM developments

To be evaluated after the first year of occupancy.

Customer Focused TDM Initiatives

Initiative 1:

Hotel Portland will actively promote the use of the Amtrak Downeaster as a transit option to and from Thompson's Point. This will take the form of co-promotional and marketing efforts that will offer hotel stay packages that include Amtrak travel, both to get to and from Portland, as well as for day trips from Thompson's Point during the guests' stay.

Initiative 2:

Hotel Portland will work with Thompson's Point to establish and promote the use of water shuttle and water taxi conveyance from the to-be-built seasonal dock at Thompson's Point to and from the Old Port area. This, together with the encouragement of METRO (below), is part of a larger effort to demonstrate that a stay in Portland can be made efficient, enjoyable, and sustainable without requiring guests to have vehicles of their own (either to get to and from Hotel Portland, or to travel around Portland during their stay).

Initiative 3:

Hotel Portland, together with other Thompson's Point businesses, will actively promote the use of METRO (the regular service as well as the forthcoming direct service running from the Jetport/PTC/Old Port via Congress). This will include offering printable free METRO day passes pre-trip, with clear directions for taking the bus from the airport, as well as downtown. The hotel will also endeavor to headline info on METRO and other preferred modes of travel before offering visitor driving directions and parking information.

Future initiatives, TDM developments

To be assessed after the first full year of occupany.

You may fill out by using an updated version of Adobe Reader and saving a copy, or by printing and returning to the Thompson's Point TDM Coordinator.

TDM Coordinator - Chelsea O'Reilly
Thompson's Point. 501 Danforth Street. Portland, ME 04102
917.254.7587 chelsea@thompsonspointmaine.com

PLACEMAKER PARTNERS, LLC
501 Danforth Street
Portland, ME 04102
(207) 747-5288

September 25, 2017

Ms. Christine Grimando, Senior Planner
Planning and Development Department
City of Portland, Maine
389 Congress Street
Portland, Maine 04101-3509

Ms. Barbara Barhydt, Development Review Manager
Planning and Development Department
City of Portland, Maine
389 Congress Street
Portland, Maine 04101-3509

Subject: The Forefront at Thompson's Point
New Hotel - Level III - Site Plan Application

Dear Christine:

On behalf of Forefront Hoteliers, LLC, we are pleased to provide the accompanying package of submission materials related to the proposed 148 room hotel with full service restaurant and bar. We are excited to propose this multifaceted hotel and restaurant which pays homage to the existing historical railyard architecture. By moving the hotel from the previously contemplated Lot 4 and 5 location to the area directly south of the newly renovated Brick South event center Forefront Hoteliers, LLC and Forefront Brick South, LLC will be able to foster a stronger symbiotic relationship between the two different but complimentary uses.

This submission package is intended to meet the City's Level III Site Plan Submission requirements as outlined in the Level III Final Site Plan Application procedures as well as Section 14-527 (f) of the Code of Ordinances.

The proposed development requires a Level III Site Plan Submission Pursuant to Section 14-523 (f) 1. of the Land Use Code. The applicant is proposing the following development:

1. The construction of a new structure having a total floor area greater than 10,000 Sq. ft. (20,000 sq. ft.+/);

Forefront Hoteliers, LLC hotel proposal has been a long standing component of the approved Master Development Plan. The new 148 room 5-story hotel on the 1.15-acre development Lot 6 as shown on the approved Forefront at Thompson's Point Sectional 2 Subdivision Recording Plat dated 09.16.2016 and last amended 05.04.2017 is extremely similar in size and program to that which was approved during the Master Development Plan phase review. The previously anticipated 24-unit condominium component a top the hotel has been replaced with additional guest rooms. The construction of Common Area roadway and infrastructure is currently under construction along the lot frontage of Lot 6. The extension of common roadway and infrastructure associated with the Sectional 2 Subdivision Plat is currently under review by the City of Portland Planning Board as part of a Level III Site Plan Application for the Children's Museum and Theatre of Maine.

As outlined in the Level III Site Plan submission requirements, you will find in the accompanying materials information such as a written narrative and detailed site plan drawings.

The Forefront at Thompson's Point development team appreciates your continued assistance on the development of this project.

If you have any questions regarding these materials, please contact this office.

Sincerely,

PLACEMAKER PARTNERS, LLC

Bo Kennedy, P.E.
Project Manager/Engineer

Attachments

c: Chris Thompson, Forefront Partners I, LP
Jed Troubh, Forefront Partners, I, LP

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ATTACHMENT A

LEVEL III SUBMISSION SUPPORTING NARRATIVE

ATTACHMENT B

CONFORMITY WITH APPLICABLE DESIGN STANDARDS

ATTACHMENT C

SUPPLEMENTAL STORMWATER MANAGEMENT REPORT

PLACEMAKER PARTNERS, LLC
501 Danforth Street
Portland, ME 04102
(207) 747-5288

September 25, 2017
Re-Submitted October 31, 2017

Ms. Christine Grimando, Senior Planner
Planning and Development Department
City of Portland, Maine
389 Congress Street
Portland, Maine 04101-3509

Ms. Barbara Barhydt, Development Review Manager
Planning and Development Department
City of Portland, Maine
389 Congress Street
Portland, Maine 04101-3509

Subject: The Forefront at Thompson's Point
New Hotel - Level III - Site Plan Application

Dear Christine:

On behalf of Forefront Hoteliers, LLC, Placemaker Partners, LLC is pleased to provide the accompanying package of submission materials related to the proposed 148 room hotel with full service restaurant and bar. We are excited to propose this multifaceted hotel and restaurant which pays homage to the existing historical railyard architecture. By moving the hotel from the previously contemplated Lot 4 and 5 location to the area directly south of the newly renovated Brick South event center Forefront Hoteliers, LLC and Forefront Brick South, LLC will be able to foster a stronger symbiotic relationship between the two different but complimentary uses.

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If you have any questions regarding these materials, please contact this office.

Sincerely,

PLACEMAKER PARTNERS, LLC

Bo Kennedy, P.E.
Project Manager/Engineer

List of Attachments:

Attachment A – Level III Submission Supporting Narrative
Attachment B – Conformity with Applicable Design Standards (Site Plan and Zoning)
Attachment C – Supplemental Stormwater Management Report
Attachment D – Traffic Generation Summary
Attachment E – Utility Correspondence
Attachment F – Proof of Right, Tittle and Interest, and Letters Authorizing Its Assigns and Agents
Attachment G – Evidence of State and Federal Approvals, FAA, and Historical Non-Determination
Attachment H – Evidence of Financial and Technical Capacity
Attachment I – Construction Management Plan
Attachment J – Interim TDM Update
Attachment K – Geotechnical and Soils Information

c: Chris Thompson, Forefront Partners I, LP
Jed Troubh, Forefront Partners, I, LP

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Level III – Preliminary and Final Site Plans
Development Review Application
Portland, Maine

Planning and Urban Development Department
Planning Division

Portland's Planning and Urban Development Department coordinates the development review process for site plan, subdivision and other applications under the City's Land Use Code. Attached is the application form for a Level III: Preliminary or Final Site Plan. Please note that Portland has delegated review from the State of Maine for reviews under the Site Location of Development Act, Chapter 500 Stormwater Permits, and Traffic Movement Permits.

Level III: Site Plan Development includes:

- New structures with a total floor area of 10,000 sq. ft. or more except in Industrial Zones.
- New structures with a total floor area of 20,000 sq. ft. or more in Industrial Zones.
- New temporary or permanent parking area(s) or paving of existing unpaved parking areas for more than 75 vehicles.
- Building addition(s) with a total floor area of 10,000 sq. ft. or more (cumulatively within a 3 year period) except in Industrial Zones.
- Building addition(s) with a total floor area of 20,000 sq. ft. or more in Industrial Zones.
- A change in the use of a total floor area of 20,000 sq. ft. or more in any existing building (cumulatively within a 3 year period).
- Multiple family development (3 or more dwelling units) or the addition of any additional dwelling unit if subject to subdivision review.
- Any new major or minor auto business in the B-2 or B-5 Zone, or the construction of any new major or minor auto business greater than 10,000 sq. ft. of building area in any other permitted zone.
- Correctional prerelease facilities.
- Park improvements: New structures greater than 10,000 sq. ft. and/or facilities encompassing 20,000 sq. ft. or more (excludes rehabilitation or replacement of existing facilities); new nighttime outdoor lighting of sports, athletic or recreation facilities not previously illuminated.
- Land disturbance of 3 acres or more (includes stripping, grading, grubbing, filling or excavation).

Portland's development review process and requirements are outlined in the Land Use Code (Chapter 14), Design Manual and Technical Manual.

Planning Division
Fourth Floor, City Hall
389 Congress Street
(207) 874-8719
planning@portlandmaine.gov

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

I. Project Information (Please enter n/a on those fields that are not applicable)

Project Name:	Hotel At Thompson's Point
Proposed Development Address:	Thompson's Point Rd
Project Description:	148 Room Full Service Hotel
Chart/Block/Lot:	202/A/004
Preliminary Plan	N/A
Final Plan	2017/09/25

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

APPLICANT

Name:	Chris Thompson, Manager
Business Name:	Forefront Hoteliers, LLC
Address:	501 Danforth Street
City/State:	Portland/ ME
Zip Code:	04102
Work #:	207-747-5288
Home #:	N/A
Cell #:	N/A
Fax #:	207-747-5941
E-mail:	parallaxpartners@gmail.com

OWNER

Name:	Forefront Partners I, LP
Address:	501 Danforth Street
City/State:	Portland/ME
Zip Code:	04102
Work #:	207-747-5288
Home #:	N/A
Cell #:	207-347-1614
Fax #:	207-747-5941
E-mail:	parallaxpartners@gmail.com

AGENT/REPRESENTATIVE

Name:	Placemaker Partners, LLC - Bo Kennedy
Address:	501 Danforth Street
City/State:	Portland/ ME
Zip Code:	04102
Work #:	207-747-5288 Ext. 112
Home #:	N/A
Cell #:	N/A
Fax #:	207-747-5941
E-mail:	bo@placemakerpartners.com

BILLING (to whom invoices will be forwarded to)

Name:	Forefront Hoteliers, LLC
Address:	501 Danforth st
City/State:	Portland/ME
Zip Code:	04102
Work #:	207 - 747-5288
Home #:	
Cell #:	
Fax #:	
E-mail:	parallaxpartners@gmail.com

ENGINEER

Name:	Bo Kennedy, P.E - Placemaker Partners, LLC
Address:	501 Danforth Street
City/State:	Portland/ME
Zip Code:	04102
Work #:	207-747-5288 EXT 112
Home #:	
Cell #:	
Fax #:	
E-mail:	bo@placemakerpartners.com

SURVEYOR

Name:	Charlie Marchese - Sebago Technics
Address:	75 John Roberts RD #1A
City/State:	South Portland/ME
Zip Code:	04106
Work #:	207-200-2100
Home #:	
Cell #:	
Fax #:	
E-mail:	CMarchese@sebagotechnics.com

ARCHITECT

Name:	Keith A. Kelley - Opechee Associates
Address:	11 Corporate Drive
City/State:	Belmont /NH
Zip Code:	03220
Work #:	603-527-9090
Home #:	N/a
Cell #:	603-765-9265
Fax #:	
E-mail:	keithk@opechee.com

ATTORNEY

Name:	David Galgay - Verrill Dana
Address:	1 Portland Square
City/State:	Portland/ME
Zip Code:	04112
Work #:	207-774-4000
Home #:	N/a
Cell #:	
Fax #:	
E-mail:	dgalgay@verrilldana.com

DESIGNATED PERSON(S) FOR UPLOADING INTO e-PLAN

Name:	Bo Kennedy
E-mail:	bo@placemakerpartners.com
Name:	Sue Santere
E-mail:	sue@thompsonspointmaine.com
Name:	Wendy Ward
E-mail:	Wendy@thompsonspointmaine.com

III. APPLICATION FEES

LEVEL III DEVELOPMENT (check applicable review)

☐	Less than 50,000 sq. ft.	$750.00
☑	50,000 – 100,000 sq. ft.	$1,000.00
☐	100,000 – 200,000 sq. ft.	$2,000.00
☐	200,000 – 300,000 sq. ft.	$3,000.00
☐	Over 300,000 sq. ft.	$5,000.00
☐	Parking lots over 100 spaces	$1,000.00
☐	After-the-fact Review	$1,000.00 + applicable application fee above

PLAN AMENDMENTS (check applicable review)

☐	Planning Staff Review	$250.00
☐	Planning Board Review	$500.00

OTHER REVIEWS (check applicable review)

☐	Traffic Movement	$1,500.00
☐	Stormwater Quality	$250.00
☐	Subdivision	$500.00 + applicable fee for lots/units below
	# of Subdivision Lots/Units [ ] x $25.00 each	$
☐	Site Location	$3,500.00 + applicable fee for lots/units below
	# of Site Location Lots/Units [1] x $200.00 each	$
☐	Change of Use	
☐	Flood Plain	
☐	Shoreland	
☐	Design Review	
☐	Housing Replacement	
☐	Historic Preservation	
	TOTAL APPLICATION FEE DUE:	$ 1,000

IV. FEES ASSESSED AND INVOICED SEPARATELY

- Notices to abutters (receipt of application, workshop and public hearing meetings) ($.75 each)
- Legal Ad in the Newspaper (% of total ad)
- Planning Review ($52.00 hour)
- Legal Review ($75.00 hour)
- Third Party Review (all outside reviews or analysis, eg. Traffic/Peer Engineer, are the responsibility of the applicant and will be assessed and billed separately)

V. PROJECT DATA (Please enter n/a on those fields that are not applicable)

TOTAL AREA OF SITE (Total Site/Lot 6)	26.26 AC/1.15 AC	~~sq. ft.~~
PROPOSED DISTURBED AREA OF THE SITE	76,939	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)	76,939	sq. ft.
Impervious Area (Total Proposed)	63,124	sq. ft.
Building Ground Floor Area and Total Floor		
Building Footprint (Total Existing)	0	sq. ft.
Building Footprint (Total Proposed)	19,000	sq. ft.
Building Floor Area (Total Existing)	0	sq. ft.
Building Floor Area (Total Proposed)	90,000	sq. ft.
ZONING		
Existing	B-5	
Proposed, if applicable	N/A	
LAND USE		
Existing	N/A	
Proposed	Hotel	
RESIDENTIAL, IF APPLICABLE		
# of Residential Units (Total Existing)	N/A	
# of Residential Units (Total Proposed)	N/A	
# of Lots (Total Proposed)	N/A	
# of Affordable Housing Units (Total Proposed)	N/A	
PROPOSED BEDROOM MIX		
# of Efficiency Units (Total Proposed)	N/A	
# of One-Bedroom Units (Total Proposed)	N/A	
# of Two-Bedroom Units (Total Proposed)	N/A	
# of Three-Bedroom Units (Total Proposed)	N/A	
PARKING SPACES		
# of Parking Spaces (Total Existing)	Unknown	
# of Parking Spaces (Total Proposed)	10	
# of Handicapped Spaces (Total Proposed)	1	
BICYCLE PARKING SPACES		
# of Bicycle Spaces (Total Existing)	0	
# of Bicycle Spaces (Total Proposed)	4	
ESTIMATED COST OF THE PROJECT	$18,000,000	

VI. APPLICANT SIGNATURE

By digitally signing the attached document(s), you are signifying your understanding this is a legal document and your electronic signature is considered a ***legal signature*** per Maine state law.

I hereby certify that I am the Owner of record of the named property, or that the owner of record authorizes the proposed work and that I have been authorized by the owner to make this application as his/her authorized agent. I agree to conform to all applicable laws of this jurisdiction. In addition, if a permit for work described in this application is issued, I certify that the Planning Authority and Code Enforcement's authorized representative shall have the authority to enter all areas covered by this permit at any reasonable hour to enforce the provisions of the codes applicable to this permit.

This application is for a Level III Site Plan review. It is not a permit to begin construction. An approved site plan, a Performance Guarantee, Inspection Fee, Building Permit, and associated fees will be required prior to construction. Other Federal, State or local permits may be required prior to construction, which are the responsibility of the applicant to obtain.

Signature of Applicant:	Bo Kennedy
Date:	2017.10.31

PRELIMINARY PLAN (Optional) - Level III Site Plan			
Applicant Checklist	Planner Checklist	# of Copies	**GENERAL WRITTEN SUBMISSIONS CHECKLIST**
N/A		1	Completed Application form
N/A		1	Application fees
N/A		1	Written description of project
N/A		1	Evidence of right, title and interest
N/A		1	Evidence of state and/or federal approvals, if applicable
N/A		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.
N/A		1	Evidence of financial and technical capacity
N/A		1	Traffic Analysis (may be preliminary, in nature, during the preliminary plan phase)
Applicant Checklist	Planner Checklist	# of Copies	**SITE PLAN SUBMISSIONS CHECKLIST**
N/A		1	Boundary Survey meeting the requirements of Section 13 of the City of Portland's Technical Manual
N/A		1	**Preliminary Site Plan including the following: (information provided may be preliminary in nature during preliminary plan phase)**
N/A		Proposed grading and contours;	
N/A		Existing structures with distances from property line;	
N/A		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;	
N/A		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;	
N/A		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
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;	
N/A		A traffic control plan as detailed in Section 1 of the Technical Manual;	
N/A		Proposed buffers and preservation measures for significant natural features, where applicable, as defined in Section 14-526(b)(1);	
N/A		Location and proposed alteration to any watercourse;	
X		A delineation of wetlands boundaries prepared by a qualified professional as detailed in Section 8 of the Technical Manual;	
N/A		Proposed buffers and preservation measures for wetlands;	
X		Existing soil conditions and location of test pits and test borings;	
X		Existing vegetation to be preserved, proposed site landscaping, screening and proposed street trees, as applicable;	
X		A stormwater management and drainage plan, in accordance with Section 5 of the Technical Manual;	
X		Grading plan;	
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;
X		A note on the plan identifying the Historic Preservation designation and a copy of the Application for Certificate of Appropriateness, if applicable, as specified in Section Article IX, the Historic Preservation Ordinance;
X		Location and dimensions of all existing and proposed HVAC and mechanical equipment and all proposed screening, where applicable;
X		An exterior lighting plan in accordance with Section 12 of the Technical Manual;
X		A signage plan showing the location, dimensions, height and setback of all existing and proposed signs;
X		Location, dimensions and ownership of easements, public or private rights of way, both existing and proposed.

PORTLAND FIRE DEPARTMENT
SITE REVIEW
FIRE DEPARTMENT CHECKLIST

SEE ATTACHED C-9.0 FIRE SAFETY COMPLIANCE PLAN

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.)***

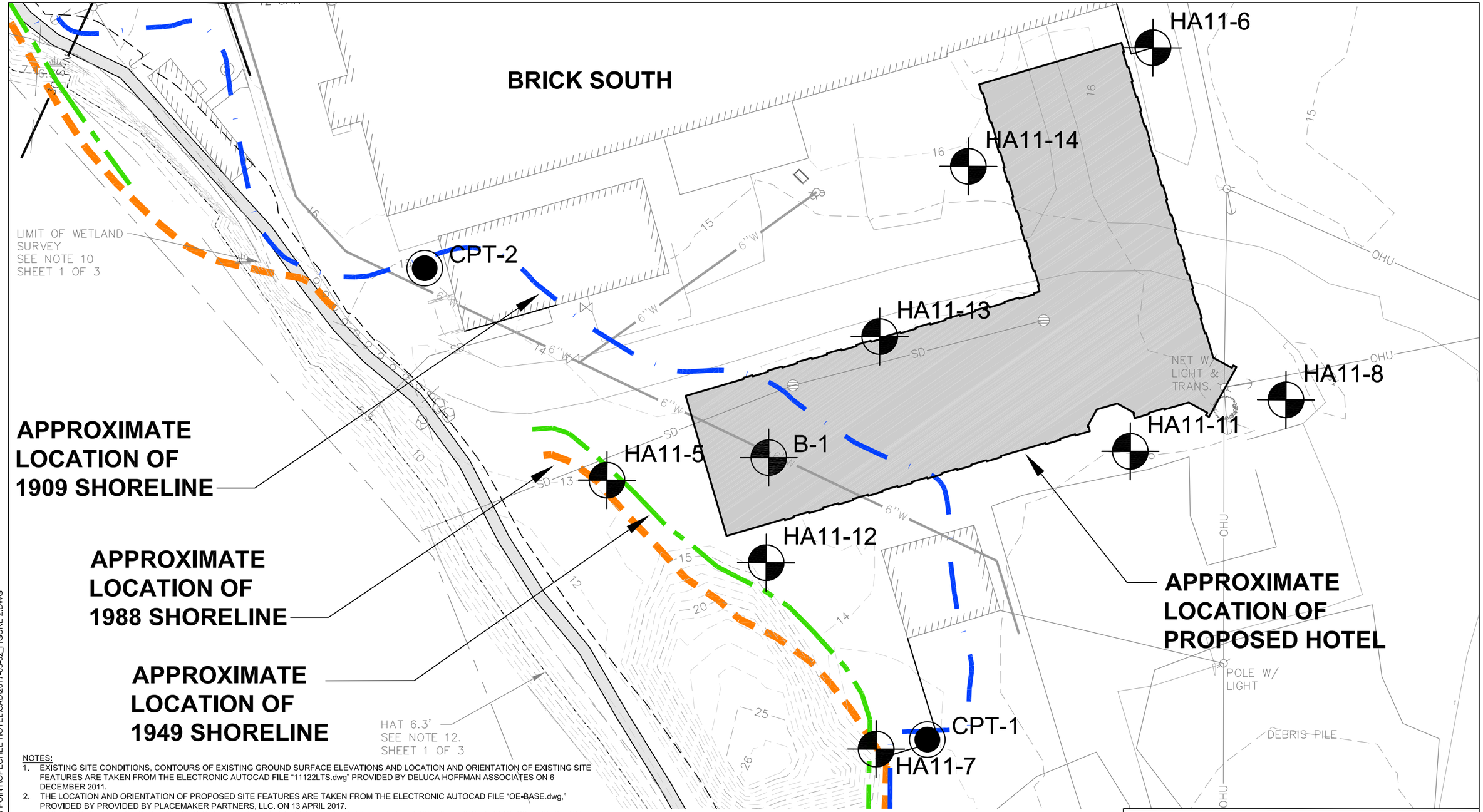
9. Hydrant locations

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



NOTES:

1. EXISTING SITE CONDITIONS, CONTOURS OF EXISTING GROUND SURFACE ELEVATIONS AND LOCATION AND ORIENTATION OF EXISTING SITE FEATURES ARE TAKEN FROM THE ELECTRONIC AUTOCAD FILE "11122LTS.dwg" PROVIDED BY DELUCA HOFFMAN ASSOCIATES ON 6 DECEMBER 2011.
2. THE LOCATION AND ORIENTATION OF PROPOSED SITE FEATURES ARE TAKEN FROM THE ELECTRONIC AUTOCAD FILE "OE-BASE.dwg," PROVIDED BY PROVIDED BY PLACEMAKER PARTNERS, LLC. ON 13 APRIL 2017.
3. LOCATIONS OF HA11-SERIES TEST BORINGS WERE DETERMINED IN THE FIELD BY HALEY & ALDRICH BY TAPING/PACING DISTANCES FROM EXISTING SITE FEATURES AND WERE RECORDED USING GPS SURVEY EQUIPMENT UPON COMPLETION OF DRILLING AND ARE CONSIDERED APPROXIMATE.
4. LOCATIONS OF SUBSURFACE EXPLORATIONS COMPLETED BY OTHERS DETERMINED BY HALEY & ALDRICH BY OVERLAYING, SCALING AND ROTATING DRAWING AND ARE CONSIDERED APPROXIMATE.
5. ELEVATIONS ARE IN FEET AND REFERENCE THE NATIONAL GEODETIC VERTICAL DATUM OF 1929 (NGVD 29).
6. HISTORICAL SHORELINES SHOWN ARE APPROXIMATE AND WERE DETERMINED BY SCALING FROM HISTORICAL SANBORN MAPS.

LEGEND:

HA11-1 — DESIGNATION AND APPROXIMATE LOCATION OF TEST BORING COMPLETED UNDER THE DIRECTION OF HALEY & ALDRICH IN 2011

B-1 — DESIGNATION AND APPROXIMATE LOCATION OF TEST BORING COMPLETED BY OTHERS

CPT-1 — DESIGNATION AND APPROXIMATE LOCATION OF CONE PENETRATION TEST COMPLETED BY OTHERS

HALEY & ALDRICH

PROPOSED HOTEL
THOMPSONS POINT DEVELOPMENT
PORTLAND, MAINE

EXISTING SITE AND SUBSURFACE EXPLORATION LOCATION PLAN

SCALE: AS SHOWN
MAY 2017

FIGURE 1

G:\PROJECTS\37971 - THOMPSONS POINT\OPECHEE HOTEL\CAD\2017-05-02_FIGURE 2.DWG

LEVEL III SUBMISSION SUPPORTING NARRATIVE

In accordance with Section 14-527 (f) and (g) the General Written Submission Checklist, we offer the following narrative describing the information supporting the Level III site plan submission.

Section 14-527 (f)

1. The Boundary and Topographic Survey Plans prepared by Sebago Technics and submitted as part of the original 2013 Level III approval documents, subsequent 2014 Master Plan approval, and 2016 Subdivision approval documents remain valid and are made part of the current Level III Site Plan submission. The recently approved amended Sectional 2 Subdivision Recording Plat dated 05.04.2017 and Sheet C-2.0 – Existing Conditions, Demolition and Removals Plan included with this plan set satisfy Items 1 thru 4 of this section.

2. A Site Layout Plan – Sheet C-3.0 and a Grading Plan – Sheet C-5.0 accompanies this submission. These plans show the location and details for all disturbed surfaces.

3. The engineering specification and cross-sectional designs remain consistent with those approved during the Subdivision application review and are included on plan sheet C-8.8.

4. The hotel will be share a dumpster and loading area with the Brick South building located in the northwesterly corner of the lot 6. The occasional off hours delivery may occur along the easterly side of the hotel via the pedestrian alley.

5. Public transit is accessible at the near-by Portland Transportation Center via the METRO service. Forefront Partners is actively engaged with the METRO as part of the ongoing TDM effort. A METRO stop on-site may be selected at such a time that is agreeable to both The Forefront and METRO.

6. The design plans detail the (10) ten proposed vehicular parking spaces proposed in this application. (4) Four bicycle parking spaces are located near the main hotel entrance. The site will use Standard City of Portland Dero hitch bicycle posts consistent with the other onsite posts. The Forefront development collaborates with bicycle organizations as a part of the TDM initiative and is committed to provide additional bicycle parking in collaboration with their recommendation and sponsorship.

7. Snow storage is proposed to be located in the landscaped areas on the perimeter of the access drive.

8. A Traffic Control Plan is not required as part of this application. Construction activity will not affect the public street system, nor will it require impacts to the "Common Area" loop road recently constructed.

9. The proposed re-development area does not include any natural features. This requirement is not applicable to this application.

10. This project does not propose alterations to any watercourses. The accompanying plan sheets show the site's proximity to existing watercourses which includes the Fore River.

11. Wetland boundaries and natural resources are shown on the referenced boundary and topographic plans. This portion of the Forefront project does not propose impacts to the delineated wetlands located on the panhandle portion of the site.

12. Existing soil conditions are documented in the previously approved Master Development Plan and Subdivision Plan. The site has a long history of heavy development and most of the surfaces are

described as compacted gravel, pavement or building. The existing surfaces types are also identified on the accompanying plan set.

13. The applicant proposes landscaping in pervious areas as shown on the enclosed Landscaping Plan L-1.0.

14. The Grading Plan Sheet C-5.0 and Stormwater Management Plan Sheet C-5.1 are included in the accompanying plan set. The proposed stormwater management plan is consistent with the previously approved Subdivision plan and utilizes the proprietary filtration devices known as Focalpoint Bio-Filtration Systems and Contech Jellyfish filters to satisfy Section 5 of the City of Portland Technical manual for stormwater quality treatment. A stormwater memorandum prepared by the engineer of record is appended to this application.

15. A Grading Plan Sheet C-5.0 accompanies the Level III Site Plan submission. This plan shows the detailed site grading within the "disturbed areas" as defined in Section 5 III (F) of the City of Portland Technical Manual. The Grading Plan depicts the erosion and sediment control measures meeting the Basic Standards as required as part of City of Portland's Technical Manual Section 5. Generally speaking, the site grades are greater than 3' above the 100-year floodplain as indicated on the latest Flood Hazard Maps for the City of Portland.

16. Sheet C-2.0 Existing Conditions, Demolition and Removals Plan details specific measures to handle groundwater dewatering during construction to comply with the approved MaineDEP Voluntary Response Action Program (VRAP). We anticipate very little need for groundwater dewatering during these interim phase activities. Additional ground water protection measures are included in the stormwater management treatment facilities by using an impermeable liner separating stormwater runoff and groundwater.

17. The applicant proposes two connections to an existing 8" sanitary sewer service. Additionally, the hotel kitchen will include an external grease trap. The final grease trap size will be determined upon finalization of the kitchen design but will be no less than 1,000 gallons. The Utility Plan Sheet C-4.0 shows details for the proposed sewer services.

18. The enclosed Utility Plan Sheet C-4.0 shows the location of all existing fire hydrants. The Life Safety Compliance plan C-9.0 shows existing.

19. The existing 12" water main (publicly owned), 8" sewer main(private), 4" gas main (private), and electrical/communications (private) duct bank serving the project is shown on the enclosed Utility Plan Sheet C-4.0. The proposed development will utilize existing utility stubs provided to the development lot.

20. The hotel will share on-site solid waste receptacles with the Brick South building. Currently, the Brick South Building is using a portion of the 10' x 20' and 13' x 25' dumpster enclosure. All hotel waste (including room, bar/lounge/kitchen etc) will be stored in appropriate trash/recycling containers in a central trash/receiving area located on the brick south end of the building. These containers will be serviced by an independent solid waste contractor, on a regular basis. All waste generated from the site preparation and general site work will be collected and sorted/separated on-site until they are removed and disposed of properly, off-site, by a private contractor. All construction waste will be collected and sorted/separated on-site and managed by the general contractor.

21. C-3.0 Site Layout Plan shows the hotel building location. The enclosed architectural plans prepared by Opechee Construction show the proposed tentative floor plans and building elevations for all sides of the building.

22. A shadow analysis is not applicable to this application.

23. The proposed development is not with-in a Historic preservation district. All non-determination letters are on-file with the city and included in Attachment G.

24. 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.

    At this point in the hotel design process it is too early to have specific roof top equipment selected. It is anticipated that the majority of the roof top equipment would be located near the South East corner of the building where parapet walls extend above the roof level to help screen the equipment. Any additional roof top equipment would be located along the center spine of each wing of the building to maximize the distance from roof edge and reduce visibility.

25. An exterior Lighting Plan Sheet E-0.0 is included and consistent with the lighting plan approved as part of the Subdivision Plan review.

26. A separate signage plan and application will be submitted under a separate cover and application. Standard traffic signage shall meet MUTCD standards and detailed on the included plan set.

27. All existing and proposed easements and rights of access are described in the Declaration of Covenants recorded in the county registry of deeds.

Section 14-527 (g)

1. The construction management plan is enclosed in Attachment I of the site plan submission package.

2. A Traffic Study was completed as part of the approved MaineDOT Traffic Movement Permit for the previously reviewed and approved with the approved Master Development Plan, Overall Subdivision Plan, and Level III site plan applications. The work proposed as part of this application is consistent with these approvals. The proposed scope of work has been estimated for trip generations as shown in the enclosed memorandum prepared by Gorrill Palmer Associates dated 2017.09.13 in Attachment D.

3. There are no significant natural features within the proposed site development lot 6 area. Thompson's Point has some vegetation on the far westerly end of the panhandle where some mature trees have established and which require protection under the Shoreland protection requirements. Furthermore, the Fore River tidal flats, river, and protected shoreland bird habitat surround the perimeter of the peninsula. These areas will remain undeveloped at this time. These activities have been previously reviewed and approved as part of the Level III Site Plan approval and by the MaineDEP under a Natural Resources Protection Act (NRPA) review.

4. A detailed narrative describing the existing site watershed hydrology, existing buildings, and existing land cover is included in the previously submitted stormwater management reports and are included with this submission by way of reference.

5. A memorandum detailing the proposed stormwater management components and runoff calculations is appended to this application. The proposed improvements included with this submission include the disturbance of 1.33 acres. The disturbance area is included entirely within the site's previously developed impervious area and proposes the redevelopment of approximately 0.94 acres of new impervious area (roadway, building, and pedestrian access).

6. The proposed development was found to be consistent with the City Master Plans during the Master Development Plan and Subdivision Plan review process.

7. The applicant has received ability to serve letters for the currently proposed Master Development plan. The development of this portion of the common infrastructure is sized to be consistent with the previously approved Subdivision plan. It is noted that the updated utility design plans have been provided to the Portland Water District (PWD) for their engineering review comments. A new City of Portland Wastewater Capacity Application summarizing the estimated proposed wastewater flows is included in Attachment E.

8. All hotel waste (including room, bar/lounge/kitchen etc) will be stored in appropriate trash/recycling containers in a central trash/receiving area located on the brick south end of the building. These containers will be serviced by an independent solid waste contractor, on a regular basis.

   All waste generated from the site preparation and general site work will be collected and sorted/separated on-site until they are removed and disposed of properly, off-site, by a private contractor.

   All construction waste will be collected and sorted/separated on-site and managed by the general contractor.

9. 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 (4) municipal fire hydrants located within 500 feet radius of the building. Please see the attached Fire Safety Compliance Plan C-9.0

   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 Thompson's Point access road for 2 sides of the building.
   -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 Standards 3.7 through 3.11 - Standards for blasting and regulation of explosives:
   - Geotechnical explorations were performed and the subsurface condition does not contain bedrock. Based on the findings, large blast operations are not anticipated.

10. A review of the Applicable Design Standards of Section 15-426 is included in Attachment B of the application.

11. 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.

General Written Submissions Checklist

As acknowledged on the Final Site Plan Submission's General Written Submissions Checklist, we note the following items not previously covered in this supporting narrative:

Item: *Evidence of Right, Title and Interest*

Copies for proof of land ownership and agreements are on file with the city and included in Attachment F.

Item: *Evidence of State and/or Federal Approvals; if applicable*

The Applicant has provided copies of the State and Federal Permits issued for the project including the Traffic Movement Permit, U.S. ACOE Permit, and MaineDEP NRPA Permit in Attachment G.

Item: *Written Assessment of Proposed Project's Compliance with Applicable Zoning Requirements*

A written summary is contained in Attachment B to this submission.

Item: *Evidence of Financial and Technical Capacity*

The Applicant has enclosed a letter from Bangor Savings Bank reaffirming Forefront Partners I, LP and its affiliates financial and technical capacity in Attachment H.

CONFORMITY WITH APPLICABLE DESIGN STANDARDS
(Site Plan and Zoning)

The following statement is made in accordance with the City of Portland Code of Ordinances, Chapter 14 Land Use, Section 14-526.

OVERVIEW

This project conforms with all the applicable design standards of Section 14-526 as demonstrated in the following narrative.

(a) Transportation Standards

1. Impact on Surrounding Street Systems:

   The applicant has obtained a Traffic Movement Permit which addresses impacts on surrounding street systems. A summary of calculated site trip generation with the proposed hotel use is enclosed with this application.

2. Access and Circulation:

   a. Site Access and Circulation.

      (i) Thompson's Point site is accessed via Thompson's Point Connector Road. The applicant has worked with fire safety and city officials to make access and circulation easy and safe for all vehicular and pedestrian users. The proposed hotel development includes an on-site one way driveway loop with (10) short term parking stalls. The driveways have been designed to align perpendicular to the "loop road" and across from other driveway entrances/exits. Additional pedestrian circulation is proposed to connect all sides of the building to the common area sidewalks.

      (ii) The driveway is designated as one-way to minimize conflict at the main entrance/drop off zone as well as eliminate left turn queuing on the corner of the "loop access road".

      (iii) In addition to room for several vehicles to unload near the main entrance, the site features (10) short term parking spaces reserved for patron loading and unloading. This feature will relieve queuing at peak check-in times and avoid impeding the main road circulation.

   b. Loading and Servicing.

      (i) A formal loading dock is not proposed for the hotel. Loading and servicing for the hotel will occur in one of two locations: 1) shared dumpster enclosure area to the northwest of the hotel or 2) hand cart delivered to the northeasterly corner of the building. Occasional delivery vehicles will be permitted down the pedestrian alley during off hours and on a pre-coordinated schedule. The hardscape area cross-section has been designed to withstand delivery vehicle loading. The hotel driveway alignment is designed to accommodate a 40 ft Single Unit vehicle (delivery or fire truck apparatus)

   c. Sidewalks.

(i) A 10 ft wide sidewalk is proposed on the front portion of the hotel which connects to an approximately 30 ft wide pedestrian spine on the easterly side of the building and a 15 ft wide raised crosswalk to the southerly portion of the peninsula.

(ii) The development sidewalk improvements are all new and this requirement is not applicable.

(iii) The development provides pedestrian access to adjacent trailways (Portland Trails), Portland Transportation Center, and abutting land uses (commercial and residential).

3. Access and Circulation.

   a. The development will be served by an existing transit stop at the Portland Transportation Center.

   b. The new transit stop may include a pull-off space and shelter. A final location is still TBD but communication between Forefront Partners and the METRO is ongoing as summarized in an updated TDM document to be finalized for submission to the city by December 2017.

   c. The existing stop is connected to the public pedestrian system.

   d. Waiver: Waivers for this section have not been requested for this project.

4. Parking:

   a. Location and Required Number of Vehicle Parking Spaces:

      (i) The site plan proposes (10) ten onsite short-term spaces primarily for loading and unloading during the check-in/check-out process. The primary parking facility will be 100% managed by the Forefront Hotel valet service. The applicant has retained Unified Parking Partners to manage the existing parking lots on site in a safe and efficient manner.

      (ii) The applicant has prepared a TDM strategy approved in 2011, updated in 2015, and working on a scheduled December 2017 update. An interim update is included in the enclosed submission documents.

      (iii) N/A

      (iv) The site layout plan shows compliant parking stall and drive aisle dimensions.

      (v) Existing gravel parking lots will be retained. The applicant proposes a small parking and circulation area in-front of the building.

   b. Location and Required Number of Bicycle Parking Spaces:

      (i)(b) (4) four parking stalls (2 Dero bicycle hitching posts) are proposed near the main entrance.

   c. Motorcycles and Scooter Parking.

      (i) N/A.

   d. Snow Storage.

(i) On-site snow storage is available around the perimeter of the site.

5. Transportation Demand Management (TDM):

   a. The applicant has developed a TDM Plan pursuant to the City of Portland's Code of Ordinances. An interim update is attached with a full amendment proposed to be completed by December 2017.

   b. The TDM Plan incorporates the City goals by integrating elements described in the Technical Manual.

(b) Environmental Quality Standards

1. Preservation of Significant Natural Features:

   a. The Forefront Hotel development is located internally to other development areas and is not proximate to the natural features of Thompson' Point.

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

2. Landscaping and Landscaping Preservation:

   a. Landscape Preservation.

      (i) The site's existing tree population is limited to the northwest corner of the site. The project proposed plans to preserve trees as required by the Shoreland Zoning Ordinance and original Level III Site Plan approval. This is not applicable to the proposed area included with this scope of work.

      (ii) The applicant has performed a site walk with the City's arborist and will meet this criterion.

      (iii) N/A.

      (iv) The applicant will not require a waiver from this standard.

   b. Site Landscaping.

      (i) Landscaped Buffers:

         a) The applicant proposes a landscaped screening buffer to the dumpster enclosure area. The dumpster enclosure itself provides screening to the dumpsters using evergreen bush inserts. Refer to the enclosed Landscape plan L-1.0

      (ii) Parking Lot Landscaping:

         a) The applicant proposes landscaping as shown on the enclosed Landscape Plan L-1.0.

      (iii) N/A

3. Water Quality, Stormwater Management and Erosion Control:

a. Stormwater:

(i) All stormwater draining onto the site from adjacent properties drains to an existing storm drain system. The storm drainage system will not be altered at this time.

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

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

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

b. The Stormwater Management Plan meets the requirements and goals stated in Section 5 – Permit by Rule of the Technical Manual.

c. The project is not located in a watershed of an urban impaired stream as listed by the MaineDEP.

d. N/A

e. The stormwater management system includes groundwater protection measures including a 30 mil PVC impermeable liner around all subsurface stormwater treatment and storage facilities.

f. The applicant proposes a separated sanitary sewer service to the City of Portland municipal treatment system.

(c) Public Infrastructure and Community Safety Standards.

1. Consistency with City Master Plans:

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

b. The project site proposed the conveyance of land to the City for the sole purpose of public access to the site. The City has successfully petitioned for a Public Railroad Crossing at the entrance to the site.

2. Public Safety and Fire Prevention:

a. The site has been designed to promote safe and inviting public meeting and gathering spaces.

b. The proposed development allows for emergency response vehicles to access multiple sides of the proposed building.

c. The project will utilize existing public fire hydrants. All hydrants have been tested for flow capacity.

3. Availability and Adequate Capacity of Public Utilities:

a. The newly installed infrastructure has been sized to accommodate the proposed hotel. Forefront Partners recently completed a 12" main extension with service stubs designed for the Hotel use and a future expansion.

b. The primary power electrical service will come from an underground duct bank located on the westerly side of the building.

c. New infrastructure has been sized and installed in accordance with the City's technical manual.

d. The existing site sanitary sewer system is connected to the Thompson's Point sanitary pump station.

e. New infrastructure has been sized and installed in accordance with the City's technical manual.

f. The project will use exterior dumpsters to store trash and recyclables temporarily until a contracted waste management company can pick up and dispose of the solid waste. The project proposes to remove all temporary trash receptacles upon the completion of a Special Event.

(d) Site Design Standards.

1. Massing, Ventilation and Wind Impact:

   a. The new building will have been designed to not result in adverse impacts to other buildings or abutting properties.

   b. The new building will have been designed to not result in adverse impacts to other buildings or abutting properties.

   c. HVAC venting is located on the roof and will not affect any public spaces or adjacent properties.

2. Shadows:

   a. The development is located in the B5 Zone and this standard is not applicable.

3. Snow and Ice Loading:

   a. The proposed roof is flat and will prevent snow and ice from running off to adjacent areas.

4. View Corridors:

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

5. Historic Resources:

   a. The development is not located in a historic district, historic landscape district or City designated landmark; however, the project is seeking Federal Grant money and consequently a Section 106 review was prepared and accepted by the Maine Historic Preservation Office.

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

   c. There are no known archaeological resources on the site.

6. Exterior Lighting:

   a. Site Lighting.

(i) Permanent exterior site and building mounted lighting has full cut off fixtures. Proposed site lighting is consistent with other lighting installed on the site and consists of LED cut off fixtures mounted 20 ft height.
(ii) Specialty ground lighting may be added in heavy pedestrian areas. Final layout will be submitted under separate cover.

7. Noise and Vibration:

   a. HVAC and Mechanical Equipment.
      (i) All equipment will be located on the roof and screened accordingly.
      (ii) If applicable, the generator will be limited to one hour of routine maintenance per week.

8. Signage and Way finding:

   a. All building signage and specialty wayfinding signage will be submitted under a separate application package.

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

      (ii) Standard traffic signage is shown on the enclosed Site Layout Plan and designed to meet MUTCD recommendations.

   b. All onsite way finding and directional signage will be submitted under a separate application package.

9. Zoning Related Design Standards:

   a. The proposed hotel with restaurant building is permitted in the B-5 Zone. The development meets all Zoning Dimensional standards as summarized in the table below:

Summary of Zoning Dimensional Requirements:		
Requirement Description	**Required**	**Provided**
Minimum Lot Size	None	1.15 acres
Minimum Frontage	None	401.5+/- FT on Private Road
Yard Dimensions:		
Front	None	6 FT
Side	None	0.5 FT
Rear	None	0 FT
Maximum Lot Coverage:	100%	66.2%
Maximum Building Height	120 FT	54 FT

The following statement is made in accordance with the City of Portland Design Manual Zone B-5 Urban Commercial Business Zone.

Design Manual Design Standards:

a. Shared Infrastructure: The hotel lot is part of an integrated subdivision which shares utility and stormwater infrastructure, pedestrian and vehicular circulation, and loading/waste facilities with other lots with-in the development.
b. The hotel building is located as close to the street as possible while still providing the necessary one-way main entrance access loop. The westerly corner includes an architecturally integrated external stair case as well as windows facing the Fore River. The proposed pool room on the corner will differentiate itself because of its single-story skyline.
c. The southerly exposed main entrance is marked with a prominent architectural feature (Port Cochere). The building is oriented to be clearly visible from the road as well as the adjacent highway (I-295).
d. On-site Parking is restricted to a handful of short term loading spaces with the bulk of the visitor parking located in a shared parking facility via mandatory valet service.

SUPPLEMENTAL STORMWATER MANAGEMENT REPORT FOR HOTEL (LOT 6) LEVEL III SITE PLAN APPLICATION (GENERAL AND BASIC STANDARDS)

THE FOREFRONT AT THOMPSON'S POINT
FOREFRONT HOTEL
PORTLAND, ME

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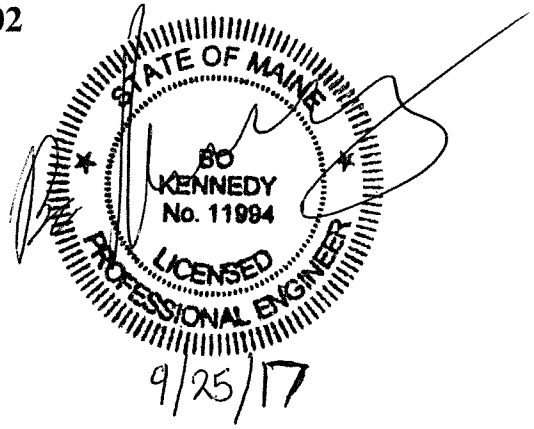

SEPTEMBER 2017

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List of Appendices

Appendix A – FocalPoint Approval and Sizing letter from MeDEP
Appendix B – FocalPoint Design Checklist and HydroCAD Model Summary
Appendix C – JellyFish™ HydroCAD Model Summary
Appendix D – Summary of Water Quality Treatment Zones C & D(partial)
Appendix E – Stormwater Management Plan-1 C-5.1

SUPPLEMENTAL STORMWATER MANAGEMENT REPORT

1.0 Introduction

The proposed hotel is depicted on the Master Development Plan (approved Jan. 2015) and more specifically referenced on the Overall Subdivision Plan (approved January 12, 2016) in a linear configuration on development lots 4 & 5. The proposed hotel as presented here-in is configured in an L shape on development lot 6 in place of the previously contemplated educational building. The hotel plans contained in a standalone City of Portland Level III site plan application dated September 25, 2017 provides additional construction details and refines another area of the evolving Master Development Plan.

This supplemental report relies upon assumptions and design approaches previously discussed and approved as part of previous Stormwater Management Reports associated with The Forefont at Thompson's Point Master Development Plan Application, Subdivision Application, and Level II or III Site Plan applications. Some of these assumptions pertinent to this report include but are not limited the following list:

- A waiver from the Flooding Standards was previously approved;
- A waiver from Channel Protection requirements (such as isolator row requirements associated with Filterra Treebox filters or additional detention associated with FocalPoint systems) was previously approved; and
- Prorated treatment credits for treatment of stormwater runoff from on-site existing impervious surfaces (MeDEP Chapter 500 rules dated 2010) that have been retained (primarily consisting of renovated buildings) are applicable to the overall treatment percentage computation.

This supplemental report details the stormwater management systems proposed for the site plan improvements associated with the Forefront Hotel at Thompson's Point as well as demonstrates the integration of stormwater treatment and conveyance infrastructure approved under the Master Development and Subdivision Plans Stormwater Management Strategy. The enclosed computations show that this phase of the project has been designed to meet the Portland Stormwater Management Standards adopted 7/19/10, General Stormwater Standards of MeDEP (revised 2015), and Maine Stormwater Management Design Manual Technical Design Manual (Dated May 2016) and are consistent with the overall goals presented in previous Stormwater Reports. The intent and principals of the stormwater management design, erosion and sediment control, and Inspection and Maintenance Manual have remained the same as approved in June 5, 2012 and include full compliance with Chapter 32 of the City's Technical Manual Stormwater rules and Chapter 500 of the MeDEP Stormwater law.

This phase of the project will have a cumulative redeveloped area of 1.46 acres of which 1.14 acres are newly constructed impervious surfaces.

2.0 Stormwater Management Zone Revisions

This supplemental report summarizes the changes to the water quality treatment zones and provides detailed land cover computations of development tributary to the respective stormwater management systems sized to convey and treat stormwater runoff from the proposed re-development.

The proposed hotel site plan is divided into two major drainage discharge zones identified as Zone D and Zone C on the Overall Stormwater Management Plan C-4.1 dated 09.16.16 and

approved under the Subdivision application. The Stormwater Management Zones are organized and labeled based on tributary treatment area and discharge location.

A portion of the property between the new hotel building and the existing Brick South building will be an improved event lawn area with patio and walkways as well as and a portion of the existing Brick South Roof drains to the Zone D discharge. The drainage infrastructure from this subcatchment (D27) will be connected to an existing 12" storm drain stub installed as part of the roadway constructed during the summer of 2017 and discharge to the Fore River through an existing 36" SD pipe labeled as D0.

The new hotel roof (including a potential future expansion area), driveway loop, and adjacent pedestrian alley will be collected in a closed storm drainage system and discharge to a new storm drainage trunk line identified as Zone C on the Overall Stormwater Management Plan C-4.1 dated 09.16.16 and approved under the Subdivision application. The Zone C discharge will be a newly constructed piece of infrastructure discharging to the Fore River on the easterly side of the Thompson's Point peninsula. The trunk line is sized to accommodate stormwater runoff from stormwater management zones C and B.

The area of proposed development included with this application affects the zones and subzones identified on the Overall Stormwater Management Plan as Zone D and C and summarized in Table 1 below:

TABLE 1 – Summary of Changes to Stormwater Management Zones

Subdivision Plan Discharge Zone ID	CB Inlet ID	Description of Change
C – 501	C15A (roof)	The proposed roof area has been adjusted to reflect the currently proposed building size. The roof area has been broken into two drainage areas shown to minimize length of internal roof drainage piping. A portion of this area previously shown as roof will be developed as driveway and drain to Catch basin C7.
C – 502	D27	The developed area between the two buildings has been redirected to drainage to Zone D so it does not need to pass under the building.
C – 503	C-15B	This is the easterly portion of the proposed roof.
C - 703	C9 thru C13	The pedestrian alley drainage area discharging to Zone C has grown in size and will enter through a series of inlets with-in the hardscape. The larger Zone C area will reduce the overall size shown to be part of Zone B area 403.
B – 403	C 14	A portion of the Zone B area 403 that has been regraded to drain to Zone C.
C – 1	D27 and C13	A portion of the Brick South Building area previously included entirely in Zone C is now included in both Zone D and C treatment areas.

The C-5.1 Stormwater Management Plan – 1 shows the updated stormwater management zones and proposed stormwater infrastructure and is attached in Appendix E. An updated Water Quality Treatment table is shown on plan Sheet C-5.2 Stormwater Management Plan-2 and enclosed in Appendix D.

3.0 Stormwater Quality Treatment (General Standards)

3.1 Zone D (Event Lawn and Brick South Roof):

Zone D – Area D27

The stormwater treatment approach to this subcatchment utilizes a proprietary high-performance bio-filtration system known as FocalPoint manufactured and distributed by ACF Environmental. The proposed FocalPoint system has been sized and configured in accordance with the preapproval letter from Maine DEP to ACF Environmental dated February 2, 2017 and enclosed for reference in Appendix A. A FocalPoint system is required to be sized based on three main criteria:

- 174 SF of filter area per prorated acre based on MeDEP Chapter 500 prescribed water quality of volume of 1" from all impervious surfaces and 0.4" from all pervious surfaces;
- Storage volume provided for a 0.95-inch Type III 24-hr rainfall event; and
- Flow rate (CFS) from 1 yr-24 hr storm

The resultant sizing computations are detailed in Appendix D and conclude a minimum filter surface of 86 Sq. Ft. and 7 Cultec 150XLHD (or approved equal) separator chambers are required. The design layout specifies a 96 Sq. Ft filter and 7 Cultec 150XLHD (or approved equal) are used. The additional 10 Sq. Ft. of filter area will provide two functions:

- City of Porltand Stormwater Fee Credits - Immediately, the system is oversized such that additional City of Porltand Stormwater Fee Credits can be applied to the owner's monthly bill.
- Future Design Changes - Secondly, should the event lawn area design change to include a higher percentage of impervious area. The oversized filter area equates to the conversion of approximately 2,175 Sq. Ft. of pervious surface to impervious surface and still meet all the design standards.

The proposed FocalPoint design considers ground water protection measures in the construction details as shown on the plan sheets Stormwater Details FocalPoint Separator Row C-7.3 & Stormwater Details FocalPoint System Details C-7.4 of the Level III Site Plan set. Separation of stormwater runoff from groundwater is a requirement of the MeDEP VRAP Groundwater Management Work Plan prepared by Credere Associates. The construction details provide for a separation between ground water and stormwater runoff passing through the FocalPoint system by wrapping the filter and adjacent separator row chambers with a heavy duty 30 mil PVC impervious liner.

The FocalPoint filter is considered adequate to meet and exceed the Chapter 500 General Standards for water quality treatment.

3.2 Zone C (Hotel Roof, Driveway, Landscaping, and Pedestrian Hardscapes):

Zone C - Areas C7 thru C15

The Zone C subcatchment areas numbered C7 through C15 associated with the Hotel Site Plan are tributary to a Contech Jellyfish™ Treatment Unit.

Jellyfish™ units are precast concrete manholes that utilize membrane filtration treatment cartridges. Flow enters the Jellyfish™ from an upstream storage chamber system and flows into a

settling tank portion of the unit. Once the settling tank is filled, flow from the bottom of the tank is forced up through hi-flow cartridges and continues to the outlet on the by-pass conveyance trunk line. A baffle wall is located between the inlet and outlet compartments to ensure that un-treated flow from small storm events is not mixed with treated flow. When the hi-flow treatment cartridge has filled, a drain down cartridge(s) is activated treating the remaining water quality volume. Horizontal orifices are located on top of the cartridges to control the outflow of the system. Each Jellyfish™ cartridge unit is designed to discharge the water quality volume at a rate not to exceed 80 GPM/cartridge.

To meet Chapter 500, the Water Quality Volume provided with-in a Jellyfish™ System must be equal to or greater than the following:

1"/12 x impervious area plus 0.4"/12 x landscaped area = Water Quality Volume (cubic feet)

Computations of Water Quality Volume for Zone C can be found in Appendix D. It is noted that the Zone C Jellyfish™ system is oversized to accommodate a potential future building expansion.

The water quality volume is provided in a subsurface arched chamber storage system. This portion of the design is identical to the system installed as part of the Brick North and Brick South development projects.

Jellyfish™ units are designed based on a mass sediment loading calculation. Each treatment hi-flow cartridge has a mass capacity of 125 1bs and each low-flow (draindown) cartridge has a capacity of 63 lbs. The mass loading for each zone was determined by Maine DEP sediment loading standards, assuming a 50% sediment removal from a designed pre-treatment StormTech® Isolator row.

Discharge from larger storm events are controlled over a broad crested weir housed in a precast concrete outlet control structure set above the water quality volume. The overflow piping network is sized to handle runoff from a 25-year storm event. A rain event exceeding the storm drainage network would likely flood the catch basin inlet, into the parking lot and over the curb line to the river.

Pretreatment for flow entering from all inlet pipes to the storage area will be provided via the installation of a StormTech® Isolator row(s).

Therefore, water quality goals for the Jellyfish™ Proprietary Systems meet the General Stormwater Standards of the November 2005 Chapter 500 Rules of MeDEP (rev. January 2015).

The Jellyfish™ treatment systems and Filterra® are considered adequate to meet the Chapter 500 General Standards.

4.0 Conclusion

The stormwater management strategy for this phase of the project presented herein are consistent with the Master Development Plan and Subdivision Plan Strategies. The overall Thompson's Point stormwater management strategy provides a blue print for treating a minimum of 95% of the net new redeveloped impervious area and 80% of the net new developed area. This phase of the amended site plan treats greater than 100% or 1.64 ac of the 1.46 ac. redeveloped area and greater than 100% or 1.33 ac. of the 1.14 ac. redeveloped impervious area. When a 60% credit is taken for the treatment of a portion of the existing Brick South Building the Hotel Phase of the amended site plan treats 112.64% of the net developed area and 116.15% of the net developed impervious area. The individual systems have been adjusted to accommodate current detailed site

plan revisions but ultimately the design strategies remain the same and meets or exceeds the City of Portland Stormwater Management Requirements.

5.0 Appendices

Appendix A – FocalPoint Approval and Sizing letter from MeDEP
Appendix B – FocalPoint Design Checklist and HydroCAD Model Summary
Appendix C – JellyFish™ HydroCAD Model Summary
Appendix D – Summary of Water Quality Treatment Zones C & D(partial)
Appendix E – Stormwater Management Plan-1 C-5.1

APPENDIX A

FocalPoint Approval and Sizing letter from MeDEP

STATE OF MAINE
DEPARTMENT OF ENVIRONMENTAL PROTECTION

PAUL R. LEPAGE
GOVERNOR

PAUL MERCER
COMMISSIONER

February 2, 2017

Stormwater Systems ACF-Convergent Water Technologies Alliance
23 Faith Drive
Gorham, ME 04038
ATTN: Robert Woodman and Scott Gorneau

Dear Mr. Woodman and Mr. Gorneau:

This letter replaces the May 16, 2016 approval from the Department of Environmental Protection (Department) that authorized the use of the FocalPoint system. The FocalPoint system (a high performance modular biofiltration system), when installed in series with a subsurface chamber-based treatment row, meets the requirements of the General Standards (Section 4.C.) of the Stormwater Management Rules (Chapter 500), provided that the system is filled with the FocalPoint engineered filter media; it is sized to meet the requirements of the General Standards (Section 4.B.); and it is installed, operated and maintained in accordance with the following provisions:

1. The FocalPoint system must be sized in accordance with the manufacturer's latest field test results with the goal of treating 90% of the annual runoff volume. To accomplish this, the system must be modelled in HydroCAD (or similar TR-55 modelling software) to demonstrate that the entire volume of a 0.95 inch Type III 24-hr storm is treated prior to activation of the bypass/overflow (typically set at 6" to 12" above the mulch surface). When sizing the FocalPoint system to meet Chapter 500, note that runoff from the entire contributing drainage area, including pervious areas, must be included in the modeled runoff values.

2. The surface area of the media within the FocalPoint must be a minimum of 174 square feet per 1 acre of impervious area treated (26 sq. ft. per 0.15 acres). The thickness of the media is to be no less than 1.5 ft. (18 inches) and the ratio of the surface area of the filter media bed in square feet to the ponding volume in cubic feet must be no less than 1 to 5.

3. The FocalPoint system consists of five components that include: 1) an open cell underdrain; 2) a wide aperture separation mesh wrap around the underdrain; 3) a layer of clean washed, 3/8" diameter bridging stone; 4) advanced high flow rate engineered media with an infiltration rate of 100 inches per hour; and 5) double shredded hardwood mulch. These components are built from the bottom up to create a mostly permeable profile that measures 3 feet from bottom of underdrain to top of mulch. The ponding

depth above the mulch surface is typically 6 to 12 inches and varies based on site conditions. An overflow outlet should be placed above the ponding depth.

4. The FocalPoint system requires the establishment of vegetation that is tolerant of wet and dry conditions. Plants that are not performing as desired should be replaced as needed. A list of appropriate plants for use in the FocalPoint system is provided at: http://www.acfenvironmental.com/products/stormwater-management/filtration/focal-point/.

5. The FocalPoint biofiltration system must be placed in-line with a subsurface chamber-based treatment row that is approved by the Department such that both the treated discharge and the bypass discharge from the FocalPoint system drain to the treatment row. The treatment row must be sized to treat the peak flow from a 1-year, 24-hour storm event. The treatment row structure must be continuous and without obstacle for cleaning, and must have access at both ends for the removal of accumulated sediment and debris. The treatment row must be underlain with a bottom surface consisting of 2 layers of woven geotextile (e.g., ACF S300) that extends 18 to 24 inches beyond all sides of the bottom of the structure.

6. Additional storage downstream of the FocalPoint and treatment row will be required to store at least the sum of 1.0 inch of runoff from the impervious areas and 0.4 inches of runoff from the lawn and landscaped areas that drain to the system unless attenuation of the channel protection volume is not required (i.e. direct discharge to a lake, tidal waters, or a major river). An external outlet control structure must control the flow out of a downstream storage system, sized for the entire channel protection volume, and drain in no less than 24 hours or more than 48 hours.

7. If required for flooding control, the storage system can be sized to provide for the storage and release of the peak flow with a regulated flow rate from 24-hour storms of the 2, 10, and 25-year frequencies such that the peak flows from the project site do not exceed the peak flow prior to undertaking the project.

8. The applicant must demonstrate that the design meets all the manufacturer's specifications and shall be reviewed by the manufacturer prior to submission to the Department for approval. Review and approval of the design by the manufacturer will be sufficient to demonstrate conformance with the manufacturer's specifications. The FocalPoint system must be installed by a manufacturer's certified installer or under the supervision of a manufacturer's representative.

9. Components of the system that are delivered in bulk (i.e., mulch, high flow media and clean washed bridging stone), should be contained in nylon super sacks to promote ease of storage and protection during on-site construction activities.

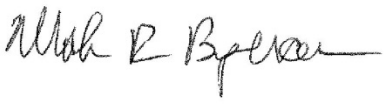
10. The FocalPoint and treatment row system should be inspected and maintained if necessary at least once every six months to maintain the established efficiency for pollutant removal. Prior to construction, a five-year binding inspection and maintenance contract must be provided prior to the Department for review and approval, and must be renewed before contract expiration. The contract will be with a professional with knowledge of erosion and stormwater control, including experience with the proposed system.

11. The overall stormwater management design must meet all Department criteria and sizing specifications and will be reviewed and approved by the Department prior to use.

12. This approval is conditional on full-scale, cold climate field testing results, performed in accordance with the Department's protocols, confirming that the pollutant removal efficiency and sizing of the FocalPoint system are appropriate. The "permit shield" provision (Section 14) of the Chapter 500 rules will apply, and the Department will not require the replacement of the system if, with proper maintenance, pollutant removals do not satisfy the General Standard Best Management Practices.

Questions concerning this decision should be directed to David Waddell at (207) 215-6932 or Jeff Dennis at (207) 215-6376.

Sincerely,



Mark Bergeron, P.E.
Director
Bureau of Land Resources

cc: Don Witherill, Maine DEP

FocalPoint

BIOFILTRATION SYSTEMS

HIGH PERFORMANCE MODULAR BIOFILTRATION SYSTEM (HPMBS)

Operations & Maintenance

ACF ENVIRONMENTAL

Customer Focused, Environmentally Committed

GENERAL DESCRIPTION

The following general specifications describe the general operations and maintenance requirements for the FocalPoint® High Performance Modular Biofiltration System (HPMBS). The system utilizes physical, chemical and biological mechanisms of a soil, plant and microbe complex to remove pollutants typically found in urban stormwater runoff. The treatment system is a fully equipped, modular, constructed in place system designed to treat contaminated runoff.

Stormwater enters the FocalPoint® HPMBS, is filtered by the High Flow Biofiltration Media and passes through to the underdrain/storage system where the treated water is detained, retained or infiltrated to sub-soils, prior to discharge to the storm sewer system of any remaining flow.

Higher flows bypass the FocalPoint® HPMBS via a downstream inlet or other overflow conveyance. Maintenance is a simple, inexpensive and safe operation that does not require confined space entry, pumping or vacuum equipment, or specialized tools. Properly trained landscape personnel can effectively maintain FocalPoint® HPMBS by following instructions in this manual.

BASIC OPERATIONS

FocalPoint® is a modular, high performance biofiltration system that often works in tandem with other integrated management practices (IMP). Contaminated stormwater runoff enters the biofiltration bed through a conveyance swale, planter box, or directly through a curb cut or false inlet. Energy is dissipated by a rock or vegetative dissipation device and is absorbed by a 3-inch layer of aged, double shredded hardwood mulch, with fines removed, (when specified) on the surface of the biofiltration media.

As the water passes through the mulch layer, most of the larger sediment particles and heavy metals are removed through sedimentation and chemical reactions with the organic material in the mulch. Water passes through the biofiltration media where the finer particles are removed and numerous chemical reactions take place to immobilize and capture pollutants in the soil media.

The cleansed water passes into the underdrain/storage system and remaining flows are directed to a storm sewer system or other appropriate discharge point. Once the pollutants are in the soil, bacteria begin to break down and metabolize the materials and the plants begin to uptake and metabolize the pollutants. Some pollutants such as heavy metals, which are chemically bound to organic particles in the mulch, are released over time as the organic matter decomposes to release the metals to the feeder roots of the plants and the cells of the bacteria in the soil where they remain and are recycled. Other pollutants such as phosphorus are chemically bound to the soil particles and released slowly back to the plants and bacteria and used in their metabolic processes. Nitrogen goes through a variety of very complex biochemical processes where it can ultimately end up in the plant/bacteria biomass, turned to nitrogen gas or dissolves back into the water column as nitrates depending on soil temperature, pH and the availability of oxygen. The pollutants ultimately are retained in the mulch, soil and biomass with some passing out of the system into the air or back into the water.

DESIGN AND INSTALLATION

Each project presents different scopes for the use of FocalPoint® HPMBS. To ensure the safe and specified function of this stormwater BMP, Convergent Water Technologies and/or its Value Added Resellers (VAR) review each application before supply. Information and design assistance is available to the design engineer during the planning process. Correct FocalPoint® sizing is essential to optimum performance. The engineer shall submit calculations for approval by the local jurisdiction when required. The contractor and/or VAR is responsible for the correct installation of FocalPoint® HPMBS units as described in approved plans. A comprehensive installation manual is available at www.convergentwater.com.

FocalPoint
BIOFILTRATION SYSTEMS

MAINTENANCE

Why Maintain?

All stormwater treatment systems require maintenance for effective operation. This necessity is often incorporated in your property's permitting process as a legally binding BMP maintenance agreement. Other reasons for maintenance include:

- Avoid legal challenges from your jurisdiction's maintenance enforcement program.
- Prolong the lifespan of your FocalPoint® HPMBS.
- Avoid costly repairs.
- Help reduce pollutant loads leaving your property.

Simple maintenance of the FocalPoint® HPMBS is required to continue effective pollutant removal from stormwater runoff before any discharge into downstream waters. This procedure will also extend the longevity of the living biofiltration system. The unit will recycle and accumulate pollutants within the biomass, but may also subjected to other materials entering the surface of the system. This may include trash, silt and leaves etc. which will be contained above the mulch and/or biofiltration media layer. Too much silt may inhibit the FocalPoint's® HPMBS flow rate, which is a primary reason for system maintenance. Removal of accumulated silt/sediment and/or replacement of the mulch layer (when specified), is an important activity that prevents over accumulation of such silt/sediment.

When to Maintain?

Convergent Water Technologies and/or its VAR includes a 1-year maintenance plan with each system purchased. Annual included maintenance consists of two (2) scheduled maintenance visits. Additional maintenance may be necessary depending on sediment and trash loading (by Owner or at additional cost). The start of the maintenance plan begins when the system is activated for full operation. Full operation is defined as when the site is appropriately stabilized, the unit is installed and activated (by VAR), i.e., when mulch (if specified) and plantings are added.

Activation should be avoided until the site is fully stabilized (full landscaping, grass cover, final paving and street sweeping completed). Maintenance visits are scheduled seasonally; the spring visit aims to clean up after winter loads including salts and sands. The fall visit helps the system by removing excessive leaf litter.

A first inspection to determine if maintenance is necessary should be performed at least twice annually after storm events of greater than (1) one inch total depth (subject to regional climate). Please refer to the maintenance checklist for specific conditions that indicate if maintenance is necessary.

It has been found that in regions which receive between 30-50 inches of annual rainfall, (2) two visits are generally required. Regions with less rainfall often only require (1) one visit per annum. Varying land uses can affect maintenance frequency.

Some sites may be subjected to extreme sediment or trash loads, requiring more frequent maintenance visits. This is the reason for detailed notes of maintenance actions per unit, helping the VAR/Maintenance contractor and Owner predict future maintenance frequencies, reflecting individual site conditions.

Owners must promptly notify the VAR/Maintenance contractor of any damage to the plant(s), which constitute(s) an integral part of the biofiltration technology. Owners should also advise other landscape or maintenance contractors to leave all maintenance of the FocalPoint® HPMBS to the VAR/Maintenance contractor (i.e. no pruning or fertilizing).

EXCLUSION OF SERVICES

It is the responsibility of the owner to provide adequate irrigation when necessary to the plant(s) in the FocalPoint® HPMBS.

Clean up due to major contamination such as oils, chemicals, toxic spills, etc. will result in additional costs and are not covered under the VAR/Maintenance contractor maintenance contract. Should a major contamination event occur, the Owner must block off the outlet pipe of the FocalPoint® (where the cleaned runoff drains to, such as drop-inlet) and block off the point where water enters of the FocalPoint® HPMBS. The VAR/Maintenance contractor should be informed immediately.

MAINTENANCE VISIT SUMMARY

Each maintenance visit consists of the following simple tasks (detailed instructions below).

1. Inspection of FocalPoint® HPMBS and surrounding area
2. Removal of debris, trash and mulch
3. Mulch replacement
4. Plant health evaluation (including measurements) and pruning or replacement as necessary
5. Clean area around FocalPoint® HPMBS
6. Complete paperwork, including date stamped photos of the tasks listed above.

MAINTENANCE TOOLS, SAFETY EQUIPMENT AND SUPPLIES

Ideal tools include: camera, bucket, shovel, broom, pruners, hoe/rake, and tape measure. Appropriate Personal Protective Equipment (PPE) should be used in accordance with local or company procedures. This may include impervious gloves where the type of trash is unknown, high visibility clothing and barricades when working in close proximity to traffic and also safety hats and shoes.

MAINTENANCE VISIT PROCEDURE

Inspection of FocalPoint® HPMBS and surrounding area

Record individual unit before maintenance with photograph (numbered). Record on Maintenance Report (see example in this document) the following:

- Standing Water yes | no
- Is Bypass Inlet Clear? yes | no
- Damage to HPMBS System yes | no
- to Overflow conveyance yes | no

Removal of Silt / Sediment / Clay

Dig out silt (if any) and mulch and remove trash & foreign items.

- Silt / Clay Found? yes | no
- Cups / Bags Found? yes | no
- Leaves? yes | no
- Volume of material removed _____ (volume or weight)

Removal of debris, trash and mulch

After removal of mulch and debris, measure distance from the top of the FocalPoint® HPMBS engineered media soil to the flow line elevation of the adjacent overflow conveyance. If this distance is greater than that specified on the plans (typ. 6" - 12"), add media (not top soil or other) to recharge to the distance specified.

- Distance to media surface to flow line of overflow conveyance (inches) _____
- # of Buckets of Media Added _____

Mulch Replacement

Most maintenance visits require only replacement mulch (if utilized) which must be, aged, double shredded hardwood mulch with fines removed. For smaller projects, one cubic foot of mulch will cover four square feet of biofiltration bed, and for larger projects, one cubic yard of mulch will cover 108 square feet of biofiltration bed. Some visits may require additional FocalPoint® HPMBS engineered soil media available from the VAR/Contractor.

- Add double shredded, aged hardwood mulch which has been screened to remove fines, evenly across the entire biofiltration media bed to a depth of 3".
- Clean accumulated sediment from energy dissipation system at the inlet to the FocalPoint® HPMBS to allow for entry of trash during a storm event.

Plant health evaluation and pruning or replacement as necessary

Examine the plant's health and replace if dead or dying.
Prune as necessary to encourage growth in the correct directions

- Height above Grate (feet) _____
- Width at Widest point (feet) _____
- Health alive | dead
- Damage to Plant yes | no

Clean area around FocalPoint® HPMBS

- Clean area around unit and remove all refuse to be disposed of appropriately.

Complete paperwork

- Deliver Maintenance Report and photographs as appropriate.
- Some jurisdictions may require submission of maintenance reports in accordance with approvals.
- It is the responsibility of the Owner to comply with local regulations.

FocalPoint Warranty

Seller warrants goods sold hereunder against defects in materials and workmanship only, for a period of (1) year from date the Seller activates the system into service. Seller makes no other warranties, express or implied.

Seller's liability hereunder shall be conditioned upon the Buyer's installation, maintenance, and service of the goods in strict compliance with the written instructions and specifications provided by the Seller. Any deviation from Seller's instructions and specifications or any abuse or neglect shall void warranties.

In the event of any claim upon Seller's warranty, the burden shall be upon the Buyer to prove strict compliance with all instructions and specifications provided by the Seller.

Seller's liability hereunder shall be limited only to the cost or replacement of the goods. Buyer agrees that Seller shall not be liable for any consequential losses arising from the purchase, installation, and/or use of the goods.

Maintenance Checklist

Element	Problem	What To Check	Should Exist	Action
Inlet	Excessive sediment or trash accumulation	Accumulation of sediment or trash impair free flow of water into FocalPoint	Inlet free of obstructions allowing free flow into FocalPoint System	Sediments or trash should be removed
Mulch Cover	Trash and floatable debris accumulation	Excessive trash or debris accumulation.	Minimal trash or other debris on mulch cover	Trash and debris should be removed and mulch cover raked level. Ensure that bark nugget
Mulch Cover	Ponding of water on mulch cover	Ponding in unit could be indicative of clogging due to excessive fine sediment accumulation or spill of petroleum oils	Stormwater should drain freely and evenly over mulch cover.	Contact VAR for advice.
Plants	Plants not growing, or in poor condition	Soil/mulch too wet, evidence of spill. Pest infestation. Vandalism to plants.	Plants should be healthy and pest free.	Contact VAR for advice.
Plants	Plant growth excessive	Plants should be appropriate to the species and location of FocalPoint		Trim/prune plants in accordance with typical landscaping and

APPENDIX B

FocalPoint Design Checklist and
HydroCAD Model Summary

ACF Environmental
2831 Cardwell Rd
Richmond, VA 23234

Bo Kennedy, PE
Placemaker Partners, LLC
501 Danforth Street
Portland, ME 04102

September 29, 2017,

SUBJECT: The Forefront at Thompson's Point – Forefront Hotel – Portland, Maine
Plan Review and Construction Oversight Commitment

Dear Bo,

Thank you for forwarding the permit plans for the proposed The Forefront at Thompson's Point – Forefront Hotel – Portland, Maine project to ACF environmental for review of the proposed FocalPoint biofiltration system.

Our team has reviewed the plans (with latest revision date of 9/25/2017) and made the following observations:

- There is one 96 sf FocalPoint system shown on the plans.
- The system has the approved FocalPoint section (3" mulch, 18" media, 6" bridging stone and 9" modular underdrain.
- The system has a peak elevation of less than 6 inches of temporary ponding volume for the 0.95" storm – which is within the recommended temporary ponding range for the system.
- The volume associated with the 0.95" 24hr storm is treated prior to activation of the overflow device (WQ goal met). (per review of HydroCAD output). A pair of 12" dia PVC domed risers with a filter insert is proposed for bypass.
- A 7 chamber Cultec 150XLHD separator row is proposed as required by the MeDEP FocalPoint design guidance.
- It is our understanding that Channel Protection and Flood Control is not needed for this project.

Overall, ACF takes no exceptions to the location and application of the FocalPoint system for this project.

It appears that the system has been designed in accordance with the design criteria set forth by Maine DEP in the FocalPoint system approval letter and meet the system specifications etc.

With regard to the installation, ACF Environmental will host a preconstruction meeting with the site contractor and will be on-site during the entire installation to ensure that the installation is being conducted in accordance with our standard installation procedures.

ACF Environmental will also provide the first year's maintenance on the FocalPoint bed area.

Please review and contact me with any questions from your office.

We look forward to working with you on this project.

Sincerely,

Robert J Woodman,
Senior Stormwater Engineer
ACF Environmental

Cc: Lee Jones, ACF Environmental

FOCALPOINT

HIGH PERFORMANCE MODULAR BIOFILTRATION SYSTEM

MAINE – CHAPTER 500 DESIGN WORKSHEET/CHECKLIST

1. FocalPoint Bed Area (min 174 square feet per acre of impervious area (e.g. 0.2 acres = 35 sf))

- Tributary Impervious area = 0.38 ac. (A)
- Tributary Pervious area = 0.34 ac. (B)
- Min FocalPoint bed area req'd = (((A) x 1.0) + ((B) x 0.4)) * 174 = 89.8 sf.
- FocalPoint Bed Area provided * = 96 sf.
- Dimensions of Proposed FocalPoint = 8 ft x 12 ft

* see criteria 2. to determine if minimum size is appropriate.

2. A 0.95 inch Type III 24hr rainfall event shall be modelled to demonstrate the entire storm volume is treated prior to activation of the overflow (typically set at 6-12" above the mulch)

- Temporary storage depth provided = 3"_____ inches (typ 6" to 12")
- Temporary storage volume provided at above depth = 129_____ cubic feet.
- Peak ponding depth from 0.95" 24hr storm event = __N/A_____ inches

3. Ratio of the surface area of the filter media (sf) to the temporary ponding volume (cf) shall be no less that 1:5

- Ratio of FocalPoint Bed Area : Temporary Storage Vol = 1:1.34

4. Subsurface Chamber Treatment Row must be sized to treat the peak flow from a 1 yr-24hr storm event.

- 1yr 24hr Peak Flowrate = 1.19_____ cfs
- Chamber model selected
  - Cultec 330 XLHD (1 chamber per 0.227 cfs) ☐
  - Cultec 150XLHD (1 chamber per 0.185 cfs) ☒

- Number of Chambers required = 1.19 / 0.185 = 6.43 ch
- Number of Chambers Provided = 7 EA Cultec 150XLHD

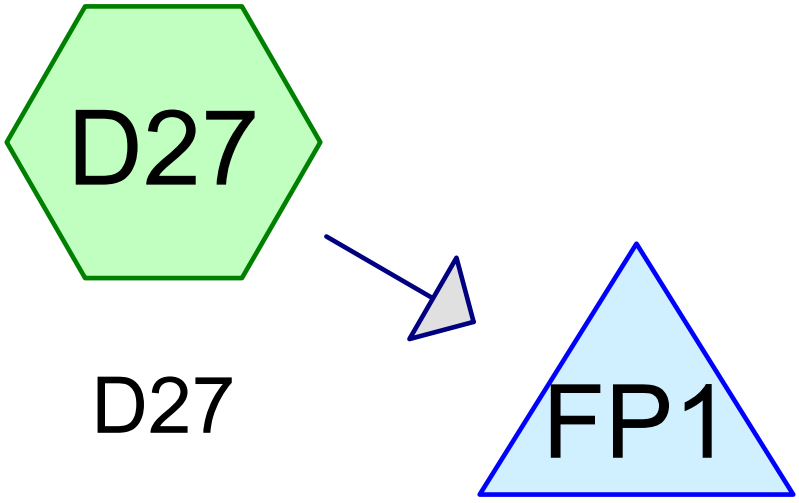
5. Controlled release of the Channel Protection over 24-48 hrs ---*N/A*

- Controlled release of the channel protection volume is being achieved by: ***N/A***
  - Expanded subsurface storage basin with OCS ☐***N/A***
  - Surface detention basin with OCS ☐***N/A***

6. The Design shall be reviewed by the manufacturer's representative prior to submission and installation will be overseen by the manufacturer's representative.

- The Design has been reviewed by ACF Environmental ☒
- Engineer will coordinate installation inspection with ACF ☒

Contact ACF Environmental at 1800 448 3636 with any questions
or contact Rob Woodman – Senior Stormwater Engineer at rwoodman@acfenv.com



FocalPoint 96sf

Subcat Reach Pond Link

Routing Diagram for 2017.09.01 Hotel Focal Point - Zone D
Prepared by Hewlett-Packard Company, Printed 9/28/2017
HydroCAD® 10.00-19 s/n 09708 © 2016 HydroCAD Software Solutions LLC

Area Listing (all nodes)

Area (sq-ft)	CN	Description (subcatchment-numbers)
14,750	74	>75% Grass cover, Good, HSG C (D27)
16,530	98	Unconnected pavement, HSG C (D27)
31,280	**87**	**TOTAL AREA**

Ground Covers (all nodes)

HSG-A (sq-ft)	HSG-B (sq-ft)	HSG-C (sq-ft)	HSG-D (sq-ft)	Other (sq-ft)	Total (sq-ft)	Ground Cover	Sub Num
0	0	14,750	0	0	14,750	>75% Grass cover, Good	
0	0	16,530	0	0	16,530	Unconnected pavement	
0	**0**	**31,280**	**0**	**0**	**31,280**	**TOTAL AREA**	

Time span=0.00-48.00 hrs, dt=0.01 hrs, 4801 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Dyn-Stor-Ind method - Pond routing by Dyn-Stor-Ind method

Subcatchment D27: D27 Runoff Area=31,280 sf 52.85% Impervious Runoff Depth=0.20"
Tc=6.0 min CN=87 Runoff=0.14 cfs 515 cf

Pond FP1: FocalPoint 96sf Peak Elev=11.78' Storage=1 cf Inflow=0.14 cfs 515 cf
Primary=0.14 cfs 515 cf Secondary=0.00 cfs 0 cf Outflow=0.14 cfs 515 cf

Total Runoff Area = 31,280 sf Runoff Volume = 515 cf Average Runoff Depth = 0.20"
47.15% Pervious = 14,750 sf 52.85% Impervious = 16,530 sf

Summary for Subcatchment D27: D27

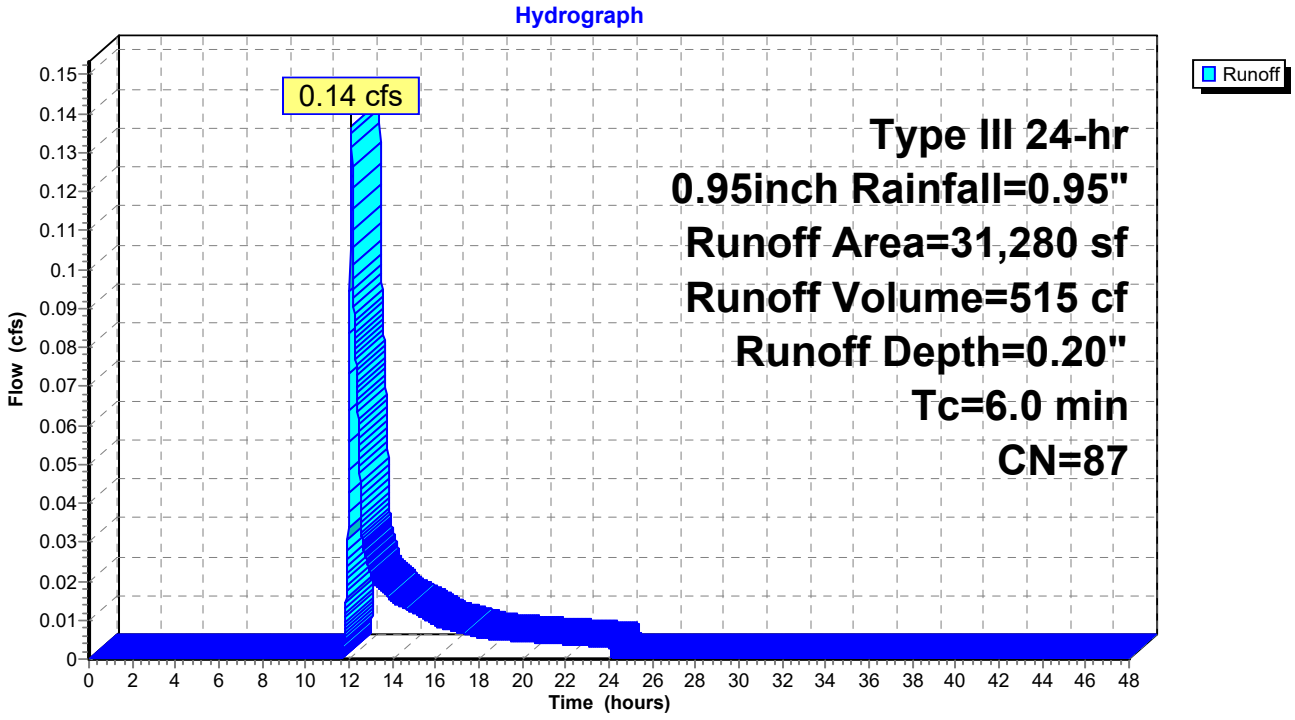
Runoff = 0.14 cfs @ 12.11 hrs, Volume= 515 cf, Depth= 0.20"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Type III 24-hr 0.95inch Rainfall=0.95"

Area (sf)	CN	Description
16,530	98	Unconnected pavement, HSG C
14,750	74	>75% Grass cover, Good, HSG C
31,280	87	Weighted Average
14,750		47.15% Pervious Area
16,530		52.85% Impervious Area
16,530		100.00% Unconnected

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					**Direct Entry,**

Subcatchment D27: D27



Summary for Pond FP1: FocalPoint 96sf

Inflow Area = 31,280 sf, 52.85% Impervious, Inflow Depth = 0.20" for 0.95inch event
Inflow = 0.14 cfs @ 12.11 hrs, Volume= 515 cf
Outflow = 0.14 cfs @ 12.11 hrs, Volume= 515 cf, Atten= 0%, Lag= 0.2 min
Primary = 0.14 cfs @ 12.11 hrs, Volume= 515 cf
Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0 cf

Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Peak Elev= 11.78' @ 12.11 hrs Surf.Area= 216 sf Storage= 1 cf

Plug-Flow detention time= 0.1 min calculated for 515 cf (100% of inflow)
Center-of-Mass det. time= 0.1 min (889.1 - 889.0)

Volume	Invert	Avail.Storage	Storage Description
#1	11.75'	97 cf	**18.00'W x 12.00'L x 2.25'H FocalPoint** 486 cf Overall x 20.0% Voids
#2	14.00'	267 cf	**Custom Stage Data (Irregular)**Listed below (Recalc) -Impervious
		365 cf	Total Available Storage

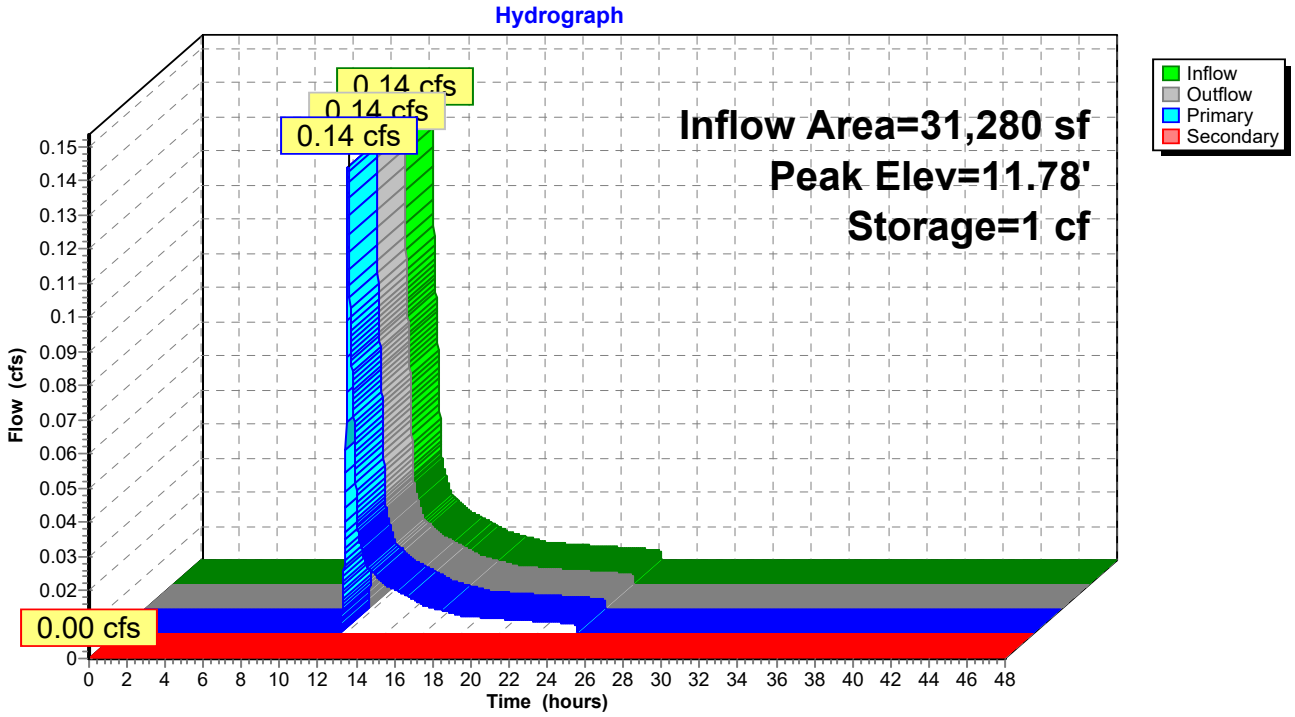
Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
14.00	96	40.0	0	0	96
14.50	250	65.0	83	83	307
15.00	500	96.0	184	267	706

Device	Routing	Invert	Outlet Devices
#1	Primary	11.75'	**100.000 in/hr Exfiltration over Surface area** Phase-In= 0.10'
#2	Secondary	14.25'	**12.0" Horiz. Orifice/Grate X 2.00** C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=0.14 cfs @ 12.11 hrs HW=11.78' (Free Discharge)
↑—**1=Exfiltration** (Exfiltration Controls 0.14 cfs)

Secondary OutFlow Max=0.00 cfs @ 0.00 hrs HW=11.75' (Free Discharge)
↑—**2=Orifice/Grate** (Controls 0.00 cfs)

Pond FP1: FocalPoint 96sf



Time span=0.00-48.00 hrs, dt=0.01 hrs, 4801 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Dyn-Stor-Ind method - Pond routing by Dyn-Stor-Ind method

Subcatchment D27: D27 Runoff Area=31,280 sf 52.85% Impervious Runoff Depth=1.41"
Tc=6.0 min CN=87 Runoff=1.19 cfs 3,681 cf

Pond FP1: FocalPoint 96sf Peak Elev=14.35' Storage=148 cf Inflow=1.19 cfs 3,681 cf
Primary=0.50 cfs 3,413 cf Secondary=0.68 cfs 267 cf Outflow=1.18 cfs 3,681 cf

Total Runoff Area = 31,280 sf Runoff Volume = 3,681 cf Average Runoff Depth = 1.41"
47.15% Pervious = 14,750 sf 52.85% Impervious = 16,530 sf

Summary for Subcatchment D27: D27

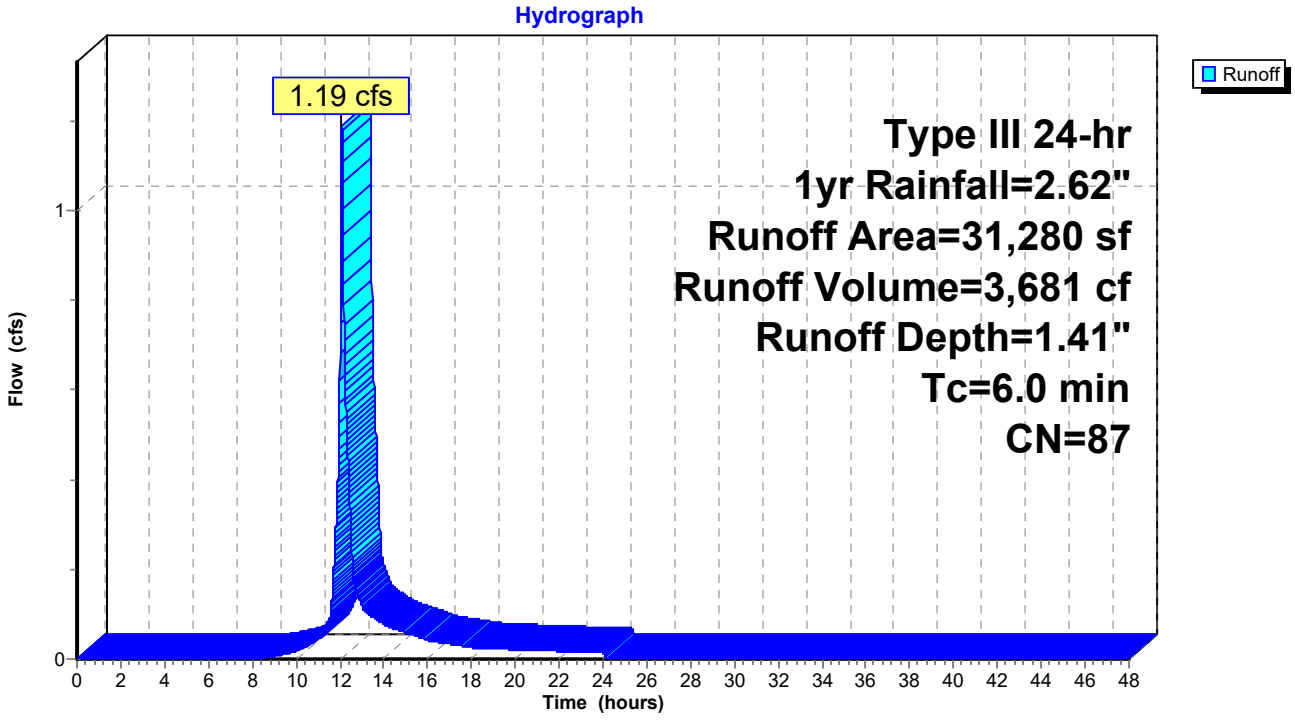
Runoff = 1.19 cfs @ 12.09 hrs, Volume= 3,681 cf, Depth= 1.41"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Type III 24-hr 1yr Rainfall=2.62"

Area (sf)	CN	Description
16,530	98	Unconnected pavement, HSG C
14,750	74	>75% Grass cover, Good, HSG C
31,280	87	Weighted Average
14,750		47.15% Pervious Area
16,530		52.85% Impervious Area
16,530		100.00% Unconnected

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					**Direct Entry,**

Subcatchment D27: D27



Summary for Pond FP1: FocalPoint 96sf

Inflow Area = 31,280 sf, 52.85% Impervious, Inflow Depth = 1.41" for 1yr event
Inflow = 1.19 cfs @ 12.09 hrs, Volume= 3,681 cf
Outflow = 1.18 cfs @ 12.10 hrs, Volume= 3,681 cf, Atten= 1%, Lag= 0.7 min
Primary = 0.50 cfs @ 11.98 hrs, Volume= 3,413 cf
Secondary = 0.68 cfs @ 12.10 hrs, Volume= 267 cf

Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Peak Elev= 14.35' @ 12.10 hrs Surf.Area= 216 sf Storage= 148 cf

Plug-Flow detention time= 1.1 min calculated for 3,680 cf (100% of inflow)
Center-of-Mass det. time= 1.1 min (828.7 - 827.6)

Volume	Invert	Avail.Storage	Storage Description
#1	11.75'	97 cf	**18.00'W x 12.00'L x 2.25'H FocalPoint** 486 cf Overall x 20.0% Voids
#2	14.00'	267 cf	**Custom Stage Data (Irregular)**Listed below (Recalc) -Impervious
		365 cf	Total Available Storage

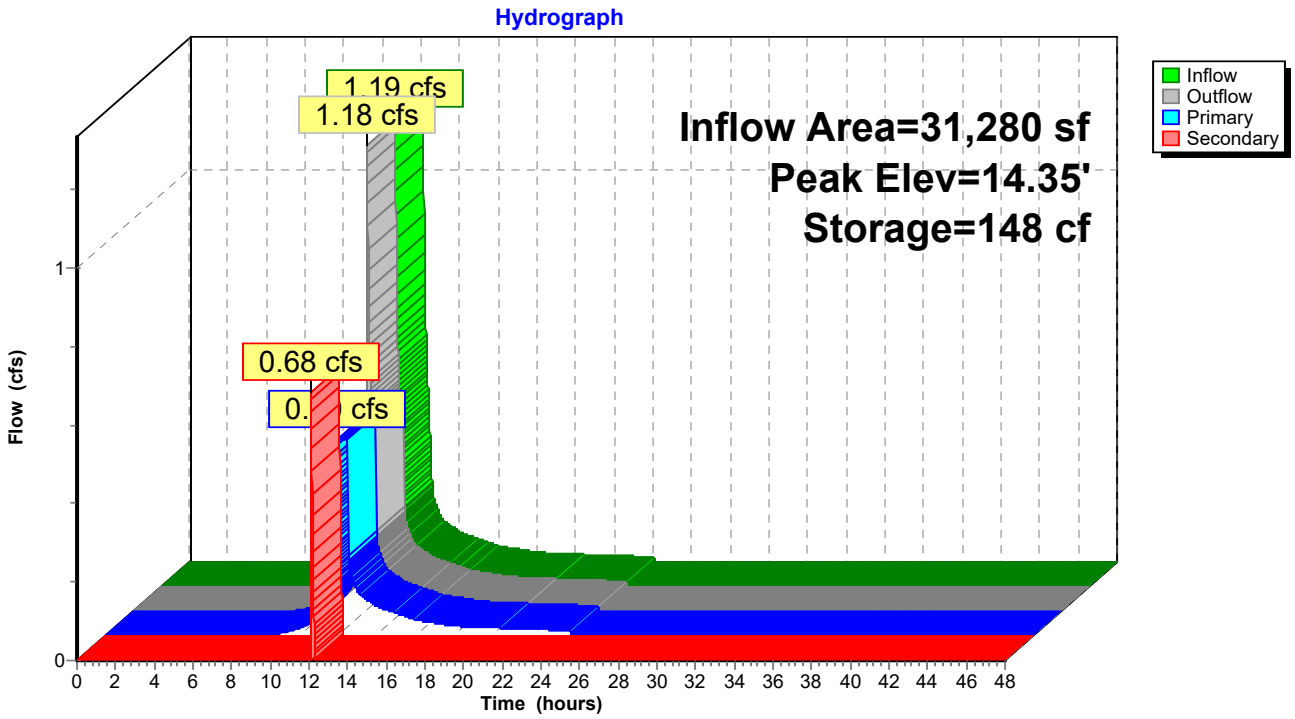
Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
14.00	96	40.0	0	0	96
14.50	250	65.0	83	83	307
15.00	500	96.0	184	267	706

Device	Routing	Invert	Outlet Devices
#1	Primary	11.75'	**100.000 in/hr Exfiltration over Surface area** Phase-In= 0.10'
#2	Secondary	14.25'	**12.0" Horiz. Orifice/Grate X 2.00** C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=0.50 cfs @ 11.98 hrs HW=11.90' (Free Discharge)
↑—**1=Exfiltration** (Exfiltration Controls 0.50 cfs)

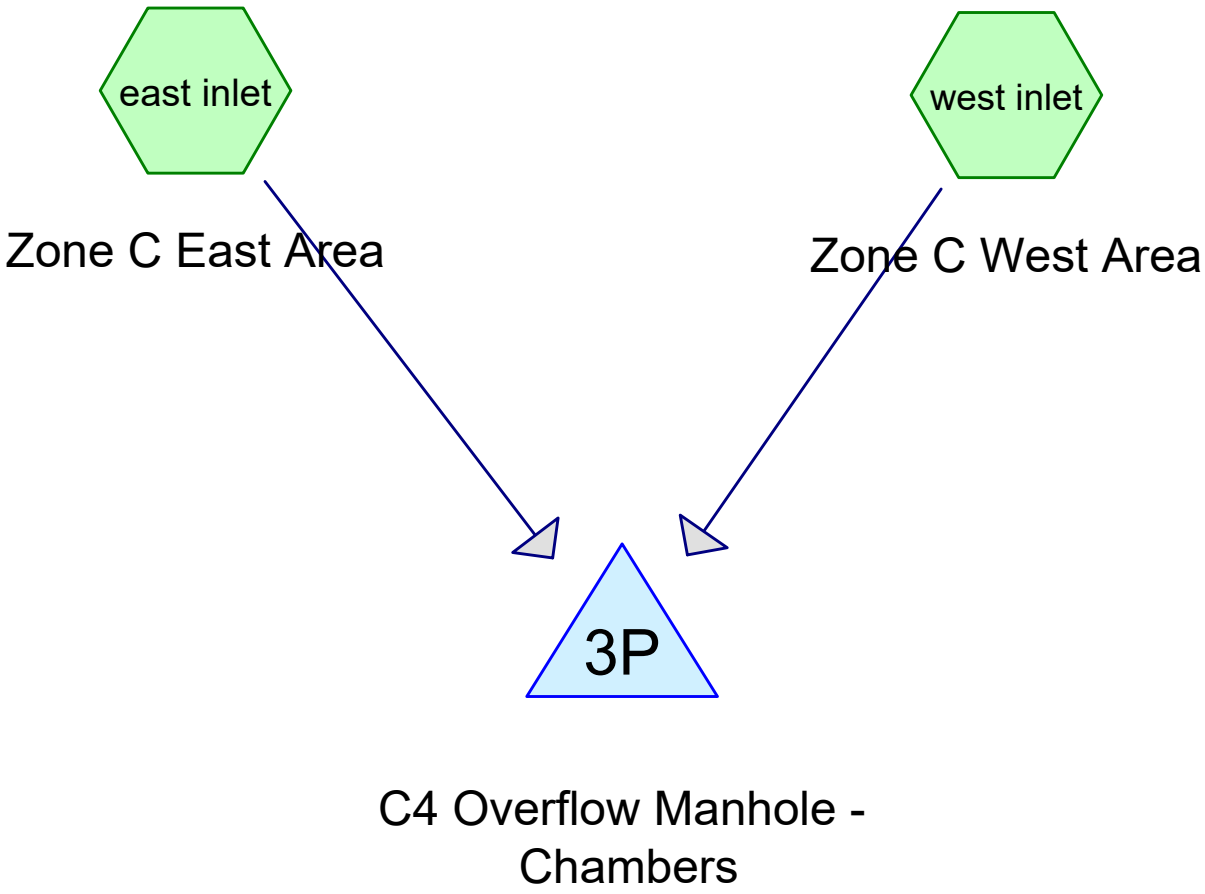
Secondary OutFlow Max=0.68 cfs @ 12.10 hrs HW=14.35' (Free Discharge)
↑—**2=Orifice/Grate** (Weir Controls 0.68 cfs @ 1.05 fps)

Pond FP1: FocalPoint 96sf



APPENDIX C

JellyFish™ HydroCAD Model Summary



Subcat Reach Pond Link

Routing Diagram for 2017.09.14 Hotel Jelly Fish - Zone C
Prepared by Hewlett-Packard Company, Printed 9/28/2017
HydroCAD® 10.00-19 s/n 09708 © 2016 HydroCAD Software Solutions LLC

Area Listing (all nodes)

Area (sq-ft)	CN	Description (subcatchment-numbers)
2,800	74	>75% Grass cover, Good, HSG C (east inlet, west inlet)
46,594	98	Paved parking, HSG C (east inlet, west inlet)
49,394	**97**	**TOTAL AREA**

Ground Covers (all nodes)

HSG-A (sq-ft)	HSG-B (sq-ft)	HSG-C (sq-ft)	HSG-D (sq-ft)	Other (sq-ft)	Total (sq-ft)	Ground Cover	Sub Num
0	0	2,800	0	0	2,800	>75% Grass cover, Good	
0	0	46,594	0	0	46,594	Paved parking	
0	**0**	**49,394**	**0**	**0**	**49,394**	**TOTAL AREA**	

Time span=0.00-48.00 hrs, dt=0.01 hrs, 4801 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Dyn-Stor-Ind method - Pond routing by Dyn-Stor-Ind method

Subcatchment east inlet: Zone C East Area Runoff Area=26,486 sf 96.69% Impervious Runoff Depth=0.66"
Tc=6.0 min CN=97 Runoff=0.46 cfs 1,454 cf

Subcatchment west inlet: Zone C West Runoff Area=22,908 sf 91.60% Impervious Runoff Depth=0.59"
Tc=6.0 min CN=96 Runoff=0.36 cfs 1,117 cf

Pond 3P: C4 Overflow Manhole - Chambers Peak Elev=11.58' Storage=2,571 cf Inflow=0.82 cfs 2,571 cf
Outflow=0.00 cfs 0 cf

Total Runoff Area = 49,394 sf Runoff Volume = 2,571 cf Average Runoff Depth = 0.62"
5.67% Pervious = 2,800 sf 94.33% Impervious = 46,594 sf

Summary for Subcatchment east inlet: Zone C East Area

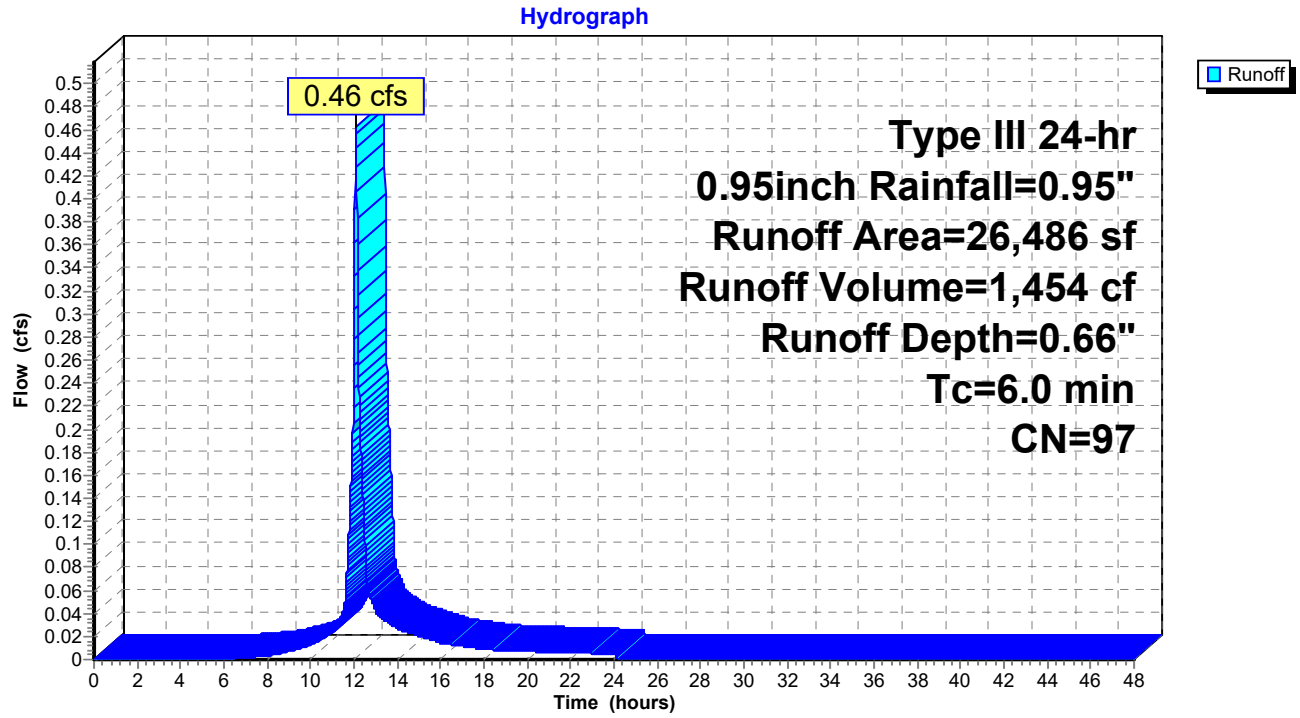
Runoff = 0.46 cfs @ 12.09 hrs, Volume= 1,454 cf, Depth= 0.66"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Type III 24-hr 0.95inch Rainfall=0.95"

Area (sf)	CN	Description
25,610	98	Paved parking, HSG C
876	74	>75% Grass cover, Good, HSG C
26,486	97	Weighted Average
876		3.31% Pervious Area
25,610		96.69% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					**Direct Entry,**

Subcatchment east inlet: Zone C East Area



Summary for Subcatchment west inlet: Zone C West Area

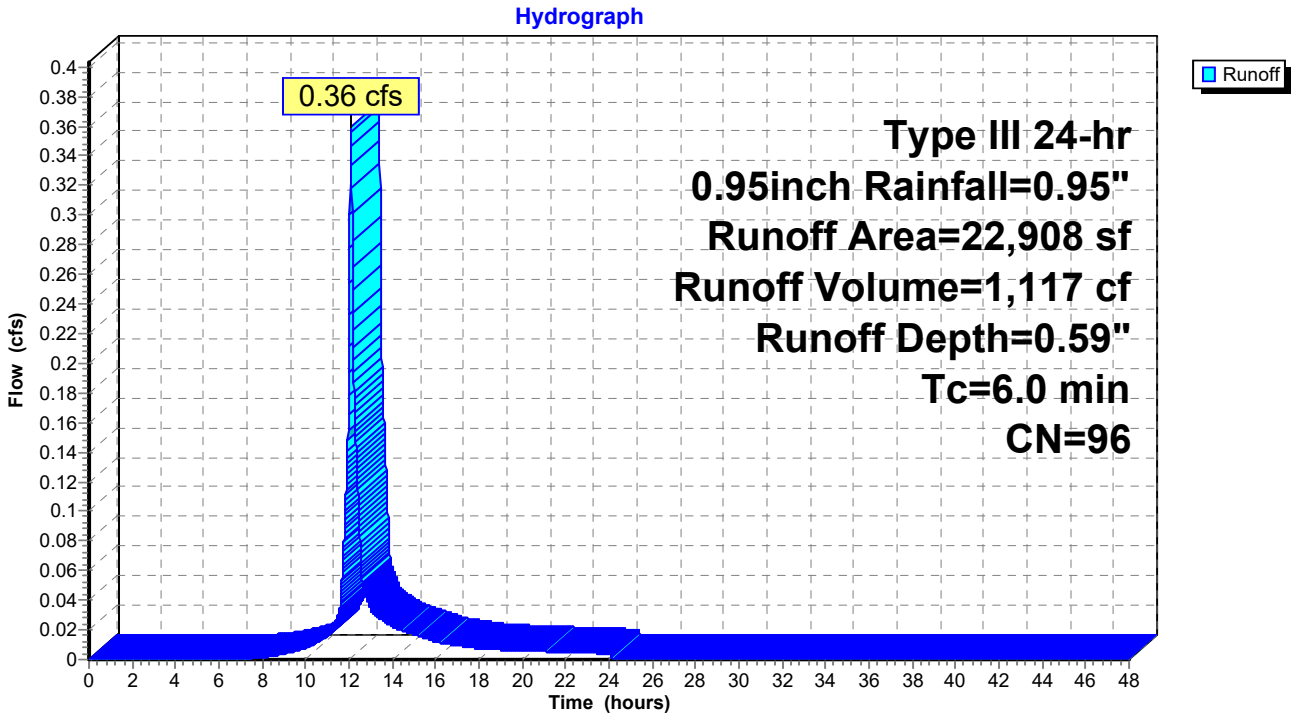
Runoff = 0.36 cfs @ 12.09 hrs, Volume= 1,117 cf, Depth= 0.59"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Type III 24-hr 0.95inch Rainfall=0.95"

Area (sf)	CN	Description
20,984	98	Paved parking, HSG C
1,924	74	>75% Grass cover, Good, HSG C
22,908	96	Weighted Average
1,924		8.40% Pervious Area
20,984		91.60% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					**Direct Entry,**

Subcatchment west inlet: Zone C West Area



Summary for Pond 3P: C4 Overflow Manhole - Chambers

Inflow Area = 49,394 sf, 94.33% Impervious, Inflow Depth = 0.62" for 0.95inch event
Inflow = 0.82 cfs @ 12.09 hrs, Volume= 2,571 cf
Outflow = 0.00 cfs @ 0.00 hrs, Volume= 0 cf, Atten= 100%, Lag= 0.0 min
Primary = 0.00 cfs @ 0.00 hrs, Volume= 0 cf

Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Peak Elev= 11.58' @ 24.34 hrs Surf.Area= 2,444 sf Storage= 2,571 cf

Plug-Flow detention time= (not calculated: initial storage exceeds outflow)
Center-of-Mass det. time= (not calculated: no outflow)

Volume	Invert	Avail.Storage	Storage Description
#1A	10.02'	810 cf	**14.75'W x 60.58'L x 3.50'H Field A** 3,127 cf Overall - 1,103 cf Embedded = 2,025 cf x 40.0% Voids
#2A	10.52'	1,103 cf	**ADS_StormTech SC-740 +Cap** x 24 Inside #1 Effective Size= 44.6"W x 30.0"H => 6.45 sf x 7.12'L = 45.9 cf Overall Size= 51.0"W x 30.0"H x 7.56'L with 0.44' Overlap 3 Rows of 8 Chambers
#3B	10.02'	1,399 cf	**29.00'W x 53.46'L x 3.50'H Field B** 5,426 cf Overall - 1,929 cf Embedded = 3,496 cf x 40.0% Voids
#4B	10.52'	1,929 cf	**ADS_StormTech SC-740 +Cap** x 42 Inside #3 Effective Size= 44.6"W x 30.0"H => 6.45 sf x 7.12'L = 45.9 cf Overall Size= 51.0"W x 30.0"H x 7.56'L with 0.44' Overlap 6 Rows of 7 Chambers
		5,240 cf	Total Available Storage

Storage Group A created with Chamber Wizard
Storage Group B created with Chamber Wizard

Device	Routing	Invert	Outlet Devices
#1	Primary	13.02'	**7.0' long x 0.5' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 Coef. (English) 2.80 2.92 3.08 3.30 3.32

Primary OutFlow Max=0.00 cfs @ 0.00 hrs HW=10.02' (Free Discharge)
1=Broad-Crested Rectangular Weir (Controls 0.00 cfs)

Pond 3P: C4 Overflow Manhole - Chambers - Chamber Wizard Field A

Chamber Model = ADS_StormTech SC-740 +Cap (ADS StormTech® SC-740 with cap length)
Effective Size= 44.6"W x 30.0"H => 6.45 sf x 7.12'L = 45.9 cf
Overall Size= 51.0"W x 30.0"H x 7.56'L with 0.44' Overlap

51.0" Wide + 6.0" Spacing = 57.0" C-C Row Spacing

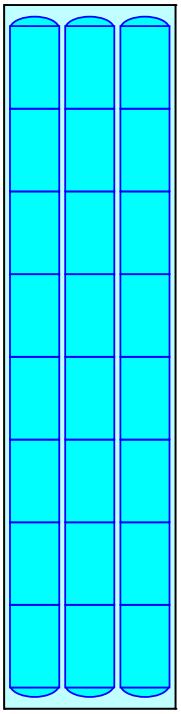
8 Chambers/Row x 7.12' Long +0.81' Cap Length x 2 = 58.58' Row Length +12.0" End Stone x 2 = 60.58' Base Length
3 Rows x 51.0" Wide + 6.0" Spacing x 2 + 6.0" Side Stone x 2 = 14.75' Base Width
6.0" Base + 30.0" Chamber Height + 6.0" Cover = 3.50' Field Height

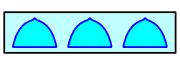
24 Chambers x 45.9 cf = 1,102.6 cf Chamber Storage

3,127.3 cf Field - 1,102.6 cf Chambers = 2,024.7 cf Stone x 40.0% Voids = 809.9 cf Stone Storage

Chamber Storage + Stone Storage = 1,912.4 cf = 0.044 af
Overall Storage Efficiency = 61.2%
Overall System Size = 60.58' x 14.75' x 3.50'

24 Chambers
115.8 cy Field
75.0 cy Stone





Pond 3P: C4 Overflow Manhole - Chambers - Chamber Wizard Field B

Chamber Model = ADS_StormTech SC-740 +Cap (ADS StormTech® SC-740 with cap length)
Effective Size= 44.6"W x 30.0"H => 6.45 sf x 7.12'L = 45.9 cf
Overall Size= 51.0"W x 30.0"H x 7.56'L with 0.44' Overlap

51.0" Wide + 6.0" Spacing = 57.0" C-C Row Spacing

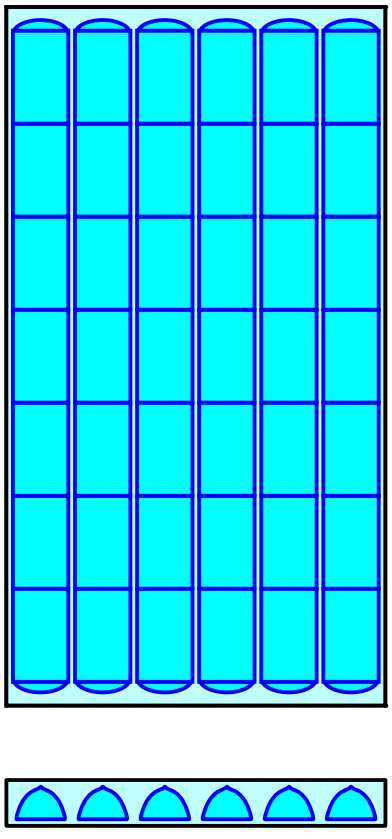
7 Chambers/Row x 7.12' Long +0.81' Cap Length x 2 = 51.46' Row Length +12.0" End Stone x 2 = 53.46' Base Length
6 Rows x 51.0" Wide + 6.0" Spacing x 5 + 6.0" Side Stone x 2 = 29.00' Base Width
6.0" Base + 30.0" Chamber Height + 6.0" Cover = 3.50' Field Height

42 Chambers x 45.9 cf = 1,929.5 cf Chamber Storage

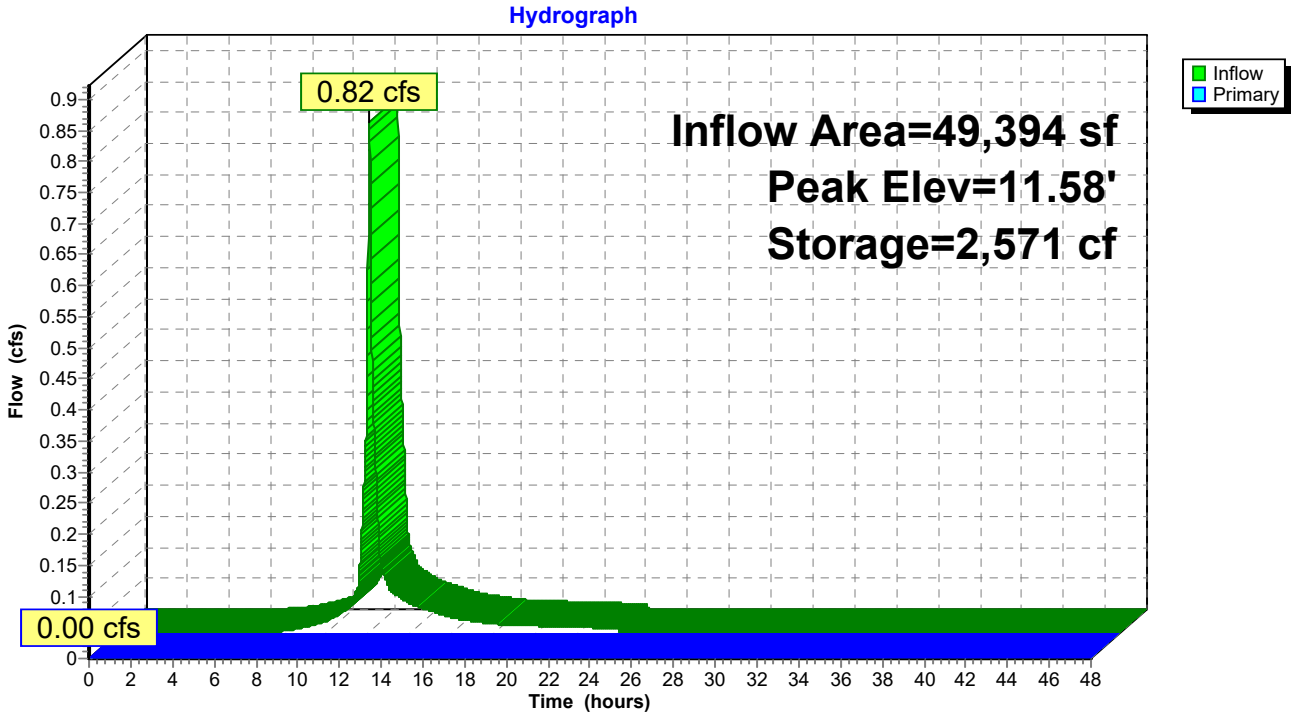
5,425.9 cf Field - 1,929.5 cf Chambers = 3,496.4 cf Stone x 40.0% Voids = 1,398.5 cf Stone Storage

Chamber Storage + Stone Storage = 3,328.0 cf = 0.076 af
Overall Storage Efficiency = 61.3%
Overall System Size = 53.46' x 29.00' x 3.50'

42 Chambers
201.0 cy Field
129.5 cy Stone



Pond 3P: C4 Overflow Manhole - Chambers



Time span=0.00-48.00 hrs, dt=0.01 hrs, 4801 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Dyn-Stor-Ind method - Pond routing by Dyn-Stor-Ind method

Subcatchment east inlet: Zone C East Area Runoff Area=26,486 sf 96.69% Impervious Runoff Depth=2.28"
Tc=6.0 min CN=97 Runoff=1.50 cfs 5,037 cf

Subcatchment west inlet: Zone C West Runoff Area=22,908 sf 91.60% Impervious Runoff Depth=2.18"
Tc=6.0 min CN=96 Runoff=1.27 cfs 4,159 cf

Pond 3P: C4 Overflow Manhole - Chambers Peak Elev=13.18' Storage=4,905 cf Inflow=2.77 cfs 9,197 cf
Outflow=1.22 cfs 4,445 cf

Total Runoff Area = 49,394 sf Runoff Volume = 9,197 cf Average Runoff Depth = 2.23"
5.67% Pervious = 2,800 sf 94.33% Impervious = 46,594 sf

Summary for Subcatchment east inlet: Zone C East Area

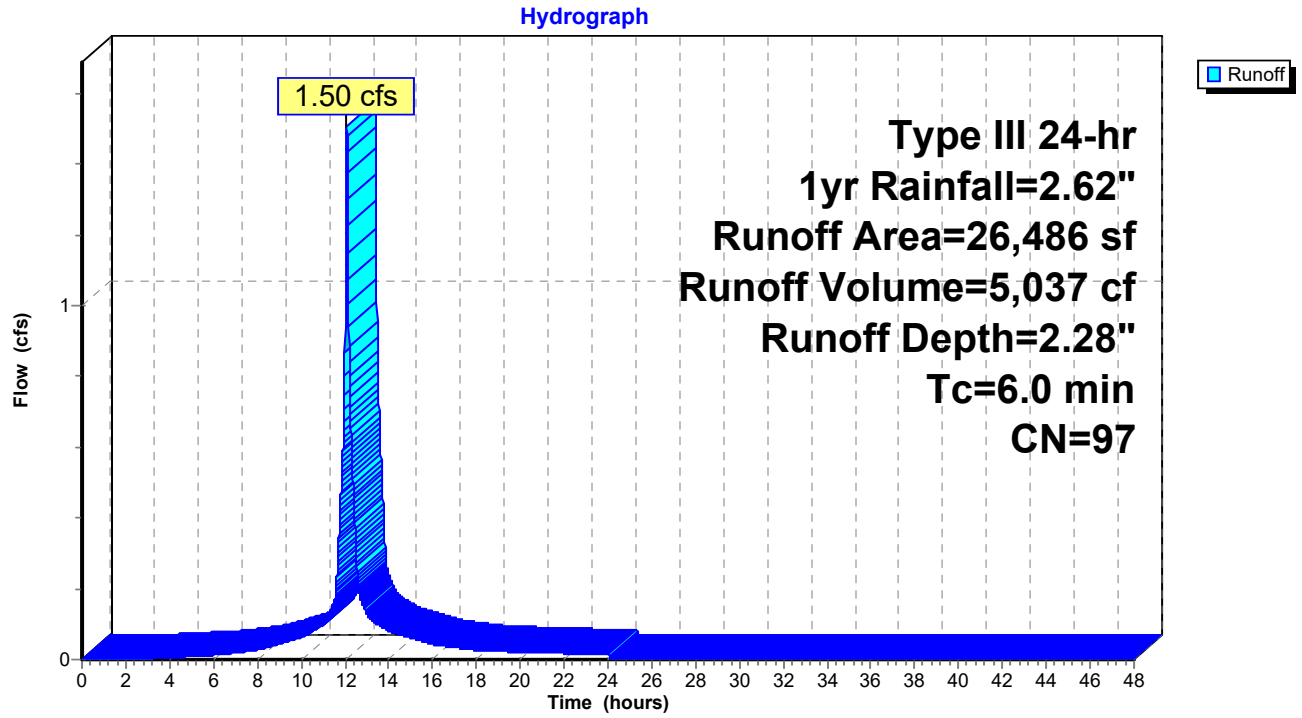
Runoff = 1.50 cfs @ 12.08 hrs, Volume= 5,037 cf, Depth= 2.28"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Type III 24-hr 1yr Rainfall=2.62"

Area (sf)	CN	Description
25,610	98	Paved parking, HSG C
876	74	>75% Grass cover, Good, HSG C
26,486	97	Weighted Average
876		3.31% Pervious Area
25,610		96.69% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					**Direct Entry,**

Subcatchment east inlet: Zone C East Area



Summary for Subcatchment west inlet: Zone C West Area

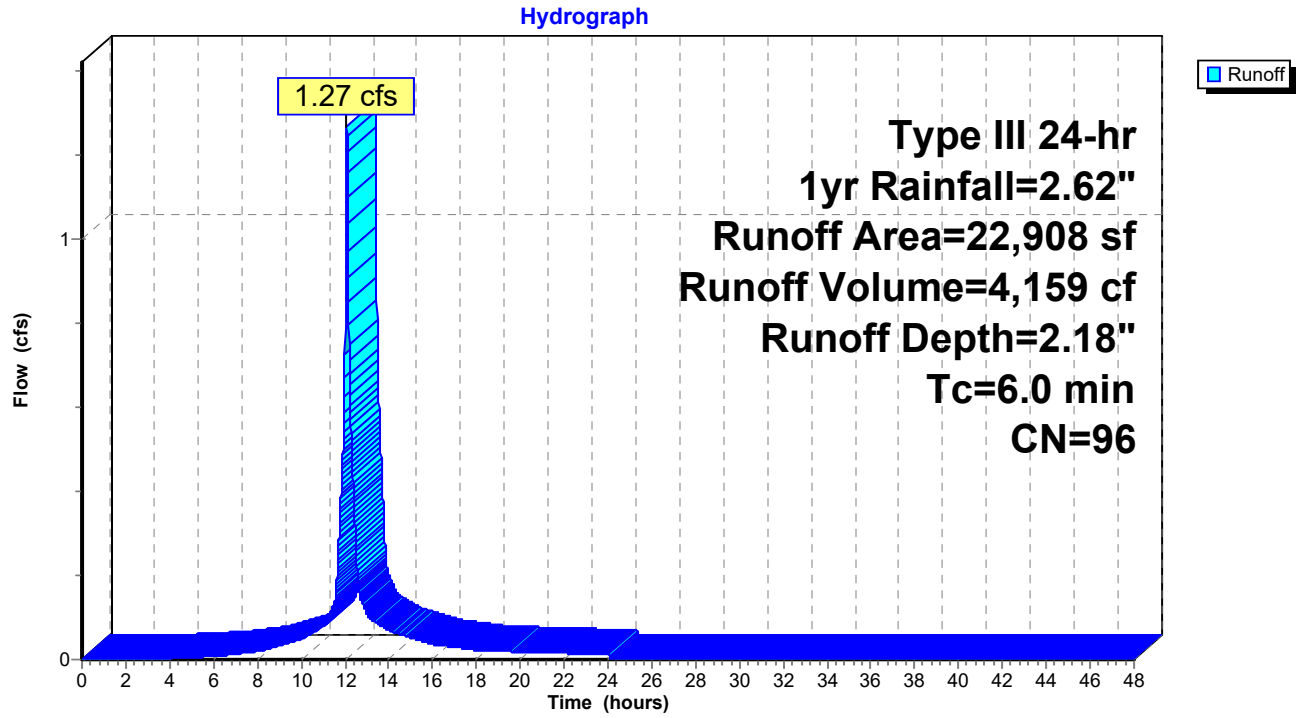
Runoff = 1.27 cfs @ 12.08 hrs, Volume= 4,159 cf, Depth= 2.18"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Type III 24-hr 1yr Rainfall=2.62"

Area (sf)	CN	Description
20,984	98	Paved parking, HSG C
1,924	74	>75% Grass cover, Good, HSG C
22,908	96	Weighted Average
1,924		8.40% Pervious Area
20,984		91.60% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					**Direct Entry,**

Subcatchment west inlet: Zone C West Area



Summary for Pond 3P: C4 Overflow Manhole - Chambers

Inflow Area = 49,394 sf, 94.33% Impervious, Inflow Depth = 2.23" for 1yr event
Inflow = 2.77 cfs @ 12.08 hrs, Volume= 9,197 cf
Outflow = 1.22 cfs @ 12.27 hrs, Volume= 4,445 cf, Atten= 56%, Lag= 10.9 min
Primary = 1.22 cfs @ 12.27 hrs, Volume= 4,445 cf

Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Peak Elev= 13.18' @ 12.27 hrs Surf.Area= 2,444 sf Storage= 4,905 cf

Plug-Flow detention time= 246.3 min calculated for 4,444 cf (48% of inflow)
Center-of-Mass det. time= 126.9 min (902.2 - 775.2)

Volume	Invert	Avail.Storage	Storage Description
#1A	10.02'	810 cf	**14.75'W x 60.58'L x 3.50'H Field A** 3,127 cf Overall - 1,103 cf Embedded = 2,025 cf x 40.0% Voids
#2A	10.52'	1,103 cf	**ADS_StormTech SC-740 +Cap** x 24 Inside #1 Effective Size= 44.6"W x 30.0"H => 6.45 sf x 7.12'L = 45.9 cf Overall Size= 51.0"W x 30.0"H x 7.56'L with 0.44' Overlap 3 Rows of 8 Chambers
#3B	10.02'	1,399 cf	**29.00'W x 53.46'L x 3.50'H Field B** 5,426 cf Overall - 1,929 cf Embedded = 3,496 cf x 40.0% Voids
#4B	10.52'	1,929 cf	**ADS_StormTech SC-740 +Cap** x 42 Inside #3 Effective Size= 44.6"W x 30.0"H => 6.45 sf x 7.12'L = 45.9 cf Overall Size= 51.0"W x 30.0"H x 7.56'L with 0.44' Overlap 6 Rows of 7 Chambers
		5,240 cf	Total Available Storage

Storage Group A created with Chamber Wizard
Storage Group B created with Chamber Wizard

Device	Routing	Invert	Outlet Devices
#1	Primary	13.02'	**7.0' long x 0.5' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 Coef. (English) 2.80 2.92 3.08 3.30 3.32

Primary OutFlow Max=1.22 cfs @ 12.27 hrs HW=13.18' (Free Discharge)
1=Broad-Crested Rectangular Weir (Weir Controls 1.22 cfs @ 1.11 fps)

Pond 3P: C4 Overflow Manhole - Chambers - Chamber Wizard Field A

Chamber Model = ADS_StormTech SC-740 +Cap (ADS StormTech® SC-740 with cap length)
Effective Size= 44.6"W x 30.0"H => 6.45 sf x 7.12'L = 45.9 cf
Overall Size= 51.0"W x 30.0"H x 7.56'L with 0.44' Overlap

51.0" Wide + 6.0" Spacing = 57.0" C-C Row Spacing

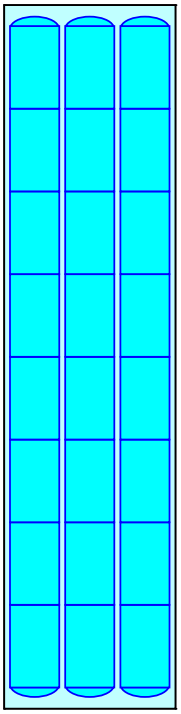
8 Chambers/Row x 7.12' Long +0.81' Cap Length x 2 = 58.58' Row Length +12.0" End Stone x 2 = 60.58' Base Length
3 Rows x 51.0" Wide + 6.0" Spacing x 2 + 6.0" Side Stone x 2 = 14.75' Base Width
6.0" Base + 30.0" Chamber Height + 6.0" Cover = 3.50' Field Height

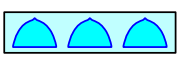
24 Chambers x 45.9 cf = 1,102.6 cf Chamber Storage

3,127.3 cf Field - 1,102.6 cf Chambers = 2,024.7 cf Stone x 40.0% Voids = 809.9 cf Stone Storage

Chamber Storage + Stone Storage = 1,912.4 cf = 0.044 af
Overall Storage Efficiency = 61.2%
Overall System Size = 60.58' x 14.75' x 3.50'

24 Chambers
115.8 cy Field
75.0 cy Stone





Pond 3P: C4 Overflow Manhole - Chambers - Chamber Wizard Field B

Chamber Model = ADS_StormTech SC-740 +Cap (ADS StormTech® SC-740 with cap length)
Effective Size= 44.6"W x 30.0"H => 6.45 sf x 7.12'L = 45.9 cf
Overall Size= 51.0"W x 30.0"H x 7.56'L with 0.44' Overlap

51.0" Wide + 6.0" Spacing = 57.0" C-C Row Spacing

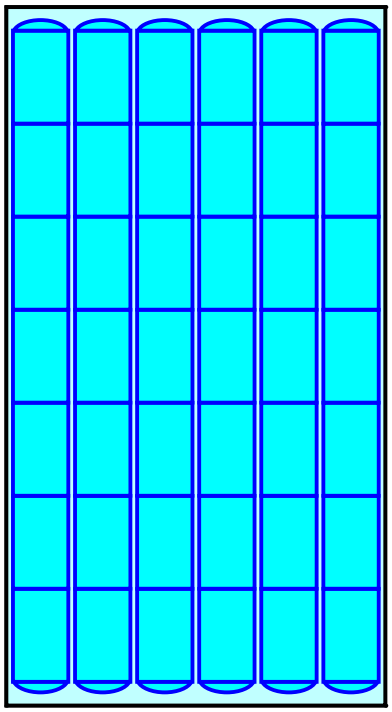
7 Chambers/Row x 7.12' Long +0.81' Cap Length x 2 = 51.46' Row Length +12.0" End Stone x 2 = 53.46' Base Length
6 Rows x 51.0" Wide + 6.0" Spacing x 5 + 6.0" Side Stone x 2 = 29.00' Base Width
6.0" Base + 30.0" Chamber Height + 6.0" Cover = 3.50' Field Height

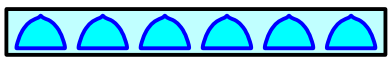
42 Chambers x 45.9 cf = 1,929.5 cf Chamber Storage

5,425.9 cf Field - 1,929.5 cf Chambers = 3,496.4 cf Stone x 40.0% Voids = 1,398.5 cf Stone Storage

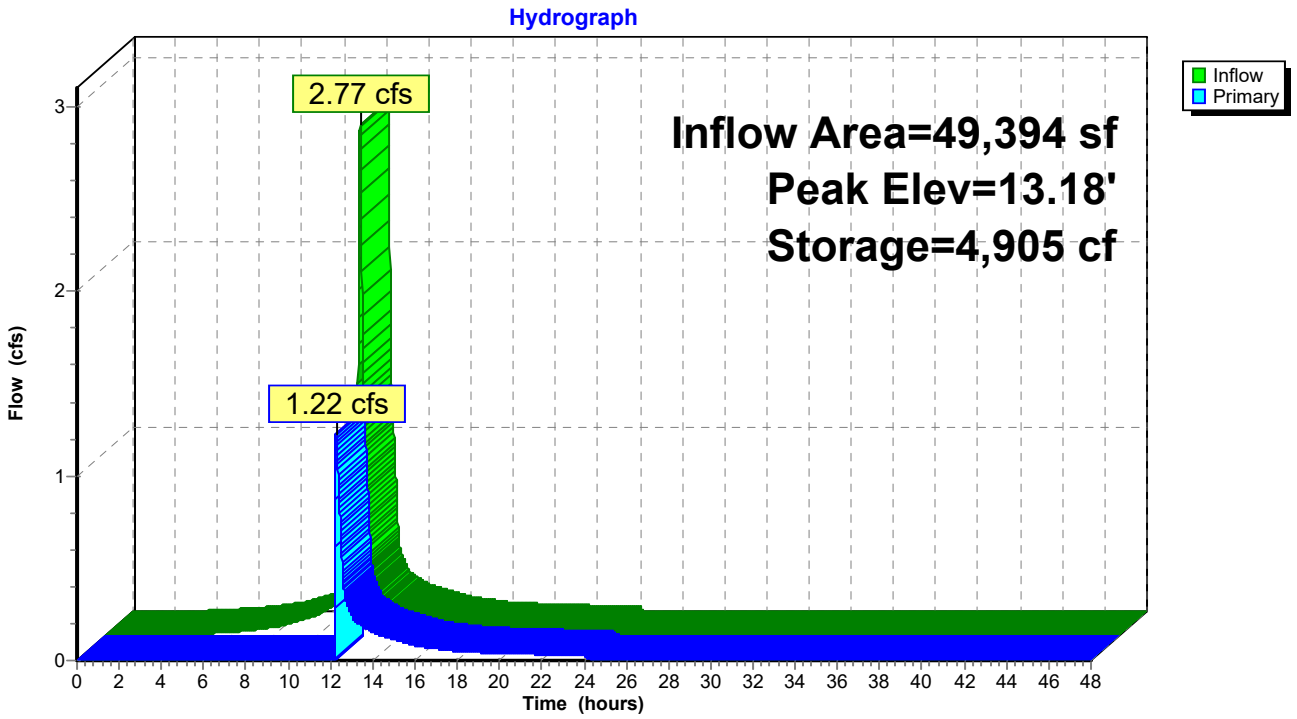
Chamber Storage + Stone Storage = 3,328.0 cf = 0.076 af
Overall Storage Efficiency = 61.3%
Overall System Size = 53.46' x 29.00' x 3.50'

42 Chambers
201.0 cy Field
129.5 cy Stone





Pond 3P: C4 Overflow Manhole - Chambers



APPENDIX D

Summary of Water Quality Treatment Zones C & D(partial)

Summary of Water Quality Treatment - Lot 6 (Hotel)

Zone	Inlet ID	Impervious Area (sf)	Pervious Area (sf)	Total Area (sf)	Total Area (Acres) [1]	Required Water Quality Volume (CF) [2]	Existing Developed Area Mitigation Credits (SF) [9]	Treatment Approach [6]	Filter Size Area Required [6] (SF)	Jellyfish Unit Provided [5]	1 Yr 24-hr Storm Event Peak Flow Rate (cfs)[3]	Required Isolator Row Chambers (Stormtech SC-740 (JF) or Cultec 150 XLHD (Focal Point)[4]	Provided Filter Bed (SF)/Water Quality Volume (CF) [7]	Isolator Row Chambers (Stormtech SC-740 or Cultec 150 XLHD) Provided (EA)[6]
Zone D	D-27	6,135.00	14,749.00	20,884.00	0.48	1002.88	-	FocalPoint Biofiltration System	89	N/A	1.19	6.43	96.00	7
	D - 27 Brick South (Partial South Side)	10,395.00	0.00	10,395.00	0.24	866.25	6237.00	FocalPoint Biofiltration System		N/A				
	Disturbed Perimeter Area	0.00	0.00	0.00	0.00	-	-	None		-	-	-	-	-
Zone D Totals (Lot 6 Portion)	-	**16,530.00**	**14,749.00**	**31,279.00**	**0.72**	**1,869.13**	**6,237.00**	-		-	-	-	-	-
Zone C Developed Area	C-14	7,447.00	876.00	8,323.00	0.19	649.78	0.00	Contech Jellyfish Filter	N/A	JF4 2-1	0.47	2.33	4051 CF	16
	C-7	7,195.00	1,924.00	9,119.00	0.21	663.72	0.00				0.46	2.32		
	C-10	1,926.00	0.00	1,926.00	0.04	160.50	0.00				0.12	0.59		
	C-11	2,649.00	0.00	2,649.00	0.06	220.75	0.00				0.16	0.81		
	C-13 (non-roof portion)	933.00	0.00	933.00	0.02	77.75	0.00				0.06	0.28		
	C-15A (Roof)	10,055.00	0.00	10,055.00	0.23	837.92	0.00				0.61	3.07		
	C-15B (Roof)	9,660.00	0.00	9,660.00	0.22	805.00	0.00				0.59	2.95		
	C-15C (Future)	*3,734.00*	*0.00*	*3,734.00*	*0.09*	311.17	0.00				0.23	1.14		
	Disturbed Perimeter Area	0.00	0.00	0.00	0.00	0.00	0.00	N/A		-	-	-	-	-
Zone C Developed Area Subtotals		**43,599.00**	**2,800.00**	**46,399.00**	**1.07**	**3,726.58**	**0.00**	-		-	2.70	13.49	N/A	N/A
Zone C Existing Buildings	C-13 BS-South Side (Partial)	2,995.00	0.00	2,995.00	0.00	249.58	1,797.00	Contech Jellyfish Filter	N/A	JF4 2-1 (included in above)	0.18	0.91	Included in Zone C above	Included in Zone C above
Zone C Existing Building Subtotal	-	**2,995.00**	**0.00**	**2,995.00**	**0.00**	**249.58**	**1,797.00**	-		-	**0.18**	**0.91**	**0.00**	-
Zone C Totals	-	**46,594.00**	**2,800.00**	**49,394.00**	**1.07**	**3,976.17**	**1,797.00**	-	**0.00**	**0.00**	**2.88**	**14.41**	**N/A**	**N/A**

****Previously Approved Filterra Box**

Developed Area Breakdown		
A.) Total New Developed Area Treated (SF)	63,549.00	**1.46**
B.) Total New Developed Area untreated (SF)	0.00	**0.00**
C.) Total New Developed Area (SF) = A+B	63,549.00	**1.46**
D.) Existing Developed Area Treated (SF)	13,390.00	**0.31**
E.) Adjusted Existing Developed Area Treated (SF)	8,034.00	**0.18**
F.) Total Net Developed Area Treated (SF) = A+E	71,583.00	**1.64**
Impervious Area Breakdown		
G.) Total New Impervious Area treated (SF)	49,734.00	**1.14**
H.) Total New Impervious Area untreated (SF)	0.00	**0.00**
I.) Total New Impervious Area (SF) = G+H	49,734.00	**1.14**
J.) Existing Impervious Area Treated (SF)	13,390.00	**0.31**
K.) Adjusted Existing Impervious Area Treated (SF)	8,034.00	**0.18**
L.) Total Net Impervious Area Treated (SF) = G+K	57,768.00	**1.33**

Treatment Breakdown	Required	Provided
% of Net Developed Area Treated = F/C	80.00%	112.64%
% of Net Impervious Area Treated = L/I	95.00%	116.15%

NOTES AND ASSUMPTIONS:

1. All areas are based on the Placemaker Partners Permit drawings dated September 2017
2. The required water quality volumes have been computed based on Sections 7.4, 7.5 and 7.6 of the Maine DEP Volume III BMP's Technical Design Manual. The volume is computed to be 1" times the subcatchments impervious area and 0.4" times the subcatchments vegetated area. Exisiting buildings to remain are not required to be treated.
3. The 1 year peak flow rates have been computed using the rational method. The rainfall intensities are derived from the Cumberland County IDF curve.
4. Subsurface storage system sizing is based on a Stormtech SC-740 chamber system. All isolator rows have been computed per a 7/29/2016 letter from State of Maine to Stormtech re: Pretreatment Isolator Row of the Maine DEP Volume III BMP's Technical Manual. One chamber is required for each 0.2 cfs of the computed tributary 1 year peak flow rate.
5. The required number of Jelly Fish treatment units have been computed based on Contech Sizing requirements. The water quality volume for each unit is storage up stream and the amount of treatment cartridges are computed based sediment mass loading.
6. Focal Point system was sized using the 2/2/201 approval letter from the State of Maine to Stormwater Systems ACF. See attached computations and separate focal point checklist for sizing.
7. Provided Water Quality Volume for stormtreat storage system computed using 61.38 CF of storage per chamber based on Storm Tech Chamber Design Manual
8. Vacant
9. According to Chapter 500 Maine DEP stormwater rules Dated 2015; the department allows applicants to take credit for the treatment of existing impervious areas on site. For existing roofs the credit can be calculated by multiplying the total treated area by 0.6. The overall project was approved using this methodology.
10. Vacant

Rational Method Flow Computations										
ZONE	INLET ID	IMPERVIOUS (SF)	PERVIOUS (SF)	TOTAL AREA (SF)	TOTAL AREA (ACRES)	WEIGHTED C	25-YEAR FLOW	10-YEAR FLOW	2-YEAR FLOW	1-Year Flow
Zone D	D-24	8,527.00	600.00	9,127.00	0.21	0.90	1.18	1.04	0.75	0.53
	D-25	19,009.00	2,393.00	21,402.00	0.49	0.87	2.66	2.34	0.00	1.19
	D-26	6,135.00	14,749.00	20,884.00	0.48	0.42	1.26	1.11	0.00	0.56
	D - 26 Brick South (Partial South Side)	10,395.00	0.00	10,395.00	0.24	0.95	1.42	1.25	0.00	0.63
Zone D Sub-totals		**44,066.00**	**17,742.00**	**61,808.00**	**1.42**	**-**	**6.52**	**5.73**	**0.75**	**2.92**
Zone C	C-3	7,447.00	876.00	8,323.00	0.19	0.87	1.04	0.92	0.67	0.47
	C-7	7,195.00	1,924.00	9,119.00	0.21	0.79	1.04	0.91	0.66	0.46
	C-9	1,926.00	0.00	1,926.00	0.04	0.95	0.26	0.23	0.17	0.12
	C-10	2,649.00	0.00	2,649.00	0.06	0.95	0.36	0.32	0.23	0.16
	C-11 (non-roof portion)	933.00	0.00	933.00	0.02	0.95	0.13	0.11	0.08	0.06
	C-12A (Roof)	10,055.00	0.00	10,055.00	0.23	0.95	1.37	1.21	0.88	0.61
	C-12B (Roof)	9,660.00	0.00	9,660.00	0.22	0.95	1.32	1.16	0.84	0.59
	C-12C (Future)	*3,734.00*	*0.00*	3,734.00	0.09	0.95	0.51	0.45	0.33	0.23
	BS-South Side (Partial)	2,995.00	0.00	2,995.00	0.07	0.95	0.41	0.36	0.26	0.18
Zone C Sub-totals		**46,594.00**	**2,800.00**	**49,394.00**	**1.13**	**-**	**6.43**	**5.66**	**4.12**	**2.88**

Assumptions		
Pervious C	**0.2**	
Impervious C	**0.95**	
I-1 Year	**2.8**	**in/hr**
I -2 Year Storm	**4**	**in/hr**
I-10 Year Storm	**5.5**	**In/Hr**
I-25 Year Storm	**6.25**	**In/Hr**
Notes:		
1. Rainfall intensity based on Cumberland County IDF curve using a TC of 5 min.		

Zone C Required StormTech Chamber Storage Computation

Weir Wall Height	13.02	EL	
Bottom of Chamber Elevation	10.52	EL	
Total Chamber Height	30	Inches	30 (max chamber height)
Total Storage per chamber	61.38	CF	
Total WQV for Zone C	3,976.00	CF	
Total Chambers Required	64.8	#	
Total Chambers Provided	66	#	
Total Storage Provided	4051.08	CF	

Hotel Project Water Quality Volume (CF) 3,976.00
(includes Future Building Expansion, 3,734 SF building area)

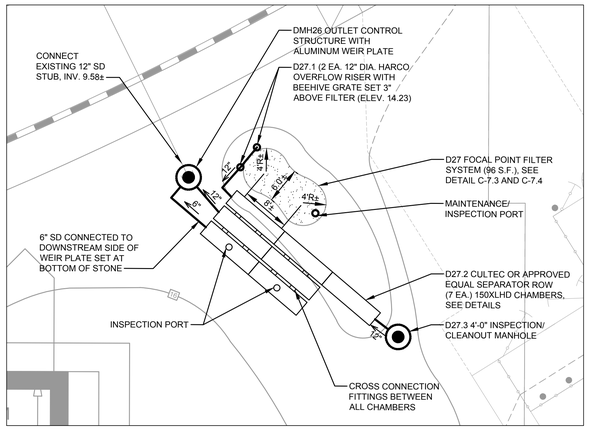
Notes:

1. Height of weirwall based based on WQv. See sheet "rational method flow compuations". Structure C4 in which weir wall is located was modeled using HydroCad. See attached computations.

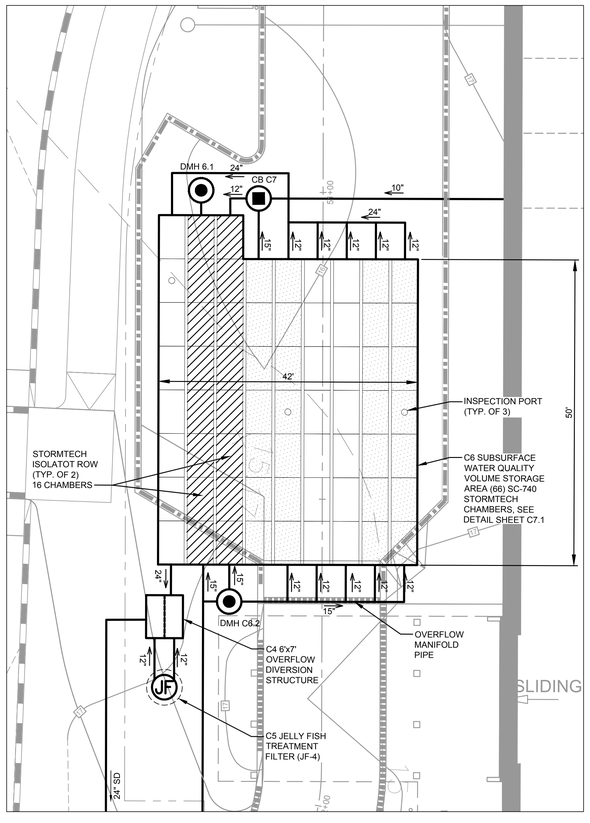
	Impervious Area	Pervious Area	1 yr Peak Flow (CFS)	Flow Per SC-740 Chamber	Required Isolator Row Chambers	Provided Isolator Row Chambers
Trib. To East Inlet	25610	876	1.5	0.2	7.5	8
Trib. To West Inlet	20984	1924	1.2	0.2	6	8

APPENDIX E

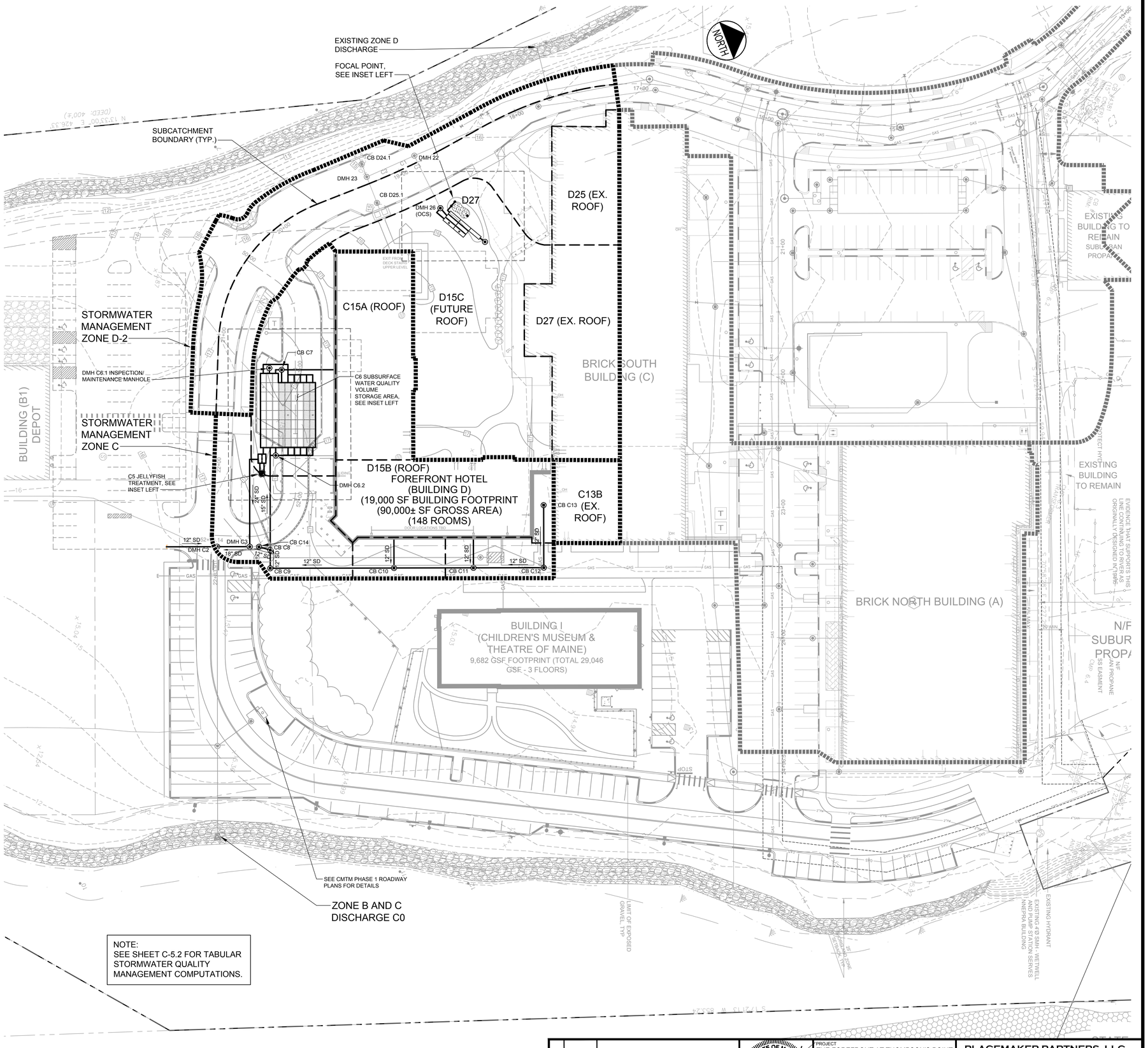
Stormwater Management Plan-1 C-5.1



FOCAL POINT AREA
ENLARGED VIEW
SCALE: 1"=10'



SUBSRUFACE WATER QUALITY STORAGE AREA
ENLARGED VIEW
SCALE: 1"=10'



NOTE:
SEE SHEET C-5.2 FOR TABULAR STORMWATER QUALITY MANAGEMENT COMPUTATIONS.

PRELIMINARY – NOT FOR CONSTRUCTION

GRAPHIC SCALE
30 0 15 30 60
(IN FEET)
1 inch = 30 ft.

REV	DATE	DESCRIPTION
1	9/25/2017	FINAL SITE PLAN SUBMISSION

REVISIONS

STATE OF MAINE — BO KENNEDY No. 11904 — LICENSED PROFESSIONAL ENGINEER — 09.25.17

P.E. BO KENNEDY
LIC. #11994

PROJECT
THE FOREFRONT AT THOMPSON'S POINT
FOREFRONT HOTEL

SHEET TITLE
STORMWATER MANAGEMENT PLAN - 1

CLIENT
FOREFRONT HOTELIERS, LLC

PLACEMAKER PARTNERS, LLC
501 DANFORTH STREET
PORTLAND, ME 04102
bo@placemakerpartners.com

DRAWN: BEK	DATE: AUG. 2017
DESIGNED: BEK	SCALE: 1" = 30'
FILE NAME: HOTEL-SMP.dwg	
SHEET	C-5.1

EVIDENCE THAT SUPPORTS THIS REGULATION IS NOT ON THE ORIGINALLY DESIGNED PLANS

GORRILL PALMER

707 Sable Oaks Drive, Suite 30
South Portland, Maine 04106
207.772.2515

Trip Generation Summary
Thompson's Point
September 2017

Date: September 13, 2017
Subject: Updated Trip Generation
Thompson's Point
To: Bo Kennedy, Placemaker Partners, LLC
From: Randy Dunton, Emily Tynes, Gorrill Palmer (JN 3353)

Gorrill Palmer (GP) has prepared this updated trip generation summary to evaluate the trip generation for Thompson's Point in Portland, Maine. The following is a summary of the forecast trip generation for the existing uses, the proposed hotel, and the comparison of the total trip generation to the permitted trip generation.

Existing Trip Generation Summary

The trip generation for the existing Thompson's Point site has been based on information provided by Bo Kennedy in an email dated August 22, 2017. The trip generation was calculated using the same methodology as that used in previous trip generation evaluations for the site. The following table summarizes the trip generation for the existing site:

Existing Site Trip Generation

Building	Description	Size	AM Peak Hour	PM Peak Hour
Brick North				
	Winery	5,890 sf	4	16
	Circus Conservatory	6,800 sf	5	4
	Big Room Studios	3,461 sf	13	20
	Big J's Chicken Shack	1,852 sf	21	20
	Brewery	10,068 sf	7	7
	Distillery	5,284 sf	4	4
	Color Me Mine	2,136 sf	2	6
	International Cryptozoology Museum	993 sf	1	1
	Brick North Total		**57**	**78**
Brick South				
	Event/Assembly Space	2,500 Seats	100	195
	Annex	7,384 sf	--*	--*
	Brick South Total		**100**	**195**
Existing Subtotal			**157**	**273**
Reduction (10%) for Bus / Train / Shared Use			(-16)	(-27)
Existing Trip Generation			**141**	**246**

*Maximum of 2,500 people in the building for events. Highest trip generation would be an event in the Event space, not the Annex.

As shown in the table, the existing site is forecast to generate 141 trip ends during the AM peak hour and 246 trip ends during the PM peak hour.

Proposed Site Trip Generation

The trip generation for the proposed site has been based on a 148 room hotel. The previous master plan included a 125 room hotel. The hotel is proposed to include a restaurant that is intended to serve primarily hotel guests and potentially guests of other Thompson's Point uses. It is not anticipated to draw significant outside traffic, so the trip generation for the restaurant is forecast to be negligible. The trip generation for the hotel was calculated using the same methodology as that used to calculate the hotel trip generation in the original master plan. The following table summarizes the trip generation for the proposed site:

- AM Peak Hour of Adjacent Street: 83 trip ends
- PM Peak Hour of Adjacent Street: 87 trip ends

Site Trip Generation

The trip generation for the existing site has been combined with the trip generation for the proposed hotel to yield the site trip generation. The total site trip generation after the construction of the hotel has been compared to the permitted trip generation to identify the remaining available permitted trips.

Proposed Site Trip Generation

Site	Building	AM Peak Hour	PM Peak Hour
Existing			
	Brick North	57	78
	Brick South	100	195
	Existing Total	**157**	**273**
Proposed			
	Hotel	83	87
	Proposed Total	**83**	**87**
Proposed Site Subtotal		**240**	**360**
Reduction (10%) for Bus / Train / Shared Use		(-24)	(-36)
Proposed Site Trip Generation		**216**	**324**
Permitted Trip Ends		734	1091
Difference Between Permitted and Proposed Site		**518**	**767**

As shown in the table the proposed site is forecast to generate 216 trip ends during the AM peak hour and 324 trip ends during the PM peak hour. This trip generation is 518 trip ends less than the permitted trip generation during the AM peak hour and 767 trip ends less than the permitted trip generation during the PM peak hour.

JN:	3353	Gorrill Palmer
Project Description:	Thompsons Point Existing	707 Sable Oaks Drive
Project Location:	Portland, Maine	Suite 30
Date:	9/7/2017	South Portland, Maine 04106

Specialty Retail Center
Land Use Code (LUC) 814

Gross Floor Area (ft^2): 5,890

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)	261	4	50%	50%	131	130	---
Peak Hour of Adjacent Street Traffic 7-9 AM**	T = 0.74 (X)	4	N/A	60%	40%	2	2	
Peak Hour of Adjacent Street Traffic 4-6 PM	T = 2.71 (X)	16	5	45%	55%	7	9	---
AM Peak Hour of Generator	T = 6.84 (X)	40	4	50%	50%	20	20	---
PM Peak Hour of Generator	T = 5.02 (X)	30	3	55%	45%	17	13	---
Saturday	T = 42.04 (X)	248	3	50%	50%	124	124	---
Saturday Peak Hour of Gen.***	T = 6.63 (X)	39	3	50%	50%	20	19	---

**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	290	4	50%	50%	145	145	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	36	5	45%	55%	16	20	0.98
AM Peak Hour of Generator	T = 4.91 (X) + 115.59	145	4	50%	50%	73	72	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)	8	60%	40%	5	3
Saturday Peak Hour**	T = 1.325 (PM Peak Hour)	40	50%	50%	20	20

**Saturday Peak Hour comes from a ratio of PM to Saturday trip rates from LUC 820 - Shopping Center
***AM Peak Hour of Adjacent Street comes from a ration of PM to AM trip rates from LUC 820 - Shopping Center

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JOB 2419
SHEET NO. _____ OF _____
CALCULATED BY _____ DATE _____
CHECKED BY _____ DATE _____
SCALE _____

Education Space Trip Generation

Total (from 2/27/14 submittal): 25 AM and 21 PM

6,799 SF in Building A
30,600 SF in Building D
} 37,399 SF Total

$\frac{6,799}{37399} \times 25 = 5$ AM trips to Building A

$\frac{6799}{37399} \times 21 = 4$ PM trips to Building A

$\frac{30600}{37399} \times 25 = 20$ AM trips to Building D

$\frac{30600}{37399} \times 21 = 17$ PM trips to Building D

JN:	2419
Project Description:	Thompsons Point
Project Location:	Portland, Maine
Date:	August 14, 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 3,461

Trip Ends Based on Fitted Curve Equation

Time Period	ITE Trip Rate	Trip Ends	Number of Studies	Directional Split * IN	Directional Split * OUT	Directional Distribution IN	Directional Distribution OUT	R^2
Weekday	Ln (T) = 0.77 Ln (X) + 3.65	100	78	50%	50%	50	50	0.80
AM Peak Hour	**Ln (T) = 0.80 Ln (X) + 1.55**	**13**	**217**	**90%**	**10%**	**12**	**1**	**0.83**
PM Peak Hour	**T = 1.12 (X) + 78.81**	**83**	**235**	**15%**	**85%**	**12**	**71**	**0.82**
Saturday	T = 2.14 (X) + 18.47	26	17	50%	50%	13	13	0.66
Peak Hour of Generator	Ln (T) = 0.81 Ln (X) - 0.12	2	10	55%	45%	1	1	0.59

* Percentages rounded to nearest 5%

Trip Ends Based on Average Rate

Time Period	ITE Trip Rate	Trip Ends	Number of Studies	Directional Split * IN	Directional Split * OUT	Directional Distribution IN	Directional Distribution OUT	R^2
Weekday	T = 11.01 (X)	38	78	50%	50%	19	19	---
AM Peak Hour	T = 1.55 (X)	5	217	90%	10%	5	0	---
PM Peak Hour	T = 1.49 (X)	5	235	15%	85%	1	4	---
Saturday	T = 2.37 (X)	8	17	50%	50%	4	4	---
Saturday Peak Hour of Gen.	**T = 0.41 (X)**	**1**	**10**	**50%**	**50%**	**1**	**0**	**---**

* Percentages rounded to nearest 5%

PM Peak Hour:	T = 1.49/1.55 (AM Peak)	12		15%	85%	2	10	0.82

PM Trips Based on Email From Chris T. dated Aug 28, 2015 stating 20 max.

JN:	3353	
Project Description:	Thompson's Point Existing	
Project Location:	Portland, Maine	
Date:	September 7, 2017	

Gorrill Palmer
707 Sable Oaks Drive
Suite 30
South Portland, Maine 04106

High Turnover (Sit Down) Restaurant
Land Use Code (LUC) 932

Gross Floor Area (ft^2): 1,852

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	235	50%	50%	118	117	N/A
AM Peak Adjacent Street	T = 11.52 (X)	18	**21**	50%	50%	11	10	N/A
PM Peak Adjacent Street	T = 10.92 (X)	38	**20**	60%	40%	12	8	N/A
AM Peak of Generator	**T = 13.53 (X)**	**21**	**25**	**50%**	**50%**	**13**	**12**	**N/A**
PM Peak of Generator	**T = 18.80 (X)**	**27**	**35**	**55%**	**45%**	**19**	**16**	**N/A**
Saturday	T = 158.37 (X)	2	293	50%	50%	147	146	N/A
Saturday Peak Hour of Gen.	T = 20.00 (X)	3	**37**	65%	35%	24	13	N/A

JN:	3353	Gorrill Palmer
Project Description:	Thompsons Point Existing	707 Sable Oaks Drive
Project Location:	Portland, Maine	Suite 30
Date:	09/07/17	South Portland, Maine 04106

Manufacturing
Land Use Code (LUC) 140

Gross Floor Area 10,068

Trip Ends Based on Fitted Curve Equation

Time Period	ITE Trip Rate	Trip Ends	Directional Split *		Directional Distribution		Number of Studies
			IN	OUT	IN	OUT	
Weekday	T = 3.88 (X) - 20.70	18	50%	50%	9	9	62
AM Peak Adjacent Street	T = 0.83 (X) - 28.88	-21	75%	25%	-16	-5	50
PM Peak Adjacent Street	T = 0.78 (X) - 12.89	-5	35%	65%	-2	-3	54
AM Peak hour of Generator	T = 0.83 (X) - 17.71	-9	70%	30%	-6	-3	50
PM Peak Hour of Generator	T = 0.76 (X) - 5.15	3	50%	50%	2	1	50
Saturday	Not Given	-	50%	50%	---	---	2
Saturday Peak Hour of Gen.	Not Given	-	50%	50%	---	---	2

* Percentages rounded to nearest 5%

Trip Ends Based on Average Rate

Time Period	ITE Trip Rate	Trip Ends	Directional Split *		Directional Distribution		
			IN	OUT	IN	OUT	
Weekday	T = 3.82 (X)	38	50%	50%	19	19	62
AM Peak Adjacent Street	T = 0.73 (X)	7	75%	25%	5	2	50
PM Peak Adjacent Street	T = 0.74 (X)	7	35%	65%	2	5	54
AM Peak Hour of Generator	T = 0.78 (X)	8	70%	30%	6	2	50
PM Peak Hour of Generator	T = 0.75 (X)	8	50%	50%	4	4	50
Saturday	T = 1.49 (X)	15	50%	50%	8	7	2
Saturday Peak Hour of Gen.	T = 0.28 (X)	3	50%	50%	2	1	2

* Percentages rounded to nearest 5%

JN:	2419
Project Description:	Thompsons Point
Project Location:	Portland, Maine
Date:	08/14/15

Gorrill-Palmer Consulting Engineers, Inc.
P.O. Box 1237
15 Shaker Road
Gray, Maine 04039

Manufacturing
Land Use Code (LUC) 140

Gross Floor Area 5,284

Trip Ends Based on Fitted Curve Equation

Time Period	ITE Trip Rate	Trip Ends	Directional Split * IN	Directional Split * OUT	Directional Distribution IN	Directional Distribution OUT	Number of Studies
Weekday	T = 3.88 (X) - 20.70	0	50%	50%	0	0	62
AM Peak Adjacent Street	T = 0.83 (X) - 28.88	-24	75%	25%	-18	-6	50
PM Peak Adjacent Street	T = 0.78 (X) - 12.89	-9	35%	65%	-3	-6	54
AM Peak hour of Generator	T = 0.83 (X) - 17.71	-13	70%	30%	-9	-4	50
PM Peak Hour of Generator	T = 0.76 (X) - 5.15	-1	50%	50%	-1	0	50
Saturday	Not Given	-	50%	50%	---	---	2
Saturday Peak Hour of Gen.	Not Given	-	50%	50%	---	---	2

* Percentages rounded to nearest 5%

Trip Ends Based on Average Rate

Time Period	ITE Trip Rate	Trip Ends	Directional Split * IN	Directional Split * OUT	Directional Distribution IN	Directional Distribution OUT	
Weekday	T = 3.82 (X)	20	50%	50%	10	10	62
AM Peak Adjacent Street	T = 0.73 (X)	4	75%	25%	3	1	50
PM Peak Adjacent Street	T = 0.74 (X)	4	35%	65%	1	3	54
AM Peak Hour of Generator	T = 0.78 (X)	4	70%	30%	3	1	50
PM Peak Hour of Generator	T = 0.75 (X)	4	50%	50%	2	2	50
Saturday	T = 1.49 (X)	8	50%	50%	4	4	2
Saturday Peak Hour of Gen.	T = 0.28 (X)	1	50%	50%	1	0	2

* Percentages rounded to nearest 5%

JN: 2419
Project Description: Thompsons Point
Project Location: Portland, Maine
Date: 8/14/2015

Gorrill-Palmer Consulting Engineers, Inc.
P.O. Box 1237
15 Shaker Road
Gray, Maine 04039

Specialty Retail Center
Land Use Code (LUC) 814

Gross Floor Area (ft^2): 2,136

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)	95	4	50%	50%	48	47	---
Peak Hour of Adjacent Street Traffic 7-9 AM**	T = 0.74 (X)	2	N/A	60%	40%	1	1	
Peak Hour of Adjacent Street Traffic 4-6 PM	T = 2.71 (X)	6	5	45%	55%	3	3	---
AM Peak Hour of Generator	T = 6.84 (X)	15	4	50%	50%	8	7	---
PM Peak Hour of Generator	T = 5.02 (X)	11	3	55%	45%	6	5	---
Saturday	T = 42.04 (X)	90	3	50%	50%	45	45	---
Saturday Peak Hour of Gen.***	T = 6.63 (X)	14	3	50%	50%	7	7	---

**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	129	4	50%	50%	65	64	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	27	5	45%	55%	12	15	0.98
AM Peak Hour of Generator	T = 4.91 (X) + 115.59	126	4	50%	50%	63	63	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)	3	60%	40%	2	1
Saturday Peak Hour**	T = 1.325 (PM Peak Hour)	15	50%	50%	8	7

**Saturday Peak Hour comes from a ratio of PM to Saturday trip rates from LUC 820 - Shopping Center
***AM Peak Hour of Adjacent Street comes from a ration of PM to AM trip rates from LUC 820 - Shopping Center

JN:	3353	Gorrill Palmer
Project Description:	Thompson's Point	707 Sable Oaks Drive
Project Location:	Portland, Maine	Suite 30
Date:	September 7, 2017	South Portland, Maine 04106

Cultural Center
Based on Los Angeles Entertainment District Museum

Gross Floor Area 993

Time Period	Trip Rate per 1000 GFA	Trip Ends	Number of Studies	Directional Split		Directional Distribution		R^2
				IN	OUT	IN	OUT	
PM Peak Hour	T = 1.14(X)	1	1	50%	50%	1	0	---

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JOB 2419 - Thompsons Point
SHEET NO. _____ OF _____
CALCULATED BY ET DATE 8/14/15
CHECKED BY _____ DATE _____
SCALE _____

Trip Generation - Event / Assembly Space / Event Center

Source: Original approved study (Trip Gen Summary Memo 3-3-14)

2500 occupants = 100 AM trips
195 PM trips

Based on City and MaineDOT reviewed and approved rates used in the original approved study. They originate from a study from the Bayside Expo and Executive Conference Center in Boston, Massachusetts

JN:	3353	
Project Description:	Thompson's Point Proposed	
Project Location:	Portland, Maine	
Date:	September 7, 2017	

Gorrill Palmer
707 Sable Oaks Drive
Suite 30
South Portland, Maine 04106

Hotel
Land Use Code (LUC) 310

Numer of Rooms: 148

Trip Ends Based on Fitted Curve Equation

Time Period	ITE Trip Rate	Trip Ends	Directional Split *		Directional Distribution	
			IN	OUT	IN	OUT
Weekday	T = 8.95 (X) - 373.16	951	50%	50%	476	475
AM Peak Adjacent Street	Ln(T) = 1.24 Ln(X) - 2.00	66	60%	40%	40	26
PM Peak Adjacent Street	---	---	55%	45%	---	---
AM Peak hour of Generator	Ln(T) = 0.87 Ln(X) + 0.02	79	55%	45%	43	36
PM Peak Hour of Generator	Ln(T) = 1.00 Ln(X) - 0.58	83	60%	40%	50	33
Saturday	T = 9.62 (X) - 294.56	1129	50%	50%	565	564
Saturday Peak Hour of Gen.	T = 0.69 (X) + 4.32	106	55%	45%	58	48

* Percentages rounded to nearest 5%

Trip Ends Based on Average Rate

Time Period	ITE Trip Rate	Trip Ends	Directional Split *		Directional Distribution	
			IN	OUT	IN	OUT
Weekday	T = 8.17 (X)	1209	50%	50%	605	604
AM Peak Adjacent Street	**T = 0.56 (X)**	**83**	**60%**	**40%**	**50**	**33**
PM Peak Adjacent Street	**T = 0.59 (X)**	**87**	**55%**	**45%**	**48**	**39**
AM Peak Hour of Generator	T = 0.52 (X)	77	55%	45%	42	35
PM Peak Hour of Generator	T = 0.61 (X)	90	60%	40%	54	36
Saturday	T = 8.19 (X)	1212	50%	50%	606	606
Saturday Peak Hour of Gen.	T = 0.72 (X)	107	55%	45%	59	48

* Percentages rounded to nearest 5%

CITY OF PORTLAND WASTEWATER CAPACITY APPLICATION

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

Bradley Roland, P.E.
Water Resources Division

Date: 2017.09.25

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

Site Address: Thompson's Point Rd

Chart Block Lot Number: 202/A/004 - Lot 6

Proposed Use: Hotel
Previous Use: Light Industrial
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.
Thompson's Point Pump Station

Site Category		
	Commercial *(see part 4 below)*	
	Industrial *(complete part 5 below)*	
	Governmental	
	Residential	
	Other *(specify)*	x

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

2. Please, Submit Contact Information.

City Planner's Name: Christine Grimando Phone: 207-874-8608
Owner/Developer Name: Forefront Hoteliers, LLC
Owner/Developer Address: 501 Danforth Street, Portland, ME
Phone: 207-747-5288 Fax: 207-747-5941 E-mail: parallaxpartners@gmail.com
Engineering Consultant Name: Bo Kennedy
Engineering Consultant Address: 501 Danforth Street Portland, ME
Phone: 207-747-5288 ext 112 Fax: 207-747-5288 E-mail: bo@placemakerpartners.com

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

3. Please, Submit Domestic Wastewater Design Flow Calculations.

Estimated Domestic Wastewater Flow Generated: 20,416 GPD
Peaking Factor/ Peak Times: 6/ AM
Specify the source of design guidelines: *(i.e.* __ *"Handbook of Subsurface Wastewater Disposal in Maine,"* __ *"Plumbers and Pipe Fitters Calculation Manual,"* __ *Portland Water District Records, Other (specify)* Maine Subsurface Disposal Rules

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 - 1000 Gal min.

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: N/A GPD

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

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

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

Peaking Factor/Peak Process Times: _____

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

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

Proposed Hotel *Estimated Thompson's Point Wastewater Design Flows*				
	Quantity	Unit	Flow per Unit	Total Design Flow (GPD)
Hotel				
Hotel	*90,000*	*SF*		
	148	Room(s)	100 gpd/room	14,800
	18	Employee	12 gpd/employee	216
Hotel Service Restaurant (3 meals/day)	5,620	SF +/-		
	174	Seat(s)	30 gpd/seat	5,220
	15	Employee	12 gpd/employee	180
			Hotel Subtotal	**20,416**
Brick North - Building A				
Mixed Use			Previously Calc. 2015.11.05	5,441
			Brick North Subtotal	**5,441**
Brick South - Building C				
Event/Assembly Space			Previously Calc. 2015.11.05	12,500
			Brick South Subtotal	**12,500**
			Total Site Flow	**38,357 GPD**

Assumptions:

Hotel	Hotel and Rest. Share kitchen	Seats per prelim. Floor plan	
Brick North	Calculated as part of Level III in 2015		
Brick South	Calculated as part of Level III in 2015		

References:

Chapter 241 State of Maine Subsurface Disposal Rules, DHS; January 18, 2011
Site Master Plan, September 2015
Traffic Study, Gorrill-Palmer, September 2015
Mechanical Engineer, Bennett Engineering October 2015

Portland Water District

FROM SEBAGO LAKE TO CASCO BAY

April 19, 2017

Bo Kennedy
Placemaker Partners LLC
501 Danforth Street
Portland, ME 04102

Re: Thompson's Point Phase III, PO
Ability to Serve with PWD Water

Dear Mr. Kennedy:

The Portland Water District has received your request for an Ability to Serve Determination for the noted site submitted on March 15, 2017. Based on the information provided per PWD approved plans date 4/4/17, 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 is required.**

Conditions of Service

The following conditions of service apply:

- The District can confirm that the existing water and sewer system have the capacity to serve the additional units within Phase III of the Thompson's Point development in Portland. A main extension of approximately 450-feet will be required as proposed in a request letter dated 3/15/17 from Placemaker Partners, LLC. As further design plans become available for the next construction phase please send a copy to the MEANS group for review. We will work with you or your representative to ensure that the design meets our current standards.

- The existing 6-inch fire service and Brick South hydrant will be removed as part of this phase. This service must be terminated by removing the 6-inch gate valve and capping the tapping sleeve.

- Water District approval of water infrastructure plans will be required for the project prior to construction. As your project progresses, we advise that you submit any preliminary design plans to MEANS for review of the water main and water service line configuration. We will work with you to ensure that the design meets our current standards.

- Once the project is ready for construction, the owner or contractor will need to make an appointment to come in and complete a service application form and pay the necessary fees.

225 DOUGLASS STREET P.O. BOX 3553 PORTLAND, MAINE 04104-3553
PHONE: 207.774.5961 FAX: 207.761.8307 WEB: WWW.PWD.ORG

Existing Site Service

According to District records, the project site does currently have existing water service. A 6-inch diameter ductile iron water service line provides water service to this site. Please refer to the "Conditions of Service" section of this letter for requirements related to the use of this service.

Water System Characteristics

According to District records, there is an 12-inch diameter ductile iron water main in Thompsons Point Road and a public fire hydrant located 100 feet from the site. The most recent static pressure reading was 102 psi on April 25, 2016.

Public Fire Protection

The installation of new public hydrants to be accepted into the District water system will most likely not be required. It is your responsibility to contact the Portland Fire Department to ensure that this project is adequately served by existing and/or proposed hydrants.

Domestic Water Needs

The data noted above indicates there should be adequate pressure and volume of water to serve the domestic water needs of your proposed project. Based on the high water pressure in this area, we recommend that you consider the installation of pressure reducing devices that comply with state plumbing codes.

Private Fire Protection Water Needs

You have indicated that this project will require water service to provide private fire protection to the site. Please note that the District does not guarantee any quantity of water or pressure through a fire protection service. Please share these results with your sprinkler system designer so that they can design the fire protection system to best fit the noted conditions. If the data is out of date or insufficient for their needs, please contact MEANS to request a hydrant flow test and we will work with you to get more complete data.

Should you disagree with this determination, you may request a review by the District's Internal Review Team. Your request for review must be in writing and state the reason for your disagreement with the determination. The request must be sent to MEANS@PWD.org or mailed to 225 Douglass Street, Portland Maine, 04104 c/o MEANS. The Internal Review Team will undertake review as requested within 2 weeks of receipt of a request for review.

If the District can be of further assistance in this matter, please let us know.

Sincerely,
Portland Water District

Gordon S. Johnson, P.E.
Engineering Services Manager

IBERDROLA
USA

4/5/2012

Stephen Bushey, PE
Deluca-Hoffman Associates, Inc
778 Main Street
South Portland, Maine
Sent via email

RE: Ability to Serve Letter for Thompson's Point Upgrade

Dear Mr. Bushey:

CMP has the ability to serve your proposed project located at Thompson's Point in Portland, Maine, in accordance with our CMP Handbook (web link below). We can provide you the desired pad mounted transformers or pole mounted transformers per your request and city approval, in accordance with our CMP Standards Handbook. If you have any questions on the process, or need help in completion of the documents, please feel free to contact me.

New Service Milestones

- Call 1-800-565-3181 to establish a new account and an SAP work order. Please provide both of these to me.
- Submit Load information. Please complete this CMP spreadsheet using load information
- Submit the easement information worksheet. Please complete this CMP form and either email or fax back to us.
- Submit any electronic drawings (PDF (preferred) or DWG files) of the site layout and proposed electrical connections if you have them.
- Preliminary meetings with CMP Advisor and Engineer to determine details of job (I will need to schedule with your electrician/contractor-please let me know who this is)
- Field planner design appointment to cost out job and develop CMP Invoice.
- Submit invoice for payment.
- Easements signed and payment received. Attached is what a typical easement will look like.
- Job scheduled for completion after the electrical inspection has been received.

This process can take several months, depending upon several factors including transformer delivery, return of completed paperwork, and other jobs in the system that may be ahead of yours. In addition, contact with the other utilities, including telephone and cable, should be commenced as soon as practical. They may have additional work or charges in addition to the CMP work required to bring your project on line.

162 Canco Road Portland, ME 04103
Tel (800) 750-4000
207-842-2367 office
207-458-0382 cell
207-626-4082 fax

www.cmpco.com

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Please complete the attached forms (specific instructions are on each form) and email them back to me at your earliest convenience.

For your convenience, here is a link to the CMP Website which contains our Handbook with details on most service requirements:

CMP Handbook of Standard Requirements
(http://www.cmpco.com/MediaLibrary/3/6/Content%20Management/YourAccount/PDFs%20and%20Docs/handbook.pdf)

If you have any questions, please contact me.

Attachments:

Excel Load Sheet
Easement Worksheet
Standard CMP Easement

Regards,

Jamie

Jamie Cough
Energy Services Advisor
Central Maine Power Company
162 Canco Road
Portland, ME 04103
207-842-2367 office
207-458-0382 cell
207-626-4082 fax

From:	Carpenter, Scott
To:	Sandi Keef
Cc:	Bo Kennedy
Subject:	RE: The Forefront at Thompson"s Point - Ability to Serve Project
Date:	Thursday, February 13, 2014 1:54:00 PM

To whom it may concern;

We, Unitil Natural Gas have been in contact with the owner of the Thompson Point project and have conceptionally come to terms with an agreement to service this project as the result of our meetings.

As a side note, we did some work last fall (2013) that included upgrading and extending our existing gas main to a 4" main on Sewall St., down the street in the direction of the Thompson's Point project and ran a service to the Eyecare Medical building at 53 Sewall St. We look forward to working with everyone on this exciting project as it comes together!

If you need something else, please don't hesitate to contact us.

Kindest Regards,
Scott

Scott Carpenter
New Business Development
Unitil
ME Gas Operations
1075 Forest Ave
Portland, ME 04103-3586
Phone: (207) 541-2543
Fax: (207) 541-2593

From: Sandi Keef [mailto:SKeef@fstinc.com]
Sent: Friday, January 24, 2014 2:49 PM
To: Carpenter, Scott
Cc: Bo Kennedy
Subject: The Forefront at Thompson's Point - Ability to Serve Project

Please find the attached request for a formal Ability to Serve Capacity Letter for the Thompson's Point project. Please contact our office with any questions.

Thank you,

Sandi Keef | *Technical Assistant*

FAY, SPOFFORD & THORNDIKE formerly DeLuca Hoffman Associates
778 Main Street, Suite 8 | South Portland, ME 04106

Main Tel: (207) 775-1121 | Fax: (207) 879-0896
skeef@fstinc.com | www.fstinc.com

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FOREFRONT
THOMPSON'S POINT | HOTEL | PORTLAND MAINE

Forefront Hoteliers, LLC
501 Danforth Street | Portland, ME 04102

10/26/2017

Christine Grimando, AICP
Senior Planner
Planning & Urban Development Department
389 Congress Street
Portland, Maine 04101

Dear Christine,

Pursuant to the pending Level III Site Plan application for Forefront Hoteliers, LLC, in my capacity as Manager, I am writing to confirm that PlaceMaker Partners, LLC has the authority to act as our agent and pursue permitting and approvals on our behalf.

Please do not hesitate to contact me if you have any questions or if I can provide further information to support your review and consideration.

Yours sincerely,

Chris Thompson
Manager
Forefront Hoteliers, LLC

Forefront Partners I, LP
501 Danforth Street | Portland, ME 04102

10/26/2017

Christine Grimando, AICP
Senior Planner
Planning & Urban Development Department
389 Congress Street
Portland, Maine 04101

Dear Christine,

Pursuant to the pending Level III Site Plan application for Forefront Hoteliers, LLC, in my capacity as General Partner I am writing to confirm that Forefront Partners I, LP has assigned the development rights to Lot 6 to our affiliate entity, Forefront Hoteliers, LLC, for the purpose of securing permits and approvals and eventual ownership of Lot 6.

Please do not hesitate to contact me if you have any questions or if I can provide further information to support your review and consideration.

Yours sincerely,

Chris Thompson
President
Forefront GP, LLC, its General Partner

ATTACHMENT G

State and Federal Permits

DEPARTMENT OF THE ARMY
NEW ENGLAND DISTRICT, CORPS OF ENGINEERS
696 VIRGINIA ROAD
CONCORD, MASSACHUSETTS 01742-2751

REPLY TO
ATTENTION OF

MAINE GENERAL PERMIT (GP)
AUTHORIZATION LETTER AND SCREENING SUMMARY

Forefront Partners I, LP
55 Lisbon Street, Suite 2400
Lewiston, Maine 04240

CORPS PERMIT # NAE-2012-00992
CORPS PGP ID# 12-154
STATE ID# L-25672-2G-A-N

DESCRIPTION OF WORK:
To construct and maintain an 8' x 9' landing with an attached 4.33' x 40' aluminum ramp leading to a 10' x 10' intermediate float with a 12' x 20' float attached perpendicular extending southwest in Fore River off Thompson's Point. The work also includes placing fill in approximately 420 SF of intertidal area in conjunction with the construction of a 25' x 20' granite block stairway and in 386 SF of intertidal area to construct a riprap plunge pool for a storm drainage outfall for a total of 806 SF (0.018 acres) off Thompson's Point at Portland, Maine as shown on the attached plans entitled "Forefront Partners I,LP, Commercial Redevelopment, City of Portland, Thompson's Point, Maine" in 4 sheets dated April 2012. **SEE ATTACHED CONDITIONS:**

LAT/LONG COORDINATES : 43.64897 N 70.29191 W **USGS QUAD:** ME-Portland West

I. CORPS DETERMINATION:
Based on our review of the information you provided, we have determined that your project will have only minimal individual and cumulative impacts on waters and wetlands of the United States. **Your work is therefore authorized by the U.S. Army Corps of Engineers under the enclosed Federal Permit, the Maine General Permit (GP).** Accordingly, we do not plan to take any further action on this project.

You must perform the activity authorized herein in compliance with all the terms and conditions of the GP [including any attached Additional Conditions and any conditions placed on the State 401 Water Quality Certification including any required mitigation]. Please review the enclosed GP carefully, including the GP conditions beginning on page 5, to familiarize yourself with its contents. You are responsible for complying with all of the GP requirements; therefore you should be certain that whoever does the work fully understands all of the conditions. You may wish to discuss the conditions of this authorization with your contractor to ensure the contractor can accomplish the work in a manner that conforms to all requirements.

If you change the plans or construction methods for work within our jurisdiction, please contact us immediately to discuss modification of this authorization. This office must approve any changes before you undertake them.

Condition 41 of the GP (page 18) provides one year for completion of work that has commenced or is under contract to commence prior to the expiration of the GP on October 12, 2015. You will need to apply for reauthorization for any work within Corps jurisdiction that is not completed by October 12, 2016.

This authorization presumes the work shown on your plans noted above is in waters of the U.S. Should you desire to appeal our jurisdiction, please submit a request for an approved jurisdictional determination in writing to the undersigned.

No work may be started unless and until all other required local, State and Federal licenses and permits have been obtained. **This includes but is not limited to a Flood Hazard Development Permit issued by the town if necessary.**

II. STATE ACTIONS: PENDING [ ], ISSUED[ ], DENIED [ ] DATE_____

APPLICATION TYPE: PBR:___, TIER 1:___, TIER 2:___, TIER 3: X , LURC:___ DMR LEASE:___ NA:___

III. FEDERAL ACTIONS:

JOINT PROCESSING MEETING: 5-17-12 LEVEL OF REVIEW: CATEGORY 1:___ CATEGORY 2: X

AUTHORITY (Based on a review of plans and/or State/Federal applications): SEC 10 X , 404___ 10/404___, 103___

EXCLUSIONS: The exclusionary criteria identified in the general permit do not apply to this project.

FEDERAL RESOURCE AGENCY OBJECTIONS: EPA NO , USF&WS NO , NMFS NO

If you have any questions on this matter, please contact my staff at 207-623-8367 at our Manchester, Maine Project Office. In order for us to better serve you, we would appreciate your completing our Customer Service Survey located at http://per2.nwp.usace.army.mil/survey.html

Rodney A Howe

RODNEY A. HOWE
SENIOR PROJECT MANAGER
MAINE PROJECT OFFICE

8-24-12

FRANK J. DEL GIUDICE **DATE**
CHIEF, PERMITS & ENFORCEMENT BRANCH
REGULATORY DIVISION

US Army Corps
of Engineers ®
New England District

PLEASE NOTE THE FOLLOWING GENERAL CONDITIONS FOR
DEPARTMENT OF THE ARMY
GENERAL PERMIT
NO. NAE-2012-00992

1. The following condition applies to the construction of the granite block stairway and the rip rapped stormwater plunge pool. Please note appendix A, II. Navigable Waters of the United States, Category 1, (a) Fill, 2. Work conducted in the intertidal zone must be conducted in-the dry during low water, or between Nov. 8 – Apr. 9.

2. The following condition applies to the construction of the ramp and float system. Please note appendix A, II. Navigable Waters of the United States Category 2 and (f) Structures and Floats Category 2 of the attached Programmatic General Permit.

MAR-2012-00992

APPLICATION FOR A NATURAL RESOURCES PROTECTION ACT PERMIT

→PLEASE TYPE OR PRINT IN *BLACK INK ONLY*

1. Name of Applicant:	Forefront Partners I, LP	**5.Name of Agent:**	DeLuca-Hoffman Associates, Inc.
2. Applicant's Mailing Address:	55 Lisbon Street, Suite 2400 Lewiston, ME 04240	**6. Agent's Mailing Address:**	778 Main Street, Suite 8 South Portland, ME 04106
3. Applicant's Daytime Phone #:	(207) 347-1614	**7. Agent's Daytime Phone #:**	(207) 775-1121
4. Applicant's Email Address (Required from *either* applicant or agent):	parallaxpartners@gmail.com	**8. Agent's Email Address:**	sbushey@delucahoffman.com

9. Location of Activity: (Nearest Road, Street, Rt.#)	1 Thompson's Point	**10. Town:**	Portland	**11. County:**	Cumberland

12. Type of Resource: (Check all that apply)	☐ River, stream or brook ☐ Great Pond ☐ Coastal Wetland ☐ Freshwater Wetland ☐ Wetland Special Significance ☒ Significant Wildlife Habitat ☐ Fragile Mountain	**13. Name of Resource:**	adjacent tidal flats of the Fore River
		14. Amount of Impact: (Sq.Ft.)	**Fill:** N/A **Dredging/Veg Removal/Other:**

15. Type of Wetland: (Check all that apply)	☐ Forested ☐ Scrub Shrub ☐ Emergent ☐ Wet Meadow ☐ Peatland ☐ Open Water ☐ Other coastal wetland	**FOR FRESHWATER WETLANDS**		
		Tier 1	*Tier 2*	*Tier 3*
		☐ 0 - 4,999 sq ft. ☐ 5,000-9,999 sq ft ☐ 10,000-14,999 sq ft	☐ 15,000 – 43,560 sq. ft.	☐ > 43,560 sq. ft. or ☐ smaller than 43,560 sq. ft., not eligible for Tier 1

16. Brief Activity Description:	The applicant proposes a transit oriented development over the previously developed Thompson's Point site in Portland. See Attachment 1 for additional information.

17. Size of Lot or Parcel & UTM Locations:	☐ _____ square feet, or ☒ 27.56 acres	UTM Northing: 4,833,933	UTM Easting: 395,870

18. Title, Right or Interest:	☐ own ☐ lease ☒ purchase option ☐ written agreement

19. Deed Reference Numbers:	Book#: 6579/6676 Page: 30/287	**20. Map and Lot Numbers:**	Map #: 201/202	Lot #: A-5, A-8, A-10/A-1, A-4	
21. DEP Staff Previously Contacted:	Marybeth Richardson	**22. Part of a larger project:**	☐ Yes ☒ No	**After-the-Fact:**	☐ Yes ☒ No
23. Resubmission of Application?:	☐ Yes→ ☒ No	**If yes, previous application #**		**Previous project manager:**	
24. Written Notice of Violation?:	☐ Yes → ☒ No	**If yes, name of DEP enforcement staff involved:**		**25. Previous Wetland Alteration:**	☐ Yes ☐ No
26. Detailed Directions to the Project Site:	Take Exit 5 off I-295 South and proceed onto Thompson's Point Connector Road, cross railroad tracks into site.				

27.	**TIER 1**	**TIER 2/3 AND INDIVIDUAL PERMITS**	
☐ Title, right or interest documentation	☐ Statement of Avoidance & Minimization	☒ Title, right or interest documentation	☒ Erosion Control/Construction Plan
☐ Topographic Map	☐ Statement/Copy of cover letter to MHPC	☒ Topographic Map	☐ Functional Assessment (Attachment 3), if required
☐ Narrative Project Description		☒ Copy of Public Notice/Public Information Meeting Documentation	☐ Compensation Plan (Attachment 4), if required
☐ Plan or Drawing (8 1/2" x 11")		☒ Wetlands Delineation Report (Attachment 1) that contains the Information listed under Site Conditions	☐ Appendix A and others, if required
☐ Photos of Area		☒ Alternatives Analysis (Attachment 2) including description of how wetland impacts were Avoided/Minimized	☒ Statement/Copy of cover letter to MHPC
			☐ Description of Previously Mined Peatland, if required

28. FEES Amount Enclosed:	

CERTIFICATIONS AND SIGNATURES LOCATED ON PAGE 2

IMPORTANT: IF THE SIGNATURE BELOW IS NOT THE APPLICANT'S SIGNATURE, ATTACH LETTER OF AGENT AUTHORIZATION SIGNED BY THE APPLICANT.

By signing below the applicant (or authorized agent), certifies that he or she has read and understood the following :

DEP SIGNATORY REQUIREMENT

PRIVACY ACT STATEMENT

Authority: 33 USC 401, Section 10; 1413, Section 404. Principal Purpose: These laws require permits authorizing activities in or affecting navigable waters of the United States, the discharge of dredged or fill material into waters of the United States, and the transportation of dredged material for the purpose of dumping it into ocean waters. Disclosure: Disclosure of requested information is voluntary. If information is not provided, however, the permit application cannot be processed nor a permit be issued.

CORPS SIGNATORY REQUIREMENT

USC Section 1001 provides that: Whoever, in any manner within the jurisdiction of any department or agency of the United States knowingly and willfully falsifies, conceals, or covers up any trick, scheme, or disguises a material fact or makes any false, fictitious or fraudulent statements or representations or makes or uses any false writing or document knowing same to contain any false, fictitious or fraudulent statements or entry shall be fines not more than $10,000 or imprisoned not more than five years or both. I authorize the Corps to enter the property that is subject to this application, at reasonable hours, including buildings, structures or conveyances on the property, to determine the accuracy of any information provided herein.

DEP SIGNATORY REQUIREMENT

I certify under penalty of law that I have personally examined the information submitted in this document and all attachments thereto and that, based on my inquiry of those individuals immediately responsible for obtaining the information, I believe the information is true, accurate, and complete. I authorize the Department to enter the property that is the subject of this application, at reasonable hours, including buildings, structures or conveyances on the property, to determine the accuracy of any information provided herein. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment.

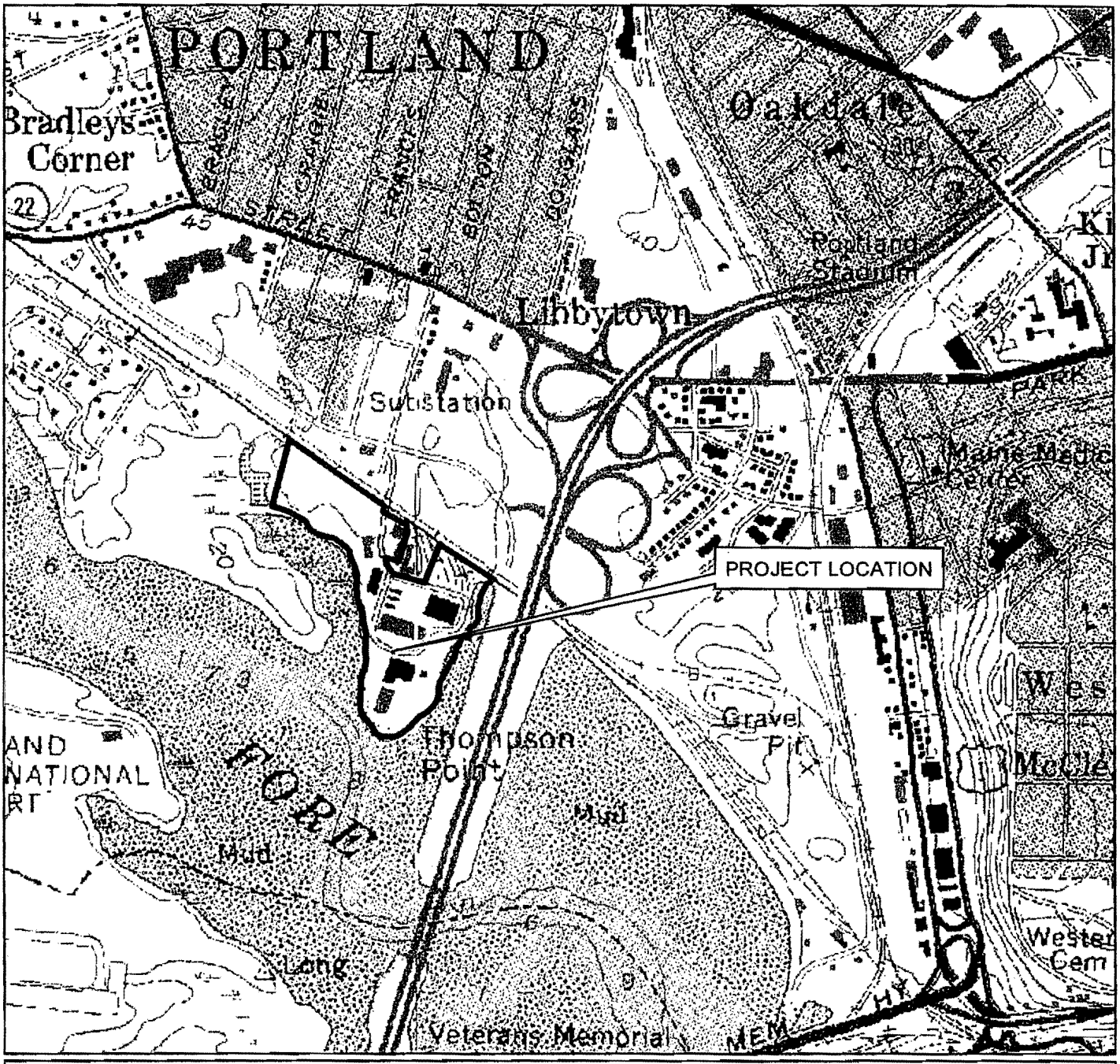
Further, I hereby authorize the DEP to send me an electronically signed decision on the license I am applying for with this application by emailing the decision to the address located on the front page of this application (see #4 for the applicant and #8 for the agent).

SIGNATURE OF AGENT/APPLICANT

Date: 4/26/12

NOTE: Any changes in activity plans must be submitted to the DEP and the Corps in writing and must be approved by both agencies prior to implementation. Failure to do so may result in enforcement action and/or the removal of the unapproved changes to the activity.

(pink)



USGS LOCATION MAP
THOMPSON'S POINT
PORTLAND, MAINE

SOURCE: MAINE OFFICE OF GIS - MAPS

DeLuca-Hoffman Associates, Inc.
778 MAIN STREET, SUITE 8
SOUTH PORTLAND, ME 04106
207-775-1121
www.delucahoffman.com

DRAWN:	DED
CHECKED:	SRB
DATE:	SEPTEMBER 2010
FILENAME:	2982-USGS
SCALE:	1 inch = 1,000 feet

FIGURE

2

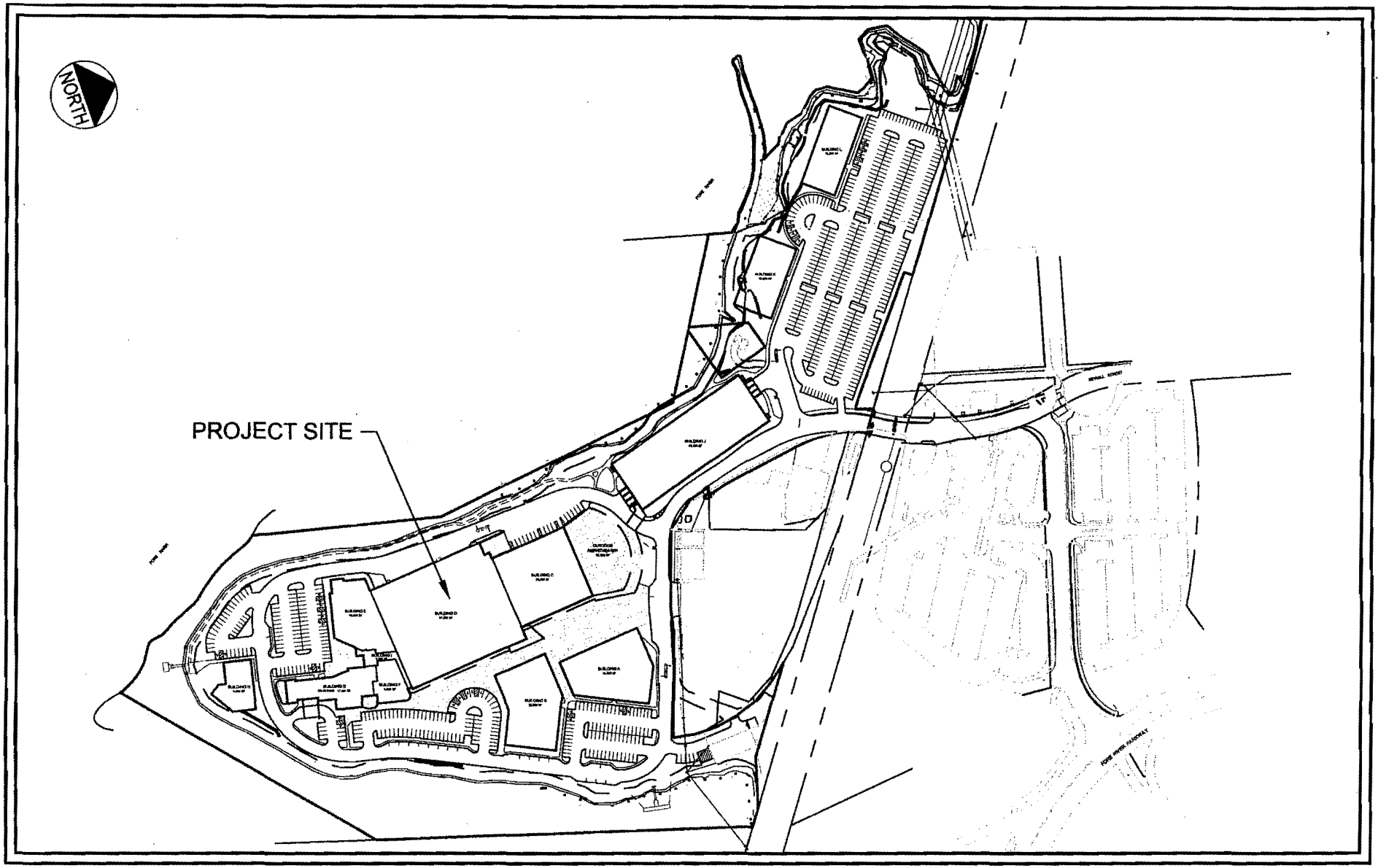


FIGURE:	BOOK:	PAGE:	LOCATION:	PROPOSED ACTIVITY:	PROJECT APPLICANT:	
1	6579 6875	30 287	CITY OF PORTLAND THOMPSON'S POINT	COMMERCIAL REDEVELOPMENT	FOREFRONT PARTNERS I, LP	
	LEGAL DESCRIPTION: SEE ALTA SURVEY BY SEBAGO TECHNICS INC		WATER BODY: FORE RIVER	ABUTTERS: SEE ATTACHMENT 10	SCALE: 1" = 300' DATUM: -	DELUCA-HOFFMAN ASSOCIATES, INC.
					DATE: APR 2012	

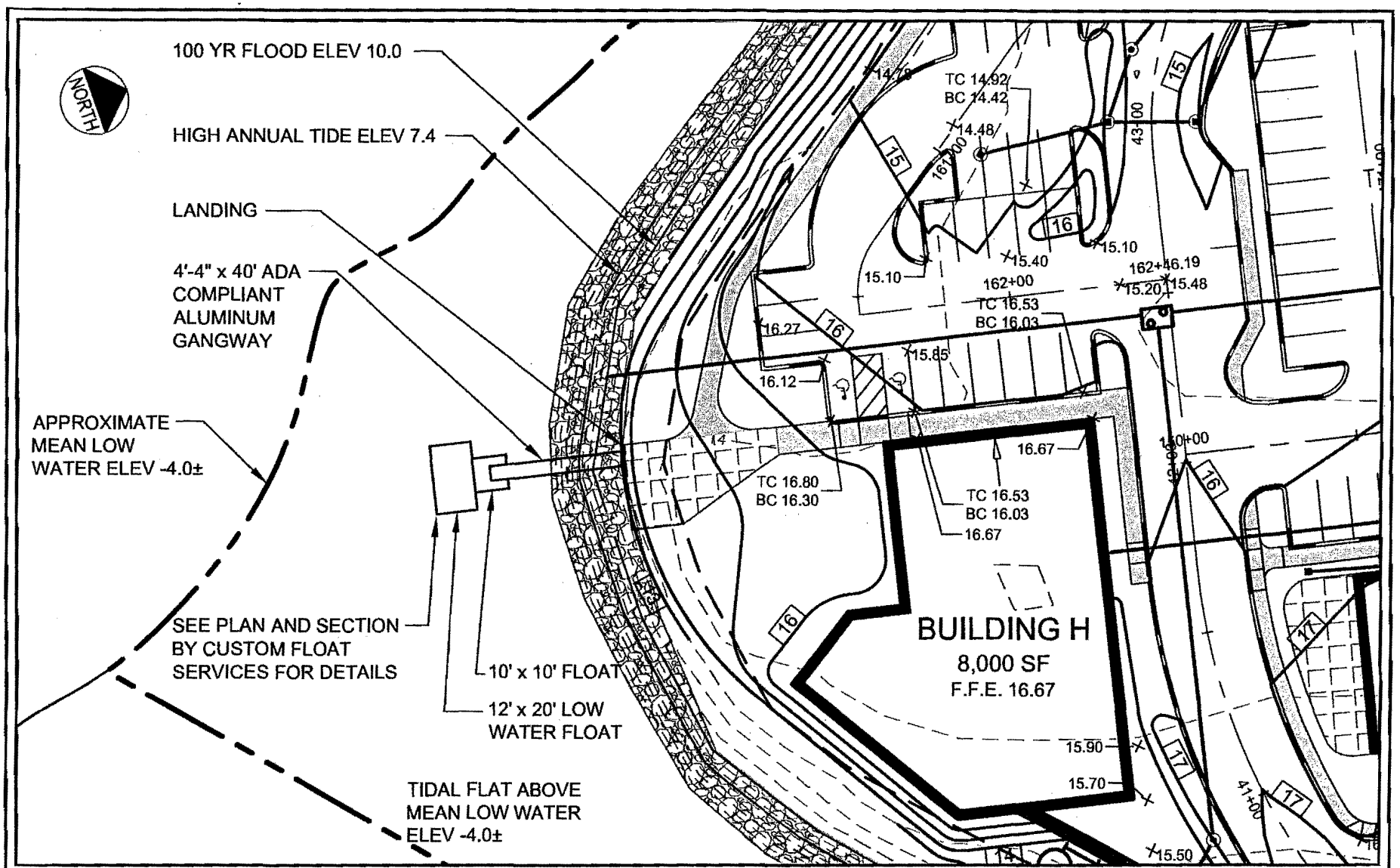
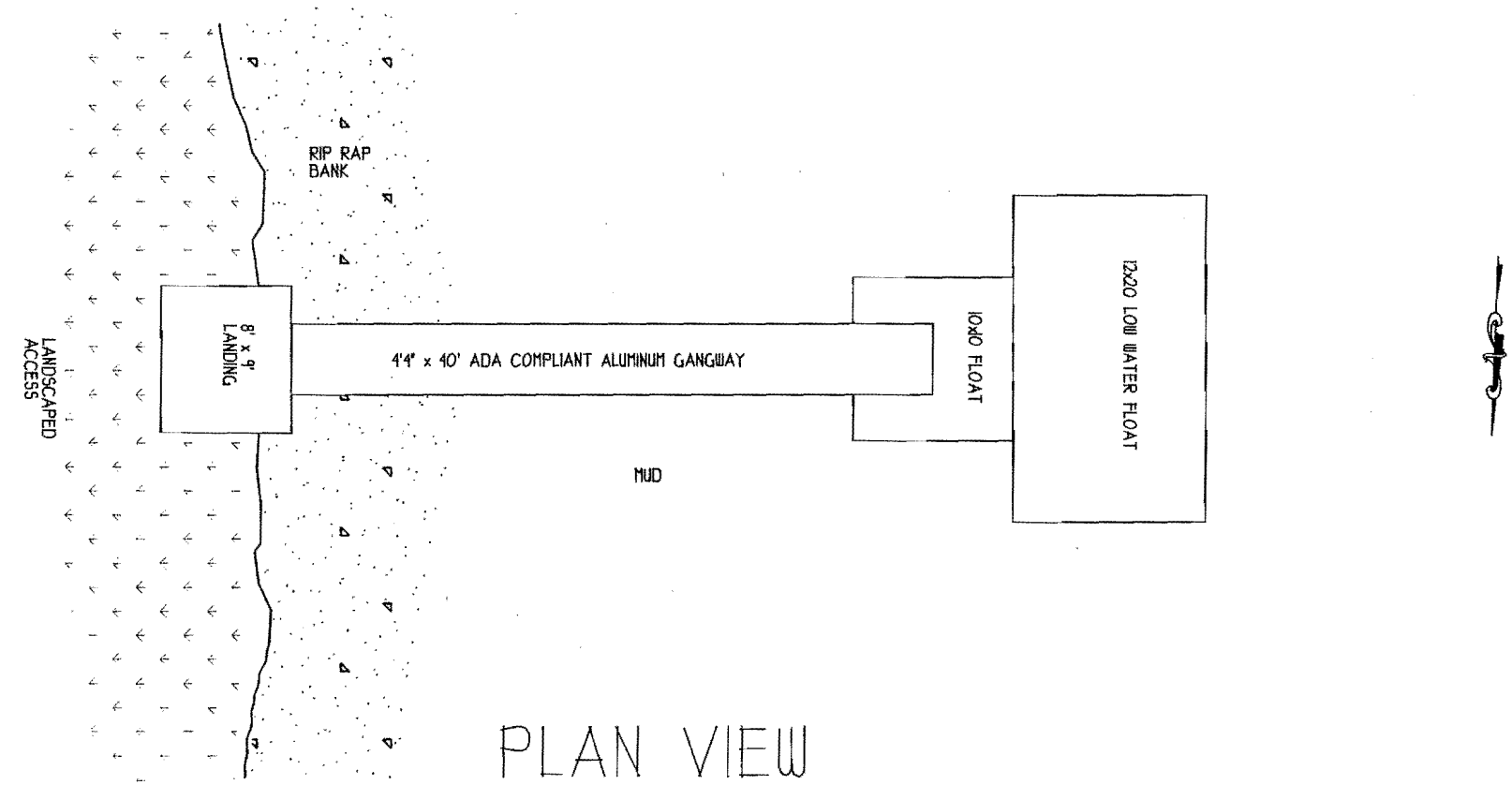
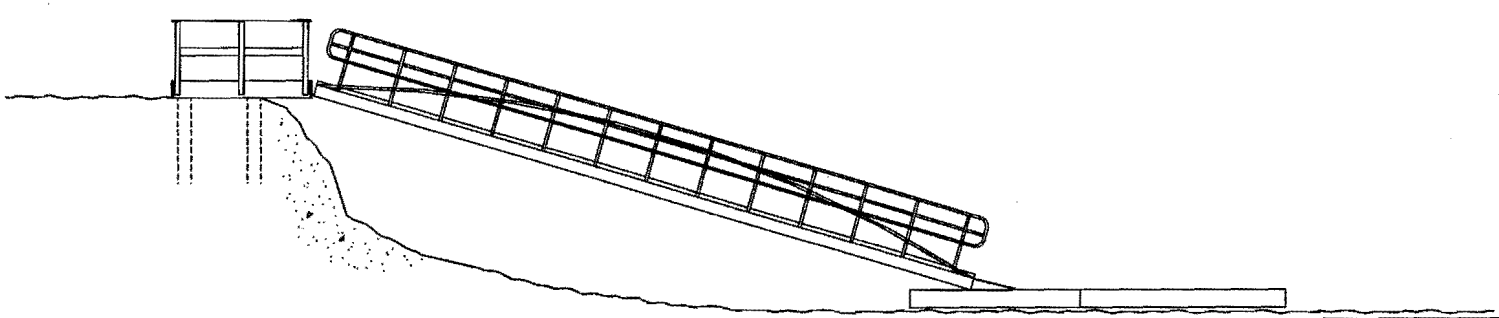


FIGURE:	BOOK:	PAGE:	LOCATION:	PROPOSED ACTIVITY:	PROJECT APPLICANT:	
2	6579 6875	30 287	CITY OF PORTLAND THOMPSON'S POINT	COMMERCIAL REDEVELOPMENT	FOREFRONT PARTNERS I, LP	
	LEGAL DESCRIPTION: SEE ALTA SURVEY BY SEBAGO TECHNICS INC		WATER BODY: FORE RIVER	ABUTTERS: SEE ATTACHMENT 10	SCALE: 1" = 40' DATUM: -	DELUCA-HOFFMAN ASSOCIATES, INC.
					DATE: APR 2012	



PLAN VIEW

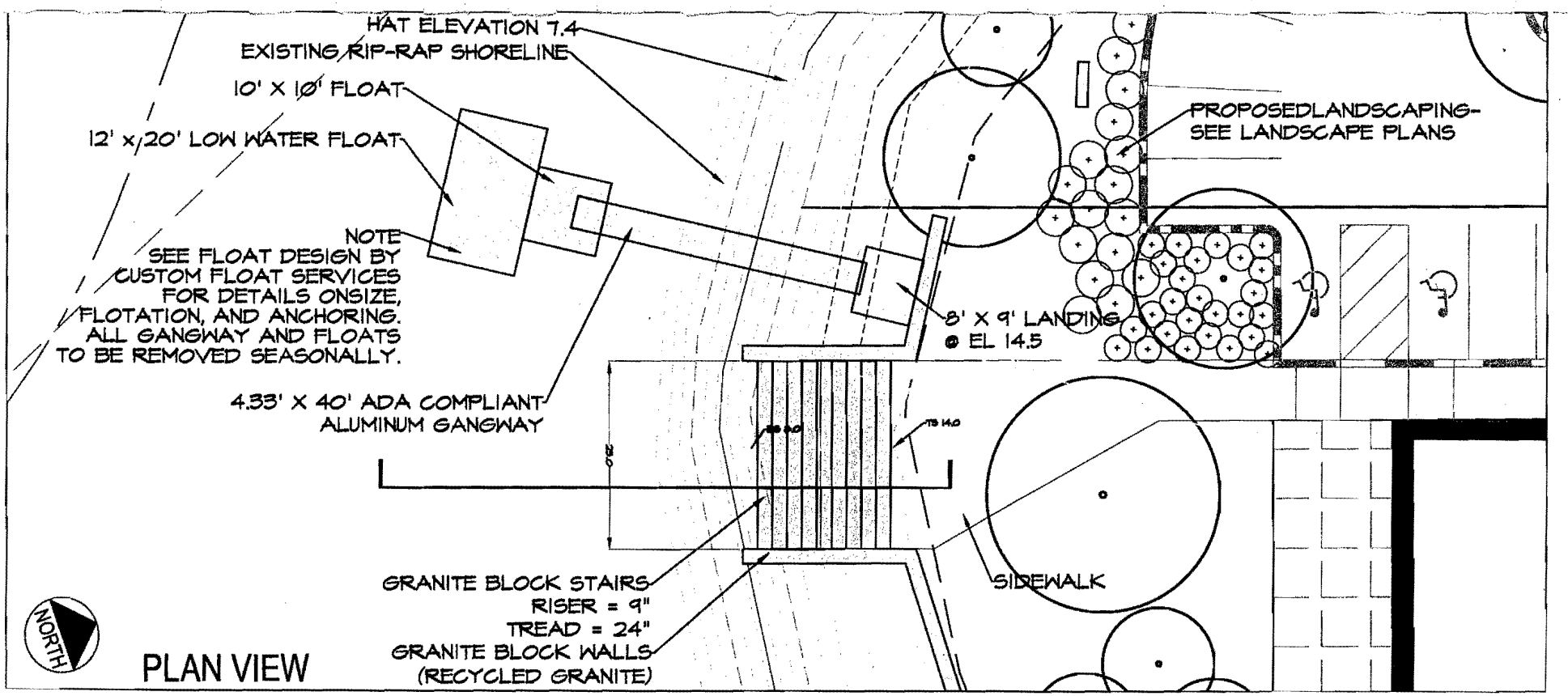


SIDE ELEVATION

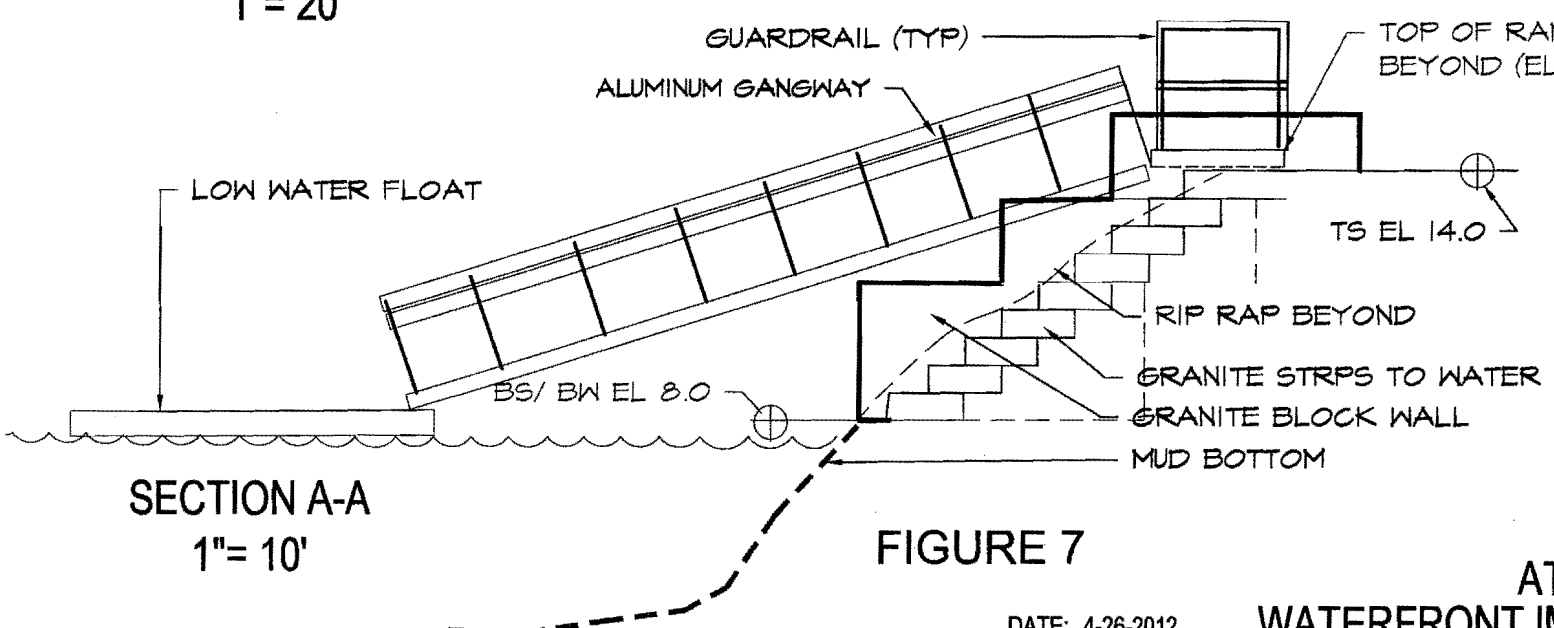
FIGURE:
5

THE FOREFRONT AT THOMPSON'S POINT PLAN #1	REV:
FOR: CHRIS THOMPSON / JON JENNINGS	DATE: 11/21/11
DRAWN BY: MPD	SCALE: NOT TO SCALE
DESIGNED BY:	

Custom Float Services
By Beacon Shore Contractors, Inc.



PLAN VIEW
1"= 20'



SECTION A-A
1"= 10'

FIGURE 7

CARROLL ASSOCIATES
LANDSCAPE ARCHITECTS
217 COMMERCIAL STREET
PORTLAND, MAINE 04101
PHONE: (207) 772-1552
FAX: (207) 772-0772

DATE: 4-26-2012

THE FOREFRONT AT THOMPSON'S POINT WATERFRONT IMPROVEMENTS PLAN

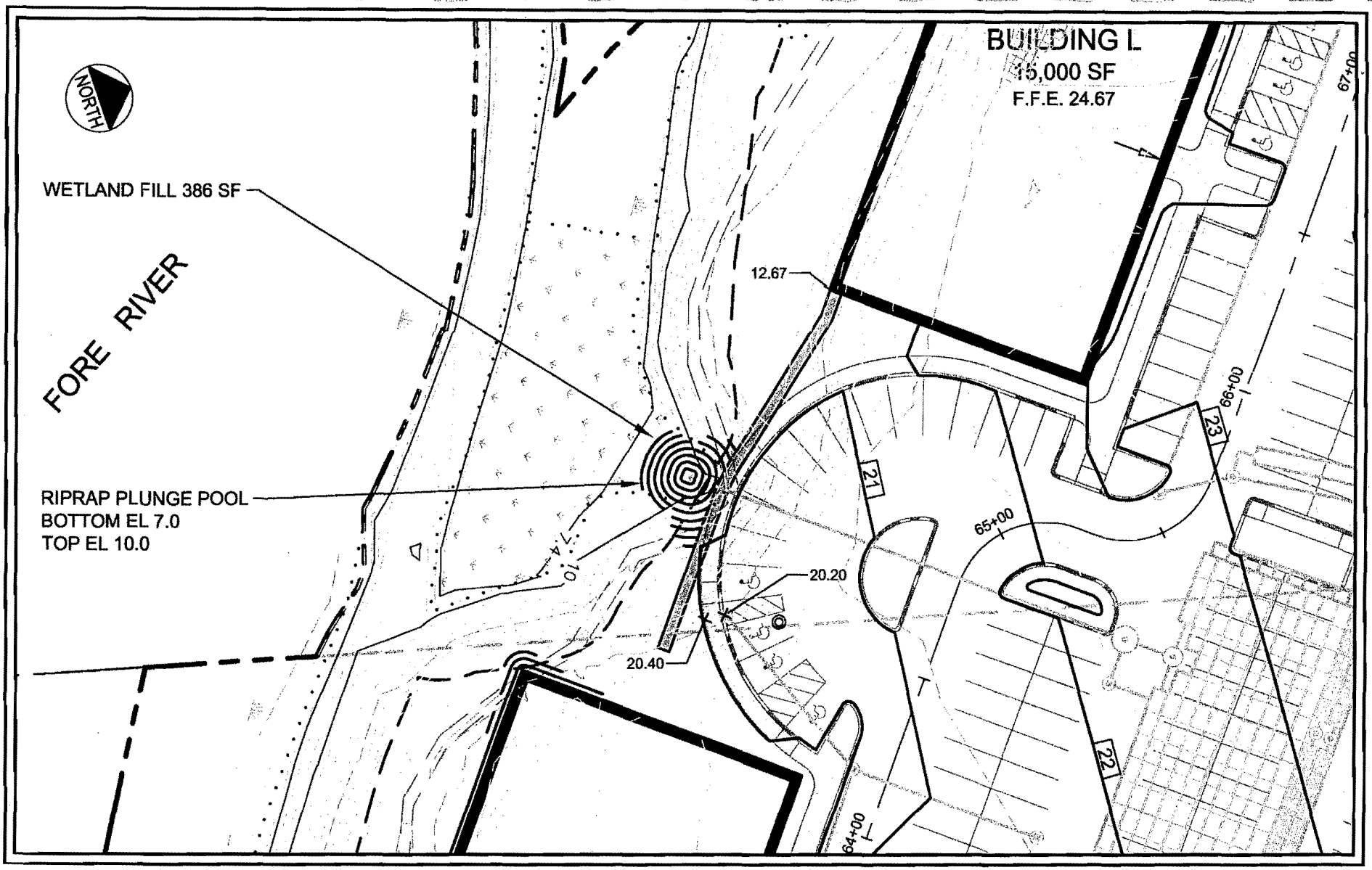


FIGURE:	BOOK:	PAGE:	LOCATION:	PROPOSED ACTIVITY:	PROJECT APPLICANT:
6	6579 6875	30 287	CITY OF PORTLAND THOMPSON'S POINT	COMMERCIAL REDEVELOPMENT	FOREFRONT PARTNERS I, LP
	LEGAL DESCRIPTION: SEE ALTA SURVEY BY SEBAGO TECHNICS INC		WATER BODY: FORE RIVER	ABUTTERS: SEE ATTACHMENT 10	SCALE: 1" = 40' DATUM: -
					DATE: APR 2012
					DELUCA-HOFFMAN ASSOCIATES, INC.

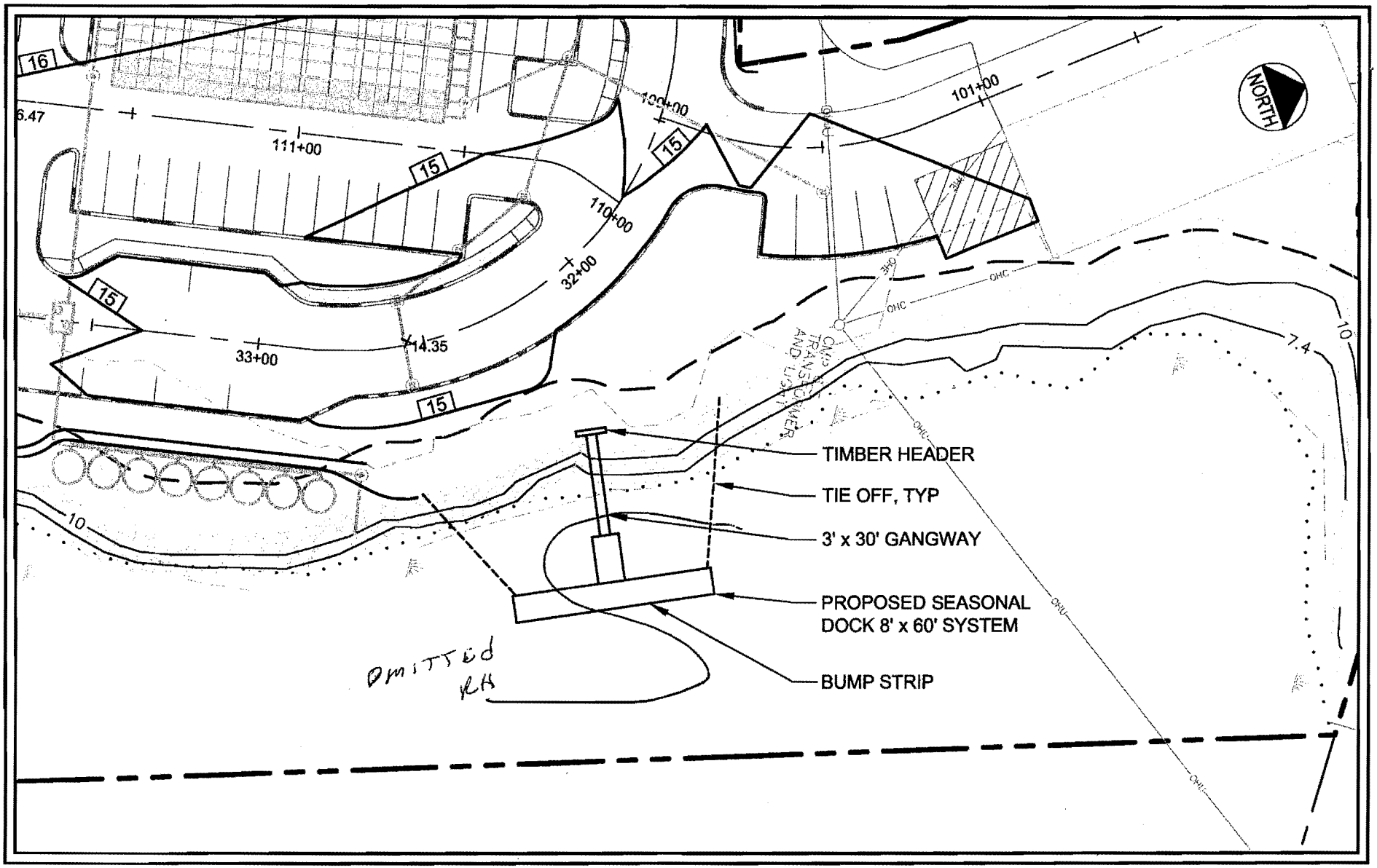


FIGURE:	BOOK:	PAGE:	LOCATION:	PROPOSED ACTIVITY:	PROJECT APPLICANT:
3	6579 6875	30 287	CITY OF PORTLAND THOMPSON'S POINT	COMMERCIAL REDEVELOPMENT	FOREFRONT PARTNERS I, LP
	LEGAL DESCRIPTION:	WATER BODY:	ABUTTERS:	SCALE: 1" = 40' DATUM: -	DELUCA-HOFFMAN ASSOCIATES, INC.
	SEE ALTA SURVEY BY SEBAGO TECHNICS INC	FORE RIVER	SEE ATTACHMENT 10	DATE: APR 2012	

DEPARTMENT OF THE ARMY
NEW ENGLAND DISTRICT, CORPS OF ENGINEERS
696 VIRGINIA ROAD
CONCORD, MASSACHUSETTS 01742-2751

REPLY TO ATTENTION OF

MAINE GENERAL PERMIT (GP)
AUTHORIZATION LETTER AND SCREENING SUMMARY

Forefront Partners I, LP
55 Lisbon Street, Suite 2400
Lewiston, Maine 04240

CORPS PERMIT #: NAE-2012-00992 amendment
CORPS PGP ID# 12-154
STATE ID# L-25672-2G-A-N

DESCRIPTION OF WORK:
Department of the Army permit NAE-2012-00992 authorized you to construct and maintain an 8' x 9' landing with an attached 4.33' x 40' aluminum ramp leading to a 10' x 10' intermediate float with a 12' x 20' float attached perpendicular extending southwest in Fore River off Thompson's Point. As requested your permit is hereby amended to shift the pier location slightly west and construct a 6' x 16' pile and timber pier with an attached 4' x 50' ramp leading to an 12'X24' intermediate float cut at an angle with a 10' x 60' line of bottom moored floats attached at an angle extending southwest in Fore River off lot 13 at Thompson's Point at Portland, Maine as shown on the attached plans entitled " the Forefront at Thompson's Point Seasonal Dock System by FST" in 3 sheets

LAT/LONG COORDINATES : 43.64897 N 70.29191 W **USGS QUAD:** ME-Portland West

I. CORPS DETERMINATION:
Based on our review of the information you provided, we have determined that your project will have only minimal individual and cumulative impacts on waters and wetlands of the United States. **Your work is therefore authorized by the U.S. Army Corps of Engineers under the enclosed Federal Permit, the Maine General Permit (GP).** Accordingly, we do not plan to take any further action on this project.

You must perform the activity authorized herein in compliance with all the terms and conditions of the GP [including any attached Additional Conditions and any conditions placed on the State 401 Water Quality Certification including any required mitigation]. Please review the enclosed GP carefully, including the GP conditions beginning on page 5, to familiarize yourself with its contents. You are responsible for complying with all of the GP requirements; therefore you should be certain that whoever does the work fully understands all of the conditions. You may wish to discuss the conditions of this authorization with your contractor to ensure the contractor can accomplish the work in a manner that conforms to all requirements.

If you change the plans or construction methods for work within our jurisdiction, please contact us immediately to discuss modification of this authorization. This office must approve any changes before you undertake them.

Condition 41 of the GP (page 18) provides one year for completion of work that has commenced or is under contract to commence prior to the expiration of the GP on October 12, 2015. You will need to apply for reauthorization for any work within Corps jurisdiction that is not completed by October 12, 2016.

This authorization presumes the work shown on your plans noted above is in waters of the U.S. Should you desire to appeal our jurisdiction, please submit a request for an approved jurisdictional determination in writing to the undersigned.

No work may be started unless and until all other required local, State and Federal licenses and permits have been obtained. **This includes but is not limited to a Flood Hazard Development Permit issued by the town if necessary.**

II. STATE ACTIONS: PENDING [ ], ISSUED[ ], DENIED [ ] DATE_____

APPLICATION TYPE: PBR:___, TIER 1:___, TIER 2:___, TIER 3: X, LURC:___ DMR LEASE:___ NA:___

III. FEDERAL ACTIONS:

JOINT PROCESSING MEETING: 5-17-12 LEVEL OF REVIEW: CATEGORY 1:___ CATEGORY 2: X

AUTHORITY (Based on a review of plans and/or State/Federal applications): SEC 10_ X _, 404___ 10/404___, 103_

EXCLUSIONS: The exclusionary criteria identified in the general permit do not apply to this project.

FEDERAL RESOURCE AGENCY OBJECTIONS: EPA NO, USF&WS NO, NMFS NO

If you have any questions on this matter, please contact my staff at 207-623-8367 at our Manchester, Maine Project Office. In order for us to better serve you, we would appreciate your completing our Customer Service Survey located at http://per2.nwp.usace.army.mil/survey.html

Rodney A. Howe
RODNEY A. HOWE
SENIOR PROJECT MANAGER
MAINE PROJECT OFFICE

4-16-2012
FRANK J. DEL GIUDICE **DATE**
CHIEF, PERMITS & ENFORCEMENT BRANCH
REGULATORY DIVISION

-R (1145-2-303b) Date April 10, 2014

EMORANDUM FOR FILE

SUBJECT: Forefront Partners I,LP NAE-2012-00992 amendment

1. PRELIMINARY JURISDICTIONAL DETERMINATION:

__X__ The State of Maine has performed a **preliminary jurisdictional determination** with which the Corps concurs. **(OR)**
___Our preliminary determination of jurisdiction is that the aquatic resources within the review area are waters of the United States due to the presence of: (Check all that apply)
X TNWs, including territorial seas
___Wetlands adjacent to TNWs
___Relatively permanent waters (RPWs) that flow directly or indirectly into TNWs
___Non-RPWs that flow directly or indirectly into TNWs
___Wetlands directly abutting RPWs that flow directly or indirectly into TNWs
___Wetlands adjacent to but not directly abutting RPWs that flow directly or indirectly into TNWs
___Wetlands adjacent to non-RPWs that flow directly or indirectly into TNWs
___Impoundments of jurisdictional waters
___Isolated (interstate or intrastate) waters, including isolated wetlands

2. SECTION 106 COORDINATION
Coordination with the State Historic Preservation Officer Yes/ N/A **(circle one)**. Determination & date:
_____No effect by 10 day default; 8/10/12 No effect; _____May effect; _____No Adverse effect

Coordination with the Tribal Historic Preservation Officer(s) Yes/ N/A **(circle one)**.
Determination & date: 5/27/12 No effect by default;_____No effect;_____May effect; ___No Adverse effect

3. ENDANGERED SPECIES CONSULTATION: USFWS/NMFS (circle one or both).
Determination & date: 6/7/12 No effect;_____Not likely to adversely effect

4. ESSENTIAL FISH HABITAT (EFH): EFH PRESENT Y / N (circle one).
IF YES: Based on the terms and conditions of the PGP, which are intended to ensure that authorized projects cause no more than minimal environmental impacts, the Corps of Engineers has preliminary determined that this project will not cause more than minimal adverse effects to **EFH** identified under the Magnunson-Stevens Fisheries Conservation and Management Act.
Determination & date:_____No recommendations received; ___No effect; 6/7/12 May Adversely effect.
EFH recommendations: Normal TOYR construction window and Cat 2 Standards for installation.

IMPACTS: 0.0 Short-term; _____ Long-term; 0.0 Cumulative. (Brief description)

Environmental impacts are minimal both individually and cumulatively Y / N (circle one).
The original permit authorized an 8' x 9' landing with an attached 4.33' x 40' aluminum ramp leading to a 10' x 10' intermediate float with a 12' x 20' float attached perpendicular extending southwest in Fore River off Thompson's Point. This amendment authorizes the permittee to shift the pier location slightly west and construct a 6' x 16' pile and timber pier with an attached 4' x 50' ramp leading to an12'X24' intermediate float cut at an angle with a 10' x 60' line of bottom moored floats attached at an angle extending southwest in Fore River off lot 13 at Thompson's Point at Portland. The structure meets Corps guidelines for structures placed in navigable waters and there are no FNP's in the vicinity. Impacts to navigation in the immediate vicinity are considered minimal. The federal resource agencies have reviewed the original project and recommended normal TOYR restriction for construction. They determined the project is eligible for a Cat 2 GP as proposed. The permit is conditioned accordingly.

Rodney Howe
Senior Project Manager
Maine Project Office

US Army Corps
of Engineers ®
New England District

WORK-START NOTIFICATION FORM

(Minimum Notice: Two weeks before work begins)

****
* MAIL TO: U.S. Army Corps of Engineers, New England District *
*
* Policy Analysis/Technical Support Branch *
* Regulatory Division *
* 696 Virginia Road *
* Concord, Massachusetts 01742-2751 *
****

Corps of Engineers Permit No. NAE-2012-00992 was issued Forefront Partners I, LP. The permit authorized the permittee to construct a 6' x 16' pile and timber pier with an attached 4' x 50' ramp leading to an 12'X24' intermediate float cut at an angle with a 10' x 60' line of bottom moored floats attached at an angle extending southwest in Fore River off lot 13 at Thompson's Point at Portland, Maine.
The people (e.g., contractor) listed below will do the work, and they understand the permit's conditions and limitations.

PLEASE PRINT OR TYPE

Name of Person/Firm: _____

Business Address: _____

_____

_____

_____

Telephone Numbers: ( ) _____ ( ) _____

Proposed Work Dates: **Start** _____ **Finish** _____

Permittee's Signature: _____ **Date:** _____

Printed Name: _____ **Title:** _____

****

FOR USE BY THE CORPS OF ENGINEERS

PM: Howe **Submittals Required:** _____

Inspection Recommendation: _____

_____

US Army Corps of Engineers®
New England District

(Minimum Notice: Permittee must sign and return notification within one month of the completion of work.)

COMPLIANCE CERTIFICATION FORM

Corps of Engineers Permit No: NAE-2012-00992

Name of Permittee: Forefront Partners I, LP

Permit Issuance Date: _____

Please sign this certification and return it to the following address upon completion of the activity and any mitigation required by the permit. You must submit this after the mitigation is complete, but not the mitigation monitoring, which requires separate submittals.

****

* MAIL TO: U.S. Army Corps of Engineers, New England District *
* Policy Analysis/Technical Support Branch, ATTN: PAS*
* Regulatory Division *
* 696 Virginia Road *
* Concord, Massachusetts 01742-2751 *

****

Please note that your permitted activity is subject to a compliance inspection by an U.S. Army Corps of Engineers representative. If you fail to comply with this permit you are subject to permit suspension, modification, or revocation.

I hereby certify that the work authorized by the above referenced permit was completed in accordance with the terms and conditions of the above referenced permit, and any required mitigation was completed in accordance with the permit conditions.

_____ _____
Signature of Permittee ***Date***

_____ _____
Printed Name Date of Work Completion

( ) ( )
Telephone Number ***Telephone Number***

BOARD OF HARBOR COMMISSIONERS
PORT OF PORTLAND, MAINE

Application for a Marine Construction Permit

DECISION

Date of public hearing:
August 14, 2014

Name and address of applicant:
Thompson's Point Development Company
501 Danforth Street
Portland, ME 04102

Location of project for which permit is requested:
Thompsons Point
Fore River

Description of project:
Construction of a seasonal dock system

For the Record:

Names and addresses of witnesses (proponents, opponents and others):
Bo Kennedy, FST

Exhibits admitted (e.g. renderings, reports, etc.):
Marine Construction permit application packet prepared by FST

Summary of testimony presented:
Applicant outlined the proposed project and answered questions from the board.

Findings of Fact and Conclusions of Law:

1) Waiver of 25ft rule as defined in Rule 16.2(b):

The Board of Harbor Commissioners may grant a waiver of the 25 foot rule if it finds that it would be unfair, inappropriate or unnecessary to apply the rule in a particular situation.

Granted ___ Not Granted ____

Reason: N/A

RECEIVED
AUG 20 14
F.S.&T.

Factors to be considered by the Board:

a. Whether the particular marine structure or obstruction under consideration, even if allowed to be constructed or placed within 25 feet of a sideline, will permit a channel that will adequately allow the passage of vessels;

b. Whether existing marine structures or obstructions make it impossible for a channel wide enough to allow the passage of vessels to exist, regardless of the placement or construction of the marine structure under consideration;

c. The intended use of the marine structure of obstruction;

d. Whether granting a waiver would significantly reduce an abutting property owner's use of that abutting property, including but not limited to the owner's ability in the future to attach a marine structure to that abutting property;

e. Any boundary lines between properties that extend into the harbor as described in deeds, maps or plans; and

f. Any other factor the Board believes is relevant to whether a waiver should be granted in a particular case.

2) The marine structure or obstruction will not substantially or unreasonably interfere with navigation, including its impact on convenient channels for the passage of vessels.

Satisfied __x___ Not Satisfied ____

Reason:

3) The marine structure or obstruction will not injure the rights of others.

Satisfied _x____ Not Satisfied ____

Reason:

4) The marine structure or obstruction will not threaten public safety.

Satisfied _x_ __ Not Satisfied ____

Reason:

Conclusion: (check one)

_x__ Option 1: The Board finds that the standards described above have been satisfied and therefore GRANTS the permit.

__ Option 2: The Board finds that while the standards described above have been satisfied, certain additional conditions must be imposed to minimize adverse effects on navigation and/or public safety, and therefore GRANTS the permit SUBJECT TO THE FOLLOWING CONDITIONS:

___ Option 3: The Board finds that the standards described have NOT all been satisfied and therefore DENIES the permit.

Dated:

8-18-14

Jeff C. Liick
Harbor Master
Port of Portland
By Direction

BOARD OF HARBOR COMMISSIONERS
PORT OF PORTLAND

PERMIT-A

TO BE POSTED IN A CONSPICUOUS PLACE AT THE CONSTRUCTION SITE

To: Thompsons Point Development Company
501 Danforth Street
Portland, ME 04102

The Board of Harbor Commissioners for the Port of Portland has carefully considered your application, dated the 22th day of July, 2014 for a permit authorizing:

Construction of a seasonal float system

Having given public notice of this pending application, as required by law, and therein designated the 8th day of May 2014, at 5:00 o'clock in the afternoon prevailing time as the time when they would meet at Portland City Hall, to examine this issue and hear all interested parties, and having met at the time and place mentioned and examined the location of this proposed construction project and having heard all interested parties, the Board of Harbor Commissioners for the Port of Portland hereby issues this permit which authorizes you to proceed under all applicable local and federal regulations hereinafter stated, and to maintain within the limits mentioned in the permit application.

In addition, the construction project described above must be surrounded by a containment boom unless the Board of Harbor Commissioners for the Port of Portland has waived this requirement in writing, either as part of the above-listed conditions, or in a separate statement.

This permit is limited authorization, which contains a stated set of conditions with which the permit holder must comply. If a contractor performs the work for you, both you and the contractor are responsible for assuring that the work is done in conformance with the conditions and limitations of this authorization. Please be sure that the person who will be performing the work has read and understands these conditions.

Performing any work not specifically authorized by this permit, or that fails to comply with its conditions, may subject your to the enforcement provisions of Harbor Commission regulations. If any change in plans or construction methods is found necessary, please contact the Harbor Commission immediately to discuss modifications to your authorization. Any change must be approved by the Harbor Commission before it is undertaken.

Nothing in this permit shall be construed to justify or authorize any invasion to the private rights of others. Moreover, nothing in this permit shall limit or modify the authority of the Board of Harbor Commissioners for the Harbor of Portland with its applicable statute. Attested copies will be submitted to the U. S. Army Corps of Engineers, the Department of Environmental protection, the City of Portland, and the City of South Portland.

In Witness Whereof, of the Board of Harbor Commissioners for the Port of Portland hereunto affix their corporate seal on this 14th day of August, 2014. The work authorized to this permit must be completed on or before the 14th day of august 2015.

Federal Aviation Administration
Air Traffic Airspace Branch, ASW-520
2601 Meacham Blvd.
Fort Worth, TX 76137-0520

Aeronautical Study No.
2010-ANE-904-OE

Issued Date: 12/21/2010

Steve Bushey
DeLuca-Hoffman Associates
778 Main Street
South Portland, ME 04106

**** FEASIBILITY REPORT ****

The Federal Aviation Administration has conducted a limited aeronautical review concerning the feasibility of a structure described as follows:

Structure:	Feasibility Study (commercial buildings)
Location:	Portland, ME
Latitude:	43-39-03.79N NAD 83
Longitude:	70-17-28.48W
Heights:	150 feet above ground level (AGL)
	175 feet above mean sea level (AMSL)

The results of this review can be found on the attached page(s).

NOTE: THE RESULTS OF OUR LIMITED REVIEW IS NOT AN OFFICIAL DETERMINATION OF FINDINGS BUT ONLY A REPORT BASED ON THE GENERAL OR ESTIMATED INFORMATION SUPPLIED FOR THE STRUCTURE. ANY FUTURE, OFFICIAL AERONAUTICAL STUDY MAY REVEAL DIFFERENT RESULTS.

If we can be of further assistance, please contact our office at (847) 294-7575. On any future correspondence concerning this matter, please refer to Aeronautical Study Number 2010-ANE-904-OE.

Signature Control No: 131185695-134672885 (FSB)
Vivian Vilaro
Specialist

Attachment(s)
Additional Information

Additional information for ASN 2010-ANE-904-OE

Feasibility Study for Aeronautical Study No. 2010-ANE-904-OE

This informal feasibility report is based on the data submitted by the sponsor. This is not a formal determination but only a report based on the information furnished to this office. Please keep in mind that there is always a possibility that the final outcome of a formal aeronautical study might prove to be different from the results of this informal feasibility study.

1. The proposed site would be located approximately 3279 feet (0.53 nautical miles) northeast of the Runway 29 threshold of the Portland International J Airport (PWM) in Portland, ME.

2. Based on Part 77, notice to the FAA would be required and the structure does not exceed the obstruction standards. This information is based on airport information currently on file with the FAA.

3. This informal feasibility report does not supercede or override any state, county or local laws or ordinances.

4. Based on the unofficial nature of this study, the FAA shall not be held responsible for any type of commitment entered into by the sponsor based solely on this informal feasibility report.

5. If the location or overall AMSL height changes, the results of this feasibility study are will not apply.

6. Please refer to the ASN noted above on any future correspondence concerning this feasibility report or if you do file formal notice with the FAA concerning the structure.

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

PAUL R. LEPAGE
GOVERNOR

EARLE G. SHETTLEWORTH, JR.
DIRECTOR

March 29, 2013

RECEIVED APR - 2 2013

Greg A. Mitchell, Director
Economic Development Department
City of Portland
389 Congress Street
Portland, Maine 04101

Project: MHPC #0812-11; Forefront at Thompson's Point, proposed commercial development; Maine Historic Building Record documentation
Location: Portland, ME

Dear Mr. Mitchell:

The Commission is in receipt of the final Maine Historic Building Record narrative history and description from Sutherland Conservation & Consulting for the subject project. This narrative meets the requirements of the Schedule of Documentation for the former Maine Central Railroad Machine Shop and Car Repair Shop/Planing Mill at Thompson's Point, Portland, Maine.

Under separate cover from Todd Caverly, we have received the photographic documentation for the Thompson's Point facility. The photographic documentation meets the requirements of the Schedule of Documentation.

The submittals described above satisfy Stipulation A of the Memorandum of Agreement between the Economic Development Administration, the Maine State Historic Preservation Officer, the City of Portland, and Forefront Partners I, LP.

If you have any questions regarding this matter, please feel free to contact me.

Sincerely,

Kirk F. Mohney

Kirk F. Mohney
Deputy State Historic Preservation Officer

cc: Amy Cole Ives, Sutherland Conservation & Consulting
Todd Caverly

PHONE: (207) 287-2132

FAX: (207) 287-2335

NOTICE OF INTENT TO COMPLY WITH MAINE CONSTRUCTION GENERAL PERMIT

PLEASE TYPE OR PRINT IN *BLACK INK ONLY*

Name of Applicant (Owner):	Forefront Partners I, LP Attn: Chris Thompson	**Applicant Mailing Address:**	501 Danforth Street		
Town/City:	Portland	**State:**	Maine	**Zip Code:**	04102
Daytime phone: (with area code)	207-747-5288	**Email if available:**	parallaxpartners@gmail.com	**Name of Agent:**	Bo Kennedy, P.E. - FST bkennedy@fstinc.com
Project Location: (Town/City):	Portland	**UTM Northing: (if known)**	4,833,933	**UTM Easting: (if known)**	395,870
Map #:	201/202	**Lot #:**	A-5, A-8, A-10/ A-1, A-4	**Size of disturbed area proposed:**	5.0 ac.
Creating a common plan of development or sale?	**Yes** X	**No**	**Part of a larger project?**	**Yes** X	**No**
Name of waterbody(ies) to which the disturbed area drains, or name municipality if drains to an MS4:	Fore River				
Does site drain to an Impaired Waterbody (C)? If so, give name:	No				
Detailed directions to site, including address if available:	1 Thompson's Point Road - Portland, Maine				
Description of project and its purpose:					
The construction is associated with an overall plan to develop Thompson's Point with a mixed use development.					
The development is subject to a Site Location of Development Permit as approved by the City of Portland through					
the delegated review authority.					

I am filing notice of my intent to carry out work which meets the requirements of the Construction General Permit (effective 3/10/03). I have a copy of the Construction General Permit. I have read and will comply with all of the standards. I have attached all the required submittals. *Notification forms cannot be accepted without the necessary attachments.*

- ☒ ALL: A check (non-refundable) made payable to: "Treasurer, State of Maine." **See DEP fee schedule for correct fee**. You must know # of acres being permitted to determine the fee.
- ☒ ALL: A U.S.G.S. topo map or Maine Atlas & Gazetteer map with the project site clearly marked. (previously submitted)
- ☒ ALL: Drawing of the proposed activity (site plan). (previously submitted)
- ☒ ALL: An ESC plan. (Interim Plan enclosed)
- ☒ IF this form is not being signed by the landowner or lessee of the property, attach documentation showing authorization to sign.
- ☐ IF any construction activity will occur in essential habitat, attach written approval from the Dept. of Inland Fisheries & Wildlife.

I authorize staff of the Departments of Environmental Protection to access the project site for the purpose of determining compliance with the general permit. I also understand that ***this permit is not valid until approved by the Department or 14 days after receipt by the Department, whichever is less.***

Signature of Applicant:		**Date:**	6/18/14

Keep the bottom copy as a record of permit. Send the form with attachments via certified mail to the Maine Dept. of Environmental Protection **at the appropriate regional office.** The DEP will send a copy to the Town Office as evidence of the DEP's receipt of notification. No further authorization by DEP will be issued after receipt of notice. Check with DEP Staff to determine the expiration date on this permit . **Work carried out in violation of any standard is subject to enforcement action.**

OFFICE USE ONLY	Ck.# 1190	Date 6/18/2014	Staff MR	Staff	
NOI # 58116	FP 130.00		Acc. Date 6.23.14	Def. Date	After Photos

GLS

STATE OF MAINE
DEPARTMENT OF TRANSPORTATION
16 STATE HOUSE STATION
AUGUSTA, MAINE 04333-0016

Paul R. LePage
GOVERNOR

David Bernhardt
COMMISSIONER

LEGAL SERVICES Tel: (207) 624-3020 Fax: (207) 624-3021
MDOT TTY TEL: 888-516-9364

April 3, 2012

Danielle P. West-Chuhta
Associate Corporation Counsel
389 Congress Street
Portland, ME 04101-3509

Re: Railroad Decision #364

Dear Ms. West-Chuhta:

I enclose Railroad Decision # 364, dated April 3, 2012, signed by David Bernhardt, P.E., Commissioner of the Maine Department of Transportation. Decision # 364 relates to the City of Portland's petition to establish a public highway crossing over railroad tracks at Sewall Street in Portland, Maine.

If you have any questions regarding the above, please contact me.

Very truly yours,

Richard N. Hewes
Attorney for MaineDOT

RNH/jas
Enclosure
cc: Nathan Moulton, Manager, Rail Transportation, MaineDOT w/enc.
David Fink, President, Pan Am Railways w/enc.
Central Maine Power Co., Land Management Dept. w/enc.
Cumberland County Commissioners w/enc.
Langdon Street Real Estate w/enc.
Mercy Hospital w/enc.
Northern New England Rail Authority w/enc.
Portland Water District w/enc.
Thompson's Point Inc. w/enc.
The Waynflete School w/enc.
Kat Beaudoin w/enc.
Robert Bremm, Ritter Project Management w/enc.
Tony Donovan, Fishman Realty Group w/enc.
James Howard, Esq. w/enc.

H:\$Legal-shared\Hewes\Railroad Decisions\RR Hearing #364 - Portland\ Ltr to Interested Parties 4 4 12 Decision.doc

MAINE DEPARTMENT OF TRANSPORTATION

RAIL DECISION - RR # 364

REGARDING:

Petition pursuant to 23 M.R.S.A. § 7202 by the City of Portland to Establish a Public Highway Crossing Over Railroad Tracks at Sewall Street in Portland, Maine.

ABSTRACT:

On September 7, 2011, the City of Portland petitioned the Maine Department of Transportation to establish a public grade crossing for highway traffic on Sewall Street in Portland, Maine at Railroad Mile Post 1.92 on the Mountain Division Branch Line. Portland Terminal Company has owned a private railroad crossing at that location for decades. Rail traffic is operated by Springfield Terminal Railway Company. The owner of the rails and the operator of rail traffic are owned by Pan Am Railways. This decision, RR # 364, establishes a public grade crossing on Sewall Street after the conditions outlined herein are satisfied.

Hearing was held February 27, 2012

Location of hearing: Portland City Hall

The petition is granted

Date of Decision: April 3, 2012

Commissioner: David Bernhardt, P.E.

Hearing Officer: Richard N. Hewes, Esq.

I. PROCEDURAL BACKGROUND

On September 7, 2011, pursuant to 23 M.R.S.A. § 7202, the City of Portland ("City") petitioned the Maine Department of Transportation ("Department") to establish a public highway crossing ("Crossing") over railroad tracks in Portland at Sewall Street. The tracks are owned by Portland Terminal Company, train traffic is operated by Springfield Terminal Railway Company and Pan Am Railways owns Portland Terminal Company and Springfield Terminal Railway Company (these three entities are separately and collectively referred to as the "Railroad"). Tracks currently cross over a private way immediately to the south of the terminus of Sewall Street at Mile Post 1.92 on the Mountain Division Branch Line. The City requests that a public crossing be established where the private crossing now exists.

Hearing on the aforementioned petition was ordered to be held at the City Hall in Portland at 6:00 o'clock in the evening on November 22, 2011. Asserting membership in a class that could be substantially and directly affected by Railroad Decision #364, Pan Am applied for intervenor status. At the November 22, 2011 hearing, Pan Am's motion for intervenor status was granted without objection. The City asked for a continuance. Representatives of the railroad were present and did not object. The City and Pan Am had not yet finalized an agreement on fundamental aspects of the Crossing, but felt they could reach agreement on those issues through further communications. The hearing was continued and rescheduled for January 12, 2012. The January hearing was cancelled because of a snow storm. The matter was rescheduled and a public hearing was held February 27, 2012 at Portland City Hall.

II. NOTICE

Exhibit 18 is a copy of the January 18, 2012 cover letter with attached notice of the February 27, 2012 hearing that was sent to the following interested parties, including abutters and stakeholders:

City of Portland
Nathan Moulton, Manager, Rail Transportation, MaineDOT.
George Thayer, Springfield Terminal Railway Company/Maine Central Railroad
David Fink, President, Pan Am Railways
Central Maine Power Co.
Cumberland County Commissioners
Langdon Street Real Estate
Mercy Hospital
Northern New England Rail Authority
Portland Terminal Co.
Portland Water District
Thompson's Point Inc.
The Waynflete School
Kat Beaudoin, Integrated Planning Solutions
Robert Bremm, Ritter Project Management
Tony Donovan, Maine Rail Transit Coalition

James Howard, Esq.

Exhibits 19 and 20 are pages from the February 7 and 13, 2012 editions of the Portland Press Herald, a newspaper that has general circulation in the area affected by the City's petition. These pages contain notices which state that the hearing would be held February 27, 2012 at 6:00 p. m, in the Portland City Hall. Notice was proved to have been given in the manner prescribed by 23 MRSA § 7202 and 5 MRSA § 8053. Hearing on the aforementioned petition was held at the time and place stated in the notice. The hearing officer viewed the crossings on the day of the hearing and his observations are part of the evidence.

III. EVIDENCE

A. Exhibits.

Exhibit #

1. September 7, 2011 hearing request from Danielle P. West-Chuhta, Esq., Counsel for the City of Portland.

2. Sign-up sheet for November 22, 2011 hearing.

3. Maine Sunday Telegram's Classified Section's Tear Sheet of Notice of Hearing published October 30, 2011 which indicated the hearing would be held at the Portland Transportation Center on November 22, 2011 at 6:00 p.m.

4. Notice of Hearing which indicated that the hearing would be held at the Portland Transportation Center on November 22, 2011 at 6:00 p.m.

5. Copy of Letter to Danielle P. West-Chuhta, Esq. and Interested Parties dated October 27, 2011 enclosing the Notice of Hearing which indicated that the hearing would be held at the Portland Transportation Center.

6. Notice of Hearing indicating a new location for the hearing being held on November 22, 2011 to be the Portland City Hall.

7. Copy of Letter to Danielle P. West-Chuhta, Esq. and Interested Parties dated November 3, 2011 enclosing the Notice of Hearing indicating the new location for the hearing to be held on November 22, 2011 to be the Portland City Hall.

8. Undeliverable return envelope with hearing notice mailed to Northern New England Rail Authority.

9. Email to Patricia Quinn at NNEPRA dated November 15, 2011, enclosing a copy of the Notice of Hearing with the new location of Portland City Hall incorporated.

10. Portland Press Herald Newspaper Classified Section Tear Sheet with Notice of

Hearing published November 4, 2011 with the new location of Portland City Hall incorporated.

11. Maine Sunday Telegram Classified Section Tear Sheet with Notice of Hearing published November 6, 2011 with the new location of Portland City Hall incorporated.

12. Pan Am Railways Application for Intervenor Status.

13. Email from Danielle West-Chuhta, Esq. waiving the City of Portland's objections to the Application for Intervenor Status.

14. November 22, 2010 hearing transcript.

15. Portland Press Herald Newspaper's Classified Section's Tear Sheet of Notice of Hearing published December 22, 2011.

16. Portland Press Herald Newspaper's Classified Section's Tear Sheet of Notice of Hearing published December 29, 2011.

17. Letter to Danielle P. West-Chuhta, Esq. and Interested Parties dated December 12, 2011 with Notice of the January 12, 2012 Hearing.

18. Letter to Danielle P. West-Chuhta, Esq. and Interested Parties dated January 18, 2012 with Notice of the February 27, 2012 Hearing.

19. Portland Press Herald Newspaper Tear Sheet (p. D 6) published February 7, 2012 with Advertised Notice of February 27, 2012 Hearing.

20. Portland Press Herald Newspaper Tear Sheet (p. D 3) published February 13, 2012 with Advertised Notice of February 27, 2012 Hearing.

21. Sign-in Sheet for Attendees of the February 27, 2012 Public Hearing.

22. September 7, 2012 petition for hearing with margin notations.

23. Subdivision plat of the area of the proposed Sewall Street crossing.

24. Written testimony by Gregory Mitchell, City of Portland.

25. Public Hearing Submission by City of Portland with photos, plans and descriptions of proposed crossing and Thompson's Point development.

26. Email (two pages) confirming that Pan Am Railways and the developer of Forefront at Thompson's Point reached agreement relative to the Crossing.

A. Public Comments.

Danielle P. West-Chuhta, Esquire, Associate Corporation Counsel for the City, spoke in support of the petition to establish the Crossing. Ms. West offered Exhibit 22, the request for hearing, and Exhibit 23, a plat map showing the area surrounding the Crossing and the planned extension of Sewall Street. The Crossing is located at Mile Post 1.92 on the Mountain Division Branch Line. Trains travel at 10 miles per hour through the Crossing area. The Crossing will be at grade and the purpose of the Crossing will be to create a way for highway traffic to travel to and from Thompson's Point, which will be developed in the near future.

The terminus of Sewall Street, a town way, is at the northern boundary of the railroad corridor. A private way, also known as Sewall Street, continues through the Crossing and runs into Thompson's Point. The tracks currently run through that private way. The City plans to extend Sewall Street about 130 feet to the south of the existing crossing. When this piece of road is accepted as a public way, the tracks will be located within a public street. The City requests that a public crossing be established where the private crossing now exists.

Gregory Mitchell, Acting Director of the City's Department of Planning and Urban Development said that the Crossing is part of a larger plan to develop Thompson's Point, a peninsula to the south of the Crossing that extends into the Fore River. The planned development will be a world class destination that will provide access to cultural functions, athletic events and other entertainment activities. Officials from the Portland Fire Department have reviewed plans for the proposed Crossing and approve of the design.

Christopher Thompson, a representative of Forefront Partners I, LP, the company that plans to develop Thompson's Point, said that Thompson's Point will be converted into a 27 acre complex called the Forefront at Thompson's Point. The development will have an event center, a concert hall and amphitheater, a sports medicine facility, a hotel, a restaurant, office buildings and a parking garage. The event center will offer 3500 basketball fans the chance to view Portland's local professional team. Vendors and entrepreneurs will be able to display their wares at trade shows in a 44,000 foot facility. Music enthusiasts will have the opportunity to enjoy concerts at a 4500 seat auditorium and office space will be available as well. The Forefront at Thompson's Point will serve to connect walking trails to the Portland Transportation Center. Given the large number of people expected to use this facility, the existing crossing must be upgraded to facilitate the flow of public highway traffic to and from Thompson's Point.

Stephen Bushey, an engineer who works for Deluca Hoffman Associates, spoke in favor of the Crossing. He offered Exhibit 25, a brochure entitled Public Hearing Submission by City of Portland. Exhibit 25 contains photos, plans and descriptions of the Crossing area, including the planned development. Surface parking will be available for 712 vehicles and the parking garage will have space for 732 cars.

The Crossing will be constructed sometime between 2012 and 2014 at a cost of about $500,000 - $600,000. The two sets of tracks currently in place, a main line and a siding, will be in the proposed Crossing. The Crossing will be about 36 feet wide and will have three lanes for automobiles. Incoming and outgoing traffic will each have a dedicated lane. The middle lane

will be reversible to accommodate incoming or outgoing automobiles when traffic is heavy. A path on the west side of the inbound automobile lane will be available for pedestrians.

Flashing warning lights will be attached to a cantilevered structure over the Crossing to warn highway travelers about passing rail traffic. Pedestrian access will be controlled by automatic gates. Gates will not be installed over automobile lanes. The reversible middle lane will be used for heavy traffic during peak hours. Traffic control workers will direct traffic as needed. According to Exhibit 26, the developer has concluded an agreement with the Railroad that obligates the developer to reimburse the cost of improving the Crossing.

To access the planned development, highway traffic must enter the Thompson's Point Access Road from the Fore River Parkway. Once on the access road, travelers will move in an easterly direction until they turn onto Sewall Street at a 90 degree angle and travel south toward the Crossing. Southbound motorists travel down a slight decline that begins about 50 feet north of the Crossing. The tracks cross Sewall Street in an east-west direction at the bottom of that dip in the road. Sewall Street runs in a north-south direction and intersects the tracks at a ninety degree angle. The approach for motorists leaving Thompson's Point is level.

Automobile traffic is expected to pass through the proposed crossing during peak hours at the rate of 955 total trips. The highway speed limit at the crossing will be 25 miles per hour. After southbound motorists turn onto Sewall Street, they will have sight distance of about 500 feet to the Crossing. Highway traffic approaching from Thompson's Point can view the Crossing from a distance of 300 feet.

Two to four freight trains per week move through the Crossing. No passenger train traffic uses the Crossing at this time. Track speed is ten miles per hour. Randall Pike, P. E., a member of the firm that will design the Crossing, said that eastbound trains will have sight distance on their approach to the Crossing of several thousand feet and westbound trains will have sight distance of about 1000 feet to the Crossing.

The surrounding area is generally industrial. A parking lot and passenger loading area in the rear of the Portland Transportation Center are on the northeast quadrant of the Crossing. A power transmission facility and two story metal building are on the northwest quadrant. An Amtrak office resembling a mobile home is on the southeast quadrant. A fenced parking lot that holds dozens of trailers is on the southwest quadrant. An Amtrak passenger station is located about 600 feet to the east of the Crossing.

Nathan Moulton, Manager of Rail Transportation for the Department, said that the Department supports the proposed Crossing. Exhibit 26 states that the Department will be provided with plans of the Crossing for review and approval. Signage, pavement markings, gates, lights and other safety installations must be approved by the Department and will conform to the Manual on Uniform Traffic Control Devices.

Robert Burns, a lawyer for the Railroad, confirmed that the Railroad and the developer were close to reaching an agreement for the development of the Crossing. James Howard, a lawyer for the developer of Thompson's Point, said that the parties were close to finalizing

financial concerns and that safety and design issues were resolved. Robert Haines, a Portland resident, spoke in favor of the Crossing, but expressed doubt that the access road would accommodate inevitable congestion during big events. Dory Waxman, a former City Councilor and a resident of Portland, spoke in favor of the Crossing and stressed that traffic during big events would be manageable because designers would anticipate traffic congestion problems.

IV. FINDINGS AND CONCLUSIONS

Based on exhibits, hearing testimony and site visits, the following findings are made:

1. Parties. The City of Portland petitioned the Maine Department of Transportation to issue an order establishing a public crossing. Portland Terminal Company owns the railroad in the proposed crossing area and Springfield Terminal Railway Company operates rail traffic. Pan Am Railways owns these two entities.

2. Location of Proposed Crossing. The proposed Crossing will be located at Mile Post 1.92 on the Mountain Division Branch Line, the site of a private crossing.

3. Status of Existing Crossing. The existing crossing is private. The terminus of Sewall Street, a town way, ends on the northern edge of the rail corridor. A private way, also named Sewall Street, runs in a southerly direction over the tracks to Thompson's Point. The City plans to extend Sewall Street an additional 130 feet south of the existing crossing. When this road is accepted as a public way, the tracks will be located within a public street.

4. Crossing Geometry. Two sets of tracks, a mainline and a siding, run through Sewall Street to form a double-track crossing. The rails run in an east-west direction and intersect Sewall Street at a 90 degree angle. Sewall Street runs in a north-south direction.

5. Sight Distance. Eastbound trains will have sight distance on the approach to the Crossing of several thousand feet and westbound trains will have sight distance of about 1000 feet. Southbound motorists will approach on a decline and will have a clear view of the Crossing for about 500 feet. Motorists traveling north on Sewall Street from Thompson's Point will have sight distance of about 300 feet.

6. Railroad Traffic. Four trains pass through the Crossing each week. Timetable speed over the rails is 10 miles per hour.

7. Highway Traffic. Automobile traffic is expected to pass through the Crossing during peak hours at the rate of 955 total trips. The speed limit for automobiles will be 25 miles per hour. The highway in the Crossing will be 36 feet wide with three lanes for automobile traffic. One lane will be dedicated for incoming highway traffic and one lane will be dedicated to outgoing vehicles. The middle lane will be reversible to accommodate either incoming or outgoing vehicles when traffic is heavy. A paved path will facilitate the flow of pedestrian traffic.

8. Purpose. The Crossing will allow public highway traffic to pass through the railroad corridor and flow into the planned development at Thompson's Point.

9. Area Land Use. A parking lot and passenger loading area for the Portland Transportation Center are on the northeast quadrant of the Crossing. A power transmission facility and a two story metal building occupy the northwest quadrant. An Amtrak office resembling a mobile home is on the southeast quadrant. A parking lot that holds dozens of trailers is on the southwest quadrant. An Amtrak passenger station is located about 600 feet to the east of the crossing.

10. Construction and maintenance. The Crossing is expected to be constructed between 2012 and 2014. The estimated cost is $500,000 to $600,000.

11. Design. The Railroad and Forefront Partners I, LP have reached agreement on the design of the Crossing. The Department will be provided with the plans for review and approval to ensure that the design meets safety requirements. Officials from the Portland Fire Department approve of the proposed Crossing.

V. ORDER

Based upon the evidence and the applicable law, it is hereby ORDERED that the City of Portland's Application to Establish a public highway crossing along the planned extension of Sewall Street at Mile Post 1.92 on the Mountain Division Branch Line is granted upon the fulfillment of the following conditions:

1. The City shall lay out and accept a public way across the Mountain Division Branch Line at Railroad Mile 1.92 in Portland.

2. The following actions shall be taken and safety measures installed:

   a) All safety measures including signalization, gates, bells, signage, lights and pavement shall be properly designed and constructed in accordance with the Department's Standard Specifications and Standard Details in effect at the time the Department approves the Crossing.

   b) All safety measures that are required or recommended by the Manual on Uniform Traffic Control Devices (MUTCD) in effect when the Department approves the Crossing shall be properly located and installed.

   c) Final design plans for traffic lanes at or near the Crossing shall be submitted to the Department for approval at least 30 days before construction of the Crossing commences. Construction shall not begin until the Department approves the plans.

d) The Railroad and the City shall coordinate the planning, construction and testing of all signals and other safety devises to ensure that they are properly synchronized and in good working order before the Crossing is opened for use.

e) All pedestrian access transitions at the Crossing shall be designed and installed in compliance with the Americans with Disabilities Act (ADA).

f) Street lighting shall be installed at the crossing. Said lighting shall comply with all federal, state and local requirements.

g) The City shall be responsible for the cost of constructing the Crossing. The Railroad shall be responsible for operating and maintaining the Crossing.

h) If the Crossing has not been approved by the Department for public use by January 1, 2017, then the authority to establish the Crossing under this order shall expire unless the City or the Railroad petitions the Department before January 1, 2017 to modify this Decision for an extension of the deadline.

MAINE DEPARTMENT OF TRANSPORTATION

David Bernhardt, P. E.
Commissioner

VI. APPEAL RIGHTS

Pursuant to 23 M.R.S.A. § 7202, this decision shall be final and binding on all parties unless an appeal from this decision is taken. Any party wishing to appeal must, within 14 days from the date of the filing of this decision, file in the office of the Maine Department of Transportation its reasons for appeal and shall cause to be served on any other interested parties, a copy of the reasons for appeal certified by the department. The department must be made a party to the appeal.

Pursuant to the requirements of 5 M.R.S.A. § 11001 et seq. appellate procedures also apply to an appeal of this decision. Pursuant to 5 M.R.S.A. § 11002, a petition for review of this decision shall be filed within 30 days after receipt of notice of this decision if the appeal is taken by a party to the proceeding for this decision. Any other person aggrieved shall have 40 days from the date the decision was rendered to petition for review. If the review sought is from the Department's failure or refusal to act, the petition for review shall be filed within 6 months of the expiration of the time within which the action should reasonably have occurred.

Pursuant to 5 M.R.S.A. § 11002 (2), the petition shall specify the persons seeking review, the manner in which they are aggrieved and the final agency action which they wish reviewed. It shall also contain a concise statement as to the nature of the action or inaction to be reviewed, the grounds upon which relief is sought and a demand for relief which may be in the alternative. Copies of the petition for review shall be served by Certified Mail, Return Receipt Requested, upon the Maine Department of Transportation, all parties to the proceedings, and the Department of the Maine Attorney General.

STATE OF MAINE
DEPARTMENT OF TRANSPORTATION
16 STATE HOUSE STATION
AUGUSTA, MAINE 04333-0016

Paul R. LePage
GOVERNOR

David Bernhardt
COMMISSIONER

Applicant:	Thompson's Point Development Company Inc.
Project Location:	Thompson's Point Rd, Portland, ME Portland Tax Map 201Lot(s) 8, 9 and 10 and Map 202 Lots 2, 4 and 5
Project:	Mixed use Development
Identification #:	Reg. 01-00155-A-N
Permit Category:	200 Plus PCE
Traffic Engineer:	Thomas Gorrill Gorrill-Palmer Consulting Engineers PO Box 1237 15 Shaker Rd. Gray, ME 04039

Pursuant to the provision of 23 M.R.S.A. § 704-A and Chapter 305 of the Department's Regulations, the Maine Department of Transportation (MaineDOT) has considered the application of Thompson's Point Development Company Inc with supportive data, agency review and other related materials on file.

PROJECT DESCRIPTION

The applicant proposes to construct a 97,697 sf event center/convention hall/exhibit hall; 32,000 sf concert hall plus outdoor venue for up to 4,800 attendees; 378,000 sf of office space; 4,000 sf of medical office space; 20,000 sf gym and rehabilitation center; 125 room hotel; 6,000 sf of restaurant space (high-turnover sit down). The site is forecast to generate 734 AM and 1,091 PM weekday peak hour trip ends.

Findings

Based on a review of the files and related information, MaineDOT approves the Traffic Movement Permit Application of Thompson's Point Development Company Inc. subject to the following conditions:

MITIGATION

On-Site Mitigation

All Site Entrances

All entrances shall have overhead illumination provided, if not existing, to illuminate the intersections per MaineDOT standards at a minimum. Overhead lighting shall have an average of

0.6 to 1.0 foot candles, with the maximum to minimum lighting ratio of not more than 10:1 and an average to minimum light level of not more than 4:1.

Thompson's Point Road

Thompson's Point Road shall be widened to accommodate an 8 foot shared bike/pedestrian path, a 3 foot wide grass esplanade, a 3 foot shoulder with granite curb, an 11 foot wide outbound lane, and 11 foot wide flush concrete median, an 11 foot wide inbound lane and a 3 foot shoulder with granite curb. This section will be constructed from the site driveway to the Fore River Parkway. The 250 feet of flush median closest to Fore River Parkway shall be designated as an exclusive left turn lane outbound. The shared bike/pedestrian path shall have a crossing built at the Sewall Street cul de sac and the path extended to the existing sidewalk on Sewall Street. Another pedestrian crossing shall be installed where the current pedestrian crossing is at the bus/train station. Both crossings shall have solar powered/radio interconnected pedestrian activated rectangular rapid flashing beacon lights installed.

Thompson's Point Development

No sporting events or concerts shall begin between 4 pm and 7pm Monday through Friday.

During large sporting and concert events, the applicant shall ensure that there are flaggers and uniformed police officers present to ensure that there will be two inbound lanes prior to the event and two exit lanes after the event. Flaggers/uniformed police officers shall be stationed to ensure that pedestrians are able to cross at either of the two crosswalks, at the Transportation Center Entrance to let busses in or out and also at the transportation center parking lot entrances to ensure that transportation center patrons leaving the parking lots are merged into the out-bound flow. Uniformed police officers shall be present after an event to direct traffic at the Thompson's Point Road/Fore River Parkway intersection. Retro-reflective traffic cones shall be used by the development to create the reversible lane. Flaggers will direct vehicles into the proper lanes.

Off-Site Mitigation

Fore River Parkway/Thompson's Point Road/I-295 Exit 5A off-ramp

The Southbound off ramp at Exit 5 A shall be reconstructed to have a separate 13 foot wide left turn lane and 13 foot wide through lane. The widths include the

required curb offset. The left lane shall extend back 200 feet. Install Queue detector at the ramp gore area to act as pre-emption for the signal should the queue spill back that far.

Modify traffic signal timing and phasing accordingly.

Fore River Parkway/Congress St/I-295 Exit 5 B off-ramp

Widen the southbound off-ramp to accommodate a 5 foot wide right shoulder, two 12 foot wide right turn lanes and a 2 foot curb offset for a distance of 125 feet with an appropriate taper. Install Queue detector at the ramp gore area to act as pre-emption for the signal should the queue spill back that far.

Re-stripe Congress Street Westbound to accommodate a longer westbound left turn lane, extend back to the end of the island (to the slip lane from Park Ave to Congress St).

Modify traffic signal timing and phasing accordingly.

Congress St/Stevens Ave

Restripe Steven's Avenue to an exclusive left and a shared left/thru/right and modify traffic signal timing and phasing accordingly.

The developer shall pay an impact fee in the amount of $15,000 for inlaid thermoplastic paint skips, retro-reflective back plates and overhead lane usage signage. This money will be put towards improvements funded by PIN 19078.00.

Congress St/Westbrook St

The developer shall pay an impact fee in the amount of $15,000 for inlaid thermoplastic paint skips, retro-reflective back plates and overhead lane usage signage. This money will be put towards improvements funded by PIN 19078.00.

Congress/Frost St

The developer shall pay an impact fee in the amount of $15,000 for inlaid thermoplastic paint skips, retro-reflective back plates and overhead lane usage signage. This money will be put towards improvements funded by PIN 19078.00.

Transportation Demand Management

In lieu of additional mitigation, Transportation Demand Management shall be used to offset the traffic impacts on the roadway network. The City has implemented a Transportation Oriented Development Tax Increment Financing District for the Thompson's Point Development. This development would benefit from some increased transit connections to the airport and Old Port, funding for handicap accessible taxis or for increase in parking at the Transportation Center.

Overall

A. Provide all necessary auxiliary signs, striping and pavement markings to implement the improvements described herein according to State of Maine and/or National standards.

B. All plantings and signs (existing and/or proposed; permanent and/or temporary) shall be placed and maintained such that they do not block available sight distances and do not violate the State's "Installations and Obstructions" law. No signage or plantings shall be allowed within the "clear zone" if they constitute a deadly fixed object as determined by MaineDOT. All signs shall meet MRSA Title 23, Chapter 21, Section 1914: "On-Premise Signs".

C. If any of the supporting data or representations for which this permit is based changes in any way or is found to be incorrect / inaccurate, the applicant shall request in writing from MaineDOT a decision of what impacts those changes will have on the permit. The applicant will then be required to submit those changes for review and approval and additional mitigation as a result of those changes may be required at the expense of the applicant.

D. Because the proposed project affects the state highway and drainage systems and requires improvement to that system, the applicant must obtain approval of the design plans and coordinate work through MaineDOT's State Traffic Engineer, who can be reached at (207)-624-3620 in Augusta.

By:

Stephen Landry, P.E.
Assistant State Traffic Engineer

Date: 6/13/12

STATE OF MAINE
DEPARTMENT OF ENVIRONMENTAL PROTECTION

PAUL R. LEPAGE
GOVERNOR

PATRICIA W. AHO
COMMISSIONER

March 6, 2013

Christopher Thompson
Forefront Partners I, LP
55 Lisbon Street, Suite 2400
Lewiston, Maine 04240

Re: The Forefront at Thompson's Point, Portland:
Voluntary Response Action Program- No Action Assurance Letter

Dear Mr. Thompson:

The Maine Department of Environmental Protection (Department) has received and reviewed an application submitted in June 2012, by your environmental consultant Credere Associates, LLC (Credere) to the Department's Voluntary Response Action Program (VRAP) for the Thompson's Point property located at 1 Thompson's Point in Portland, Maine. The following reports were compiled for this site as part of the Greater Portland Council of Government's (GPCOG) Brownfields Program and were reviewed along with this application: A Phase One Environmental Site Assessment (ESA) for the Thompson's Point property prepared by Credere, dated December 5, 2011, a Phase II ESA for Thompson's Point, prepared by Credere dated July 11, 2012, as well as a Voluntary Response Action Program Work Plan, Revision 2 dated February 27, 2013 (Work Plan). Additional documentation submitted to MDEP previously for review included two Phase I ESAs prepared by Gemini Geotchnical Associates (GGA) dated February 6, 1991 and May 16, 2006, a December 15, 1998 Test Pit Investigation report prepared by GGA, and a February 26, 1999 No Further Action Assurance Letter issued by MEDEP VRAP to a previous applicant. The current application was submitted to the Department with the request that the site participate in the VRAP and that Forefront Partners I, LP (Forefront Partners), as the applicant to the VRAP, receive the protections provided by the VRAP Law.

The Thompson's Point Property (the site) is composed of five City of Portland tax map lots (Map 201 Lots A-5, A-8, and A-10, and Map 202 Lots A-1 and A-4) totaling approximately 27.5 acres located on a peninsula along the Fore River in Portland. Land use in the area is currently primarily commercial. The site has been used historically for the following activities: a train car maintenance yard, automobile repair facilities, utility distributors (natural gas and propane), building supply retailers, metal working, concrete block manufacturing, bomb shell casing manufacturing (ordinance plant), textile manufacturing, various construction contractor offices, paperboard production, trailer storage, trucking facilities, and warehousing. The Credere Phase ESA identified the past commercial/industrial use of the property as an environmental concern and identified eight specific Recognized Environmental Concerns for further Phase II

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312 CANCO ROAD
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PRESQUE ISLE
1235 CENTRAL DRIVE, SKYWAY PARK
PRESQUE ISLE, MAINE 04679-2094
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web site: www.maine.gov/dep

investigation. The Phase II investigation concluded that there is soil and groundwater contaminated with petroleum and hazardous substances, and that other universal and special wastes are located on the site, including building materials.

Based on the information presented in the above listed reports, the Department agrees with the following recommended actions as proposed in the Work Plan:

1. Known and/or potentially contaminated soils that are disturbed during redevelopment of the site will be managed according to the Work Plan and associated December 12, 2012 Soil Management Plan (SMP). Contaminated soils that are within 12 inches of the developed ground surface or removed and replaced onsite will be covered with a marker layer and a minimum of 12 inches of clean fill, and/or 6 inches of clean sand and gravel over the contaminated soil and at least 3 inches of asphalt/concrete or brick. If excess contaminated soil is generated that cannot be re-used onsite, the material will be disposed offsite at an appropriate facility as special waste.

2. Known and/or potentially contaminated groundwater that is encountered during site redevelopment work will be managed in accordance with the Work Plan and associated December 12, 2012, Groundwater Management Plan.

3. Universal, special, and hazardous waste will be properly managed and removed from the site and disposed at an appropriate facility.

4. PCB containing building materials will be characterized and managed in an appropriate manner and in accordance with the applicable provisions of the Toxic Substances Control Act 40 CFR 761 et seq. Plans for such characterization and management shall be submitted concurrently to USEPA Region 1 and the Department for review and approval.

5. Asbestos abatement and/or management activities in onsite buildings will be conducted in accordance with all applicable State and Federal rules and regulations.

6. Lead based paint abatement/management issues shall be conducted as discussed in the Work Plan and in accordance with all applicable state and federal regulations.

7. A soil screening program will be conducted after the demolition of the site buildings and removal of the concrete slabs as discussed in the Work Plan. Activities that will be completed based on the results of the screening program are discussed in the Work Plan.

8. A deed restriction will be recorded at the Cumberland County Registry of Deeds that:
    1) Prohibits excavation/disturbance of soils onsite without notification of the Department, and references the existence of an Environmental Management Plan that will be developed for the site and submitted for approval by the Department prior to deed restriction recording.
    2) Prohibits withdrawal of groundwater without notification of the Department, and references the existence of an Environmental Management Plan that will be developed for the site and submitted for approval by the Department prior to deed restriction recording.

These restrictions will be placed as Declaration of Environmental Covenants consistent with this letter and in a manner that is acceptable to the Department.

Provided that the actions described above are completed to the satisfaction of the Department, Forefront Partners I, LP and its successors and/or assigns, as well as those persons identified in 38 M.R.S.A. § 343-E(6), will be granted the liability protection provided by 38 M.R.S.A. § 343-E(1) for the property located at 1 Thompson's Point, in Portland, Maine identified as Map 201 Lots A-5, A-8, and A-10, and Map 202 Lots A-1 and A-4. The Department will take no action against Forefront Partners I, LP, its successors and assigns, and all those persons identified in 38 M.R.S.A. § 343-E(6).

Once the proposed and recommended remedial measures at the property have been implemented to the satisfaction of the Department, a report demonstrating the successful completion of the tasks must be forwarded to the VRAP. A report may be submitted when all of the remedial activities have been completed for the entire property or in stages as portions of the property are remediated and ready for redevelopment. Upon determining successful conclusion of the remedial tasks, the Department will issue a Commissioner's Certificate(s) of Completion to Forefront Partners I, LP for those portions of the property where remedial activities have been completed.

If you have any questions, please call me at 207-287-4853.

Sincerely,

Gordon Fuller
Voluntary Response Action Program
Division of Remediation

cc: Nick Hodgkins--MEDEP
Jedd Steinglass, Credere
David L. Galgay, Jr—Verrill Dana LLP.

STATE OF MAINE

Department of Environmental Protection

PAUL R. LEPAGE
GOVERNOR

PATRICIA W. AHO
COMMISSIONER

July 2012

Forefront Partners I, LP
55 Lisbon St., Suite 2400
Lewiston, ME 04240
ATTN: Chris Thompson

RE: Natural Resources Protection Act Application, Portland
DEP #L-25672-2G-A-N / #L-25672-FS-B-N

Dear Mr. Thompson:

Please find enclosed a signed copy of your Department of Environmental Protection land use permit. You will note that the permit includes a description of your project, findings of fact that relate to the approval criteria the Department used in evaluating your project, and conditions that are based on those findings and the particulars of your project. Please take several moments to read your permit carefully, paying particular attention to the conditions of the approval. The Department reviews every application thoroughly and strives to formulate reasonable conditions of approval within the context of the Department's environmental laws. You will also find attached some materials that describe the Department's appeal procedures for your information.

If you have any questions about the permit or thoughts on how the Department processed this application please get in touch with me directly. I can be reached at (207) 592-1692 or at Marybeth.richardson@maine.gov.

Sincerely,

Marybeth Richardson, Project Manager
Division of Land Resource Regulation
Bureau of Land and Water Quality

pc: File

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WEB SITE: WWW.MAINE.GOV/DEP

STATE OF MAINE
DEPARTMENT OF ENVIRONMENTAL PROTECTION
17 STATE HOUSE STATION
AUGUSTA, ME 04333

DEPARTMENT ORDER

IN THE MATTER OF

FOREFRONT PARTNERS I, LP	) NATURAL RESOURCES
PROTECTION	
Portland, Cumberland County	) COASTAL WETLAND ALTERATION
THE FOREFRONT AT THOMPSON'S POINT	) SIGNIFICANT WILDLIFE HABITAT
L-25672-2G-A-N (approval)	) WATER QUALITY CERTIFICATION
L-25672-FS-B-N (approval)	) FINDINGS OF FACT AND ORDER

Pursuant to the provisions of 38 M.R.S.A. Sections 480-A et seq. and Section 401 of the Federal Water Pollution Control Act, the Department of Environmental Protection has considered the application of FOREFRONT PARTNERS I, LP with the supportive data, agency review comments, and other related materials on file and FINDS THE FOLLOWING FACTS:

1. PROJECT DESCRIPTION:

A. History of Project: Thompson's Point is an approximately 27.5-acre peninsula of land extending into the Fore River that has a 150-year history of industrial development. In the early part of the twentieth century the site was used primarily as a railroad maintenance facility. It was later used by the federal government for war-related activities such as munitions production. Subsequent uses included the operation of a concrete products manufacturing facility and other commercial activities, and the staging and stockpiling of construction materials.

B. Summary: The applicant proposes to demolish existing structures and redevelop almost the entire project site with a number of buildings, including an events center and concert hall, outdoor amphitheater, hotel, sports medicine and athletic performance lab, parking structure, office building, surface parking, trails, public space, and small boat/kayak access. Activities contemplated by the applicant that require Natural Resources Protection Act review are those that will occur within 75 feet of the highest annual tide (HAT) line, including clean up and removal of existing debris, stockpiles, and solid waste; building demolition; clearing and grubbing in advance of new topsoil for soil stabilization, landscaping, and trails; access drive and parking area construction; new buildings; installation or replacement of stormwater outfalls; installation of utilities; installation of a seasonal dock at the south end of the peninsula; a small hand carry boat/kayak launch; and a public access ramp. Within 25 feet of the HAT line, the only proposed activities will be grading for new landscaping and drainage work.

The proposed project will result in approximately 386 square feet of freshwater wetland fill within the northwesterly "panhandle" of the site associated with a drainage outfall and grading. Under current conditions, the shoreline is riprapped around the majority of the project site. In areas not containing riprap currently, the shoreline is naturally vegetated. No significant disturbance is proposed within these areas. A total of ten drainage outfalls

are proposed and the total extent of riprap enhancement associated with the drainage work is approximately 100 linear feet.

The proposed project is shown on a set of plans, the first of which is titled "The Forefront at Thompson's Point," prepared by DeLuca-Hoffman Associates, Inc. and dated August 2011, with a latest revision date on any sheet of July 12, 2012. The project site is located on Thompson's Point, off Congress Street, in the City of Portland.

The proposed project is subject to review under the Site Location of Development Act. Pursuant to M.R.S.A. Section 489-A, the City of Portland has delegated review authority and is conducting that review.

C. Current Use of the Site: A portion of the project site is utilized as storage for refrigerated dairy trailers. Various other commercial tenants lease space throughout the remaining site. There are currently nine structures and at least several additional foundations located on the site. The majority of the approximately 4,100 linear feet of shoreline at the site has been armored with riprap. Approximately five acres of the site lie below the HAT line.

2. EXISTING SCENIC, AESTHETIC, RECREATIONAL OR NAVIGATIONAL USES:

In accordance with Chapter 315, Assessing and Mitigating Impacts to Scenic and Aesthetic Uses, the applicant submitted a copy of the Department's Visual Evaluation Field Survey Checklist as Appendix A to the application along with a description of the property and the proposed project. The applicant also submitted several photographs of the proposed project site including an aerial photograph of the project site. Department staff visited the project site in July of 2011.

The proposed project is located adjacent to the Fore River, which is a scenic resource visited by the general public, in part, for the use, observation, enjoyment and appreciation of its natural and cultural visual qualities. The project site is currently almost completely developed with paved areas, gravel areas, and a number of buildings and foundations. Some of the buildings are functional and contain commercial space and others are in various stages of disrepair. The developed areas extend to the top of the slope down to the river, which is armored with riprap. Existing wooded areas are limited to the far northwest corner of the site.

Overall, the existing site is heavily developed with little visual appeal. Current uses include construction staging, a wood salvage operation, and semi-trailer box storage. Most of the existing structures appear to be marginally maintained and are in average to poor condition. The proposed project is expected to increase the visual appeal of the site by introducing new buildings and implementing an integrated landscape enhancement plan.

The proposed project was evaluated using the Department's Visual Impact Assessment Matrix and was found to have an acceptable potential visual impact rating. Based on the information submitted in the application, the visual impact rating, and the site visit, the Department determined that the location and scale of the proposed activity is compatible with the existing visual quality and landscape characteristics found within the viewshed of the scenic resource in the project area.

The Department did not identify any issues involving existing recreational and navigational uses.

The Department finds that the proposed activity will not unreasonably interfere with existing scenic, aesthetic, recreational or navigational uses of the protected natural resource.

3. SOIL EROSION:

The applicant submitted an erosion control report and supporting plans for the proposed project, dated March 2012. Based on its review of this information, the Department finds that the activity will not cause unreasonable erosion of soil or sediment nor unreasonably inhibit the natural transfer of soil from the terrestrial to the marine or freshwater environment.

4. HABITAT CONSIDERATIONS:

The Department of Marine Resources (DMR) stated that the proposed project should not cause any significant adverse impact to marine resources, navigation or recreation.

The Maine Department of Inland Fisheries and Wildlife (MDIFW) reviewed the proposed project and stated that the mudflats and riparian areas below the HAT line are valuable shorebird feeding area on the west side of the peninsula and roosting area on the east side of the peninsula. MDIFW commented that the proposed project includes activities within the associated upland buffer areas that may have the potential to adversely affect shorebirds using the mudflats in the area. As a result of two site visits and multiple revisions to the delineation of the roosting area and the feeding area buffers based on onsite conditions, neither buffer extends onto the project site more than 50 feet from mean high water.

In response to MDIFW's concerns, the applicant revised the layout of the project to avoid and minimize potential impacts within the buffer areas, and worked with MDIFW to develop a landscape plan (revision dated July 12, 2012) that provides adequate vegetative screening of the mapped shorebird feeding area between the shoreline and proposed pedestrian trail, and limits vegetation within the shorebird roosting area buffer to lower profile shrubs that are expected to maintain visibility for the shorebirds and minimize the threat of increased raptor predation. The applicant has agreed to install interpretive signage at the proposed south end boat launch. The signage will identify the presence and significance of shorebird habitat and will be designed with MIDFW's input. Additionally, the applicant has agreed to install a raised viewing platform overlooking the salt marsh and mudflat communities in the northwest portion of the site.

In a review memorandum dated July 13, 2012, MDIFW commented: "Given the steps that the applicant has taken to maintain and enhance mapped Significant Wildlife Habitats at this site we do not feel that project completion will result in any significant adverse impact to the resource."

Based on MDIFW's review, the Department finds that the activity will not unreasonably harm any significant wildlife habitat, freshwater wetland plant habitat, threatened or endangered plant habitat, aquatic or adjacent upland habitat, travel corridor, freshwater, estuarine or marine fisheries or other aquatic life.

5. WATER QUALITY CONSIDERATIONS:

The applicant may use lumber treated with chromated copper arsenate (CCA) to construct the floats. To protect water quality, any CCA treated lumber must be cured on dry land in a manner that exposes all surfaces to the air for 21 days prior to the start of construction. Provided any CCA treated lumber is cured as described above, the Department finds that the proposed project will not violate any state water quality law, including those governing the classification of the State's waters.

The Department does not anticipate that the proposed project will violate any state water quality law, including those governing the classification of the State's waters.

6. WETLANDS AND WATERBODIES PROTECTION RULES:

The applicant proposes to alter 386 square feet of an emergent freshwater wetland in the northwestern portion of the site to regrade an area and install a stormwater outfall pipe. Other proposed impacts below the HAT line include less than 100 square feet of alteration associated with the installation of multiple drainage outfalls, most of which will replace existing outfalls. Additionally, approximately 513 square feet of coastal wetland will be altered, through shading, as a result of the seasonal installation of floats at the south end of the peninsula.

The Department's Wetlands and Waterbodies Protection Rules, Chapter 310, require that the applicant meet the following standards:

A. Avoidance. No activity may be permitted if there is a practicable alternative to the project that would be less damaging to the environment. Each application for a coastal wetland alteration permit must provide an analysis of alternatives in order to demonstrate that a practicable alternative does not exist. The applicant submitted an alternatives analysis for the proposed project completed by DeLuca-Hoffman Associates, Inc. Because the proposed project is a transit-oriented development, the applicant selected the project site due to its proximity to the highway, passenger rail service, and bus service, all within a short distance to the Portland Jetport. There are currently no other sites in Portland that can offer the amount of land availability and the location required for this type of project, which will offer a range of activities integrating office, hospitality, and cultural uses with a focus on sustainability. The proposed layout includes approximately 386 square feet of wetland fill within the northwesterly "panhandle" of the site associated with a drainage outfall and grading. This alteration was determined to be unavoidable.

B. Minimal Alteration. The amount of wetland to be altered must be kept to the minimum amount necessary for meeting the overall purpose of the project. The site is currently almost completely developed and the proposed project offers opportunities to improve the scenic character of the area as well as the water quality of runoff from the site. The applicant incorporated a number of measures into the project design and layout to minimize potential impacts to shorebird roosting and feeding areas as described in Finding 4.

C. Compensation. In accordance with Chapter 310 Section 5(C)(6)(b), compensation is not required to achieve the goal of no net loss of coastal wetland functions and values since the project will not result in over 500 square feet of fill in the resource, which is the threshold over which compensation is generally required. Further, the proposed project will not have an adverse impact on marine resources or wildlife habitat as determined by DMR and MDIFW. For these reasons, the Department determined that compensation is not required.

The Department finds that the applicant has avoided and minimized wetland impacts to the greatest extent practicable, and that the proposed project represents the least environmentally damaging alternative that meets the overall purpose of the project.

7. OTHER CONSIDERATIONS:

The Department did not identify any other issues involving existing scenic, aesthetic, or navigational uses, soil erosion, habitat or fisheries, the natural transfer of soil, natural flow of water, water quality, or flooding.

BASED on the above findings of fact, and subject to the conditions listed below, the Department makes the following conclusions pursuant to 38 M.R.S.A. Sections 480-A et seq. and Section 401 of the Federal Water Pollution Control Act:

A. The proposed activity will not unreasonably interfere with existing scenic, aesthetic, recreational, or navigational uses.

B. The proposed activity will not cause unreasonable erosion of soil or sediment.

C. The proposed activity will not unreasonably inhibit the natural transfer of soil from the terrestrial to the marine or freshwater environment.

D. The proposed activity will not unreasonably harm any significant wildlife habitat, freshwater wetland plant habitat, threatened or endangered plant habitat, aquatic or adjacent upland habitat, travel corridor, freshwater, estuarine, or marine fisheries or other aquatic life.

E. The proposed activity will not unreasonably interfere with the natural flow of any surface or subsurface waters.

F. The proposed activity will not violate any state water quality law including those governing the classifications of the State's waters provided any CCA treated lumber used for the project is cured on dry land as described in Finding 5.

G. The proposed activity will not unreasonably cause or increase the flooding of the alteration area or adjacent properties.

H. The proposed activity is not on or adjacent to a sand dune.

I. The proposed activity is not on an outstanding river segment as noted in Title 38 M.R.S.A. Section 480-P.

THEREFORE, the Department APPROVES the above noted application of FOREFRONT PARTNERS I, L.P. to alter coastal wetlands and adjacent areas as described in Finding 1, SUBJECT TO THE ATTACHED CONDITIONS, and all applicable standards and regulations:

1. Standard Conditions of Approval, a copy attached.

2. The applicant shall take all necessary measures to ensure that its activities or those of its agents do not result in measurable erosion of soil on the site during the construction of the project covered by this approval.

3. Severability. The invalidity or unenforceability of any provision, or part thereof, of this License shall not affect the remainder of the provision or any other provisions. This License shall be construed and enforced in all respects as if such invalid or unenforceable provision or part thereof had been omitted.

4. Any CCA treated lumber shall be cured on dry land in a manner that exposes all surfaces to the air for 21 days prior to the start of construction.

THIS APPROVAL DOES NOT CONSTITUTE OR SUBSTITUTE FOR ANY OTHER REQUIRED STATE, FEDERAL OR LOCAL APPROVALS NOR DOES IT VERIFY COMPLIANCE WITH ANY APPLICABLE SHORELAND ZONING ORDINANCES.

DONE AND DATED IN AUGUSTA, MAINE, THIS 27th DAY OF July, 2012.

DEPARTMENT OF ENVIRONMENTAL PROTECTION

Filed
JUL 30 2012
State of Maine
Board of Environmental Protection

BY: Michael Kuhns for
Patricia W. Aho, Commissioner

PLEASE NOTE THE ATTACHED SHEET FOR GUIDANCE ON APPEAL PROCEDURES...

MR/L25672AN&BN/ATS#74653&74756

Natural Resource Protection Act (NRPA)
Standard Conditions

THE FOLLOWING STANDARD CONDITIONS SHALL APPLY TO ALL PERMITS GRANTED UNDER THE NATURAL RESOURCE PROTECTION ACT, TITLE 38, M.R.S.A. SECTION 480-A ET.SEQ. UNLESS OTHERWISE SPECIFICALLY STATED IN THE PERMIT.

A. Approval of Variations From Plans. The granting of this permit is dependent upon and limited to the proposals and plans contained in the application and supporting documents submitted and affirmed to by the applicant. Any variation from these plans, proposals, and supporting documents is subject to review and approval prior to implementation.

B. Compliance With All Applicable Laws. The applicant shall secure and comply with all applicable federal, state, and local licenses, permits, authorizations, conditions, agreements, and orders prior to or during construction and operation, as appropriate.

C. Erosion Control. The applicant shall take all necessary measures to ensure that his activities or those of his agents do not result in measurable erosion of soils on the site during the construction and operation of the project covered by this Approval.

D. Compliance With Conditions. Should the project be found, at any time, not to be in compliance with any of the Conditions of this Approval, or should the applicant construct or operate this development in any way other the specified in the Application or Supporting Documents, as modified by the Conditions of this Approval, then the terms of this Approval shall be considered to have been violated.

E. Time frame for approvals. If construction or operation of the activity is not begun within four years, this permit shall lapse and the applicant shall reapply to the Board for a new permit. The applicant may not begin construction or operation of the activity until a new permit is granted. Reapplications for permits may include information submitted in the initial application by reference. This approval, if construction is begun within the four-year time frame, is valid for seven years. If construction is not completed within the seven-year time frame, the applicant must reapply for, and receive, approval prior to continuing construction.

F. No Construction Equipment Below High Water. No construction equipment used in the undertaking of an approved activity is allowed below the mean high water line unless otherwise specified by this permit.

G. Permit Included In Contract Bids. A copy of this permit must be included in or attached to all contract bid specifications for the approved activity.

H. Permit Shown To Contractor. Work done by a contractor pursuant to this permit shall not begin before the contractor has been shown by the applicant a copy of this permit.

STATE OF MAINE
DEPARTMENT OF ENVIRONMENTAL PROTECTION
17 STATE HOUSE STATION, AUGUSTA, MAINE 04333

Erosion Control for Homeowners

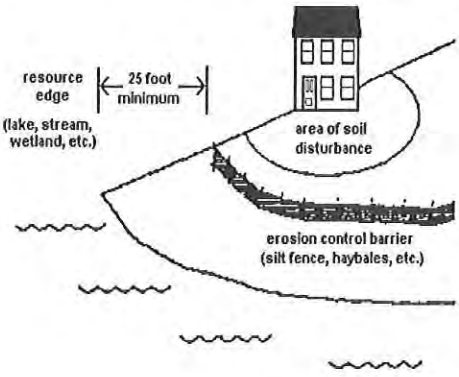
Before Construction

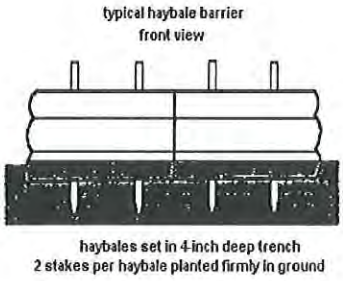
1. If you have hired a contractor, make sure you discuss your permit with them. Talk about what measures they plan to take to control erosion. Everybody involved should understand what the resource is, and where it is located. Most people can identify the edge of a lake or river. However, the edges of wetlands are often not so obvious. Your contractor may be the person actually pushing dirt around, but you are both responsible for complying with the permit.

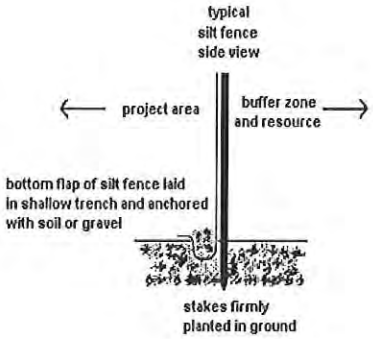
2. Call around to find where erosion control materials are available. Chances are your contractor has these materials already on hand. You probably will need silt fence, hay bales, wooden stakes, grass seed (or conservation mix), and perhaps filter fabric. Places to check for these items include farm & feed supply stores, garden & lawn suppliers, and landscaping companies. It is not always easy to find hay or straw during late winter and early spring. It also may be more expensive during those times of year. Plan ahead -- buy a supply early and keep it under a tarp.

3. Before any soil is disturbed, make sure an erosion control barrier has been installed. The barrier can be either a silt fence, a row of staked hay bales, or both. Use the drawings below as a guide for correct installation and placement. The barrier should be placed as close as possible to the soil-disturbance activity.

4. If a contractor is installing the erosion control barrier, double check it as a precaution. Erosion control barriers should be installed "on the contour", meaning at the same level or elevation across the land slope, whenever possible. This keeps stormwater from flowing to the lowest point along the barrier where it can build up and overflow or destroy the barrier.







During Construction

1. Use lots of hay or straw mulch on disturbed soil. The idea behind mulch is to prevent rain from striking the soil directly. It is the force of raindrops hitting the bare ground that makes the soil begin to move downslope with the runoff water, and cause erosion. More than 90% of erosion is prevented by keeping the soil covered.

2. Inspect your erosion control barriers frequently. This is especially important after a rainfall. If there is muddy water leaving the project site, then your erosion controls are not working as intended. You or your contractor then need to figure out what can be done to prevent more soil from getting past the barrier.

3. Keep your erosion control barrier up and maintained until you get a good and healthy growth of grass and the area is permanently stabilized.

After Construction

1. After your project is finished, seed the area. Note that all ground covers are not equal. For example, a mix of creeping red fescue and Kentucky bluegrass is a good choice for lawns and other high-maintenance areas. But this same seed mix is a poor selection for stabilizing a road shoulder or a cut bank that you don't intend to mow. Your contractor may have experience with different seed mixes, or you might contact a seed supplier for advice.

2. Do not spread grass seed after September 15. There is the likelihood that germinating seedlings could be killed by a frost before they have a chance to become established. Instead, mulch the area with a thick layer of hay or straw. In the spring, rake off the mulch and then seed the area. Don't forget to mulch again to hold in moisture and prevent the seed from washing away or being eaten by birds or other animals.

3. Keep your erosion control barrier up and maintained until you get a good and healthy growth of grass and the area is permanently stabilized.

Why Control Erosion?

To Protect Water Quality

When soil erodes into protected resources such as streams, rivers, wetlands, and lakes, it has many bad effects. Eroding soil particles carry phosphorus to the water. An excess of phosphorus can lead to explosions of algae growth in lakes and ponds called blooms. The water will look green and can have green slime in it. If you are near a lake or pond, this is not pleasant for swimming, and when the soil settles out on the bottom, it smothers fish eggs and small animals eaten by fish. There many other effects as well, which are all bad.

To Protect the Soil

It has taken thousands of years for our soil to develop. It usefulness is evident all around us, from sustaining forests and growing our garden vegetables, to even treating our septic wastewater! We cannot afford to waste this valuable resource.

To Save Money ($$)

Replacing topsoil or gravel washed off your property can be expensive. You end up paying twice because State and local governments wind up spending your tax dollars to dig out ditches and storm drains that have become choked with sediment from soil erosion.

DEP INFORMATION SHEET

Appealing a Department Licensing Decision

Dated: March 2012 **Contact: (207) 287-2811**

SUMMARY

There are two methods available to an aggrieved person seeking to appeal a licensing decision made by the Department of Environmental Protection's ("DEP") Commissioner: (1) in an administrative process before the Board of Environmental Protection ("Board"); or (2) in a judicial process before Maine's Superior Court. An aggrieved person seeking review of a licensing decision over which the Board had original jurisdiction may seek judicial review in Maine's Superior Court.

A judicial appeal of final action by the Commissioner or the Board regarding an application for an expedited wind energy development (35-A M.R.S.A. § 3451(4)) or a general permit for an offshore wind energy demonstration project (38 M.R.S.A. § 480-HH(1)) or a general permit for a tidal energy demonstration project (38 M.R.S.A. § 636-A) must be taken to the Supreme Judicial Court sitting as the Law Court.

This INFORMATION SHEET, in conjunction with a review of the statutory and regulatory provisions referred to herein, can help a person to understand his or her rights and obligations in filing an administrative or judicial appeal.

I. ADMINISTRATIVE APPEALS TO THE BOARD

LEGAL REFERENCES

The laws concerning the DEP's *Organization and Powers*, 38 M.R.S.A. §§ 341-D(4) & 346, the *Maine Administrative Procedure Act*, 5 M.R.S.A. § 11001, and the DEP's *Rules Concerning the Processing of Applications and Other Administrative Matters* ("Chapter 2"), 06-096 CMR 2 (April 1, 2003).

HOW LONG YOU HAVE TO SUBMIT AN APPEAL TO THE BOARD

The Board must receive a written appeal within 30 days of the date on which the Commissioner's decision was filed with the Board. Appeals filed after 30 calendar days of the date on which the Commissioner's decision was filed with the Board will be rejected.

HOW TO SUBMIT AN APPEAL TO THE BOARD

Signed original appeal documents must be sent to: Chair, Board of Environmental Protection, c/o Department of Environmental Protection, 17 State House Station, Augusta, ME 04333-0017; faxes are acceptable for purposes of meeting the deadline when followed by the Board's receipt of mailed original documents within five (5) working days. Receipt on a particular day must be by 5:00 PM at DEP's offices in Augusta; materials received after 5:00 PM are not considered received until the following day. The person appealing a licensing decision must also send the DEP's Commissioner a copy of the appeal documents and if the person appealing is not the applicant in the license proceeding at issue the applicant must also be sent a copy of the appeal documents. All of the information listed in the next section must be submitted at the time the appeal is filed. Only the extraordinary circumstances described at the end of that section will justify evidence not in the DEP's record at the time of decision being added to the record for consideration by the Board as part of an appeal.

WHAT YOUR APPEAL PAPERWORK MUST CONTAIN

Appeal materials must contain the following information at the time submitted:

1. *Aggrieved Status.* The appeal must explain how the person filing the appeal has standing to maintain an appeal. This requires an explanation of how the person filing the appeal may suffer a particularized injury as a result of the Commissioner's decision.
2. *The findings, conclusions or conditions objected to or believed to be in error.* Specific references and facts regarding the appellant's issues with the decision must be provided in the notice of appeal.
3. *The basis of the objections or challenge.* If possible, specific regulations, statutes or other facts should be referenced. This may include citing omissions of relevant requirements, and errors believed to have been made in interpretations, conclusions, and relevant requirements.
4. *The remedy sought.* This can range from reversal of the Commissioner's decision on the license or permit to changes in specific permit conditions.
5. *All the matters to be contested.* The Board will limit its consideration to those arguments specifically raised in the written notice of appeal.
6. *Request for hearing.* The Board will hear presentations on appeals at its regularly scheduled meetings, unless a public hearing on the appeal is requested and granted. A request for public hearing on an appeal must be filed as part of the notice of appeal.
7. *New or additional evidence to be offered.* The Board may allow new or additional evidence, referred to as supplemental evidence, to be considered by the Board in an appeal only when the evidence is relevant and material and that the person seeking to add information to the record can show due diligence in bringing the evidence to the DEP's attention at the earliest possible time in the licensing process or that the evidence itself is newly discovered and could not have been presented earlier in the process. Specific requirements for additional evidence are found in Chapter 2.

Other Considerations in Appealing a Decision to the Board

1. *Be familiar with all relevant material in the DEP record.* A license application file is public information, subject to any applicable statutory exceptions, made easily accessible by DEP. Upon request, the DEP will make the material available during normal working hours, provide space to review the file, and provide opportunity for photocopying materials. There is a charge for copies or copying services.
2. *Be familiar with the regulations and laws under which the application was processed, and the procedural rules governing your appeal.* DEP staff will provide this information on request and answer questions regarding applicable requirements.
3. *The filing of an appeal does not operate as a stay to any decision.* If a license has been granted and it has been appealed the license normally remains in effect pending the processing of the appeal. A license holder may proceed with a project pending the outcome of an appeal but the license holder runs the risk of the decision being reversed or modified as a result of the appeal.

What to Expect Once You File a Timely Appeal with the Board

The Board will formally acknowledge receipt of an appeal, including the name of the DEP project manager assigned to the specific appeal. The notice of appeal, any materials accepted by the Board Chair as supplementary evidence, and any materials submitted in response to the appeal will be sent to Board members with a recommendation from DEP staff. Persons filing appeals and interested persons are notified in advance of the date set for Board consideration of an appeal or request for public hearing. With or without holding a public hearing, the Board may affirm, amend, or reverse a Commissioner decision or remand the matter to the Commissioner for further proceedings. The Board will notify the appellant, a license holder, and interested persons of its decision.

II. JUDICIAL APPEALS

Maine law generally allows aggrieved persons to appeal final Commissioner or Board licensing decisions to Maine's Superior Court, see 38 M.R.S.A. § 346(1); 06-096 CMR 2; 5 M.R.S.A. § 11001; & M.R. Civ. P 80C. A party's appeal must be filed with the Superior Court within 30 days of receipt of notice of the Board's or the Commissioner's decision. For any other person, an appeal must be filed within 40 days of the date the decision was rendered. Failure to file a timely appeal will result in the Board's or the Commissioner's decision becoming final.

An appeal to court of a license decision regarding an expedited wind energy development, a general permit for an offshore wind energy demonstration project, or a general permit for a tidal energy demonstration project may only be taken directly to the Maine Supreme Judicial Court. See 38 M.R.S.A. § 346(4).

Maine's Administrative Procedure Act, DEP statutes governing a particular matter, and the Maine Rules of Civil Procedure must be consulted for the substantive and procedural details applicable to judicial appeals.

ADDITIONAL INFORMATION

If you have questions or need additional information on the appeal process, for administrative appeals contact the Board's Executive Analyst at (207) 287-2452 or for judicial appeals contact the court clerk's office in which your appeal will be filed.

Note: The DEP provides this INFORMATION SHEET for general guidance only; it is not intended for use as a legal reference. Maine law governs an appellant's rights.

Comments - Environmental Project Review
Maine Department of Inland Fisheries and Wildlife

Wildlife Division Comments – Region A	
Applicant's Name: Forefront Partners I, LP (Forefront at Thompson's Point)	
Project: L-25672-2G-A-N	Regulatory Agency: MDEP
Project Type: NRPA	Project Manager: Richardson
Comments Due Date:	Date Comments Sent: 7/13/12
Project Location	
Town: Portland	County: Cumberland
Waterbody: Fore River	
Wildlife Biologist(s): Camuso, Tudor, Walker	

After review of the application and consideration of the proposal's probable effect on the environment, and on our agency's programs and responsibilities, we provide the following comments:

I. Project Description/Resource Affected: Forefront Partners I, LP proposes to develop the 22.5 +/- acre Thompson's Point as a mixed use commercial and entertainment development to include an events center and concert hall, outdoor amphitheater, hotel, sports medicine facility, office complex, parking garage and surface parking for 780 vehicles. Additionally, the proposed development includes public amenities such as trails and a water access site. A seasonal rowing facility has also been suggested in the northeast corner of the site. It is our understanding that this last element has been removed from the current proposal and will potentially be reconsidered at a future date.

MDIF&W has mapped two Significant Wildlife Habitats in this portion of the Fore River, both of which include upland buffers that extend into the proposed development area. The mapped habitats include a Significant Shorebird Feeding Area along the western side of the peninsula and a Significant Shorebird Roosting Area along the eastern shoreline. Shorebirds that frequent Maine during the spring on their way to breeding grounds in the open tundra of northern Canada, and again in mid to late summer on their return trip south are dependent on open mudflats for feeding and, at times of high tide, require specific shoreline conditions that provide secure areas for roosting. Upland buffers associated both habitat types are critical in minimizing disturbance to migratory shorebirds by proximate human activities. Additionally, the vegetated condition of buffers associated with roosting habitat is an important factor in determining viability of the roost. Shorebirds will abandon roosts where tall woody vegetation that provides cover for raptors becomes established. Several of the shorebird species that frequent Maine during their migrations have shown long-term populations declines. These declines are, in part, due to significant losses of both migratory feeding and roosting stop over habitats.

II. Comments/Recommended Considerations or Conditions:

<u>Wildlife Considerations:</u>
MDIFW originally mapped Shorebird Significant Wildlife Habitats and associated buffers in 2006. At that time, shorebird roosting areas were digitized with a 250-foot associated upland

buffer based on scientific literature that documented human disturbance effects. Similarly, feeding areas were digitized with a 100-foot buffer intended to minimize unnecessary disturbance to shorebird activity on the mudflats. Where roosts occur proximate to developed areas, development was clipped out of the original buffers by GIS staff to account for existing disturbances. In the case of Thompson's Point, the originally mapped roost habitat buffer varied from 25-feet offset from mean high water to 150-feet offset from mean high water based on best available aerial photos at the time. As a result of two recent site walks and multiple revisions of the delineation of the roost area and the feeding area buffers based on on-the-ground conditions, neither buffer now extends into the site more than 50-feet from mean high water.

The applicant has adjusted the initially submitted project site plan to avoid and minimize impacts within these revised buffers and has worked closely with our Department to develop a landscape plan that at once creates adequate vegetative screening of the mapped shorebird feeding area between the shoreline and proposed pedestrian trail, and limits vegetation within the shorebird roost area buffer to shrubs that will likely not exceed 4-feet in height and thereby maintain visibility for the shorebirds and minimize the threat of increased predator activity. Additionally, the applicant has agreed to install interpretive signage at the proposed south end boat launch. The signage will identify the presence of shorebird habitat and explain the significance of these habitats. Our Department will assist the applicant in designing the signage to be installed. The applicant has also agreed to install a raised viewing platform overlooking the saltmarsh and mudflat communities in the northwestern portion of the site. This structure will serve as both an attractive amenity for the project and help to build local awareness of and appreciation for local bird life.

Given the steps that the applicant has taken to maintain and enhance mapped Significant Wildlife Habitats at this site we do not feel that project completion will result in any significant adverse impact to the resource.

Should the rowing club be constructed during a subsequent phase of development, we do feel that the structure extending into the roost and resulting presence of shells passing along the frontage of the roost will eliminate existing habitat values. With the proposed placement of the facility, it is unlikely that any mitigation for the loss of the roost could take place on-site. We would therefore recommend mitigation for the loss of this Significant Wildlife Habitat feature in the form of a contribution to the Maine Natural Resource Conservation Program for future shorebird roost protection and monitoring. The total square footage of the revised roosting habitat is 63,764sf. Should the rowing club locate in this area, the Department feels that a contribution to the MNRCP fund of $90,544 (63,764x0.71x2 per MDEP guidance) would be appropriate.

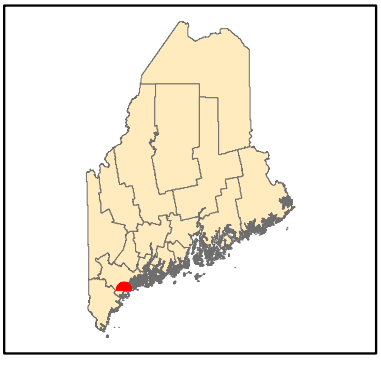
Draft II Revised Thompson's Point Shorebird Habitats

Maine Department of
Inland Fisheries and Wildlife

0 125 250 500 750 1,000 Feet

Projection: UTM, NAD83, Zone 19N

Date: 6/22/2012



STATE OF MAINE
DEPARTMENT OF ENVIRONMENTAL PROTECTION

PAUL R. LEPAGE
GOVERNOR

PATRICIA W. AHO
COMMISSIONER

June 2014

Forefront Partners I, LP
55 Lisbon St., Suite 2400
Lewiston, ME 04240

RE: Natural Resources Protection Act Application, Portland
DEP #L-25672-4P-F-N/L-25672-FS-G-N

Dear Applicant:

Please find enclosed a signed copy of your Department of Environmental Protection land use permit. You will note that the permit includes a description of your project, findings of fact that relate to the approval criteria the Department used in evaluating your project, and conditions that are based on those findings and the particulars of your project. Please take several moments to read your permit carefully, paying particular attention to the conditions of the approval. The Department reviews every application thoroughly and strives to formulate reasonable conditions of approval within the context of the Department's environmental laws. You will also find attached some materials that describe the Department's appeal procedures for your information.

If you have any questions about the permit or thoughts on how the Department processed this application please get in touch with me directly. I can be reached at (207) 592-1692 or at Marybeth.richardson@maine.gov.

Sincerely,

Marybeth Richardson
Division of Land Resource Regulation
Bureau of Land and Water Quality

pc: File

AUGUSTA
17 STATE HOUSE STATION
AUGUSTA, MAINE 04333-0017
(207) 287-7688 FAX: (207) 287-7826

BANGOR
106 HOGAN ROAD, SUITE 6
BANGOR, MAINE 04401
(207) 941-4570 FAX: (207) 941-4584

PORTLAND
312 CANCO ROAD
PORTLAND, MAINE 04103
(207) 822-6300 FAX: (207) 822-6303

PRESQUE ISLE
1235 CENTRAL DRIVE, SKYWAY PARK
PRESQUE ISLE, MAINE 04769
(207) 764-0477 FAX: (207) 760-3143

web site: www.maine.gov/dep

STATE OF MAINE
DEPARTMENT OF ENVIRONMENTAL PROTECTION
17 STATE HOUSE STATION AUGUSTA, MAINE 04333-0017

DEPARTMENT ORDER

IN THE MATTER OF

FOREFRONT PARTNERS I, LP	) NATURAL RESOURCES PROTECTION ACT
Portland, Cumberland County	) COASTAL WETLAND ALTERATION
PIER SYSTEM	) SIGNIFICANT WILDLIFE HABITAT
L-25672-4P-F-N (approval)	) WATER QUALITY CERTIFICATION
L-25672-FS-G-N (approval)	) FINDINGS OF FACT AND ORDER

Pursuant to the provisions of 38 M.R.S.A. Sections 480-A et seq. and Section 401 of the Federal Water Pollution Control Act, the Department of Environmental Protection has considered the application of FOREFRONT PARNTERS I, LP with the supportive data, agency review comments, and other related materials on file and FINDS THE FOLLOWING FACTS:

1. PROJECT DESCRIPTION:

A. History of Project: Thompson's Point is an approximately 27.5-acre peninsula of land extending into the Fore River that has a 150-year history of industrial development. In the early part of the twentieth century the site was used primarily as a railroad maintenance facility. It was later used by the federal government for war-related activities such as munitions production. Subsequent uses included the operation of a concrete products manufacturing facility and other commercial activities, and the staging and stockpiling of construction materials.

In Department Order #L-25672-2G-A-N/L-25672-FS-B-N, dated July 27, 2012, the Department approved a number of activities on the site that will occur within 75 feet of the highest annual tide (HAT) line, including: clean up and removal of existing debris, stockpiles, and solid waste; building demolition; clearing and grubbing in advance of new topsoil for soil stabilization, landscaping, and trails; access drive and parking area construction; new buildings; installation or replacement of stormwater outfalls; installation of utilities; installation of a pier system at the south end of the peninsula; and a public access ramp.

B. Summary: The applicant proposes to shift the location of the pier system to the west from its previously-approved location at the southerly tip of the Thompson's Point peninsula to align better with the proposed master plan pedestrian access. The proposed pier system will include a longer float than the previously-approved pier system that will be large enough to accommodate crew boats, or rowing shells, and will be positioned so that water access will be available during all-tide conditions. The system will consist of a permanent six-foot wide by 16-foot long timber pier located at the top of the bank, which will serve as the top/landing approach to a four-foot wide by 50-foot long seasonal gangway and a seasonal, 10-foot wide by 60-foot long float.

The proposed pier system is shown on two plans, the first titled "The Forefront at Thompson's Point Seasonal Dock System," prepared by Fay, Spofford & Thorndike and dated March 13, 2014, and the second titled "Layout Concept for Portland Rowing," prepared by Custom Float Services, Inc. and dated March 6, 2014.

C. Current Use of the Site: A realigned combined sewer overflow has been constructed along the westerly side of the peninsula. A walking trail along the "panhandle" area of the site has also been constructed. The majority of the approximately 4,100 linear feet of shoreline at the site was previously armored with riprap. Approximately five acres of the site lie below the HAT line. There are several buildings on the site that will be demolished.

2. EXISTING SCENIC, AESTHETIC, RECREATIONAL OR NAVIGATIONAL USES:

In accordance with Chapter 315, Assessing and Mitigating Impacts to Scenic and Aesthetic Uses, the applicant submitted a copy of the Department's Visual Evaluation Field Survey Checklist as Appendix A to the application along with a description of the property and the proposed project. The applicant also submitted several photographs of the proposed project site including aerial photographs. Department staff visited the project site in July 2011.

The proposed project is located adjacent to the Fore River, which is a scenic resource visited by the general public, in part, for the use, observation, enjoyment and appreciation of its natural and cultural visual qualities. The project site is currently almost completely developed with paved areas, gravel areas, and a number of buildings and foundations. Some of the buildings are functional and contain commercial space and others are in various stages of disrepair. The developed areas extend to the top of the slope down to the river, which is armored with riprap. Existing wooded areas are limited to the far northwest corner of the site.

Overall, the existing site is heavily developed with little visual appeal. Current uses include construction staging, a wood salvage operation, and semi-trailer box storage. Most of the existing structures appear to be marginally maintained and are in average to poor condition. The proposed project is not expected to significantly change the visual impact of the redeveloped site as approved in Department Order #L-25672-2G-A-N/ L-25672-FS-B-N.

The proposed project was evaluated using the Department's Visual Impact Assessment Matrix and was found to have an acceptable potential visual impact rating. Based on the information submitted in the application, the visual impact rating, and the site visit, the Department determined that the location and scale of the proposed activity is compatible with the existing visual quality and landscape characteristics found within the viewshed of the scenic resource in the project area.

The Department did not identify any issues involving existing recreational and navigational uses.

The Department finds that the proposed activity will not unreasonably interfere with existing scenic, aesthetic, recreational or navigational uses of the protected natural resource.

3. SOIL EROSION:

Construction of the proposed project is expected to take several weeks. The float systems will be prefabricated and the permanent pier section will be constructed onsite and set into place. The permanent pier section will be supported on concrete foundations. Construction will be accomplished by excavating small holes that will be backfilled with concrete. The seasonal floats will be anchored with moorings. These activities are not anticipated to cause any significant source of sedimentation.

The Department finds that the activity will not cause unreasonable erosion of soil or sediment nor unreasonably inhibit the natural transfer of soil from the terrestrial to the marine or freshwater environment.

4. HABITAT CONSIDERATIONS:

The Department of Marine Resources (DMR) reviewed the project approved in Department Order #L-25672-2G-A-N/L-25672-FS-B-N and stated that it should not cause any significant adverse impact to marine resources.

The Maine Department of Inland Fisheries and Wildlife (MDIFW) reviewed the project approved in Department Order #L-25672-2G-A-N/L-25672-FS-B-N and stated that the mudflats and riparian areas below the HAT line are a valuable shorebird feeding area on the west side of the peninsula and a roosting area on the east side of the peninsula. MDIFW commented that the proposed project includes activities within the associated upland buffer areas that may have the potential to adversely affect shorebirds using the mudflats in the area. As a result of two site visits and multiple revisions to the delineation of the roosting area and the feeding area buffers based on onsite conditions, neither buffer extends onto the project site more than 50 feet from mean high water.

During the Department's review of the original application in 2012, MDIFW expressed concerns about the initial design of the project because it proposed rowing floats at the northeasterly corner of the site, directly adjacent to the shorebird roosting area and its associated upland buffer. This float system was subsequently deleted from the plan, and the plan that was approved by the Department included a small hand carry boat/kayak launch float at the southern tip of the site as described in Finding 1. MDIFW did not express concerns about this seasonal structure and stated that the project when complete would not result in any significant adverse impact to the habitat.

The applicant now proposes to relocate the pier and float structure from the southernmost tip of Thompson's Point to a point on the shoreline approximately 108 feet west of the previously approved pier system, further from the shorebird roosting area, but still within

the shorebird feeding area. MDIFW reviewed the proposed project and stated in a review memorandum dated June 25, 2014, that the pier system has been relocated to an area that will be less disruptive to wildlife than the original location. MDIFW recommended that the applicant reiterate its commitment to installing interpretive signage in the vicinity of the pier structure and a viewing platform overlooking the salt marsh and mudflat communities in the northwest portion of the site. The applicant confirmed that it intends to comply with the previous permit conditions that required the installation of a viewing platform and educational placards.

The Department finds that the activity will not unreasonably harm any significant wildlife habitat, freshwater wetland plant habitat, threatened or endangered plant habitat, aquatic or adjacent upland habitat, travel corridor, freshwater, estuarine or marine fisheries or other aquatic life.

5. WATER QUALITY CONSIDERATIONS:

The applicant proposes to use lumber treated with chromated copper arsenate (CCA) to construct the pier system. To protect water quality, all CCA-treated lumber must be cured on dry land in a manner that exposes all surfaces to the air for 21 days prior to the start of construction.

Provided that CCA-treated lumber is cured as described above, the Department finds that the proposed project will not violate any state water quality law, including those governing the classification of the State's waters.

6. WETLANDS AND WATERBODIES PROTECTION RULES:

The applicant proposes to indirectly alter a total of 1,028 square feet of coastal wetland as a result of shading from the proposed pier system. The permanent pier section's supports will be located above the HAT line; therefore, no direct wetland impacts are proposed. The pier system as originally approved in Department Order #L-25672-2G-A-N/L-25672-FS-B-N included 513 square feet of indirect wetland alteration due to shading.

The Wetland Protection Rules interpret and elaborate on the Natural Resources Protection Act (NRPA) criteria for obtaining a permit. The rules guide the Department in its determination of whether a project's impacts would be unreasonable. A proposed project would generally be found to be unreasonable if it would cause a loss in wetland area, functions and values and there is a practicable alternative to the project that would be less damaging to the environment. Each application for a NRPA permit that involves a coastal wetland alteration must provide an analysis of alternatives in order to demonstrate that a practicable alternative does not exist.

A. Avoidance. No activity may be permitted if there is a practicable alternative to the project that would be less damaging to the environment. The applicant submitted an alternatives analysis for the proposed project completed by Fay, Spofford & Thorndike and dated May 27, 2014 and June 12, 2014. When the project was first proposed in 2012,

the site in question was contemplated as water access for small personal kayaks, canoes and a water shuttle/taxi. The applicant stated that the purpose of the revised configuration, location, and increase in float size is to allow water access for local rowing organizations. The applicant proposes to increase the size of the floats in order to launch eight oar crew boats, or shells, which are approximately 60 feet long, out into the bay. The increased pier length is needed to walk the shell down the gangway and launch it into the water. The pier system is not intended for boats to be anchored or moored for extended periods. Because of the nature of the project purpose, some increase in impact to the coastal wetland is unavoidable.

B. Minimal Alteration. The amount of coastal wetland to be altered must be kept to the minimum amount necessary for meeting the overall purpose of the project. A permanent pier has been added to the system, but will be located above the HAT line. The gangway will be 10 feet longer than originally proposed, and the float size has been expanded to accommodate a local rowing club as descried above. The proposed 60-foot long float is the minimum size necessary to safely launch rowing shells.

C. Compensation. In accordance with Chapter 310 Section 5(C)(6)(b), compensation is not required to achieve the goal of no net loss of coastal wetland functions and values since the project will not result in over 500 square feet of fill in the resource, which is the threshold over which compensation is generally required. Further, the proposed project will not have an adverse impact on marine resources or wildlife habitat as determined by DMR and MDIFW. For these reasons, the Department determined that compensation is not required.

The Department finds that the applicant has avoided and minimized wetland impacts to the greatest extent practicable, and that the proposed project represents the least environmentally damaging alternative that meets the overall purpose of the project.

7. OTHER CONSIDERATIONS:

The Department did not identify any other issues involving existing scenic, aesthetic, or navigational uses, soil erosion, habitat or fisheries, the natural transfer of soil, natural flow of water, water quality, or flooding.

BASED on the above findings of fact, and subject to the conditions listed below, the Department makes the following conclusions pursuant to 38 M.R.S.A. Sections 480-A et seq. and Section 401 of the Federal Water Pollution Control Act:

A. The proposed activity will not unreasonably interfere with existing scenic, aesthetic, recreational, or navigational uses.

B. The proposed activity will not cause unreasonable erosion of soil or sediment.

C. The proposed activity will not unreasonably inhibit the natural transfer of soil from the terrestrial to the marine or freshwater environment.

D. The proposed activity will not unreasonably harm any significant wildlife habitat, freshwater wetland plant habitat, threatened or endangered plant habitat, aquatic or adjacent upland habitat, travel corridor, freshwater, estuarine, or marine fisheries or other aquatic life.

E. The proposed activity will not unreasonably interfere with the natural flow of any surface or subsurface waters.

F. The proposed activity will not violate any state water quality law including those governing the classifications of the State's waters provided that CCA-treated lumber is cured as described in Finding 5.

G. The proposed activity will not unreasonably cause or increase the flooding of the alteration area or adjacent properties.

H. The proposed activity is not on or adjacent to a sand dune.

I. The proposed activity is not on an outstanding river segment as noted in Title 38 M.R.S.A. Section 480-P.

THEREFORE, the Department APPROVES the above noted application of FOREFRONT PARTNERS I, LP to relocate and enlarge a previously approved pier system at Thompson's Point as described in Finding 1, SUBJECT TO THE ATTACHED CONDITIONS, and all applicable standards and regulations:

1. Standard Conditions of Approval, a copy attached.

2. The applicant shall take all necessary measures to ensure that its activities or those of its agents do not result in measurable erosion of soil on the site during the construction of the project covered by this approval.

3. Severability. The invalidity or unenforceability of any provision, or part thereof, of this License shall not affect the remainder of the provision or any other provisions. This License shall be construed and enforced in all respects as if such invalid or unenforceable provision or part thereof had been omitted.

4. All CCA-treated lumber shall be cured on dry land in a manner that exposes all surfaces to the air for 21 days prior to the start of construction.

THIS APPROVAL DOES NOT CONSTITUTE OR SUBSTITUTE FOR ANY OTHER REQUIRED STATE, FEDERAL OR LOCAL APPROVALS NOR DOES IT VERIFY COMPLIANCE WITH ANY APPLICABLE SHORELAND ZONING ORDINANCES.

DONE AND DATED IN AUGUSTA, MAINE, THIS 30th DAY OF June, 2014.

DEPARTMENT OF ENVIRONMENTAL PROTECTION

Filed
JUN 30 2014
State of Maine
Board of Environmental Protection

BY: Michael Kuhns
For: Patricia W. Aho, Commissioner

PLEASE NOTE THE ATTACHED SHEET FOR GUIDANCE ON APPEAL PROCEDURES...

MR/L25672FNGN/ATS#77793, 77794

Natural Resources Protection Act (NRPA)
Standard Conditions

THE FOLLOWING STANDARD CONDITIONS SHALL APPLY TO ALL PERMITS GRANTED UNDER THE NATURAL RESOURCE PROTECTION ACT, TITLE 38, M.R.S.A. SECTION 480-A ET.SEQ. UNLESS OTHERWISE SPECIFICALLY STATED IN THE PERMIT.

A. Approval of Variations From Plans. The granting of this permit is dependent upon and limited to the proposals and plans contained in the application and supporting documents submitted and affirmed to by the applicant. Any variation from these plans, proposals, and supporting documents is subject to review and approval prior to implementation.

B. Compliance With All Applicable Laws. The applicant shall secure and comply with all applicable federal, state, and local licenses, permits, authorizations, conditions, agreements, and orders prior to or during construction and operation, as appropriate.

C. Erosion Control. The applicant shall take all necessary measures to ensure that his activities or those of his agents do not result in measurable erosion of soils on the site during the construction and operation of the project covered by this Approval.

D. Compliance With Conditions. Should the project be found, at any time, not to be in compliance with any of the Conditions of this Approval, or should the applicant construct or operate this development in any way other the specified in the Application or Supporting Documents, as modified by the Conditions of this Approval, then the terms of this Approval shall be considered to have been violated.

E. Time frame for approvals. If construction or operation of the activity is not begun within four years, this permit shall lapse and the applicant shall reapply to the Board for a new permit. The applicant may not begin construction or operation of the activity until a new permit is granted. Reapplications for permits may include information submitted in the initial application by reference. This approval, if construction is begun within the four-year time frame, is valid for seven years. If construction is not completed within the seven-year time frame, the applicant must reapply for, and receive, approval prior to continuing construction.

F. No Construction Equipment Below High Water. No construction equipment used in the undertaking of an approved activity is allowed below the mean high water line unless otherwise specified by this permit.

G. Permit Included In Contract Bids. A copy of this permit must be included in or attached to all contract bid specifications for the approved activity.

H. Permit Shown To Contractor. Work done by a contractor pursuant to this permit shall not begin before the contractor has been shown by the applicant a copy of this permit.

Revised (12/2011/DEP LW0428)

DEP INFORMATION SHEET

Appealing a Department Licensing Decision

Dated: March 2012 **Contact: (207) 287-2811**

SUMMARY

There are two methods available to an aggrieved person seeking to appeal a licensing decision made by the Department of Environmental Protection's ("DEP") Commissioner: (1) in an administrative process before the Board of Environmental Protection ("Board"); or (2) in a judicial process before Maine's Superior Court. An aggrieved person seeking review of a licensing decision over which the Board had original jurisdiction may seek judicial review in Maine's Superior Court.

A judicial appeal of final action by the Commissioner or the Board regarding an application for an expedited wind energy development (35-A M.R.S.A. § 3451(4)) or a general permit for an offshore wind energy demonstration project (38 M.R.S.A. § 480-HH(1)) or a general permit for a tidal energy demonstration project (38 M.R.S.A. § 636-A) must be taken to the Supreme Judicial Court sitting as the Law Court.

This INFORMATION SHEET, in conjunction with a review of the statutory and regulatory provisions referred to herein, can help a person to understand his or her rights and obligations in filing an administrative or judicial appeal.

I. ADMINISTRATIVE APPEALS TO THE BOARD

LEGAL REFERENCES

The laws concerning the DEP's *Organization and Powers*, 38 M.R.S.A. §§ 341-D(4) & 346, the *Maine Administrative Procedure Act*, 5 M.R.S.A. § 11001, and the DEP's *Rules Concerning the Processing of Applications and Other Administrative Matters* ("Chapter 2"), 06-096 CMR 2 (April 1, 2003).

HOW LONG YOU HAVE TO SUBMIT AN APPEAL TO THE BOARD

The Board must receive a written appeal within 30 days of the date on which the Commissioner's decision was filed with the Board. Appeals filed after 30 calendar days of the date on which the Commissioner's decision was filed with the Board will be rejected.

HOW TO SUBMIT AN APPEAL TO THE BOARD

Signed original appeal documents must be sent to: Chair, Board of Environmental Protection, c/o Department of Environmental Protection, 17 State House Station, Augusta, ME 04333-0017; faxes are acceptable for purposes of meeting the deadline when followed by the Board's receipt of mailed original documents within five (5) working days. Receipt on a particular day must be by 5:00 PM at DEP's offices in Augusta; materials received after 5:00 PM are not considered received until the following day. The person appealing a licensing decision must also send the DEP's Commissioner a copy of the appeal documents and if the person appealing is not the applicant in the license proceeding at issue the applicant must also be sent a copy of the appeal documents. All of the information listed in the next section must be submitted at the time the appeal is filed. Only the extraordinary circumstances described at the end of that section will justify evidence not in the DEP's record at the time of decision being added to the record for consideration by the Board as part of an appeal.

What your Appeal Paperwork Must Contain

Appeal materials must contain the following information at the time submitted:

1. *Aggrieved Status*. The appeal must explain how the person filing the appeal has standing to maintain an appeal. This requires an explanation of how the person filing the appeal may suffer a particularized injury as a result of the Commissioner's decision.
2. *The findings, conclusions or conditions objected to or believed to be in error.* Specific references and facts regarding the appellant's issues with the decision must be provided in the notice of appeal.
3. *The basis of the objections or challenge.* If possible, specific regulations, statutes or other facts should be referenced. This may include citing omissions of relevant requirements, and errors believed to have been made in interpretations, conclusions, and relevant requirements.
4. *The remedy sought.* This can range from reversal of the Commissioner's decision on the license or permit to changes in specific permit conditions.
5. *All the matters to be contested.* The Board will limit its consideration to those arguments specifically raised in the written notice of appeal.
6. *Request for hearing.* The Board will hear presentations on appeals at its regularly scheduled meetings, unless a public hearing on the appeal is requested and granted. A request for public hearing on an appeal must be filed as part of the notice of appeal.
7. *New or additional evidence to be offered.* The Board may allow new or additional evidence, referred to as supplemental evidence, to be considered by the Board in an appeal only when the evidence is relevant and material and that the person seeking to add information to the record can show due diligence in bringing the evidence to the DEP's attention at the earliest possible time in the licensing process or that the evidence itself is newly discovered and could not have been presented earlier in the process. Specific requirements for additional evidence are found in Chapter 2.

Other Considerations in Appealing a Decision to the Board

1. *Be familiar with all relevant material in the DEP record.* A license application file is public information, subject to any applicable statutory exceptions, made easily accessible by DEP. Upon request, the DEP will make the material available during normal working hours, provide space to review the file, and provide opportunity for photocopying materials. There is a charge for copies or copying services.
2. *Be familiar with the regulations and laws under which the application was processed, and the procedural rules governing your appeal.* DEP staff will provide this information on request and answer questions regarding applicable requirements.
3. *The filing of an appeal does not operate as a stay to any decision.* If a license has been granted and it has been appealed the license normally remains in effect pending the processing of the appeal. A license holder may proceed with a project pending the outcome of an appeal but the license holder runs the risk of the decision being reversed or modified as a result of the appeal.

WHAT TO EXPECT ONCE YOU FILE A TIMELY APPEAL WITH THE BOARD

The Board will formally acknowledge receipt of an appeal, including the name of the DEP project manager assigned to the specific appeal. The notice of appeal, any materials accepted by the Board Chair as supplementary evidence, and any materials submitted in response to the appeal will be sent to Board members with a recommendation from DEP staff. Persons filing appeals and interested persons are notified in advance of the date set for Board consideration of an appeal or request for public hearing. With or without holding a public hearing, the Board may affirm, amend, or reverse a Commissioner decision or remand the matter to the Commissioner for further proceedings. The Board will notify the appellant, a license holder, and interested persons of its decision.

II. JUDICIAL APPEALS

Maine law generally allows aggrieved persons to appeal final Commissioner or Board licensing decisions to Maine's Superior Court, see 38 M.R.S.A. § 346(1); 06-096 CMR 2; 5 M.R.S.A. § 11001; & M.R. Civ. P 80C. A party's appeal must be filed with the Superior Court within 30 days of receipt of notice of the Board's or the Commissioner's decision. For any other person, an appeal must be filed within 40 days of the date the decision was rendered. Failure to file a timely appeal will result in the Board's or the Commissioner's decision becoming final.

An appeal to court of a license decision regarding an expedited wind energy development, a general permit for an offshore wind energy demonstration project, or a general permit for a tidal energy demonstration project may only be taken directly to the Maine Supreme Judicial Court. See 38 M.R.S.A. § 346(4).

Maine's Administrative Procedure Act, DEP statutes governing a particular matter, and the Maine Rules of Civil Procedure must be consulted for the substantive and procedural details applicable to judicial appeals.

ADDITIONAL INFORMATION

If you have questions or need additional information on the appeal process, for administrative appeals contact the Board's Executive Analyst at (207) 287-2452 or for judicial appeals contact the court clerk's office in which your appeal will be filed.

Note: The DEP provides this INFORMATION SHEET for general guidance only; it is not intended for use as a legal reference. Maine law governs an appellant's rights.

Bangor Savings Bank

October 31, 2017

Christine Grimando, AICP
Senior Planner
Planning & Urban Development Department
389 Congress Street
Portland, Maine 04101

Ms. Grimando,

I am writing to you regarding Chris Thompson, Jed Troubh, Forefront Partners I, LP and its affiliate entities, currently pursuing Site Plan approvals associated with the Thompson's Point redevelopment.

I have known them for several years and am familiar with their, and their organization's, financial and technical capacity. They have demonstrated success in real estate development and management, and I believe that they have the experience, skill, financial resources, and wherewithal to bring the Thompson's Point project to fruition and make it an ongoing success.

Thank you and best regards,

Shawn McKenna
Vice President
Commercial Banking
Bangor Savings Bank
280 Fore Street, Suite 200
Portland, ME 04101

The Forefront at Thompson's Point

Transportation Demand Management Report

January 22, 2018

Overview of Transportation Demand Management (TDM) at Thompson's Point using the City of Portland's draft TDM Report Template:

Date of Report **1/22/2018**

Property Description

Name of Property/Development	Forefront at Thompson's Point
Address	#1-11 Thompson's Point Road (Office location: 501 Danforth Street, Portland, ME 04102)
Owner	Forefront Partners I LP

Property/Development Program

	Square Feet	*Units/Rooms*	*Employees*	***Parking Spaces***		
				On-site		*Off-site*
				Paved	*Unpaved*	
Residential (none)	**0**	0	0			
Office (Suburban)	2,927		10			
Office (Big Room)	3,450		14			
Office Subtotal	6,377					
Hotel Restaurant	5,650		10			
Big J's	1,852		4			
Restaurant Subtotal	**7,502**					
Retail - Color Me Mine	2,136		2			
Retail - Stroudwater Distillery	5,284		3			
Retail - Bissell Brothers Brewing	10,068		8			
Retail - Cellardoor Winery	5,890		5			
Retail Subtotal	**23,378**					
Cultural/Educational-International Cryptozoology Museum	993		1			
Cultural/Educational-Circus Maine	6,800		4			
Cultural/Educational-Children's Museum and Theatre of Maine	24,250		6			
Cultural/Educational Subtotal	**32,043**					
Hotel	**90,000**	148	10			
Event	**34,000**					
Unleased	0					
Property/Development Total	**193,300**					
				217	**516 +/-**	**300 +/-**

TDM Coordinator

Contact Person	Chelsea O'Reilly, General Manager
Company/Organization	Forefront Partners
Mailing Address	501 Danforth Street, Portland, ME 04102
Phone	(917) 254-7587 cell
Email	chelsea@thompsonspointmaine.com

TDM Plan & Targets

Date of TDM Plan	*9/13/2011*	*Date of Most Recent Update (if any)*	11/4/2015; 9/19/2017 (interim)

		TDM Plan Target (if applicable)	*Current Data*
Peak Hour Trips	*AM*	No target given	Projected: 246 (10/6/17 – includes museum & hotel)
	PM	No target given	Projected: 354 (10/6/17 – includes museum & hotel)
Mode Split	*Single-Occupancy Vehicle*	Reduce SOV trips to 80% of total, within first 5 years of project	Initial estimate from 2017 concert survey data: ~5% SOV rate traveling to concerts.
	Bicycle	Increase by 5-7% annually until overall 20% reduction in parking is reached	Initial estimate from 2017 concert survey data: 2.8%. Plans for additional data collection.
	Walk	Increase by 5-7% annually until overall 20% reduction in parking is reached	Initial estimate from 2017 concert survey data: 8.7%. Plans for additional data collection.
	Local Transit	Increase by 5% annually until overall 20% reduction in parking is reached	Initial estimate from 2017 concert survey data: 0.7%. Plans for add'l data collection.
Parking Demand		Reduce parking demand annually by 5% until a minimum of 20% reduction is reached - from peak weekday demand of ~1,450 spaces and up to ~1,900 spaces during special events (for full build out)	Initial estimates from 2016-2017 retail and events parking data: an average of 5.08 persons per vehicle for events and concerts. Plans for additional data collection.
Other: Carpooling/Vanpooling		Increase by 5% annually until overall 20% reduction in parking is reached	Initial estimate from 2017 concert survey data: 63.4%. Plans for additional data collection.
Other: Intercity Bus or Rail		No target given	Initial estimate from 2017 concert survey data: 0.3%. Plans for add'l data collection.

TDM Strategies

Note strategies identified in original TDM Plan and current status.

Strategy	***Status***
Coordinate & promote rideshare (carpooling)	Currently promoted. Exploring possibilities for additional coordination, e.g. using groupcarpool.com for events.
Coordinate & promote local and intercity public transportation (METRO, AMTRAK, Concord Coach, shuttle from Mercy Hospital)	Currently promoted. Concert shuttle from Mercy hospital reactivated. Plans for additional cross-promotion and collaboration with local and intercity transit; e.g., AMTRAK promotions and continuing exploration of METRO transit link between Old Port and Thompson's Point.
Promote walking and bicycling	Currently promote bicycle and pedestrian access. Growing sidewalk and bicycle parking infrastructure on site. Cross-promotion with trails work at and near site. Improvements to nearby Neighborhood Byway network expected in Summer 2018.
Strategic parking management	Initial parking constructed and now charging for parking. Under management by Unified Parking Partners and enforcement by Park Select. Collecting data and in communication for best event management practices.
Event scheduling and management	Full implementation of Event Management Plan and ongoing updates based on management experience. Weekly event scheduling check-in with tenants.
Transit-Oriented Development TIF	TIF property tax revenue from the development is accumulating for transit improvements. City working on plan to use funding for local transit linkage between the Jetport, PTC/TP, and the Old Port via the Congress Street corridor.

A. Development Program and Commitment to TDM

As with most large build-out projects and in part due to the effects of the Great Recession, along with its deliberate approach to adaptive development, Thompson's Point has evolved more slowly – and in slightly different ways than perhaps originally expected – than the provisions laid out in its first Transportation Demand Management (TDM) Plan. That plan was written in 2011, well before even the City's implementation of the Master Development Plan permitting methodology. The development team's experience with TDM has also grown over time from what was first proposed on paper to what has worked so far on the ground. This understanding helps to inform Thompson's Point's way forward for desired next steps for its TDM program.

The Thompson's Point development team deeply understands the value of the site's existing and future Transportation Demand Management efforts. The team also conceives of alternate transportation – walking, bicycling, carpooling and taking transit - as an extension of the Thompson's Point experience. For example, sharing a ride with friends (or strangers) to a summer concert builds community and anticipation of the event even before the group arrives on site. As the developers have stated, it is in their best interest to get it right, in order to grow as a multi-faceted destination and facilitate the ease of travel for tenants, visitors, neighbors and commuters.

As such, Forefront Partners is excited to have engaged a new General Manager and TDM Coordinator, Chelsea O'Reilly. Chelsea brings event TDM experience from her former work with the Bowery Presents and their various venues around the country, including more specifically the State Theater and the Thompson's Point Summer Concert Series. She is a good fit for managing the TDM team and the day-to-day operations of the site's TDM program.

Additional team members include staff from Soli DG, with whom Forefront Partners contracted in the summer of 2017 to help assess the TDM program. The firm assists with

Quick overview of TP's TDM planning & reporting history:

- *September 2011:* The Transportation Demand Management Plan for the Forefront at Thompson's Point was first approved
- *February 2013:* The plan was re-approved in February 2013 with Master Development Plan approval
- *November 2015:* Forefront Partners presented an Addendum to the Transportation Demand Management Plan which was approved in conjunction with the combined Brick North and Brick South Level III site plan approval (and concomitant subdivision/master plan re-approval) in early 2016
- *September 2017:* Forefront Partners provided an Interim Update to the TDM Plan as part of the Children's Museum site approval process
- *January 2018:* Forefront Partners provides this TDM Report and next steps for updating the Thompson's Point TDM Plan and future data collection

The Thompson's Point TDM coordinator is responsible for:

- Encouraging greater use of preferred modes – walking, bicycling, carpooling and taking bus or rail transit - through central online platform, social media, any on-site kiosks and site-wide promotion
- Working with Unified Parking Partners to ensure strategic parking management and monitor parking usage
- Overseeing event scheduling
- Coordinating site and tenant TDM policies and incentives
- Overseeing/conducting surveying of tenant employees and visitors
- Overseeing any trip counts
- Filing annual reports and updating the plan with the City
- Exploration of additional TDM strategies

operational and logistics management for the Maine Port Authority and provides creative and forward-thinking consulting on complex transportation infrastructures and the operational, communications, and marketing systems required to grow and manage them sustainably. DG staff have demonstrated this creativity and strategic thinking in the group's initial months of TDM program evaluation work.

In addition, the Thompson's Point TDM team has also contracted recently on this report and the updating of its TDM plan and data collection process with local TDM specialist firm, Cushman Transportation Consulting, LLC (CTC). The developers plan to continue to engage CTC on an ongoing basis to help refine overall TDM objectives and assist in creating and implementing specific TDM initiatives and the metrics and data collection tools to assess their efficacy. The Thompson's Point development team's TDM experience and project history, together with Soli DG's familiarity with Portland and regional transit infrastructures, transportation analysis, and marketing and communications, along with CTC's understanding of the local and national TDM landscape, make for an exceptional partnership. The developers believe the combined team is developing the organic, authentic, flexible, progressive and interdisciplinary TDM planning and ongoing assessment that the Forefront project requires, and which a single individual or firm would have difficulty providing.

Together, the group has begun to explore more broadly the TDM programs at evolving, multi-faceted development sites similar to Thompson's Point (e.g. in California and Northern Virginia) – including how they handle their trip and reduction targets. The team also plans to consult the upcoming release of an Urban Land Institute resource reviewing latest large site TDM program implementation and monitoring methods.

The intention is to deliver, by March 31, 2018, an updated best-practice TDM plan for Thompson's Point moving forward.

Updated Thompson's Point TDM Plan (to be delivered 3/31/18) will further clarify:

- **Implementation:**
  - operations
  - trip and parking reduction incentives and strategies
  - outreach and marketing plan – with alternate "micro TDM" proposal
  - infrastructure development
- **Monitoring & Reporting:**
  - Process for quantitative and qualitative data collection and analysis; example items likely to include:
    - Updated trip and parking reduction targets
    - Specifics on peak trip and parking demand counts
    - Specifics for assessing modal splits for non-drive alone trips – and whether modal split targets make sense vs. pure reduction on SOV trips
    - Revamped employee and visitor survey tools and methodologies
    - Best time(s) of year and intervals for data collection (e.g., annual counts between summer and fall and surveying every two years)
    - Specific goals for data analysis
    - Other best practices
  - Reporting – likely to include clarifications for:
    - Annual/biennial report with data from counts and any surveying, details of TDM activities conducted, tenant snapshots, changes to the TDM plan during the year, and plans for the following year.

Furthermore, as the TDM team has worked to flesh out initial "micro TDM" possibilities for individual leaseholders, questions have arisen regarding whether this model is truly the best fit for the site. This is in part because TDM coordination seems to work best – and serve tenants best - when it is centralized at the level of the site's overseeing management. Drafting narrative micro TDM plans for every tenant also seems to be repetitive, with little payoff in terms of providing creative solutions that don't already exist within the evolving macro TDM plan.

Tenant TDM Snapshots & Marketing for Priority Groups – to be delivered 6/30/18

- Individual tenant TDM snapshots (see Appendix A for example)
- Specific marketing plans to address the needs of different employee and visitor types

The "macro vs. micro" framework was developed by the Thompson's Point team initially in 2011, in advance of having actual tenants and operational partners engaged in real time business activities. While it functions well as a theoretical structure for organizing information, it appears to have shortcomings when it comes time to translate strategic principles into operational models that actual tenants, visitors, and guests can embrace and consider authentic and genuine. Without that authenticity and the ability to engage site users at that more immanent level and work with them to develop shared goals and meaningful performance measures, there is less chance of meeting TDM targets. What has actually unfolded over the past couple of years of operations at Thompson's Point represents the beginnings of a highly successful TDM program that has real buy-in from a diverse mix of users, and is a fertile ground for future innovation and exemplary performance.

Thus, what seems most useful to address tenants' TDM needs and meet Thompson's Point's larger TDM goals is to:

1. Provide the city with *individual tenant TDM snapshots* during the regular TDM reporting process. These snapshots will include specifics on tenant activities, employees, visitors, transportation mode share, TDM initiatives and other pertinent information. *An example of a tenant snapshot using plans for Hotel Portland can be found in Appendix A.*
2. Develop *marketing and outreach plans that specifically address* the transportation behavior and *needs of different employee and visitor types, also known as "Priority Groups*." These will incorporated in the site's updated TDM Plan. The site's marketing quite often piggybacks on the various users' and tenants' own marketing efforts. The TDM team seeks to leverage those marketing synchronicities, as tenants are best equipped to reach their patrons, employees, and visitors in a genuine fashion.

The TDM team proposes these pieces as the "micro TDM" alternative. It is the team's view these will provide much more succinct and meaningful targets and cogent descriptions of proposed initiatives than the micro TDM plans first conceived in 2011, in the absence of the diverse user group that is in place today. *The developers welcome city staff's feedback on this methodology. The TDM team plans to deliver these individual tenant snapshots and priority group marketing plans by June 30, 2018 (with the exception of the snapshot for the Hotel Portland, which is attached hereto).*

The TDM team then expects to collect the next round of data and conduct surveys under the new TDM plan between June and December 2018. This will likely be based on seasonal use of the site, e.g., summer concert data collection and then more regular daytime use in fall and early winter, that still includes events at Brick South and tenant activities in Brick North.

New Data Collection (June-Dec. 2018) and Next Annual Report (Jan. 2019)

- Updated data collection and surveying to be conducted between June-December 2018
- Submission of next annual report under the revised TDM plan in January 2019

In January 2019, the Thompson's Point team plans to produce its next annual report under the revised TDM plan, using the updated targets and data collection process.

B. Property Description & Transportation Context

Within the context of Portland's current growth and after decades of Thompson's Point being fairly underutilized as an industrial site, Forefront Partners is ever mindful of its responsibility to help form a coherent new neighborhood, with a vibrant mix of land uses that help the area thrive for the long term.

Photo above: Pre-development photo of TP's regional context: http://www.portlandmaine.gov/PhotoGallery/17/_mg_6442%20-%20thompson%20point,%20fore%20river,%20portland,%20maine.jpg

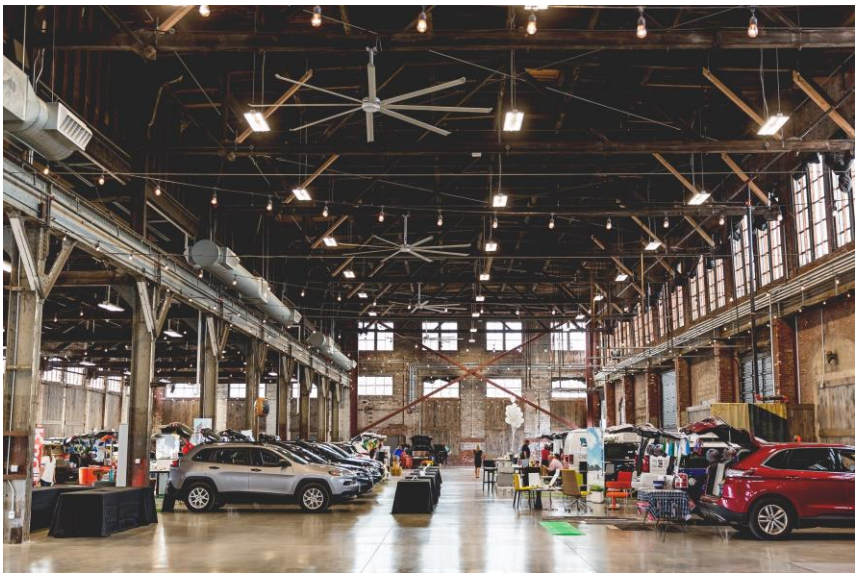
The development team is also conscious of Thompson's Point's unique location in the City of Portland and in the region - just off the Portland Peninsula and near the Libbytown neighborhood, plus served by intercity and local public transportation, local walking and bicycling networks, and Interstate 295. In addition, the site is highly visible to people traveling through the region by bus, train and via the highway. The peninsular nature and geographic boundaries of the point that make the site so interesting also encourage the use of alternate transportation, given that there is only one route for automobile traffic onto and off of the site.

As a multi-use site with cultural amenities, such as Circus Maine and the Cryptozoology Museum, and varied events, such as Bissell Brothers' beer releases, Cellar Door wine and food pairings, and the State Theatre concert series, Thompson's Point is fortunate to draw both visitors who are local and also those from across Maine and New England and beyond.

In addition, the developers have worked hard to restore specific buildings and structures to connect the site with its shipping and rail roots. Examples include refurbishing and modernizing Brick North and Brick South, which were used for train repair and storage. There is also the renovation of the former Union Station rail platform shed, which now serves as an outdoor venue for concerts, festivals, weddings, and other events, as well a seasonal ice skating rink from November through March. Earlier in Portland's history, Thompson's Point served boat and barge traffic on the Fore River and the Cumberland and Oxford Canal. The plan to restore water access to the site is another exciting part of its transportation context.

C. Recent TDM Data Collection, Surveying & Assessment Work

The Thompson's Point TDM team has spent this past fall cumulating qualitative and quantitative data gathered over the past two years to self-evaluate, inform the city of its TDM program and plan for next steps. This has included working with Unified Parking Partners to gather parking numbers for different occasions in 2016 and 2017. Forefront Partners has also worked with its various partners, tenants and vendors to determine the number of attendees at events at the multiple venues on the point during these same two years, including the summer concert series and events at the newly-opened Brick South building. The data show an average of 5.08 patrons per parked vehicle for events and concerts.



Recent Surveying & Data Collection

- Consolidating parking and event attendee data - average of 5.08 patrons per parked vehicle for retail customers and events goers
- Interviews with partners and tenants
- Survey data from event attendees
    - SOV: 4.7% of respondents
    - Carpool: 63%
    - Ridehailing (e.g. Uber): 19.5%
    - Walk: 8.7%
    - Bicycle: 2.8%
    - Local Transit: .7%
    - Intercity Bus/Rail: .3%
- Unstructured conversations with city officials
- Unstructured conversations with community leaders and members
- Plans for revising data collection and surveying process

The State Theatre conducted an online survey program with Thompson's Point concert patrons from this past summer of 2017, using the survey tool developed with the City for the 2015 Addendum to the TDM Plan (attached as Appendix B). Six hundred eighty-three attendees responded, offering a snapshot of event goers' travel behavior and experiences. Survey participants included people coming not only from Maine but also from around New England and the Maritimes - as well as from places as far away as New Jersey and Illinois. Only 4.7% of those completing the survey drove alone to the concert. The portrait of how the rest of the attendees reached the concert included carpooling (63%), ridehailing (19.5% - via Uber, Lyft, taxi, hotel shuttle, or being dropped off by private vehicle), walking from home or a friend's house or a nearby hotel (8.7%), bicycling (2.8%), taking METRO (0.7%) and using intercity bus or rail (0.3%). Fifteen percent of survey participants had used METRO service at some point and 45% said they would take METRO to a concert at Thompson's Point – this obviously only applied to those attendees who were from Greater Portland.

In addition to the data collection and surveying this fall, the TDM team has conducted individual interviews with its tenants and partners to identify how employees and visitors access the point and to document tenants' TDM interests, needs and concerns. The minutes of each interview can be found in Appendix C. A number of common threads emerged from these interviews that have helped greatly to hone Thompson's Points objectives and plans for next steps in its TDM work. Examples include:

- Continued interest in the need for stronger public transportation connections between the Old Port/Waterfront to help cruise ship and hotel visitors access the site - and conversely, in the near future, for Thompson's Point hotel guests to reach the Old Port.

- Encouraging dropoff and pickup for ridehailing trips (Uber, Lyft, taxi, etc.***)*** at the end of Sewall Street - as well as at an on-site taxi stand.
- Improving visitor wayfinding and multi-modal information to access the site - via a central online resource, local tourist maps, GPS, and physical signage.
- Need for TDM resources for employees as the employee pool expands on the site.

The developers are excited to use this feedback and guidance to create expanded tools and resources to address these needs.

As mentioned in Section A and planned for the updated TDM Plan to be delivered in March 2018, the team is also looking at TDM programs and data collection at other multi-use development sites to make recommendations for the best practice data analysis and reporting process going forward.

D. Current Thompson's Point TDM Marketing, Strategies and Best Practices

As stated above, the Thompson's Point TDM program has evolved over the past several years of development and the team's TDM practice has grown greatly through its on-the-ground experience. The following narrative describes the current strategies, incentives and disincentives the group actively utilizes to reduce drive alone trips and parking demand. The team is also excited to be exploring additional strategies for the updated TDM Plan.

Strategic Parking Management

The Thompson's Point development team understands that fully managed and shared parking will produce the strongest results for reducing single-occupancy vehicle trips to the site. With the increase in development activity and the completion of initial parking infrastructure (217 paved spaces, 516 +/- unpaved, and 300 offsite paved) Thompson's Point has recently made the important shift to paid parking. This is managed by Unified Parking Partners and under the enforcement efforts of Park Select, whose employees are in regular communication with the developers and the TDM team, including for events.

Parking

- Initial parking constructed: 217 paved spaces, 516 unpaved
- Fully managed (Unified Parking Partners) and shared – now charging for parking on site
- Agreement with Mercy on the Fore to use an additional 300 spaces for overflow parking for events

Paid parking has been part of the Thompson's Point plan since the outset, but for the first few years of the development - other than large events such as concerts where patrons were charged for on-site parking - there was no fee associated with daily parking on-site. Providing virtually unlimited free parking serves as a *de facto* disincentive to effectively encourage the regular use of alternate modes of travel. The move to paid parking helps encourage tenants, employees, patrons and guests to see

parking as a finite resource with an associated cost and improves openness to looking at different transportation practices across the board.

Thompson's Point also has an ongoing agreement with Mercy Hospital to utilize the approximately 300 spaces in its Fore River lot for overflow parking for events. This enables Thompson's Point's use of the lot on evenings and weekends, subject to providing prior notice. Staffing and security is at Thompson's Point's sole cost and the patrons are charged a lower fee than on the point. This fee covers the cost of operation with any surplus going to a charity. Forefront does not profit from this parking.

Rideshare

While the TDM team actively promotes carpooling to Thompson's Point, the very nature of many of the tenant activities – e.g., food and beverage establishments, event purveyors and cultural attractions like the skating rink and Cryptozoology Museum – tend to attract people coming in groups. Couples, friend groups and families most often arrive in passenger vehicles carrying more than one person. Thus, carpooling is the most common preferred mode of transportation that visitors use to access the site.

Rideshare

- Active promotion of carpooling for visitors
- Most common alternate mode of transportation to site

Promotion of Local and Intercity Public Transportation

The Thompson's Point development team is very cognizant of its role as a transit-oriented development (TOD) and its status as a TOD tax increment financing district within the City of Portland. Having METRO, Concord Coach and Amtrak service at the point's front door continues to be a tremendous opportunity for the site. Moreover, as Thompson's Point has developed over the past two years, the site's offerings have become an amenity for these transportation providers as well. In 2016 and 2017 the TDM team conducted outreach to enhance and expand collaboration with these key partners. This included:

Transit

- VIP express lane for transit riders to enter outdoor concert venue
- Active promotion of METRO, Concord Coach and Amtrak for visitors
- Active promotion of METRO service for employees

- For all three providers:
    - Creating an "Express" lane at the outdoor concert venue to allow METRO, Concord Coach and Amtrak riders (as well as Bicycle Benefits patrons) to bypass the long ticket line and enter the venue immediately when doors open;

- Active promotion of METRO, Concord Coach and Amtrak on the summer concerts website;
- Facilitating meetings and ongoing conversations between tenants and event partners regarding how METRO, Concord Coach and Amtrak can play a viable role in getting their patrons to and from Thompson's Point - both for events (concerts, Brick South events such as the Flower Show, etc.) and also for ongoing business activities (Circus Maine cabarets and classes, Bissell Brothers tasting room visits and beer launches, Cellardoor events, and International Cryptozoology Museum visits)

- Exploring "sponsorship" collaborations, such as the Sunaana music festival (see Amtrak below) and other reciprocal marketing possibilities to co-promote events on the point and access to them via transit
- Inclusion and participation of all providers in public meetings and other planning for the next steps of the site's development (e.g., Children's Museum and hotel).

- *METRO:*
  - Facilitating meetings and ongoing conversations between tenants and METRO representatives to explore ways that METRO and its expanded routes can be a viable transit option for employees and visitors;
  - METRO inclusion of Thompson's Point in its transit guide;
  - Continued discussions regarding the hoped for implementation of the "hub link" study and connecting the Portland Transportation Center with the Old Port/Waterfront.

- *Amtrak Downeaster/Northern New England Passenger Rail Authority (NNEPRA):*
    - Forefront Partners, in concert with event partners, developed the "Sunaana Express". The groups worked with NNEPRA to reserve a separate car from Boston's North Station to Portland on the eve of the Sunaana festival (March 4, 2017). The developers also partnered with Allagash Brewing Co. and local folk rock musician Conor Garvey to create a festival experience on the train, as patrons traveled to Bissell Brothers for the Friday night launch event (with Icelandic band Mammut playing at the Brewery). This initiative will expand for the 2018 Sunaana event.
    - Similarly, Thompson's Point has developed, and continues to explore ways to grow and innovate, other cross promotions like the Maine Brewers Guild Winter Session this month (photo at right)

    - Thompson's Point and the Rink at Thompson's Point worked with NNEPRA to cross-promote the rink and NNEPRA's "Ride With Santa" event in early December, and to explore ways to utilize the Downeaster for more regular transit to and from Thompson's Point (say, residents in Biddeford/Saco coming to the rink, or to one of the Brick North businesses, for instance).
    - Providing hosting space for the Downeaster station meeting at Brick South.

Walking & Bicycling

Thompson's Point is located near a growing pedestrian and bicycle network, including the Fore River Parkway multi-use path, Congress Street bike lanes, the Fore River Trail, neighborhood sidewalks and the expansion of the Portland Neighborhood Byway to connect the Portland Transportation Center with Deering Center. Forefront Partners' relationship with Portland Trails has been very

Walking & Bicycling

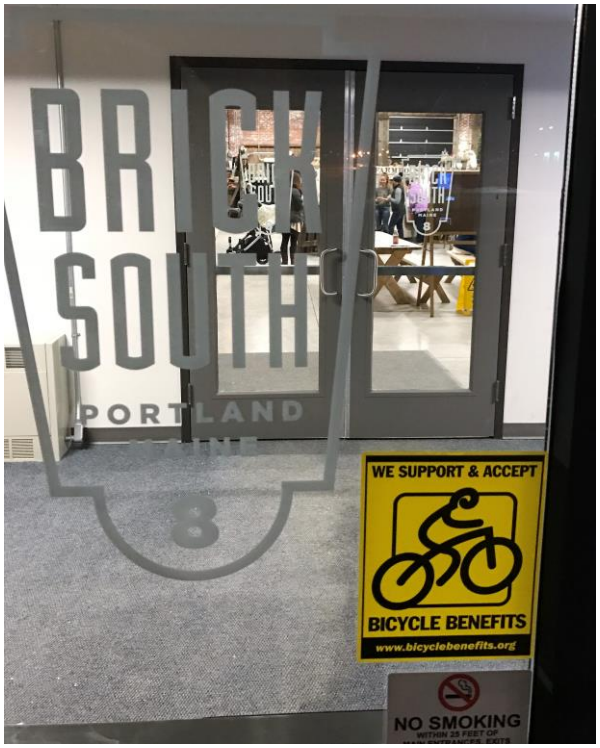
- On-site bicycle parking and additional seasonal bike racks
- VIP express lane for Bicycle Benefits riders to enter outdoor concert venue
- Active promotion of walking and bicycling for visitors

fruitful – both in terms of increasing trail connections to and near the point and also tapping into the organization's mission to promote active transportation and community engagement. Portland Trails' encouragement of walking and bicycling to Thompson's Point has been a major force in the development's ability to increase walk and bike mode share and reduce drive alone trips.

Thompson's Point and Portland Trails have partnered on various creative placemaking activities, such as the inclusion of the "Parklet" area at the end of Thompson's Point, which has become a popular spot for residents, tenants, and event visitors alike.

The TDM team has sought to encourage the use of this walking and bicycling infrastructure in the following ways:

- Collaborative sponsorship with Cyclemania to provide over 70 bicycle racks for summer concerts, and co-promotional partnership with Portland Trails to help promote the use of these racks for concert attendees;
- Creating a "METRO Express" lane at our outdoor concert venue to allow Bicycle Benefits patrons (as well as METRO, Concord Coach and Amtrak riders) to bypass the long ticket line and get into the venue immediately when doors open;
- Active promotion of walking and bicycling on the summer concerts website;
- Facilitating conversations with tenants to encourage use of bicycle racks for their employees and guests;
- Bissell Brothers and Libbytown Neighborhood Association partnership on Trail Cleanup Days
- Featured destination and Thompson's Point trail mapping on the Portland Trails web site.
- Commitment to Portland Trails collaboration through dedication of easement and license agreements
- Promotion of Portland Trails during events at the pocket park

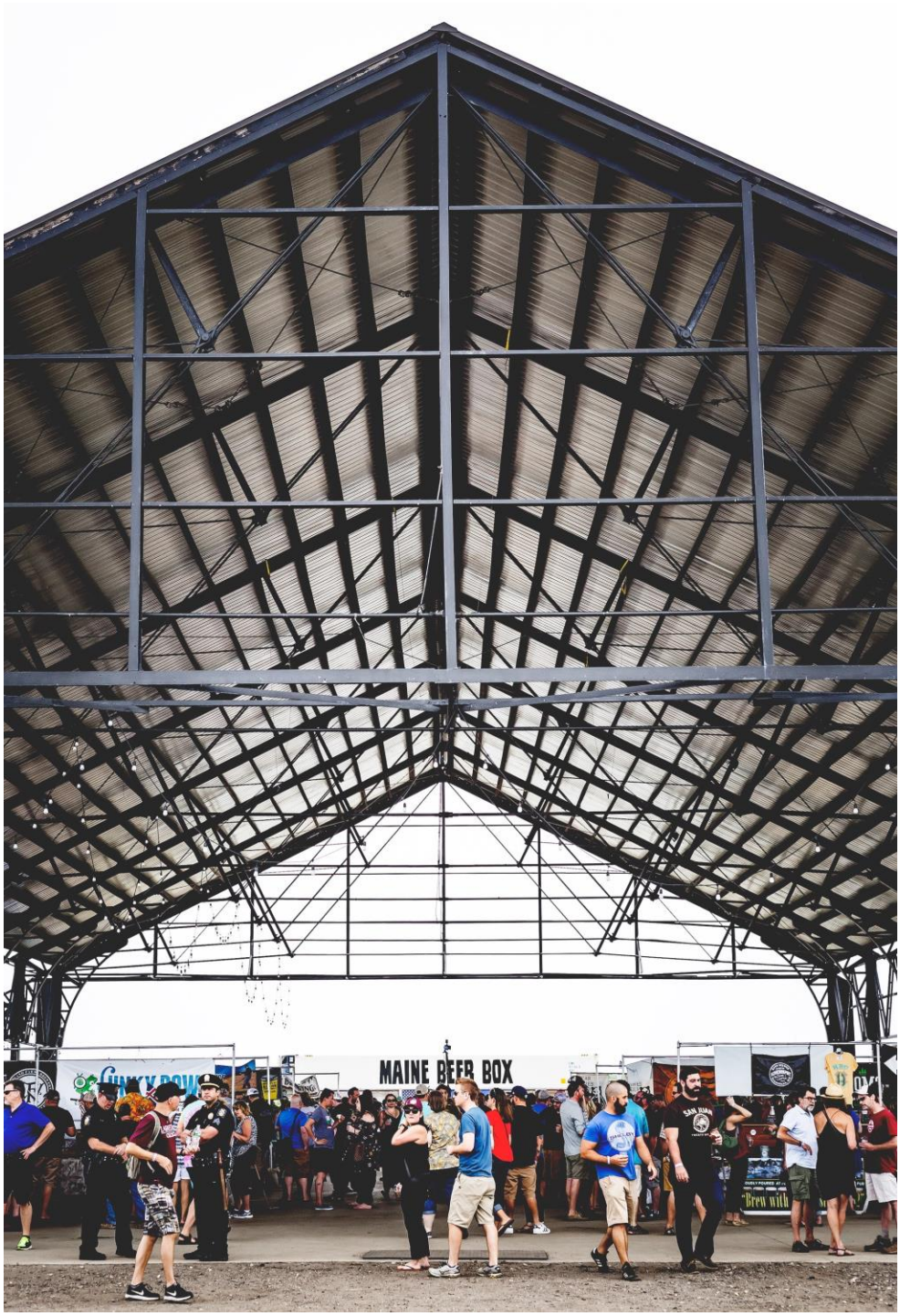


- Co-promotion in July 2017, with Portland Trails, the Libbytown Neighborhood Association, Brick South, and the State Theatre/Summer Concert Series of a "meet and greet" and grove tour with artist Sam Van Aken, creator of the "Tree of 40 Fruit" grove of hybrid heirloom stonefruit trees at Thompson's Point; combined with Brick South beer hall and Libbytown Neighborhood Association concert ticket giveaway.

Event Management

The TDM team and its event partners have fully implemented the site's 2014 Event Management Plan and an extensively expanded plan (attached as Appendix D). The group checks in with all tenants on a weekly basis to manage the site's event schedule. After three full summer concerts seasons and ten months of Brick South rentals, the TDM team and Unified Parking Partners have a wealth of experience in how best to facilitate pedestrian, bicycle and vehicular traffic and parking on the site.

Following are two case studies of proactive event management from this past year, showing the type of active learning the TDM team seeks to practice in order to learn lessons and improve performance as Thompson's Point grows.



TDM Team Report: A Great Convergence of Events

Saturday, August 5, 2017: *Thompson's Point held one of our larger summer concerts, the Alabama Shakes, with attendance over 7,300 people, along with a 300+ person wedding in Brick South. While we'd held many large concerts and multiple Brick South events prior to this date, it was the first time we'd had both overlapping on the same day. Additionally, as with most summer concert Saturdays, things were busy at Brick North (Bissell Brothers, Cellardoor, Circus Maine).*

It represented the first real test of our capacity to execute our Event Management Plan with the combination of all of these uses on the same day and same time, while also preserving parking turnover for Brick North tenant visitors.

One of our team members spent the afternoon and evening walking the site and inspecting the condition of entering traffic, parking availability, and pedestrian flow. At no point was the entering traffic congested at either the Fore River Parkway or on either side of the rail crossing, nor was there ever a shortage of Brick North parking. Inspection was made at 10 minute intervals, and at each observation, there were at least three and often up to ten parking spaces available on Lot 1 (the lot immediately to the south of Brick North's primary tenant storefronts) and Lot 2 (the lot immediately to the west of the Circus Maine space and outdoor plaza).

The one observation that staff made that has resulted in an operational change is that, given the high volume of pedestrian traffic on the sidewalk just south of the rail crossing prior to the beginning of the concert, it was often difficult for parking staff to direct cars into Lots 4-5 (the two lots on the westerly side of the site, proximate to the Portland Water District pump station area) as the entrance to those lots was often blocked by the flow of pedestrians. For this reason, we have modified the Event Management Plan to direct parking staff to station an attendant at the entrance to these lots to pause pedestrians temporarily to permit cars to turn in (the inverse is already practiced during concert exit, where staff is stationed to direct vehicles to ensure pedestrian safety.

Otherwise, this represented the first instance where all of the various event types (and in the case of the concert, one of the higher volume attendances) were successfully balanced and the Event Management Plan (as amended) was properly executed. And even then, we found room for improvement!

Photo above: the wedding party rocks out in the VIP area.

The Maine FLOWER SHOW

TDM Team Report: Lessons from the Early Birds – and they're all early birds

Wednesday, March 29 – Sunday, April 2, 2017: *Brick South had its second major event post-renovation, the Maine Landscape Nursery Association's Flower Show, which is a repeat annual event. This was, and remains, by far our highest attended event (topping 16,000 visitors between the gala on March 29 and the four event days—March 30 through April 2, 2017—and quite likely would have topped 20,000 but for the winter snow storm on Saturday, April 1).*

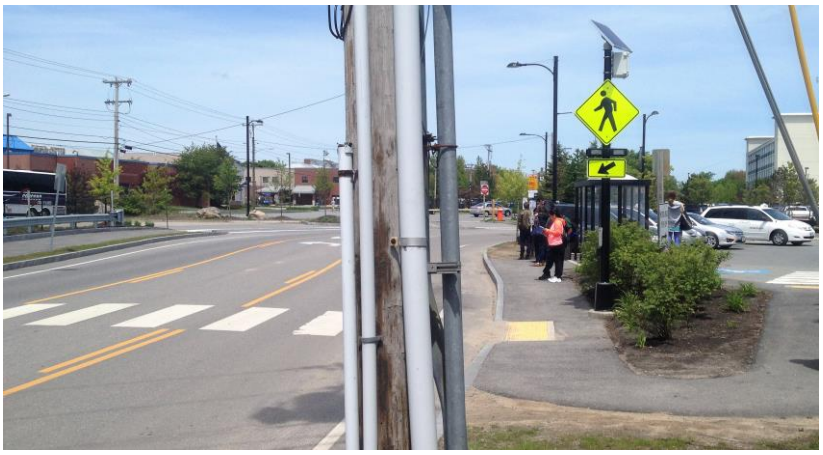
Overall this event was a significant success in terms of following the Event Management Plan over the course of a several day event with peaks and troughs in attendance.

The one significant failure came on the first morning of the event, Thursday, March 30, when our team failed to anticipate the number of visitors who decided to arrive 20-30 minutes in advance of the venue opening to the public at 9:00am. Our previous large events had largely occurred on evenings or weekends, and would often see visitors arriving over the course of one or more hours prior to the event start time. In this case, though we had staff stationed at the right locations and prepared for the event's start time, our team and the event's organizers were simply caught by surprise by the number of attendees who arrived all at once in order to be the first ones inside the venue. Since this event, we've had other large attendance trade shows with a similar tendency to foster a desire to be "first through the door," and have staffed accordingly, with the result that we've been able to avoid this backup of traffic entering the site. On that particular morning, because we were caught off guard, we ended up with significant delays entering the site until approximately 12:00pm when we saw the first wave of visitors exit; from that point on, we avoided a repeat of this scenario, including the following morning, Friday, March 31, when an even greater number of attendees arrived for the 9:00am opening time.

For this reason, we've amended our Event Management Plan to provide for staffing in anticipation of the maximum number of attendees anticipated at any one time for a weekday trade show at least one hour prior to its opening. That is to say, rather than imagine that we'll see an event's average attendance on site at any one "turn" during that event and staffing for that, we plan that we'll see the total capacity for the event arrive at the same time at the opening of the event, staff for that, and then potentially release staff as the event unfolds over the course of the day.

E. Report on Project-Specific Infrastructure Improvements

General Contribution to Area Transportation Improvements



The Thompson's Point project has produced and leveraged a number of traffic calming and pedestrian infrastructure improvements in the Libbytown and the Portland Transportation Center area. These were made possible through the developers' private local match dollars and the Economic Development Administration and Federal Highway Administration grant package for Forefront Partners – as well as through the project's partnership with MaineDOT, the City of Portland, the Portland Area Comprehensive Transportation System and NNEPRA.

Sidewalk & Crossing Improvements

The development team has built approximately 50% of the Thompson's Point circular road, with accompanying sidewalks, crosswalks and signage. This ties the site in further with the original pedestrian amenities and traffic calming improvements mentioned above. Another 25% of the circular road and pedestrian accommodations will be built with the addition of the Children's Museum and the hotel. The TDM team is also looking forward to the City's Summer 2018 construction of the expanded Portland Neighborhood Byway network, with wayfinding and crossing improvements connecting Thompson's Point and the Portland Transportation Center to Deering Center.

Bicycle Storage and Shower Facilities

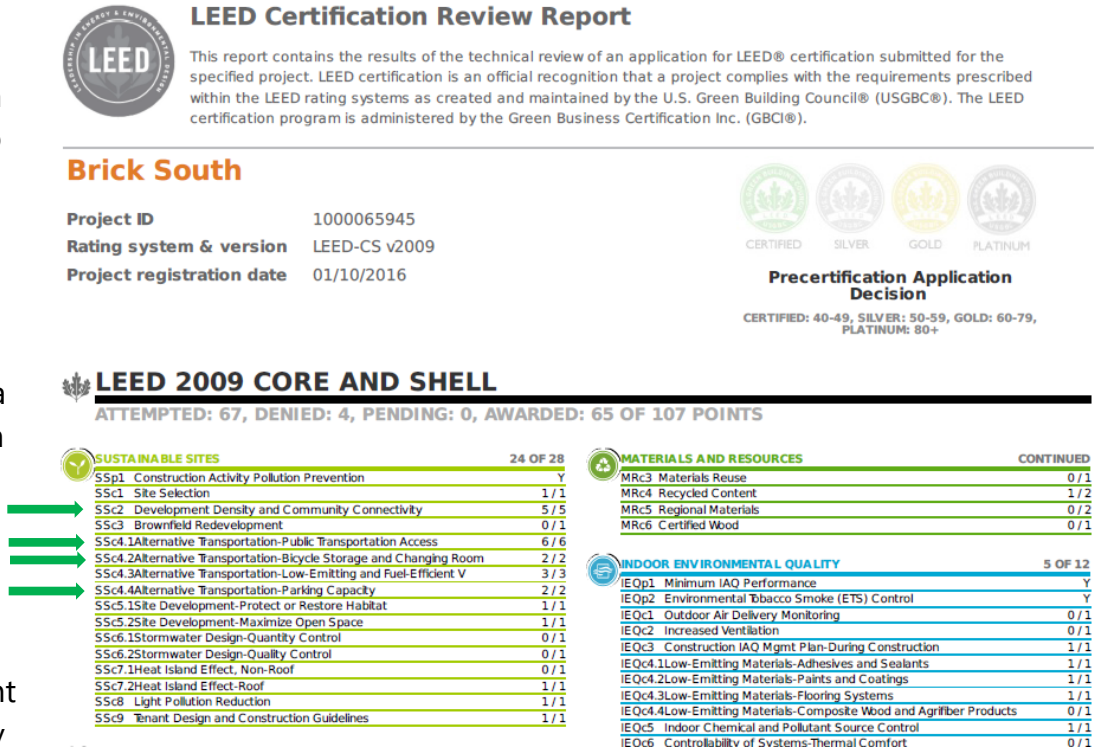
Under each building's LEED certification, Thompson's Point has met or exceeded the provisions for bicycle storage and shower/changing room facilities (this includes shower and changing rooms in Brick North and Brick South). The site currently has 8 fixed bike parking lollipop racks (2 spaces per rack) and two moveable bike corrals (18 spaces per rack) currently parked in front of Brick South – thus providing a total of 52 bicycle parking spaces.

Proposed METRO Transit Stop on Thompson's Point

The developers are working with METRO to coordinate the optimal location of a new METRO transit stop and shelter on the south end of the point. They anticipate it being either proximate to the hotel and the Children's Museum of Maine entrance on the south side of the pedestrian alley, or in front of Brick South. The TDM team's understanding is that this would be an added stop on the existing Route 1.

LEED Certification with Associated Transportation Credits

Thompson's Point has pursued a minimum of LEED Silver certification for all of its projects (to date, Brick North, Brick South, and the Hotel Portland project – see example certification review of Brick South below), and has taken a campus-wide approach to sustainability and LEED certification efforts. The buildings have all been awarded full point scoring for support of development density and community connectivity, not exceeding any minimum parking requirements, and providing public transit access and bicycle storage.



LEED Certification Review Report

This report contains the results of the technical review of an application for LEED® certification submitted for the specified project. LEED certification is an official recognition that a project complies with the requirements prescribed within the LEED rating systems as created and maintained by the U.S. Green Building Council® (USGBC®). The LEED certification program is administered by the Green Business Certification Inc. (GBCI®).

Brick South

Project ID	1000065945
Rating system & version	LEED-CS v2009
Project registration date	01/10/2016

CERTIFIED SILVER GOLD PLATINUM

Precertification Application Decision

CERTIFIED: 40-49, SILVER: 50-59, GOLD: 60-79, PLATINUM: 80+

LEED 2009 CORE AND SHELL

ATTEMPTED: 67, DENIED: 4, PENDING: 0, AWARDED: 65 OF 107 POINTS

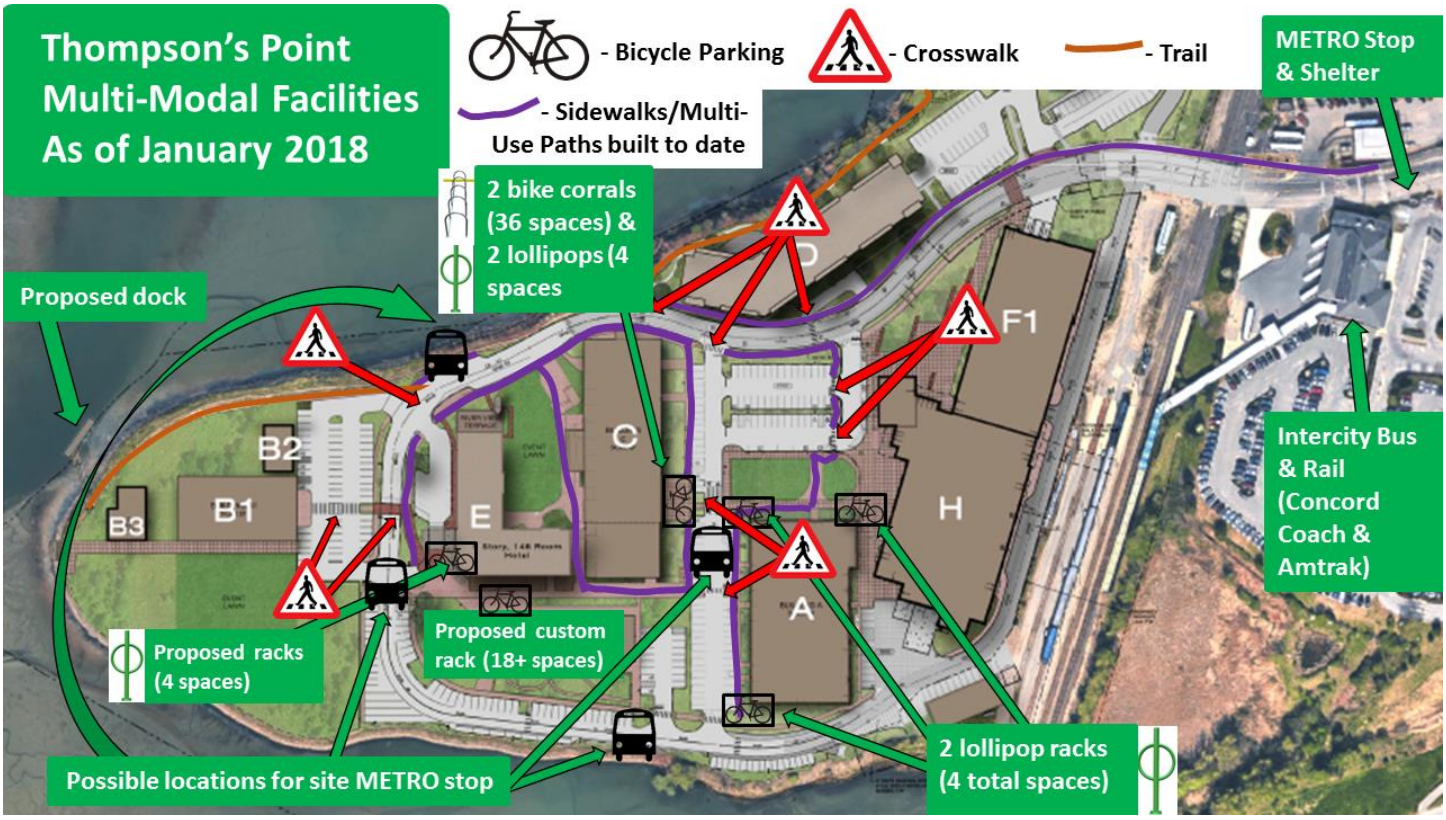
SUSTAINABLE SITES	24 OF 28
SSp1 Construction Activity Pollution Prevention	Y
SSc1 Site Selection	1 / 1
SSc2 Development Density and Community Connectivity	5 / 5
SSc3 Brownfield Redevelopment	0 / 1
SSc4.1Alternative Transportation-Public Transportation Access	6 / 6
SSc4.2Alternative Transportation-Bicycle Storage and Changing Room	2 / 2
SSc4.3Alternative Transportation-Low-Emitting and Fuel-Efficient V	3 / 3
SSc4.4Alternative Transportation-Parking Capacity	2 / 2
SSc5.1Site Development-Protect or Restore Habitat	1 / 1
SSc5.2Site Development-Maximize Open Space	1 / 1
SSc6.1Stormwater Design-Quantity Control	0 / 1
SSc6.2Stormwater Design-Quality Control	0 / 1
SSc7.1Heat Island Effect, Non-Roof	0 / 1
SSc7.2Heat Island Effect-Roof	1 / 1
SSc8 Light Pollution Reduction	1 / 1
SSc9 Tenant Design and Construction Guidelines	1 / 1

MATERIALS AND RESOURCES	CONTINUED
MRc3 Materials Reuse	0 / 1
MRc4 Recycled Content	1 / 2
MRc5 Regional Materials	0 / 2
MRc6 Certified Wood	0 / 1

INDOOR ENVIRONMENTAL QUALITY	5 OF 12
IEQp1 Minimum IAQ Performance	Y
IEQp2 Environmental Tobacco Smoke (ETS) Control	Y
IEQc1 Outdoor Air Delivery Monitoring	0 / 1
IEQc2 Increased Ventilation	0 / 1
IEQc3 Construction IAQ Mgmt Plan-During Construction	1 / 1
IEQc4.1Low-Emitting Materials-Adhesives and Sealants	1 / 1
IEQc4.2Low-Emitting Materials-Paints and Coatings	1 / 1
IEQc4.3Low-Emitting Materials-Flooring Systems	1 / 1
IEQc4.4Low-Emitting Materials-Composite Wood and Agrifiber Products	0 / 1
IEQc5 Indoor Chemical and Pollutant Source Control	1 / 1
IEQc6 Controllability of Systems-Thermal Comfort	0 / 1

Proposed Water Access to Site

As mentioned in section B and as shown in the image at right, during the buildout of the hotel and related infrastructure the development team plans to construct a seasonal dock at the southwestern edge of the point. The dock and float would connect to the Fore River channel. Thompson's Point will manage the dock and access to it, which will provide for water taxi and water shuttle service to the Old Port and Casco Bay, as well as providing for the launch of kayaks, canoes, paddleboards, and related programming.



The Thompson's Point development team is proud of the TDM infrastructure, programmatic and assessment work of the work of the past two years, feeling it has met well the spirit and intent of what was promised in the 2015 Addendum to the TDM Plan. In addition, this sense of accomplishment also comes from Forefront Partners' extensive efforts to grow its TDM knowledge base, enhance its methodologies, and add capacity and expertise through additional partners. Based on all that has been attained within this time frame, the group looks forward with great anticipation to the TDM execution and outcomes of the next two years.

F. Appendices

A. Hotel Portland Tenant Snapshot
B. Thompson's Point Concert Feedback Survey
C. Minutes from individual tenant interviews
D. Updated Event Management Plan – January 2018

Appendix A: Hotel Portland Tenant Snapshot

TENANT TDM SNAPSHOT

Company Information

Company Name: Forefront Hoteliers, LLC

Website: www.hotelportland.com

TDM Contact: Shari Young

Ph: 603.559.2606

Email: shari@northernhospitality.com

Business profile and additional comments: Hotel Portland is a 148 room full serve hotel, part of the Tribute by Marriott portfolio.

Sq. ft.: 90,000

# of emplys: 20+/-

Estimated customer volumes:

	U 50	50-200	200-500	500+
Daily:		☑		
Special events:		☑		

Employee Focused TDM Information

Modal Split
Employee Commute Methods

Transportation Mode

				OTHER / COMMENTS
SOV	☑ 45	PUBLIC	☑ 5	Estimate based on other hotels under management.
CARPOOL	☑ 10	BIKE	☑ 5	
TAXI (UBER, LYFT)	☑ 30	FOOT	☑ 5	

Employee Focused TDM Initiatives

		% ADOPTION
Initiative 1:	METRO ride to work (target)	10
Initiative 2:	Bike to work	2
Initiative 3:	Carpool	10

DETAILED DESCRIPTIONS ON PAGE 2

Customer Focused TDM Information

Modal Split
Customer Commute Methods

Transportation Mode

				OTHER / COMMENTS
SOV	☑ 20	PUBLIC	☑ 5	Estimates based on other hotel properties under management.
CARPOOL	☑ 65	BIKE		
TAXI (UBER, LYFT)	☑ 10	FOOT		

Customer Focused TDM Initiatives

		% ADOPTION
Initiative 1:	Promote use of Amtrak Downeaster	
Initiative 2:	Promote use of water taxi/shuttle to and	
Initiative 3:	Promote METRO use to and from	

DETAILED DESCRIPTIONS ON PAGE 2

Customer Information - Check all that apply

Age Groups

		OTHER / COMMENTS
U 21	☑ 10	Forecasted.
21 - 35	☑ 35	
36 - 59	☑ 35	
60 +	☑ 20	

Details

				OTHER / COMMENTS
FAMILIES	☑	SCHOOLS	☑	All apply as part of hotel guest profile.
LARGE GROUPS	☑	BUSINESSES	☑	
LOCAL	☑	NON-PROFITS	☑	
OUT OF STATE	☑	GOVERNMENT	☑	

You may fill out by using an updated version of Adobe Reader and saving a copy, or by printing and returning to the Thompson's Point TDM Coordinator.

TDM Coordinator - Chelsea O'Reilly
Thompson's Point. 501 Danforth Street. Portland, ME 04102
917.254.7587 chelsea@thompsonspointmaine.com

TENANT TDM SNAPSHOT

Employee Focused TDM Initiatives

Initiative 1:

Hotel Portland will actively encourage its employees who live on or near a transit line (METRO, South Portland, Shuttlebus/ZOOM, Lakes Region Explorer, etc.). We will pay half the cost of annual rider passes for our FTE employees, and/or offer other promotional benefits such as free concert tickets, raffling off vacation time to multi-modal employees, etc.

Initiative 2:

Hotel Portland will actively encourage bicycling/walking to work by offering a METRO or other transit pass to employees who bicycle to work at least 50% of the time, as well as offering one free annual bicycle maintenance visit to a bike shop, free concert tickets and other promotional items.

Initiative 3:

Hotel will participate in GoMaine efforts to encourage carpooling and provide free concert tickets and other offerings to employees who carpool at least 50% of the time.

Future initiatives, TDM developments

To be evaluated after the first year of occupancy.

Customer Focused TDM Initiatives

Initiative 1:

Hotel Portland will actively promote the use of the Amtrak Downeaster as a transit option to and from Thompson's Point. This will take the form of co-promotional and marketing efforts that will offer hotel stay packages that include Amtrak travel, both to get to and from Portland, as well as for day trips from Thompson's Point during the guests' stay.

Initiative 2:

Hotel Portland will work with Thompson's Point to establish and promote the use of water shuttle and water taxi conveyance from the to-be-built seasonal dock at Thompson's Point to and from the Old Port area. This, together with the encouragement of METRO (below), is part of a larger effort to demonstrate that a stay in Portland can be made efficient, enjoyable, and sustainable without requiring guests to have vehicles of their own (either to get to and from Hotel Portland, or to travel around Portland during their stay).

Initiative 3:

Hotel Portland, together with other Thompson's Point businesses, will actively promote the use of METRO (the regular service as well as the forthcoming direct service running from the Jetport/PTC/Old Port via Congress). This will include offering printable free METRO day passes pre-trip, with clear directions for taking the bus from the airport, as well as downtown. The hotel will also endeavor to headline info on METRO and other preferred modes of travel before offering visitor driving directions and parking information.

Future initiatives, TDM developments

To be assessed after the first full year of occupany.

You may fill out by using an updated version of Adobe Reader and saving a copy, or by printing and returning to the Thompson's Point TDM Coordinator.

TDM Coordinator - Chelsea O'Reilly
Thompson's Point. 501 Danforth Street. Portland, ME 04102
917.254.7587 chelsea@thompsonspointmaine.com

Appendix B:

Thompson's Point Concert Feedback Survey

REQUEST EDIT ACCESS

Thompson's Point Concert Feedback

Dear Thompson's Point concert-goer,

We would like to thank you for your patronage and hope you enjoyed your concert experience at Thompson's Point as much as we did!

As a transit oriented development, Thompson's Point (and our concert partners at the State Theatre) are eager to do what we can to encourage the use of alternative forms of transportation. While use of Single Occupant Vehicles (SOVs) continues to be necessary for many of our tenants, visitors, and guests, we are nevertheless interested to work together as a community of businesses to encourage other ways of getting people to and from the Point.

In order to help us better understand how people are getting to and from our concerts we have put together a brief survey. We would be very grateful if you would take a moment to fill out the survey and provide any feedback you may have. Thompson's Point has evolved by listening to the input of our patrons, and your feedback will help us make the Thompson's Point concert experience even better.

Thank you for your time and we look forward to hearing from you!

* Required

Email address *

Your email

Did you drive to the concert? *

- [ ] Yes
- [ ] No

If so, did you drive alone?

- [ ] Yes
- [ ] No

If not, how did you get to the concert?

Your answer

Would you consider carpooling? *

- [ ] Yes
- [ ] No

Have you used Uber / Lyft? *

- [ ] Yes
- [ ] No

Would you use Uber / Lyft to travel to a concert with others? *

- [ ] Yes
- [ ] No

Have you taken the METRO bus? *

- [ ] Yes
- [ ] No

Would you take the METRO bus to a concert at Thompson's Point? *

- [ ] Yes
- [ ] No

If not, why not, and what could get you to consider taking METRO?

Your answer

Where did you travel from and how long did it take you to get to the concert? *

Your answer

If you drove, would you ever consider riding a bicycle or walking to the concert? *

- [ ] Yes
- [ ] No

SUBMIT

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Google Forms

Appendix C: Tenant Interviews

SEMI-STRUCTURED TENANT INTERVIEW
Tenant: Big J's
Date: 11/22/17

TENANT SNAPSHOT:

- Business description: food service
- Customer Age: a diversity of ages, with the core customer base falling in the 25-50 range
- Customer Gender: undefined
- Customer Origination: a strong greater-Portland and Maine contingent, with the customer demographics that mimic those of larger format events held on Thompson's Point
- Observed transportation tendencies of customers and employees:
    - No data available
- **Primary Areas of TDM Interest:**
    - Lobby for improved public or mass transportation options that would bring customers and employees to and from the Point
    - Communicate to customers and employees simple parking policies and Alternatives
    - Improve public or mass transportation resources so that there are new customers arriving on it daily basis, and existing customers/employees have more options for accessing the Point

GUIDING QUESTIONS:

- How much of your business would you estimate comes from repeat customers (none, little, some, most, all), and would you be able to reasonably estimate a percentage?
- How many of your customers would you estimate travel to the point by means other than SOVs (none, little, some, most, all), and would you be able to reasonably estimate a percentage?
    - What are some of the ways people arrive at your establishment other than SOVs? Carpooling counts here!
- What, if any, efforts are you currently engaged in as a company that you feel might qualify as serving the objectives of TDM?
- What are some of your concerns regarding the transportation of customers and employees to and from Thompson's Point and your business

INTERVIEW NOTES:

Thompson's Point venue and access signage

- It would be great if the parking way finding signage could be more visible at the entrance to the point

Public/Mass Transportation

- There is no current convenient public or mass transportation options that service Thompson's Point consistently enough to be useful to either customers or employees. Increased frequency and connectivity from Old Port to the Portland Transportation Center and eventually Thompson's Point.

Non-vehicular access

- Big J's has a very strong overlap with Bissell Brothers customers, and sees similar non-vehicular access trends primarily focused on trails and bicycle visitors

- Additional support for visitors arriving by bicycle would be great including racks, secure storage, and incentives

Areas of Improvement

- Currently, implementing universal understanding of the parking policies on Thompson's Point and an easy way to share information with those who have questions regarding how to get to the point and what to expect upon arrival

Miscellaneous notes

- A greater collaborative communication strategy surrounding large-format events on the Point would be appreciated (this is not directly TDM)

SEMI-STRUCTURED TENANT INTERVIEW
Tenant: Big Room
Date: 10/27/17

TENANT SNAPSHOT:

- Business description: digital technology services
- Customer Age: undefined
- Customer Gender: undefined
- Customer Origination: undefined
- Observed transportation tendencies of customers and employees:
    - Personal vehicles
        - Because Big Room operates by appointment, customers and guests typically drive up
        - Employees travel from near and far and park on-site because there is no other known convenient option
        - Events hosted by Big Room fall into the same predicament as the situations mentioned above, with attendees traveling to their destination by personal vehicle
- **Primary Areas of TDM Interest:**
    - There is a strong desire to improve employee access to Thompson's Point, this includes bicycle storage, personal lockers, parking for motorcycles, parking for mopeds
    - Unlike some of the other tenants at the Point, due to the business dynamics of Big Room, the company is less focused on providing resources for customers and more focused on improving options for employees and project supporters
    - Improved clarity on parking policies as they relate to guests attending Big Room professional development events

GUIDING QUESTIONS:

- How much of your business would you estimate comes from repeat customers (none, little, some, most, all), and would you be able to reasonably estimate a percentage?
- How many of your customers would you estimate travel to the point by means other than SOVs (none, little, some, most, all), and would you be able to reasonably estimate a percentage?
    - What are some of the ways people arrive at your establishment other than SOVs? Carpooling counts here!
- What, if any, efforts are you currently engaged in as a company that you feel might qualify as serving the objectives of TDM?
- What are some of your concerns regarding the transportation of customers and employees to and from Thompson's Point and your business

INTERVIEW NOTES:

Thompson's Point venue and access signage

- Wayfinding Signage improvement on local roads and within the point would only improve navigation of those trying to access
    - This includes delivery drivers as well as event attendees and customers

Public/Mass Transportation

- METRO is the single most underutilized asset that could support both customers and employees trying to access Thompson's Point, and improvements to scheduling need to be made

Non-vehicular access

- Improvement in Thompson's Point infrastructure that supports non-vehicular access would yield a higher number of employees and event attendees coming to the point by alternative transportation means
    - This includes secure bike storage, facility showers for employees who bike in to work but are subjected to harsher environmental conditions on the commute, and walkers/joggers who experience the same challenges

Areas of Improvement

- Recognize the employee and help the tenant enhance f parking alternatives at Thompson's point when folks come to work
- Improve easy public transportation option to bring employees, customers or guests to Thompson's Point

SEMI-STRUCTURED TENANT INTERVIEW
Tenant: Bissell Brothers
Date: 10/18/17

TENANT SNAPSHOT:

- Business description: taproom, brewery, events
- Customer Age: a diversity of ages, with the core customer base falling in the 25-45 range
- Customer Gender: skews strongly towards male
- Customer Origination: a strong greater-Portland and Maine contingent visits daily, but on weekends and special beer launches, there is notable traffic from out of state
- Observed transportation tendencies of customers and employees:
    - Mass transportation includes the Beer bus, hotel shuttles
    - Small amount of people come via trails and by bike
    - Can launches attract smaller ratios of passengers per vehicle because people visit the point to purchase product and leave
- **Primary Areas of TDM Interest:**
    - Broader use of Portland Trails
    - Improved infrastructure on terminal for bikers
    - Safe and more readily accessible transportation services to get visitors home
    - Clear parking policies

GUIDING QUESTIONS:

- How much of your business would you estimate comes from repeat customers (none, little, some, most, all), and would you be able to reasonably estimate a percentage?
- How many of your customers would you estimate travel to the point by means other than SOVs (none, little, some, most, all), and would you be able to reasonably estimate a percentage?
    - What are some of the ways people arrive at your establishment other than SOVs? Carpooling counts here!
- What, if any, efforts are you currently engaged in as a company that you feel might qualify as serving the objectives of TDM?
- What are some of your concerns regarding the transportation of customers and employees to and from Thompson's Point and your business

INTERVIEW NOTES:

Thompson's Point parking

Advanced notice of parking policies would be beneficial for customers and employeesThis can be accomplished both digitally and in print, but in a centralized fashion

Thompson's Point venue and access signage

- Signage needs to start at the transportation center and percolate down into Thompson's Point, but also spread outward onto the surrounding roads

Public/Mass Transportation

- High-volume transportation options are not a high priority because the volume of customers that visit the brewery on a regular basis are so high
    - The goal would not be to bring cruise passengers by the busload to Bissell Brothers, but to increase public transportation options that customers could embrace when they decide they would like to access the Point
- It is a long-term objective to get METRO more involved with the functions that take place on the Point to help with customer volumes as well as providing safe forms of transportation home

Non-vehicular access

- Currently engaged in providing a trail map for accessing Thompson's Point from the greater Portland community
    - This document is shared in the taproom as a means of encouraging non-vehicular access of the Point
- There is interest amongst those associated with the trail network to create a waypoint system that would ultimately increase interactivity and encourage use
    - The end-product in this case could take on many forms, and have different points of interactivity with the end goal being to promote non-vehicular access avenues to Thompson's Point

Areas of Improvement

- There is greater bike infrastructure needed at the point for both customers and employees

Miscellaneous notes

- Bissell Brothers Brewing wants mission statement to reflect TDM
- Local guests most likely will be the ones to use alternative methods, not customers coming from out of state for beer (Thompson's Point to suggest Amtrak or Concord Bus trips or destination trips)

SEMI-STRUCTURED TENANT INTERVIEW
Tenant: Cellardoor
Date: 10/20/17

TENANT SNAPSHOT:

- Business description: wine bar, food service, retail, events
- Customer Age: primarily 30s and older
- Customer Gender: active participants skew more female than male, exact ratio hard to know
- Customer Origination: there is a core of repeat customers in the greater Portland area, but the winery attracts many folks from out of town and out-of-state
- Observed transportation tendencies of customers and employees:
    - Non-event customers typically come in groups of two or more and arrived by privately owned vehicles
    - Most customers visit with the intention of staying for a period of time versus to just buy something
    - Taxi services prevalent but not dominant (standard taxis, Uber, Lyft)
- **Primary Areas of TDM Interest:**
    - Greater representation of alternative methods that customers can use to access Thompson's Point,in particular, the Portland Trails connecting to the West End
    - Improved public or mass transportation options would greatly increase "foot traffic" and connect Cellardoor to customer populations associated with cruise ships and the Old Port
    - Signage on the point and the surrounding roads and centralized policies would help make the process of accessing Thompson's Point easier for planning

GUIDING QUESTIONS:

- How much of your business would you estimate comes from repeat customers (none, little, some, most, all), and would you be able to reasonably estimate a percentage?
- How many of your customers would you estimate travel to the point by means other than SOVs (none, little, some, most, all), and would you be able to reasonably estimate a percentage?
    - What are some of the ways people arrive at your establishment other than SOVs? Carpooling counts here!
- What, if any, efforts are you currently engaged in as a company that you feel might qualify as serving the objectives of TDM?
- What are some of your concerns regarding the transportation of customers and employees to and from Thompson's Point and your business

INTERVIEW NOTES:

Thompson's Point parking

- Pay to park is incentive for people to car pool
- A clearly defined set of parking policies makes it more likely that customers and employees will have a positive experience, and it facilitates transportation planning

Thompson's Point venue and access signage

- Signage off interstate for Thompson's Point exit would make the process of getting to the winery easier for customers as well as creating navigational points that employees can direct people to when they receive inquiries about directions

Public/Mass Transportation

- Employees/customers would benefit greatly from improved public or mass transportation options
- There will be a METRO stop on Thompson's Point to service the children's Museum and hotel
- The road on the Point is engineered to handle buses
- Improving the line of communication between Thompson's Point and hotels so that shuttles can easily get in and out

Non-vehicular access

- Strong interest in highlighting Thompson's Point access via foot and bike
- Social or community event such as a 5K designed to benefit Portland Trails and to highlight trail connectivity from the West End to Thompson's Point, Earth Day campaign to promote non-vehicular access
- More bike friendly infrastructure on the Point would help encourage an increase in bike traffic
- Bike Benefits is something to consider

Miscellaneous notes

- Can we get more specific signage on roads for museums? Cellardoor could piggy back off them for signage due to road blocks pertaining to wine.
- Digital and web resources that centralized transportation resources and Thompson's Point access information, parking policies would be helpful for employees and customers

SEMI-STRUCTURED TENANT INTERVIEW
Tenant: Circus Maine
Date: 11/20/17

TENANT SNAPSHOT:

- Business description: circus school, training and education, performances, events
- Customer Age: children through young adults for school and training, mid-20s to mid-40s for performances and events
- Customer Gender: undefined
- Customer Origination: undefined
- Observed transportation tendencies of customers and employees:
    - Employees and students attending school arrive primarily via single vehicle or drop off
        - Very few use public transportation or come by non-vehicular means
    - Customers primarily arrive by a mix of transportation methods that include single vehicle, carpooling and taxi services
- **Primary Areas of TDM Interest:**
    - Development of a priority based parking system so that free or reduced cost parking options can be provided to employees during nonpeak hours
    - Identify a collection of off-site parking venues and a protocol that supports their utilization
    - Improve how public transportation services Thompson's Point so that low income students who don't have access to vehicles can reliably get to and from the facility

GUIDING QUESTIONS:

- How much of your business would you estimate comes from repeat customers (none, little, some, most, all), and would you be able to reasonably estimate a percentage?
- How many of your customers would you estimate travel to the point by means other than SOVs (none, little, some, most, all), and would you be able to reasonably estimate a percentage?
    - What are some of the ways people arrive at your establishment other than SOVs? Carpooling counts here!
- What, if any, efforts are you currently engaged in as a company that you feel might qualify as serving the objectives of TDM?
- What are some of your concerns regarding the transportation of customers and employees to and from Thompson's Point and your business

INTERVIEW NOTES:

Thompson's Point parking

- Look more critically at how a tiered parking system could be implemented to help offset the cost of employee and customer parking during nonpeak hours when there may be ample space is available
    - Such a model would stand to benefit all tenants financially and logistically and could be employed in designated areas only to meet the needs of the Point
- Identify easy-to-find, proximal, and reliable off-site parking resources to accomplish the following:
    - Benefit students who can't afford to pay for parking (if the walking distance was short)
    - Develop a clear protocol for securing additional parking in support of larger Circus Maine functions when spaces on the Point have been presold to other tenants/events
- Develop an interface, such as a website, that customers can access to address parking inquiries

Thompson's Point venue and access signage

- Not discussed

Public/Mass Transportation

- METRO needs to greatly amplify its support of Thompson's Point to accomplish a myriad of goals:
    - Increase the flow of customers from the Old Port to the Point to allow for the development of new business and customers
    - Provide more reliable public transportation to students in need of attending class at Circus Maine
    - Create alternative transportation options as matter of easing the logistical concerns associated with parking during busy times at the Point

Non-vehicular access

- Emphasis needs to be placed on the Portland Trails network and continued improvement of infrastructure to support bicyclists on the point

Miscellaneous notes

- Cruise Maine and its passengers is a notable target of the Circus Maine staff, and working with mass transportation providers to facilitate flow between Commercial Street and Thompson's Point is a priority to explore further

SEMI-STRUCTURED TENANT INTERVIEW
Tenant: Color Me Mine
Date: 10/24/17

TENANT SNAPSHOT:

- Business description: arts and crafts, creative pottery, events,
- Customer Age: a diversity of ages, but a heavy focus on children
- Customer Gender: active participants skew towards female in adult-aged customers, no data on children
- Customer Origination: limited clarity but a majority seem to originate from within the greater Portland area
- Observed transportation tendencies of customers and employees:
    - Single attendees tend to arrive via personal vehicles
    - There is some overlap with other Thompson's Point tenants, and groups will come in one car to attend both Color Me Mine as well as other destinations
    - Very little public transportation
    - Bike, Trail biggest non-traditional modes of transportation
- **Primary Areas of TDM Interest:**
    - Point-wide collaboration on product packages so guests can easily flow from one tenant to the next
    - Centralized signage that represents businesses on the Point to improve navigation
    - A centralized point of access where employees and customers can go to gather up-to-date information about policies and news associated with Thompson's Point

GUIDING QUESTIONS:

- How much of your business would you estimate comes from repeat customers (none, little, some, most, all), and would you be able to reasonably estimate a percentage?
- How many of your customers would you estimate travel to the point by means other than SOVs (none, little, some, most, all), and would you be able to reasonably estimate a percentage?
    - What are some of the ways people arrive at your establishment other than SOVs? Carpooling counts here!
- What, if any, efforts are you currently engaged in as a company that you feel might qualify as serving the objectives of TDM?
- What are some of your concerns regarding the transportation of customers and employees to and from Thompson's Point and your business

INTERVIEW NOTES:

Thompson's Point parking

- Passport is currently underutilized, services or parking options could be created and implemented to make planning easier
- Important to create learning opportunities regarding Passport for both tenants and customers
- Designated Driver discount or benefit – a means of making it easy to not drive if you drink too much
    - Create policy and a pass that tenants can place in vehicles if driver was impaired and decided not to drive

Thompson's Point venue and access signage

- Signage on the roads surrounding Thompson's point would be beneficial to customers

- Creating a central message board either digital or physical would allow for easier and faster sharing of transportation resources and parking policies
- Creation of a Brick North map or floor plan to improve customer experience once at Thompson's Point
- Create and mark a specific drop off location on Google maps for the Point

Public/Mass Transportation

- No METRO users at Color Me Mine due to lack of timely services
- Uber and Lyft not commonly used

Non-vehicular access

- People do come on trails and bikes to paint, but are limited to needing vehicles when they are picking up finished work to keep the fragile pottery secure
- Willing to offer discounts and incentives to encourage people to travel to Thompson's Point on foot or by bike

Areas of Improvements

- Questioned activities and security on trails, walking in the dark has been referenced as uncomfortable, lighting may help encourage people to use the trails more

Miscellaneous notes

- Having a small number of employees with a diversity of backgrounds and living situations, makes it difficult for any will single transportation solution to reach all of them
- Rink and Color Me Mine collaboration. Discounts if go same day to both businesses
- Website – use access page and enter to win month of free parking or 5 hours of parking, etc.
- Color Me Mine and Cellardoor collaboration, discount on wine if at Color Me Mine and discount on painting if at Cellardoor

SEMI-STRUCTURED TENANT INTERVIEW
Tenant: International Cryptozoology Museum
Date: 11/10/17

TENANT SNAPSHOT:

- Business description: Museum focused on cryptozoology
- Customer Age: families, college students, and destination visitors ranging from 30s – 60s
- Customer Gender: undefined
- Customer Origination: consistent flow of local visitors, but the Museum is a destination that attracts folks from all over the country
- Observed transportation tendencies of customers and employees:
    - Personal vehicles are the dominant form of transportation that brings customers to the Museum
    - It was noted that the lack of frequent and reliable public transportation options has a notable and negative impact on visitors per year
- **Primary Areas of TDM Interest:**
    - Establish Thompson's Point as an accessible destination via the many available public transportation resources already present in the area
    - Facilitate conversations with METRO in order attract passengers that arrive in Portland via the many cruise vessels
    - Improve the Point's visibility on local tourism maps (Discovery Maps)

GUIDING QUESTIONS:

- How much of your business would you estimate comes from repeat customers (none, little, some, most, all), and would you be able to reasonably estimate a percentage?
- How many of your customers would you estimate travel to the point by means other than SOVs (none, little, some, most, all), and would you be able to reasonably estimate a percentage?
    - What are some of the ways people arrive at your establishment other than SOVs? Carpooling counts here!
- What, if any, efforts are you currently engaged in as a company that you feel might qualify as serving the objectives of TDM?
- What are some of your concerns regarding the transportation of customers and employees to and from Thompson's Point and your business

INTERVIEW NOTES:

Thompson's Point parking

Thompson's Point venue and access signage

- Strong desire to pursue signage on the highway, especially to help the many guests that travel from far distances to visit the Cryptozoology Museum

Public/Mass Transportation

- Increased METRO frequency is a high priority because it is the gateway to tapping into Cruise Maine passengers and those shopping in the Old Port

Non-vehicular access

- Collaborative campaigns embraced by all tenants of the Point that call attention to the various non-vehicular means of access would serve to establish a stronger community amongst businesses
    - The Museum wishes to be affiliated with efforts that speak to Portland Trails and bike access
    - Ensure campaigns have an inclusive voice so that all tenants stand to benefit from such outreach

<u>Areas of Improvements</u>

<u>Miscellaneous notes</u>

- Discovery Maps
    - Advertising costs $700 per year and up,
    - It would be beneficial to organize a critical mass of supporters from Thompson's Point to improve exposure on map through collective advertising
    - The Cryptozoology Museum has a strong desire to facilitate a conversation with Discovery Maps to redraw the Old Port to include a focus on Thompson's Point in tenants
    - Improved exposure on these maps as well as more frequent public transportation would serve as a strong platform for capturing new tourist traffic
- Cruise passengers
    - At its previous location, the Museum had very direct access to passengers arriving in Portland aboard cruise vessels
    - Advertising was purchased to support the Museum's exposure amongst this customer base
    - Since moving to Thompson's Point, participation by cruise passengers has fallen off almost entirely
    - The Museum is excited to explore new ways to attract these passengers to the Point

SEMI-STRUCTURED TENANT INTERVIEW
Tenant: State Theatre
Date: 11/27/17

TENANT SNAPSHOT:

- Business description: summertime musical event series
- Customer Age: a diversity of ages, with the core customer base falling in the 25-50 range
- Customer Gender: undefined
- Customer Origination: a strong greater-Portland and Maine contingent, with bigger names drawing from the entire Northeast
- Observed transportation tendencies of customers and employees:
    - Some use shuttles
    - Many come by Uber and Lyft, as well as standard taxi services
    - Because concerts are held in the warmer part of the year, many folks embrace access by foot and bike
- **Primary Areas of TDM Interest:**
    - Lyft and Uber turnaround point at Sewall Street with a turnaround waypoint that makes it easier for drivers to locate
    - Thompson's Point and State Theater involvement in conversations with the surrounding neighborhoods and the City of Portland as a mechanism to demonstrate concern with event related traffic volumes, develop collaborative objectives
    - Establish a long-term transportation conversation with the City focused on drop-off points and improved METRO service

GUIDING QUESTIONS:

- How much of your business would you estimate comes from repeat customers (none, little, some, most, all), and would you be able to reasonably estimate a percentage?
- How many of your customers would you estimate travel to the point by means other than SOVs (none, little, some, most, all), and would you be able to reasonably estimate a percentage?
    - What are some of the ways people arrive at your establishment other than SOVs? Carpooling counts here!
- What, if any, efforts are you currently engaged in as a company that you feel might qualify as serving the objectives of TDM?
- What are some of your concerns regarding the transportation of customers and employees to and from Thompson's Point and your business

INTERVIEW NOTES:

Thompson's Point parking

- Parking policies and transportation resources could be better centralized and represented online and echoed across social media
    - State Theatre has all of this information on ticket pages, but it would be beneficial if Thompson's Point had it as well
- All parking information resources need to include information that helps mitigate some of the parking demand onsite
    - Thompson's Point could echo some of those displayed by State Theatre, including paid parking resources across the city and satellite parking options

- Work with Uber and Lyft to create official drop-off and pickup points outside of the Point, perhaps near the Transportation Center

Thompson's Point venue and access signage

- Engage the City of Portland to discuss if the Sewall Street date can be opened on concert nights as a means of establishing a efficient drop off point for attendees
    - Enabling this logistical dynamic would support the Uber and Lyft drop-off point mentioned above

Public/Mass Transportation

- A regularly occurring METRO stop on Thompson's Point is long overdue
    - Immediate conversations should be undertaken and a plan should be put in place, and once everything is formalized, perhaps it could be advertised in a bus wrap via collaborative sponsorship

Non-vehicular access

- Portland Trails and Bicycle Coalition of Maine at both led to notable amounts of people accessing concerts under human power, but these stories need to be celebrated
- Call attention to these avenues of access with structured campaigns (social media, web, print)
- There are many creative solutions that could be implemented to support the biking community, including:
    - Secure bike check space and brick South with an operator
    - Secure bike check containers with an operator (similar to a coat check)
    - Secured, fenced-in, bike check area somewhere on the premises with an operator

Areas of Improvement

- The Event Management Plan that is currently in place is effective, but understanding how the surrounding neighborhoods perceive Point activity will be an important part of ensuring concerns don't become larger

Miscellaneous notes

- Event Management Plan for concerts is an integral piece two managing the influx of Thompson's Point visitors
- United Parking Partners to provide Chris Thompson with additional parking data, speaking to traffic volumes associated with Summer Concert Series
- With concerts, it will be important to "demonstrate" proactivity that speaks to attempts made by Thompson's Point to improve management of event influx

SEMI-STRUCTURED TENANT INTERVIEW
Tenant: Stroudwater
Date: 11/06/17

TENANT SNAPSHOT:

- Business description: distillery, cocktail service, small plates, retail
- Customer Age: mid-30s to 60s
- Customer Gender: relatively even mix
- Customer Origination: proportionally undefined, strong representation from local and out-of-state origins
- Observed transportation tendencies of customers and employees:
    - Customers directly bound for Stroudwater arrive primarily via personal vehicle
    - There is considerable customer overlap with events held at the brewery as well as in Brick South or outdoors on Thompson's Point
    - Carpooling and taking taxi services to the above-mentioned events as well as traveling to the Point by foot and bike are the most common forms of transportation that bring customers to the distillery other than single occupant vehicle
- **Primary Areas of TDM Interest:**
    - Improving parking policy presentation and communication so that access is understood, smooth and enjoyable for customers and guests
    - Engage in conversation with mass transportation providers (NNEPRA, METRO) as a means of bringing more people to Thompson's Point and to allow for tenants to engage new customers
    - High visibility promotional campaigns and events that present the many ways people can access the Point

GUIDING QUESTIONS:

- How much of your business would you estimate comes from repeat customers (none, little, some, most, all), and would you be able to reasonably estimate a percentage?
- How many of your customers would you estimate travel to the point by means other than SOVs (none, little, some, most, all), and would you be able to reasonably estimate a percentage?
    - What are some of the ways people arrive at your establishment other than SOVs? Carpooling counts here!
- What, if any, efforts are you currently engaged in as a company that you feel might qualify as serving the objectives of TDM?
- What are some of your concerns regarding the transportation of customers and employees to and from Thompson's Point and your business

INTERVIEW NOTES:

Thompson's Point parking

-

Thompson's Point venue and access signage

- Added attention to digital databases as a means of ensuring Thompson's Point and associated tenant addresses show up accurately will help with taxi and delivery services
- Signage on the highway and surrounding roads is an important avenue to pursue as a means of reducing uncertainty of drivers and improving general traffic flow through stoplights and intersections

Public/Mass Transportation

- METRO has never been an attractive option for those heading out to eat, drink or shop, and has always been viewed as a resource for those who don't have access to vehicles
    - This can be improved by increasing the number of stops, frequency and reach
    - Creation of a small high-frequency loop that services Thompson's Point would open access to entirely new customer bases, but a promotional campaign will be necessary to improve awareness
- The Downeaster and rail in general is underutilized and the connectivity offered by this form of transportation is underrepresented
    - A conversation with NNEPRA aimed at improving frequency and/or promoting awareness of Thompson's Point access to passengers will be integral in establishing rail as a legitimate transportation resource
        - This is likely a part of a larger marketing conversation that includes highlighting activities found at other stops along the way

Non-vehicular access

- The Portland Trails network along with the Bicycle Coalition of Maine are the most visible drivers of people to Thompson's Point under human power
- Awareness of these resources should be promoted via specific promotional campaigns and improved infrastructure on Thompson's Point

Areas of Improvement

Miscellaneous notes

- As the offerings of tenants grow, it would be useful if there was a centralized forum that helped to project this to customers
    - Example: the distillery is now serving Portland Pie Pizza
        - If examples such as this that demonstrate incremental growth are broadcasted, then it diversifies the reasons that someone might come to the Point, and could change the way in which customers plan their visit
        - The more people are aware of what is going on, the more likely it is that they will come in larger groups
        - Cataloging activities available at Thompson's Point and making this information readily accessible will help customers plan their visit more effectively

Appendix D:

Updated Event Management Plan – January 2018

Event Management Plan for
The Forefront at Thompson's Point
Portland, Maine
January, 2018

The traffic management plan ("Plan") for "Special Events" is an important component of making this project work. For the purposes of implementation, we propose that a Special Event be considered any event, or combination of events, that equals or exceeds 2500 people on site at the same time. A Special Event, as it is intended in the context of this Event Management Plan, would not include those typical modes of gathering and circulation related to the customary visitation and enjoyment of the site and its various commercial uses and public amenities. For example, a gathering of visitors in an outdoor dining area would not be considered a Special Event, nor would that visitor count contribute to the overall 2,500 capacity threshold, but a gathering of visitors in the outdoor seating area adjacent to the Mixed-Use "Depot" Building for the purposes of attending a musical performance would be considered a Special Event assuming it met, or in conjunction with other special events on site contributed to meeting, the 2,500-person threshold. Special Events generally relate to those occurrences that are planned by the Forefront at Thompson's Point as part of the programming associated with the Brick South Event Center (including, from time to time, its adjacent plaza) and Mixed-Use "Depot" Building (and its outdoor seating area). The Forefront at Thompson's Point's Management shall use its discretion in determining whether an event with a planned attendance under 2,500 shall be considered a Special Event. To accomplish the special event implementation, the applicant is approaching this from different aspects.

I. Event Timing: the first aspect is timing of the Special Event. If the event is on a weekday, Special Events are anticipated to start outside the hours of 4:00PM to 7:00PM to avoid the PM rush hour of the adjacent street traffic. Weekday Special Events conclude later in the evening when traffic on the adjacent roadway network is anticipated to be minimal compared to during a typical commuter hour. If the event is on a Saturday or Sunday, commuter traffic will not be on the roads.

II. Special Event Facilities and Accommodations: the second angle to the special event approach is to provide accommodations for large numbers of vehicles to enter or exit the site. To accomplish this, the Forefront At Thompson's Point Management utilizes the following:

- I. Signing – This includes not only signing for drivers on which lanes are for what purpose, but also to direct drivers to points of interest; such as event parking. Additional signs should also be erected to identify to the drivers destined for the bus and train facilities where they should be going such that they do not get intertwined in the traffic destined for the events. These signs are both permanent and temporary and may be positioned both onsite and offsite.

- II. Reversible Lane – This is an additional lane in the center of Thompsons Point Road that is used for incoming traffic at the beginning of an event and then reversed and used as an exit lane when the event(s) conclude. An example of this layout is depicted on Sheets C-9.1, C-9.2 and C-9.3 and enclosed in Appendix A.

- III. Traffic Control Devices – This includes devices such as traffic cones to regulate access to the lower lots on the site during special events. The use of cones would be useful in directing drivers to where you want them to be as well as restricting them from areas where access is prohibited. These can be especially useful to assist in the functionality of the reversible lane used to enter and exit the Forefront at Thompsons Point. Temporary cone barriers are used as a supplemental device to the permanently installed overhead reversible lane signals.

- IV. Police Officers – For Special Events, Thompson's Point Management shall endeavor to secure the presence of a police officer, either to direct traffic or supervise Thompson's Point parking/traffic staff's direction of traffic, at the signalized intersection of Thompsons Point / Fore River Parkway. The number of police officers shall be determined by the Portland Police Department in coordination with Thompson's Point's Management. This number is anticipated to be established relative to the capacity of the event (one officer for events of approximately 2,500, more for larger events such as concerts with attendance upwards of 8,000).

- V. Traffic Control Personnel ("TCP") – These personnel do not need to be police and are allowed to assist traffic on-site and at un-signalized roadway locations. This would include persons at each of the entrances / exits for both the train and bus to assist both customers and the buses themselves in entering and exiting. There would also be TCP at the crosswalk to Sewall Street assisting pedestrians with crossing. In addition, TCP will be positioned on either side of the RR crossing to ensure that vehicles do not stop on the RR tracks, as well as at entrances to parking areas on Thompson's Point where there might be high pedestrian traffic entering or exiting the event. We anticipate a minimum of 5 or 6 TCP per special event.

- VI. Monitoring – Special Events have been monitored since opening by a dedicated observer for each event. That observer reported after each event what worked, what is not working, and provided recommendations for improvement. This practice is ongoing as Special Events continue to occur. This monitoring includes meeting with representatives of the bus and train station to receive their input. Special Event monitoring shall also be coordinated with and/or by the Transportation Demand Management Coordinator to ensure that the development's TDM opportunities are well integrated with respect to Special Events.

- VII. Integration of TDM – Forefront management strives to encourage and integrate applicable TDM best practices into each specific Event Management Plan. The TDM Coordinator is responsible for expanding the number of best practices available and/or making the most practical practice readily available for each special event.

- VIII. Parking garage – The parking garage is designed with three lanes on the west end, with the center of the three lanes being reversible and two reversible lanes on the north side. It is anticipated that that during normal business hours, only two lanes (one in and one out) at each end of the garage will be needed. However, the third lane is available to process traffic should it become necessary.

  During a Special Event, when the Event Management Plan is in place, the parking garage is anticipated to be operated with all five lanes used. At the beginning of a Special Event, we anticipate that two entering lanes and a single exit lane will be available at the west end (total of 3 entering lanes and 2 exit lanes). The gates will be up and attendants will be accepting money on a fixed fee basis to process the traffic quicker, or we may implement other payment options, such as Passport-based technology, to assist with expediting payment processing. For certain Special Events, visitors will have pre-purchased event tickets that include event parking, so they would simply need to show their ticket to gain entrance to the garage. During Special Events, each lane would process 300 vehicles per hour with a non-gated, pay on entry flat-fee, with attendants taking money at the entry and directing vehicles to the parking spaces. This would theoretically fill the garage in 37 minutes for a Special Event, which relates to a 'good' Level-of-Service of "B".

  In addition, for larger Special Events, attendants may be positioned within the garage to assist directing incoming cars such that parking levels are filled one at a time with no empty spaces. This will improve efficiency and get the most capacity from the garage. These attendants will also be able to convey when the garage is near capacity so that they can make the proper call and appropriate signs can be put up both onsite and offsite identifying the garage is full. The

parking garage has also been designed as a double helix such that entering and exiting vehicles can turn either way exiting their parking space to go up or down. This means that you do not have to go up to the top level of the garage in order to come down to the lower levels.

When an event concludes, there will be two exit lanes at each end (for a total of four exit lanes) such that vehicles will be able to flow freely from the garage without stopping at a gate, thus considerably reducing the amount of time it takes to exit the vehicles from the garage.

Until the garage is built, Thompson's Point will utilize various parking areas on site to accommodate Special Event parking.

- IX. Offsite Parking for Special Events – on certain occasions, notably summer concerts but also occasionally for other events, remote parking may occur off site in one or more satellite lots, including but not limited to the overflow lot at Mercy Hospital on the Fore River Parkway. The use of this lot, together with the strategies outlined in the Transportation Demand Management plan to encourage use of alternative modes, assists with helping to offset the use of public streets in Libbytown neighborhood for Special Event parking.

- X. Trail and Bicycle Access – the inclusion of the dedicated pedestrian lane at the westerly side of the Thompson's Point Road rail crossing, and the extensive pedestrian improvements to the Thompson's Point Road area and adjacent facilities (Fore River Parkway; Sewall Street; etc.) contributed by Thompson's Point in fulfillment of its Master Plan infrastructure, have permitted the integration of Thompson's Point with the Portland Trails network. This has provided an important pedestrian facility to help provide a legitimate alternative to vehicular travel to Thompsons' Point for Special Events.

- XI. METRO; Amtrak; Concord Coach – these transit options are discussed in more detail in the Transportation Demand Management Plan. However, relative to the Event Management Plan, it is important to note that the Portland Transportation Center, which currently provides a hub for service for all of these modes, is linked to Thompson's Point by our new pedestrian improvements and visitors to our Special Events are increasingly traveling via these modes.

III. Emergency Preparedness: the third angle to a well-managed Special Event is being prepared for emergency situations and executing a documented Life Safety Plan. The outdoor event Life Safety Plan is enclosed in Appendix B of this EMP. The enclosed Life Safety Plan has been utilized effectively on several occasions to evacuate a small number of events classified as "Special Events" to date but should be reviewed by the event management team prior to each event to coordinate all anticipated aspects of site conditions on the day(s) of the event.

Appendix A

Off-Site Event Roadway Management Plans

CONTINUE PROPOSED 6' WIDE SIDEWALK TO MEET EXISTING SEWALL STREET SIDEWALK

PARKING

N/F
STATE OF MAINE

(LAYOUT OF TRANSPORTATION FACILITY BASED ON INTERPOLATION OF AERIAL IMAGE)

PROPOSED EMERGENCY ACCESS ROUTE

GATE TO BE PROVIDED BY DEVELOPER

EXISTING EMERGENCY ROUTE (TO REMAIN AS PEDESTRIAN WAY ONLY)

EXISTING CROSSWALK TO BE DISCONTINUED

SEWALL STREET

HOOPER STREET

PEDESTRIAN FLASHER, TYP

8' (MIN) SHARED USE PATH AND 3' ESPLANADE

OVERHEAD MAST ARM SUPPORTED DIRECTIONAL SIGNAGE

PROPOSED FOREFRONT AT THOMPSON'S POINT AND PORTLAND TRANSPORTATION CENTER SIGN TO BE COORDINATED WITH CITY OF PORTLAND, MDOT, NNEPRA AND CONCORD TRAILWAYS

PROPOSED WIDENING IMPROVEMENTS PER TRAFFIC MOVEMENT PERMIT

NORTH

FORE RIVER PARKWAY

FORE RIVER PARKWAY TRAIL

PROPOSED TAXI CAB QUEUING LANE

39' WIDE TRAVEL WAY TO INCLUDE THREE - 11' LANES AND 3' SHOULDER ON EACH SIDE

EXISTING 5' WIDE SIDEWALK

EXISTING BUS STOP SHELTER

GARAGE

PORTLAND TRANSPORTATION TERMINAL

N/F
LANGDON STREET REAL ESTATE, INC.

(LAYOUT OF TRANSPORTATION FACILITY BASED ON INTERPOLATION OF AERIAL IMAGE)

TERMINAL

N/F
PORTLAND TERMINAL COMPANY

SEE PLANS BY TEC ASSOCIATES FOR CROSSING

PROPOSED CHAIN LINK FENCE, TYP

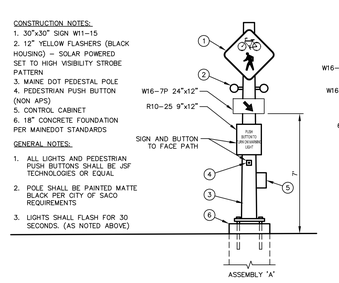
EXISTING 5/8" REBAR, 2" BELOW GRADE, VALUATION STATION 42+00, 45' RT

APPROXIMATE ENTRANCE TO NNEPRA SITE

SEE SITE LAYOUT PLAN WEST FOR CONTINUATION

CONSTRUCTION NOTES:
1. 30"x30" SIGN W11-15
2. 12" YELLOW FLASHERS (BLACK HOUSING) – SOLAR POWERED SET TO HIGH VISIBILITY STROBE PATTERN
3. MAINE DOT PEDESTAL POLE
4. PEDESTRIAN PUSH BUTTON (NON APS)
5. CONTROL CABINET
6. 18" CONCRETE FOUNDATION PER MAINEDOT STANDARDS

GENERAL NOTES:
1. ALL LIGHTS AND PEDESTRIAN PUSH BUTTONS SHALL BE JSF TECHNOLOGIES OR EQUAL
2. POLE SHALL BE PAINTED MATTE BLACK PER CITY OF SACO REQUIREMENTS
3. LIGHTS SHALL FLASH FOR 30 SECONDS. (AS NOTED ABOVE)



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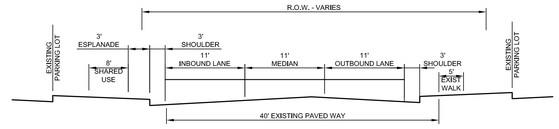
PEDESTRIAN FLASHER
N.T.S.



TYPICAL CROSS SECTION A-A
THOMPSON POINT CONNECTOR
N.T.S.

NOTE:
EXISTING CONDITIONS TAKEN FROM A SURVEY BY SEBAGO TECHNICS ENTITLED ALTA/ACSM LAND TITLE SURVEY DATED MAY 27, 2011 WITH REVISION 'E' 11-23-2011.

PRELIMINARY - NOT FOR CONSTRUCTION

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(IN FEET)
1 inch = 25 ft.

REV	DATE	DESCRIPTION
2	04.17.12	REVISED PER SITE PLAN APPLICATION REVIEW COMMENTS
1	03.20.12	FINAL SITE PLAN APPLICATION SUBMISSION

REVISIONS

STATE OF MAINE
STEPHEN R. BUSHEY
LICENSED PROFESSIONAL ENGINEER

P.E. STEPHEN R. BUSHEY
LIC. # 7429

PROJECT
THE FOREFRONT AT THOMPSON'S POINT

SHEET TITLE
THOMPSON'S POINT CONNECTOR ROAD AND SEWALL STREET LAYOUT PLAN

CLIENT
FOREFRONT PARTNERS I, LP

DeLUCA-HOFFMAN ASSOCIATES, INC.
778 MAIN STREET, SUITE 8
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DRAWN:	DED	DATE:	AUGUST 2011
DESIGNED:	BEK	SCALE:	1" = 25'
CHECKED:	SRB	JOB NO.	2982.01
FILE NAME:	2982-TPC LAYOUT		
SHEET	C-9.0		

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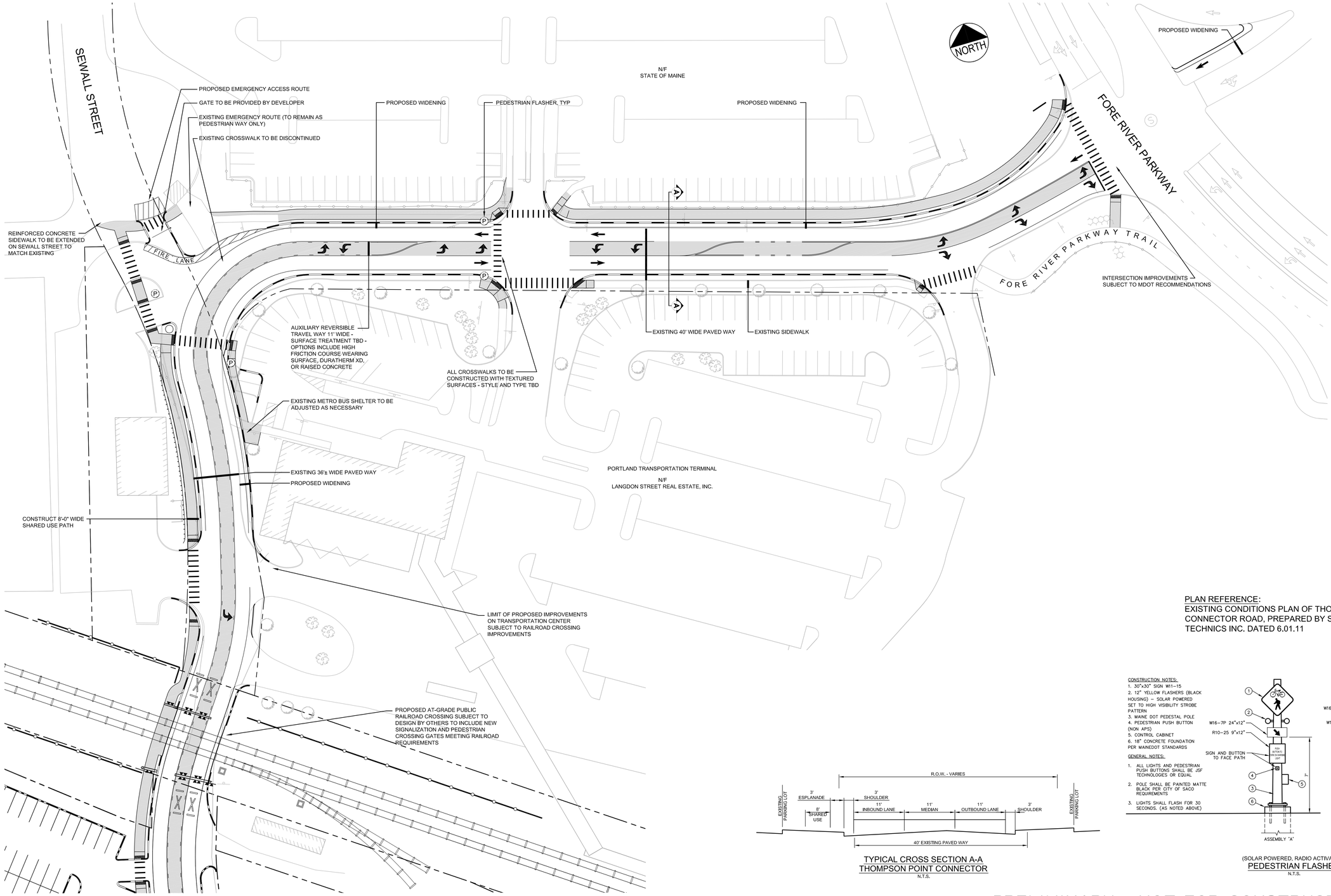
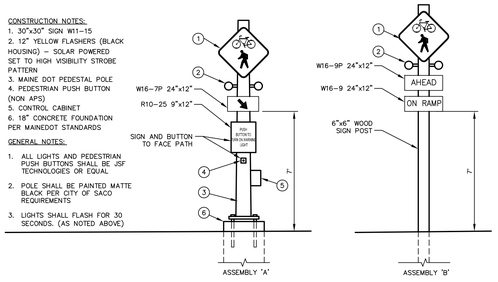


PLAN REFERENCE:
EXISTING CONDITIONS PLAN OF THOMPSON POINT CONNECTOR ROAD, PREPARED BY SEBAGO TECHNICS INC. DATED 6.01.11

TYPICAL CROSS SECTION A-A
THOMPSON POINT CONNECTOR
N.T.S.



(SOLAR POWERED, RADIO ACTIVATED)
PEDESTRIAN FLASHER
N.T.S.

PRELIMINARY - NOT FOR CONSTRUCTION

GRAPHIC SCALE
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(IN FEET)
1 inch = 30 ft.

REV	DATE	DESCRIPTION
1	03.20.12	FINAL SITE PLAN APPLICATION SUBMISSION

REVISIONS

STATE OF MAINE
STEPHEN R. BUSHEY
LICENSED PROFESSIONAL ENGINEER
P.E. STEPHEN R. BUSHEY
LIC. # 7429

PROJECT
THE FOREFRONT
AT THOMPSON'S POINT

SHEET TITLE
THOMPSON'S POINT CONNECTOR ROAD
EVENT MANAGEMENT PLAN - NO EVENT

CLIENT
FOREFRONT PARTNERS I, LP

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DRAWN:	DED	DATE:	AUGUST 2011
DESIGNED:	BEK	SCALE:	1" = 30'
CHECKED:	SRB	JOB NO.	2982.01
FILE NAME:	2982-CONCEPT5		
SHEET	C-9.1		

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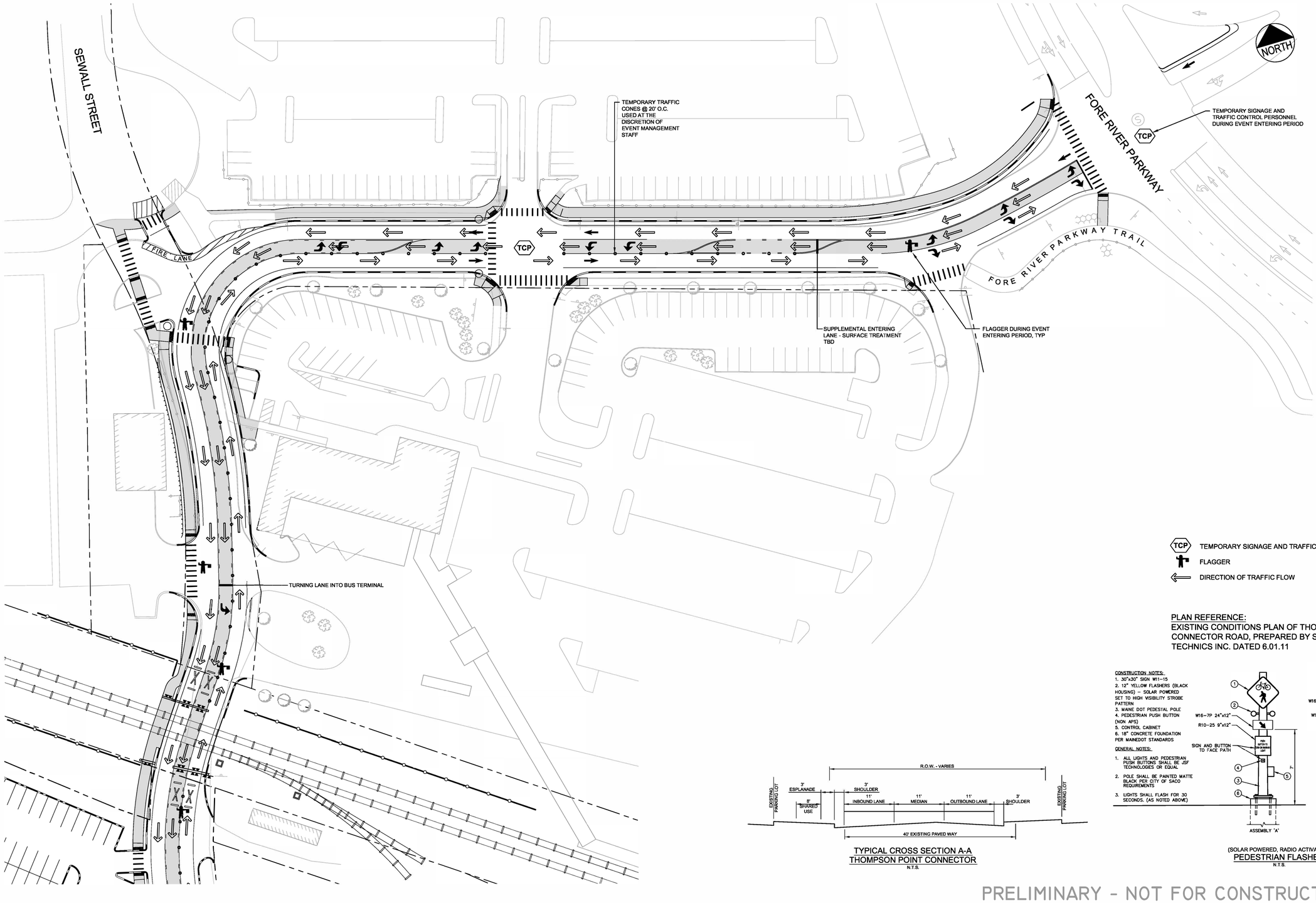


TCP TEMPORARY SIGNAGE AND TRAFFIC CONTROL PERSONNEL

FLAGGER

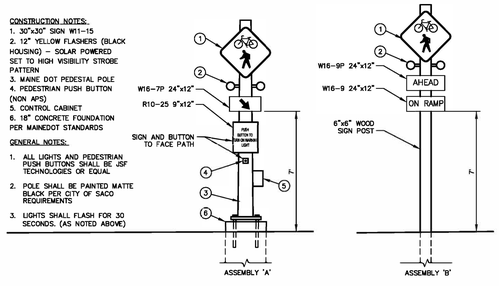
DIRECTION OF TRAFFIC FLOW

PLAN REFERENCE:
EXISTING CONDITIONS PLAN OF THOMPSON POINT CONNECTOR ROAD, PREPARED BY SEBAGO TECHNICS INC. DATED 6.01.11

TYPICAL CROSS SECTION A-A
THOMPSON POINT CONNECTOR
N.T.S.

CONSTRUCTION NOTES:
1. 30"x30" SIGN W11-15
2. 12" YELLOW FLASHERS (BLACK HOUSING) - SOLAR POWERED SET TO HIGH VISIBILITY STROBE PATTERN
3. MAINE DOT PEDESTAL POLE
4. PEDESTRIAN PUSH BUTTON (NON APS)
5. CONTROL CABINET
6. 18" CONCRETE FOUNDATION PER MAINEDOT STANDARDS

GENERAL NOTES:
1. ALL LIGHTS AND PEDESTRIAN PUSH BUTTONS SHALL BE JSF TECHNOLOGIES OR EQUAL
2. POLE SHALL BE PAINTED MATTIE BLACK PER CITY OF SACO REQUIREMENTS
3. LIGHTS SHALL FLASH FOR 30 SECONDS. (AS NOTED ABOVE)



(SOLAR POWERED, RADIO ACTIVATED)
PEDESTRIAN FLASHER
N.T.S.

PRELIMINARY - NOT FOR CONSTRUCTION

GRAPHIC SCALE
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(IN FEET)
1 inch = 30 ft.

REV	DATE	DESCRIPTION
1	03.20.12	FINAL SITE PLAN APPLICATION SUBMISSION

REVISIONS

STATE OF MAINE STEPHEN R. BUSHEY LICENSED PROFESSIONAL ENGINEER

P.E. STEPHEN R. BUSHEY
LIC. # 7429

PROJECT: THE FOREFRONT AT THOMPSON'S POINT

SHEET TITLE: THOMPSON'S POINT CONNECTOR ROAD EVENT MANAGEMENT PLAN - ENTERING CONDITIONS

CLIENT: FOREFRONT PARTNERS I, LP

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WWW.DELUCAHOFFMAN.COM

DRAWN:	DED	DATE:	AUGUST 2011
DESIGNED:	BEK	SCALE:	1" = 30'
CHECKED:	SRB	JOB NO.	2982.01
FILE NAME:	2982-CONCEPT5		
SHEET	C-9.2		

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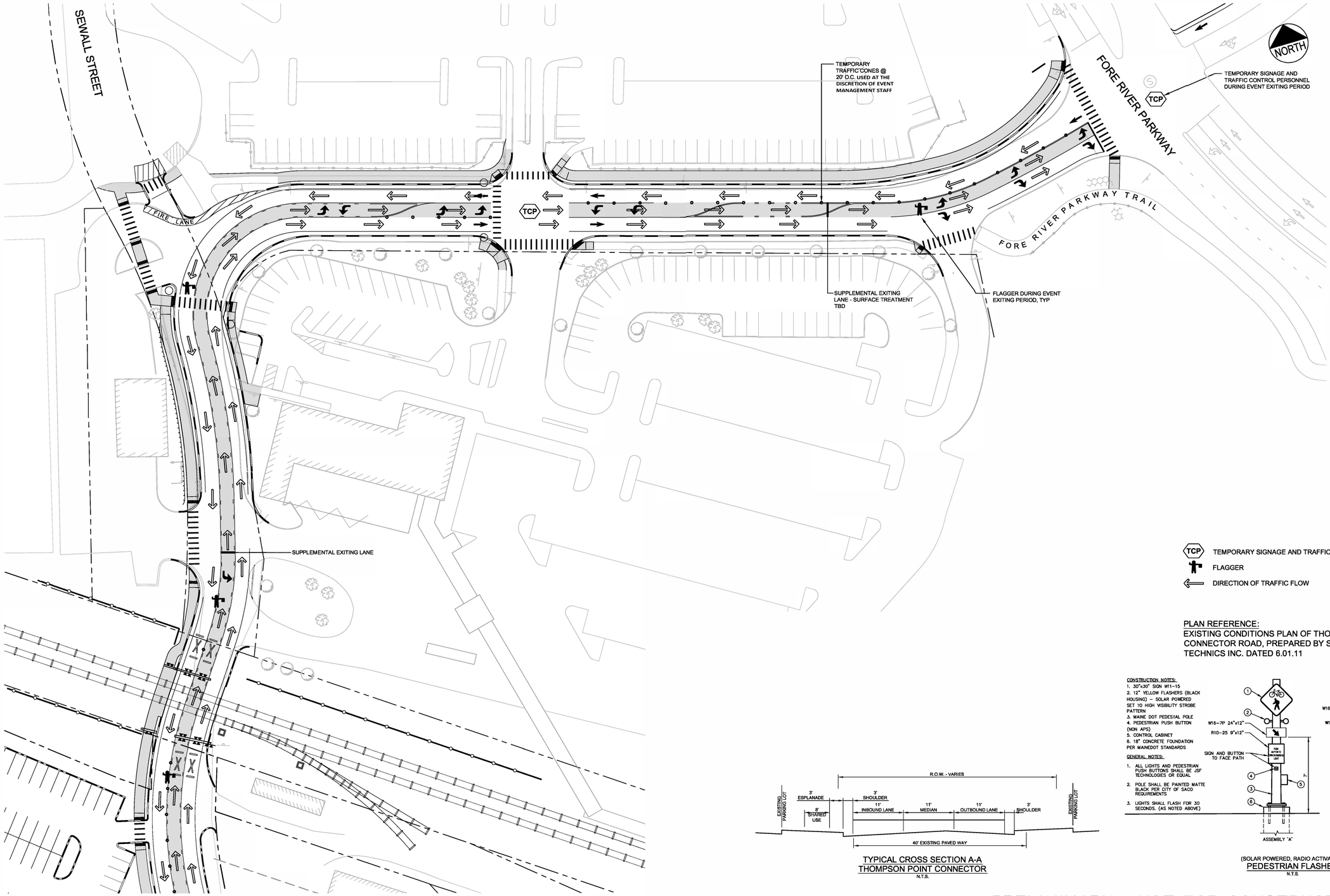

TCP TEMPORARY SIGNAGE AND TRAFFIC CONTROL PERSONNEL

FLAGGER

DIRECTION OF TRAFFIC FLOW

PLAN REFERENCE:
EXISTING CONDITIONS PLAN OF THOMPSON POINT CONNECTOR ROAD, PREPARED BY SEBAGO TECHNICS INC. DATED 6.01.11

TYPICAL CROSS SECTION A-A
THOMPSON POINT CONNECTOR
N.T.S.

CONSTRUCTION NOTES:
1. 30"x30" SIGN W11-15
2. 12" YELLOW FLASHERS (BLACK HOUSING) – SOLAR POWERED SET TO HIGH VISIBILITY STROBE PATTERN
3. MAINE DOT PEDESTAL POLE
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5. CONTROL CABINET
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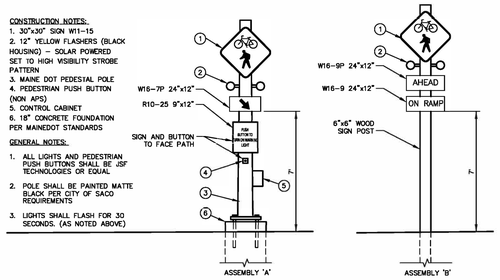

(SOLAR POWERED, RADIO ACTIVATED)
PEDESTRIAN FLASHER
N.T.S.

PRELIMINARY - NOT FOR CONSTRUCTION

GRAPHIC SCALE
30 0 15 30 60
(IN FEET)
1 inch = 30 ft.

REV	DATE	DESCRIPTION
1	03.20.12	FINAL SITE PLAN APPLICATION SUBMISSION

REVISIONS

STATE OF MAINE STEPHEN R. BUSHEY LICENSED PROFESSIONAL ENGINEER

P.E. STEPHEN R. BUSHEY
LIC. # 7429

PROJECT: THE FOREFRONT AT THOMPSON'S POINT

SHEET TITLE: THOMPSON'S POINT CONNECTOR ROAD EVENT MANAGEMENT PLAN - EXITING CONDITIONS

CLIENT: FOREFRONT PARTNERS I, LP

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DRAWN:	DED	DATE:	AUGUST 2011
DESIGNED:	BEK	SCALE:	1" = 30'
CHECKED:	SRB	JOB NO.	2982.01
FILE NAME:	2982-CONCEPT5		
SHEET	C-9.3		

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Appendix B

Life Safety Plan

Thompson's Point Amphitheater
Life Safety Plan
January 2018

INTRODUCTION

In connection with the major redevelopment of the area of Portland, ME known as Thompson's Point, the southernmost portion of the Point will be configured as concert and event amphitheater suitable to host a range of outdoor public events. The venue includes an 85'x165' open-air pavilion referred to as the "Depot," and an existing one-story 4,600 ft^2 cinder block construction building which is to be used as support space for 2018. Additional infrastructure needed to support concerts and events will be installed on a seasonal basis.

The events that will be held at the amphitheater will generally fall into one of three categories:

1) Small events for up to 1000 attendees and which are mainly located within the area of the Depot structure itself. Generally these will be private events, such as weddings or company outings, but may also include "free admission" public receptions or events, or small "pay per attendance" concerts or performing arts events.
2) Small events for less than 2000 attendees and which occupy additional area adjacent to the Depot structure, where the area dedicated for attendees of the event will extend beyond the structure. Generally these will be private events, such as weddings or company outings, but may also include "free admission" public receptions or events, markets, or small "pay per attendance" concerts, performing arts events, or trade shows.
3) "Pay for attendance" concerts, festivals, or similar events with more than 2000 and up to 8000 attendees.

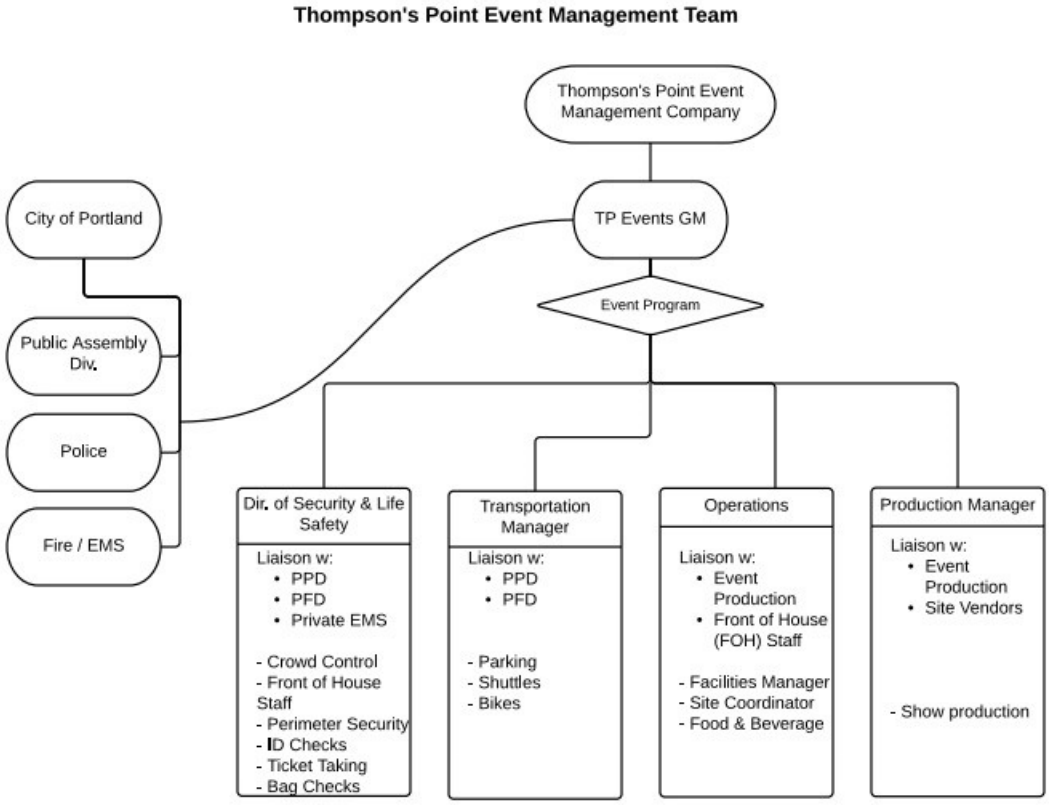
This plan provides general guidelines that address the life safety aspects of venue design and event management to be used in the planning and management of outdoor events on Thompson's Point.

A primary focus for the fire and life safety (FLS) evaluation of Thompson's Point outdoor amphitheater is to assess any fire or other potential hazards that may be present during the event that may detrimentally impact public safety. A key component to ensuring the safety of the general public is to provide adequate means of egress from the venue, such that should an emergency situation occur, the public can readily and safely evacuate the venue in a timely manner. The evaluation below demonstrates that adequate access to the venue is available for emergency responders, and outlines a plan of action that includes safety measures that may be implemented to minimize and/or mitigate any hazards to life safety that might exist within the venue.

EVENT MANAGEMENT AND STAFFING

Forefront Events, LLC ("Operator"), an affiliate of Forefront Partners I, LP, will have the overall responsibility for operation and management of all Thompson's Point (TP)-sponsored events, but will also maintain oversight and approval authority over all events that are occurring within Thompson's Point-owned venues, and will coordinate with and the City of Portland to ensure adequate life safety is afforded all who attend and support these events.

The Operator will be responsible for providing security, public safety, and crowd control for all TP-sponsored events or non-TP-sponsored events located on Thompson's Point, both inside and outside the event amphitheater, along with the integration of the requisite City of Portland Emergency Responders, including for fire protection and medical emergencies, and City of Portland Law Enforcement Personnel. The Operator's Event Coordinator will be supported by a number of other personnel, along with the contractor's event operational and administrative staff. The following represents a basic organization chart for an event's Management Team. Should an emergency situation arise, this Team also represents the Command structure for the Emergency Response Organization (ERO).



The first "line of defense" in providing security, public safety, and ensuring the safe conduct of any event is the Event Security Staff. These individuals will have as their

primary responsibility to maintain security and crowd control within the perimeter of the event area. These individuals will have been specifically trained to support events such as those occurring at Thompson's Point's, including providing the necessary "crowd management" functions as outlined by the National Fire Protection Association's Life Safety Code® (NFPA 101). Throughout all events, these individuals will, at a minimum, be performing the following functions:

- Ticket takers
- Street barricade monitors
- Patron bag checks
- I.D. checks (when alcohol is served)
- Stage barricade security
- Backstage security
- Perimeter roaming teams (inside & outside the fenced area)
- Emergency egress support

The number of personnel needed to support crowd management will be a function of the number of patrons that are anticipated to attend the event and the type of event. Basic guidelines provided within NFPA 101 indicate a minimum of at least one crowd manager for each 250 patrons in attendance at the event.

The event's operational and administrative staff will assist the Event Security personnel when/as needed to support crowd control functions, along with responding to the Event Coordinator's direction regarding the conduct of the event's activities and providing liaison with the various individual vendors that may be located on site to ensure they adhere to all the event's fire protection and life safety requirements.

The City of Portland's Police Department (PPD) will support the overall security around the site, along with providing traffic control for the surrounding streets. Depending upon the event type and projected attendance, the PPD will dedicate an adequate number of police officers to ensure the safety of the public at the event. This support may include the following services:

- Patrol of the surrounding neighborhood(s) / areas,
- Assist Event Security personnel with civil misconduct, as needed,
- Manage law enforcement issues that might arise during the event, and
- Provide off-site traffic control

Although the need for police support in the peripheral areas around the event venue is as much a function of the location and size (area) of the venue as it is a function of the number of patrons, it is often easier to develop a set of guidelines based on the anticipated level of attendance and type of event. Depending on the type of event and the anticipated level of attendance for that specific event, the Event Coordinator will coordinate with the

Portland Police Department, to ensure that the appropriate number of police officers are assigned to support the specific event.

The City of Portland's Fire Department (PFD) will provide support in the area of fire and life safety, including inspections of the venue and the various facilities that will be located at the site during the event. Contracted EMS medical staff shall provide primary medical personnel, equipment, and transport. The level of staffing for any onsite medical personnel and the equipment provided will be a function of the size and type of the specific event. However, the following medical staffing plan is recommended for use as a general set of guidelines for medical support for all events at Thompson's Point:

1) Events with Public Attendance greater than 5,000

- Two (2) roving Medical Teams [4EMTs]
- Two (2)Paramedics
- One (1) ALS Ambulance stationed on site; with one (1) alternate on standby for replacement Should transport be needed
- One [1] All Terrain Vehicle (Gator or Golf Cart), configured to allow the transport of injured if access throughout the event area by ambulance is not feasible.

One (1) medical tent is to be provided, which will be staffed by the above listed personnel, and will be conspicuously located within the event area and provided with signage that identifies its use, such that patrons can readily note its location(s) upon entering the site and know where to go should they be in need of minor medical attention.

2) Events with Public attendance greater than 3,500 but less than 5,000

- One (1) roving Medical Team [2 EMT's]
- Two (2) Paramedics
- One (1) ALS Ambulance stationed on site; with one (1) alternate on standby for replacement should transport be needed.

Either a medical tent, which will be staffed by the above listed personnel, or the onsite ambulance if necessary, will be conspicuously located within the event area and provided with signage that such that patrons can readily note its location(s) upon entering the site and know where to go should they be in need of minor medical attention.

3) Events with Public attendance greater than 2,000 but less than 3,500

- One (1) Medical Team (2 EMT's)
- One (1) ALS Ambulance stationed on site

Either a medical tent, which will be staffed by the above listed personnel, or the onsite ambulance if necessary, will be conspicuously located within the event area and provided with signage that such that patrons can readily note its location(s) upon entering the site and know where to go should they be in need of minor medical attention.

The Event Coordinator will be responsible for ensuring proper coordination and communications are provided with each member of the Management Team outlined in the organization chart above. All communications between the various Management Team members, as well as their supporting staffs, is to be via portable radios.

Although not to be considered part of the ERO, the Event Coordinator will also liaise with both the local U.S. Coast Guard Command and the City of Portland's Harbor Master. Due to the nature of specific events and the location of Thompson's Point near navigable waters, although highly unlikely, it is conceivable that boats will gather offshore in the immediate vicinity of the Thompson's Point to listen to concert events; either at anchor or drifting. Such "congested" boating in close proximity to the shore could result in incidents that would result in the need for a response by the maritime authorities. Ensuring that these authorities are aware of the upcoming event will allow them to prepare as they deem necessary.

HAZARDS ASSESSMENT

Due to the nature and locations of most of the anticipated outdoor events, the numbers and types of hazards that could potentially threaten the general health and well-being (life safety) of the staff and public at large are relatively limited. The majority of the hazards that must be addressed are those that are inherent with the operation of the event itself, including those associated with the various vendor facilities that are to be participating in an event, along with those that may arise due to severe weather events.

Fire Hazards

The fire hazards associated with most outdoor events are primarily limited to the cooking/heating facilities that are inherent with the food vendors that may be on site, as well as the equipment and materials associated with a stage(s) that is likely to be present at most events. In both instances, the amount of either flammable or combustible materials/liquids will be relatively limited and any fire that might occur would likely be restricted to the source of origin. To minimize the potential for a fire emergency, each food truck/trailer/tent that has cooking/heating equipment present shall also have at least one portable fire extinguisher installed. In general, these extinguishers should be the type that is intended to extinguish a range of fires and of sufficient size to have a reasonable chance of extinguishment; such as a type 2A:10BC. If a deep oil fryer is being used, an additional, type K (wet chemical) extinguisher is to be provided adjacent to the cooking area. Additionally, a minimum separation distance of at least 10 feet should be maintained

between any food trucks/trailers/tents that have cooking equipment and any other structure. If any of the vendors will be using a portable propane tank as a fuel source, this fact must be brought to the attention of the Event Coordinator and the Fire Safety Lead, such that should a fire occur within that particular facility, the emergency responders will have knowledge that this hazard exists and can take the appropriate actions; both in terms of fire fighting and public safety. A minimum of two (2) portable fire extinguishers are to be located at any stage that is erected at the event venue, such that they are readily accessible and remotely located from one another such that a fire at anyone location of the stage will not prevent access to at least one of the extinguishers.

Medical Hazards

Although the potential exists for medical casualties to occur at events held at Thompson's Point, historically the majority tend to be minor in nature, such as cuts from broken glass or a variety of sprained muscles or ligaments. However, due to the nature the types of events that may occur at this venue, along with the likely diversity in the age of the crowds and the potential for hot, humid weather during an event, a wide range of other potential casualties should be anticipated. At a minimum, these should include:

- Heat stroke, dehydration
- Injuries from missile hazards, such as bottles and cans
- Fainting and exhaustion
- Trampling or crushing from crowd pressure
- Injuries from "Crowd surfing" or "stage diving"
- Respiratory issues
- Age-related illnesses
- Complications from the use of illicit dugs or alcohol abuse
- Epilepsy attack resulting from strobe lighting

All injuries or medical emergencies are to be immediately reported to the Event Coordinator and/or Security Chief, such that site medical personnel can be dispatched to the location of the injured person. If the injured person is not ambulatory, measures will be implemented to move that individual to the nearest medical tent or ambulance for further evaluation, treatment, and possible transport to a local hospital.

For most events, it is likely that onsite vendors will be selling bottled water. The Event Coordinator shall be monitoring the heat index to assess if the environmental conditions warrant the need to implement additional measures to prevent the mass onset of heat stroke and/or dehydration amongst the general public. Preventative measures to mitigate the possible onset of multiple cases of dehydration include: cooling/misting station(s) located within the event area and accessible by all patrons; drinking water stations accessible by all patrons; and if conditions require, additional bottled water made available to the public, free of charge.

The roving medical team(s) will be monitoring the crowd throughout the event to assist in the early identification/notification of, and response to, any medical issues that may arise.

Severe/Adverse Weather Hazards

In general, the two weather hazards that represent the greatest likelihood of occurrence at outdoor venues are lightning and high wind events, which could include both hurricanes and tornados. Lightning can both cause severe injury or death if an individual(s) is (are) struck, or can be the source of a fire initiation if a structure or equipment is struck.

Given the nature of weather events that involve either hurricanes or other storms that can spawn tornados, it is unlikely that significant warning from the National Weather Service would not be provided for such weather circumstances well in advance of the event start time. However, during the summer months, it is not unusual for rapidly developing thunder-storms to occur. Although events may not be cancelled or postponed for a "rain only" event, such thunder-storms can also involve both lighting and high winds.

The Event Coordinator shall ensure that the local area weather is being routinely monitored. Should adverse weather, such as thunder-storms, be identified within the general northern New England region, the frequency at which the weather is being reviewed shall be increased; especially if the storms include the potential for lightning and/or high winds are being forecasted as having a future impact on the greater Portland area. Should any storms involving high winds and/or lighting be forecasted as moving into the greater Portland area, the Event Coordinator shall implement an evacuation of the event site prior to the leading edge of any such storm formation approaching to within 15 miles of the site. This distance may be modified depending on the speed at which the storm is moving, but a minimum of 30 minutes should be provided prior to the weather beginning to deteriorate to allow site evacuation and to provide patrons sufficient time to reach a safe location. Depending on the timing of the storms arrival and its expected duration, the Event Coordinator will make a determination, in conjunction with the Emergency Response Organization (ERO) as to whether the event is to be cancelled at the time of evacuation or postponed until the severe weather is clear of the area and conditions are safe to resume the event.

When only high winds are predicted, with or without a rain event, it may not be necessary to evacuate the site, but actions must still be implemented to protect the public from potential missile hazards, which may include suspending the event operations. The Event Coordinator shall ensure that all vendors take appropriate actions to secure any materials/equipment/tents/etc. that are not designed to resist high winds; such as sustained or wind gusts at or exceeding 25 to 30 mph. The specific wind-load limitations that have been determined by the appropriate professional(s), such as a professional engineer or manufacturer’s representative, for all structures and equipment that are to be located at the venue shall be provided to the Event Coordinator. The lowest value associated with any of

the structures/equipment used for the event, with a minimum of an applied 10% safety factor, shall be used as the "metric" to determine when the event operations must be halted due to high winds.

Chemical Exposure Hazards

It is not anticipated that any toxic materials will be used to support any event at Thompson's Point. Equally, with the conversion of the Thompson's Point area from one that was industrial in nature to one that will now focus on business and residential uses, it is not anticipated that the venue would be impacted by any activity associated within the adjacent buildings. The potential exists that an accident could occur offsite that could have an impact on personnel at Thompson's Point, depending on prevailing winds. Should such an offsite accident occur that might involve the development of a "smoke" plume that contained toxic or noxious fumes, it is possible that event participants could be exposed if the fumes migrated toward the event site. In general, the Department of Transportation (DoT) guidelines recommend that should an event such as that occur, that areas downwind of the accident site be evacuated for a distance of 1.3 miles wide by 2 miles long. Should a fire/explosion accident occur offsite that involved the release of fumes within a smoke plume/cloud and the wind direction is toward Thompson's Point, it would be necessary to evacuate the event.

There are no specific preventative measures that can be implemented at an event venue to alleviate or minimize the risk of exposure to a potential chemical spill at an adjacent site. However, the Event Coordinator shall review the areas surrounding any planned event venue to assess if a potential exposure hazard exists due to the nature of work performed at adjacent sites. If the potential exists for an exposure hazard to exist, the Event Coordinator shall contact those businesses to ensure that they are aware that an event will be occurring and should any accident or spill occur, immediate notification must be provided to the Portland Fire Department and the Event Coordinator.

External Threats

Although it is considered as highly unlikely, the potential always exist that a public event could be targeted for an external threat, such as a bomb threat. The Event Security will be monitoring all items brought on site in an effort to detect any potentially dangerous items, However, given the locations of the outdoor events, each will still be exposed to potential threats from areas "outside the fence."

Should a specific threat to an event and its occupants be received, this information shall be immediately relayed to the Event Coordinator who will coordinate the PPD representative on site to determine the appropriate course of action. All efforts will be directed toward ensuing the safety of all the event participants, both the general public and event staff.

LIFE SAFETY

Although these events occur outside, a primary life safety concern continues to be providing adequate means of egress should an evacuation of the site be required. As such, the primary code for reference for evaluating this aspect of an event venue is the National Fire Protection Association's *Lift Safety Code®,* NFPA 101. In general, most of the life safety requirements outlined in NFPA 101 do not readily apply to an outdoor venue, including most that pertain to providing adequate means of egress, However, it is common practice to utilize the factors within NFPA 101 (Chapter 7) for calculating occupant loading and determining the number and size of exits for enclosed outdoor venues. Although it is likely that such an approach provides "conservative" results, in terms of the means of egress, no other data exist that have been widely accepted as being valid for such an evaluation.

In general, the amphitheater is to be treated as "Assembly Occupancy" as defined by NFPA 101. Based on this occupancy classification, general requirements for providing adequate means of egress are developed that are a function of estimated maximum number of people that will be located within the event venue; the event's maximum "occupant load." To establish the maximum occupant load for outdoor venues, it is common practice to use the NFPA occupant load factor for assembly areas where it is anticipated that the occupants would be mostly standing; which is 7 ft^2 per person and defined as a factor for "concentrated use without fixed seating." However, this factor should only be applied to the area(s) of the venue that will be accessible to the general public. During most events, a significant amount of a venue's total area will be dedicated to other uses; such as providing a stage(s) and its associated "back stage" areas, along with areas occupied by food or merchandise vendors, portable toilets, etc. Therefore, a reduction is applied to the overall venue area to account for these ancillary uses and assess the actual area that will be available for public access prior to calculating the estimated occupant load for a specific venue.

NFPA 101 also has additional restrictions that must be applied to events that involve a large public attendance. For example, for any event where the occupant load is expected to exceed 6000, unless a detailed life safety evaluation is to be developed for that specific event, an occupant load factor of 15 ft^2 per person is to be used to calculate the allowable occupant load (vs. 7 ft^2/person) within that areas open to the public.

Although NFPA 101 also has a requirement that all assembly occupancies have a "main entrance" and that this entrance should have the ability to accommodate up to 2/3's of the total occupant load for the event, such a requirement may not be feasible for venues that are intended to accommodate very large numbers of people. Equally, the premise behind this requirement is a function of concern over the time needed to safety egress before conditions prevent escape. This premise is not applicable to outdoor events. Similarly, the capacity factors used to determine the size of a means of egress are also based on the

premise that the time needed to egress may be a critical factor. Although the capacity factors associated with means of egress, such as for aisle and doorway widths, will continue to be used as general guidelines when evaluating the required total width of egress openings from the venue, strict compliance with these factors is not considered to be necessary. It is not anticipated that ambient conditions within the venue could be caused to deteriorate to a point that safe egress from all available exits is threatened as a result of any hazard or activity associated with the event itself. Means of egress must be configured to ensure that all occupants have an available exit pathway that is sufficiently remote from any potential hazard such that they can safely egress the venue in a timely manner. Other than the approach of severe weather, the exit configuration for each venue is to be arranged such that ambient conditions within at least 1/2 of the available means of egress will always remain tenable/accessible.

Based on the above factors and the requirements within NFPA 101, the outdoor concert and amphitheater at Thompson's Point has been evaluated to determine the maximum number of allowable occupants (public and staff), along with the number and configuration for the means of egress.

Size

The publically accessible area of the venue for events (not inclusive of the stage and other areas dedicated to production equipment) encompasses approximately 155,500 ft^2. After a reduction in available area is made for food and beverage concessions, trucks/trailers/tents and other administrative uses, it is estimated the maximum area available for use by the public will be approximately 105,000 ft^2.

Capacity

The maximum capacity for events at the Thompson's Point amphitheater contemplated in this plan is 8,000. In accordance with life safety criteria outlined in the NFPA 101, the occupant load and egress capacity of the venue are used to define the capacity for attendees of the venue. The configuration of the public assembly area for attendees in the venue and the capacity of all events at the Thompson's Point amphitheater shall conform to the occupant load and egress capacity requirements of NFPA 101 as follows:

Occupant Load

Based on the occupant loading requirements outlined in the NFPA 101 for an outdoor event, the maximum number of occupants at this venue would be approximately 15,700; using an occupant load factor of 7 ft^2/person.

Any event that would be expected to exceed 6000 persons is required by NFPA 101 to have a life safety evaluation performed that specifically addresses all aspects of that particular event, including how adequate egress is to be provided in the event of an emergency. The intention of this document is to provide the basis for

complying with all life-safety requirements and conditions as required by NFPA 101 for events with up to 8,000 occupants.

This venue may be configured to accommodate attendees in a "general admission" (standing) area, a seated area, or a combination of "general admission" (standing) and seated areas. The occupant loading factor of 15 ft^2/person shall be used to determine the occupant load for any portions of this venue configured as "general admission" for the attendees. The occupant loading factor of 7 ft^2/person is used to determine the occupant load for any portions of this venue configured with seating for the attendees.

Any combination of standing and seated attendees will never exceed 8,000.

Egress

The capacity of the available means of egress will be a function of the total number of attendees expected at each event. NFPA 101 uses an exit capacity factor of 0.2 inches / person to determine the total width of exits that must be provided to ensure adequate means of egress are available from each event.

NFPA 101, Section 12.2.4.4, also includes requirements for the number of available exits for fenced outdoor assembly areas, based on the number of persons expected to be present. Although it is required that any enclosed area be provided with a minimum of two widely separated means of egress (exits), for any enclosed area with an occupant load that exceeds 6000, the area must be provided with a minimum of three (3) widely separated means of egress. However, given that access/egress to/from this site is limited to only the northern boundary, it isplanned that all events will be provided with a minimum of three separate exits from the venue to better ensure that an expeditious and orderly evacuation will be possible if the need arises.

The following table provides a summary of the minimum exit requirements for scenarios defined by maximum occupancy of 1000, 2000, 5000, and 8000, based on having three (3) available exits:

Maximum Attendance	Minimum Number of Exits	Minimum Total of "Clear" Exit Width [in. (ft.)]	Average "Clear" Width per Exit (ft.)
1000	**3**	**200 (17)**	**5.5**
2000	**3**	**400 (33)**	**11.1**
5000	**3**	**1000 (83.3)**	**27.8**
8000	**3**	**1600 (133.3)**	**44.4**

The actual design (numbers and clear width) of the exit arrangement may vary depending on the anticipated occupant load for a specific event at the venue. The general arrangements for the planned exits for all events are depicted in **Appendix A**. These documents indicate how events at The Point are to be generally configured, including depicting the paths for access by emergency responders and for exiting by the public.

The maximum occupant load for any event that is to be contained within a secured area will be controlled by available ticket sales. Although this number does not include the event staff that may also be within the fenced enclosure that is open to the general public, sufficient egress capacity will be provided for all occupants within this area of the event, general public and staff included. Based on the proposed layout for events that will be located within a "fenced" area, at least three (3) separate exit locations will be provided that will be available / accessible to general public;

1. A main site entrance (ticketing) centrally located along the fence line,
2. An emergency exit at the far east end of the fence, and
3. An emergency exit at the far west end of the fence.

Additional egress gates will be provided as required by the occupant load. The emergency exit gates located at the far east and west end of the fence will also be designed to accommodate access by emergency vehicles; providing at least 20 ft. of clearance.

Site Lighting

All exits must be prominently marked to indicate that they are an exit from the site and shall be provided with adequate lighting. Lighting units, fixed or portable, are to be located throughout the amphitheater to provide lighting of not only the exits, but the general areas where the public is to be located. Each of these lighting is to be provided with its own means of reliable[1] power, including the use of an electric generator if necessary. The lighting is to be located such that the loss of any single unit will not result in the total loss of ambient light within any single portion of the public area that would detrimentally impact the ability to safely egress the site (perform way-finding). Should any of the general lighting for the public area(s) be provided by a source that does not have a dedicated power source, an emergency backup power source is to be provided for those lights.

Public Address System

[1] *In this instance, "reliable" indicates that the source of power is not subject to a single-source failure other than at the unit itself, whereby all other units being fed from that power source, will continue to operate.*

A public announcing (PA) system is to be provided that ensure any general or emergency announcements can be clearly heard / understood from all areas within the public portion of the event. This system is to be provided with an emergency (back up) power source to ensure that the system remains operational if the normal power source is lost. This system will be essential in providing effective and timely communications with the general public should an emergency situation arise.

Other

It should be noted that from purely a "life safety" aspect, the use of the "beer garden" approach should be discouraged if at all possible. This configuration further isolates the public from ready access to an exit from the venue and will result in an increased time to evacuate should the need arise. Because of the higher "density" of patrons within these areas, there is also a greater risk of crowd "crush" if an evacuation is needed; thereby increasing the potential for risk of injury.

EMERGENCY RESPONSE

Should an emergency situation arise, the Event Management organization that is outlined above will become the command structure for the Emergency Response Organization (ERO). All members of the ERO will then move to a common location that will become the Incident Command Center. For larger events that include the use of an Event Administrative Trailer, this may be used to support the requirements of the Incident Command. The Event Coordinator is to initially become the Incident Commander, with all other members of the ERO providing input and expertise within their respective areas; security (crowd control), law enforcement and traffic control, medical, and fire. Based on the nature and severity of the emergency situation, the Incident Command will determine if a site evacuation is warranted.

If a site evacuation is warranted, the Event Security Staff will be directed to begin to move all occupants to the nearest exit from the site and provide additional instructions regarding movement away from the site to safer locations. Depending on the nature of the event, the Incident Command may also determine that it is necessary to contact the maritime authorities to inform them of the emergency situation, such that this can be relayed to any boaters that are located immediately offshore and could be impacted by the situation.

Severe Weather Emergency

An emergency due to the approach of severe weather will be initiated subsequent to the Event Coordinator making a determination that the onset of a severe weather event is imminent. At that time, the ERO will be activated. Depending on the type and nature of the severe weather, the site may be evacuated. Should the emergency only involve high winds that are in excess of the maximum allowed, the Event Coordinator will discontinue all operations on any stage(s) and within any tents or other portable structures that may be

subject to wind damage, and direct his staff to take the necessary measures to secure each from the effects of high wind forces, This includes immediately disassembling any of the ticket, medical, or vendor tents that cannot withstand the expected wind velocities and placing them in a safe configuration. Equally, all vendors will be notified to secure their trucks and trailers as necessary, such that they do not represent a source for potential missile hazards.

If the weather emergency is such that the site must be evacuated to ensure the safety of the occupants, such as the approach of a thunder-storm involving lightning, the evacuation shall begin at least 30 minutes prior to the expected arrival of the severe weather. It is estimated that a minimum of 20 minutes, from the time of the announcement, will be needed to safely evacuate the venue. It is incumbent upon the Event Security staff to ensure that all exits (gates) are immediately opened. Equally, the Security Staff are to direct the public in a manner that distributes the site occupants among all available exits; thereby minimizing the potential for a significant "backlog" at any single exit.

Any severe weather event, such as extreme temperatures, that result in the potential for medical casualties will be addressed in the *Medical Emergency* section below.

Fire Emergency

Localized fires that can be extinguished using a portable extinguisher shall be reported to the Event Security Director and the ERO Lead for Fire Safety, but shall not be considered an "emergency," thereby not requiring the ERO to be activated. However, any fire that develops beyond the point that cannot be extinguished with the available portable extinguisher shall be deemed to represent an emergency. The Incident Command will direct the ERO Lead for Fire Safety to take the necessary measures to prevent or minimize the spread of fire beyond the source of origin. All requests for offsite assistance from the PFD will be via the event's Fire Safety Lead.

The Event Security staff will immediately move all personnel away from the fire area. The Incident Command will advise all emergency responders of the nature of the fire event; especially if compressed flammable gas storage tanks may be involved.
The severity and location of the fire event will dictate the need to postpone or cancel the event activities. All event structures must be readily accessible to responding fire department vehicles. At a minimum, an emergency access lane must be designated as part the pre-event planning and be properly identified at the venue, The PPD and Event Security will ensure that the access lane to the fire area by any responding emergency vehicles remains clear. Should the fire emergency warrant the need to evacuate the site, all occupants will be directed by the Event Security staff toward the exits; ensuring that all occupants remain clear of the emergency access lane.

Medical Emergency

It is anticipated that most of the medical situations, even "emergencies," will primarily involve only one individual, or possibly several, for anyone situation. For such instances, it is not anticipated that it would be necessary to activate the *ERO*. These "limited" emergencies will be coordinated by the Event Security Staff and the Medical Lead. The Event Coordinator shall be informed of these emergencies and input from the rest of the Event Management staff would be on an "as requested" basis. Such medical emergencies would be handled in a manner that should have a minimal impact on the overall Event activities. The Medical Lead and his supporting staff will determine the necessary course of action, in terms of treatment, and implement the necessary actions; including transport to a local hospital.

Should the emergency involve the need to transport a patient from within the site, the Event Security will assist the Medical staff in crowd control, keeping the area around the patient(s) clear and providing a path for any needed transport vehicle, including ensuring that the emergency access lane remains clear and unobstructed.

Should a medical emergency arise that involves large numbers of persons, such as multiple cases of heat stress, dehydration, etc., the Event Coordinator will direct the initiation of the *ERO.* The *ERO* staff will evaluate the situation based on input from the Medical Lead and take the necessary measures to protect the health of the public. If the emergency is determined to be "wide spread" in nature and beyond the capabilities of the event staff and onsite equipment to mitigate the risk(s), then the Incident Command may elect to cancel further event activities and evacuate the venue.

Bomb / Terrorist Threat

Should notice of a bomb or other similar threat that could result in wide-spread damage and/or mass casualties be received by the Event Coordinator and/or the Security Lead, or PPD representative, the *ERO* will be immediately activated. The Incident Command will direct the Site Security Lead to take the necessary actions and to liaise with the PPD to initiate their specific threat protocol/actions. Should the determination be made that the site be evacuated, the Event Coordinator will issue a directive that all event operations be ceased and a general announcement would be made over the PA system to facilitate the orderly evacuation of the venue. All Event and Site Security staff will be used to support the evacuation process, directing the crowd in whatever direction is indicated by the PPD.

Appendix A

Event Exit/Evacuation Plan

NORTH

PEDESTRIAN ROUTE

MAIN GATE

APPROXIMATE ROADWAY CONSTRUCTION/STAGING/ STOCKPILE AREA (CLOSED TO PUBLIC)

GRAVEL PARKING LOT

EVENT MANAGED PARKING AREA

EVENT MANAGED PARKING AREA

EVENT MANAGED PARKING AREA

EXISTING BUILDING TO REMAIN
SUBURBAN PROPANE

EXISTING BUILDING TO REMAIN

EXISTING BUILDING TO REMAIN
NNEPRA

BRICK SOUTH
PORTLAND MAINE
8

THOMPSON'S POINT

BAR

BEER GARDEN/ OUTDOOR DINING AREA

NORTH ENTRANCE

CIRCUS OF MAINE SHELTER IN PLACE

STROUDWATER DISTILLERY SHELTER IN PLACE

BRICK NORTH BUILDING (A)
(SEE ARCHITECTURAL PLANS BY ARCHETYPE, PA)

BISSELL BROTHERS SHELTER IN PLACE

CELLAR DOOR SHELTER IN PLACE

GRAVEL PARKING LOT

24' WIDE GATE

12' WIDE GATE

30' DIA. YURT CONCESSIONS

TOILETS

TEMP. FENCE W/ GATE

12' WIDE GATE

20' X20' MERCHANDISE TENT

DEPOT PAVILION

40' WIDE MAIN GATE

24' WIDE GATE (AFTER SHOW / EMERGENCY USE ONLY)

GENERATOR POWER

LIGHT TOWER (TYP.)

FOOD TRUCK (TYP.)

LAWN AREA

SOD LAWN AREA

FOH TENT (20' X 20')

BOX CONTAINER BAR (TYP.)

LIGHT TOWER (TYP.)

EARTH MOUND

VIP LOUNGE

LIGHT TOWER (TYP.)

40' WIDE GATE

TEMPORARY BLOCK DURING EVENTS

VIP, EMERGENCY AND ACCESSIBLE PARKING AREA

35' WIDE GATE

EMS TENT (10' X 10')

12' WIDE GATE

24' WIDE GATE

8' X 40' BOX OFFICE & WILL CALL

12' WIDE GATE (EMS)

STORAGE CONTAINER

24' WIDE GATE

POWER

16' X 16' WING

20' X 24' LOADING

40' X 40' STAGE

16' X 16' WING

EXPANDED STAGE LANDING AREA

LIGHT TOWER (TYP.)

STORAGE CONTAINERS

24' WIDE GATE

TEMPORARY EVENT FENCING (TYP.)

30' X 30' CATERING TENT

40' WIDE GATE

BATHROOM TRAILER

SHOWER TRAILER

POTENTIAL SHELTER IN PLACE - LIMITED OR NO CAPACITY MAY APPLY; AVAILABILITY TO BE CONFIRMED BY EVENT COORIDNATOR PRIOR TO EVENT

REV	DATE	DESCRIPTION
		REVISIONS

PROJECT
THE FOREFRONT AT THOMPSON'S POINT
PORTLAND, ME 04102

SHEET
PEDESTRIAN VENUE EVACUATION PLAN

OWNER
FOREFRONT EVENTS, LLC
10 THOMPSONS POINT RD, PORTLAND, MAINE 04102

PLACEMAKER PARTNERS, LLC
501 DANFORTH STREET
PORTLAND, ME 04102
bo@placemakerpartners.com

DRAWN:	BEK	DATE:	FEB. 2017
DESIGNED:	BEK	SCALE:	N.T.S
FILE NAME:	OE-SITE LAYOUT.DWG		
SHEET	1 OF 1		

Interim Update to Transportation Demand Management Plan

September 19, 2017

The Transportation Demand Management Plan (TDM) for the Forefront at Thompson's Point was first approved in September 2011 and subsequently re-approved in February 2013 with Master Development Plan approval (please see Appendix 1 attached hereto); in November 2015 we presented an Addendum to Transportation Demand Management Plan which was approved in conjunction with the combined Brick North and Brick South Level III site plan approval (and concomitant subdivision/master plan reapproval) in early 2016 (please see Appendix 2 attached hereto)

Within that Addendum, we had outlined our commitment to provide our Two Year TDM Program in December 2017. The purpose of having until the end of this calendar year was to give ourselves roughly a year of operations with the Brick North building fully occupied, several months of operations with Brick South (this did not actually open until spring of 2017), another season of summer concerts and

events, and roughly three months to vet our findings, review survey information, and craft an updated forward looking plan for the City's review.

We have also recently engaged a new TDM coordinator to replace the individual who had served as TDM manager until this summer. Our new TDM coordinator, Soli DG, whose activities include operational and logistics management for the Maine Port Authority, and who provides creative and forward-thinking consulting on complex transportation infrastructures and the operational and communications systems required to grow and manage them sustainably.

We are especially excited to have them as part of the team. Their familiarity with Portland and its various modes of transportation, together with our project and its recent history, makes them a perfect partner in developing the organic, authentic, and flexible forward-thinking TDM planning that the Forefront project requires.

The underlying principles of our original TDM plan continue to shape our operational and tactical plans. Whereas when we submitted our 2015 plan we had only hosted a range of outdoor events; now, in addition to continuing to host such events, we have also introduced a number of tenants, many of whom also host public and private events, and whose patrons and employees are also active stakeholders in our ongoing efforts. It's one thing to plan for the inclusion of tenants in a project, and quite another to have actual tenants with evolving businesses who are looking to push the envelopes of their practice (which is of course part of why we've worked so hard to cultivate such a great group of creative Maine businesses!). Further, as we often muse about, when we began writing our TDM plan back in 2011, while Uber existed, it was not an active player in this region; now car share (Uber, Lyft) are part of the toolkit of daily habits for our tenants, employees, and patrons. The landscape has truly changed dramatically between iterations of our TDM plan, and this has been an exciting factor in our continued efforts at creative placemaking and managing the ebbing and flowing transportation needs of our site.

The substantive update on our TDM will take the form of our two-year update that is forthcoming in December. However, given that there is a Level III Site Plan application pending for the Children's Museum and Theatre of Maine (their "Micro TDM" overview is being developed and submitted under separate cover), we are providing this interim update with some highlights of recent TDM efforts that have been underway and ongoing over the last year.

The first goal has been to engage tenants in the creation of "Micro TDM" plans that genuinely and authentically work with their employees and patrons. As we know, engagement of this type is not something that can be legislated, mandated, or required, but must instead be creatively crafted, presented, negotiated, and evolved in real time.

The original TDM document noted that each of our tenants "will have different constituencies with varying travel patterns and habits, and who will thus require

different approaches which must nevertheless be well orchestrated," and that "tenants are expected to be active participants in the overall TDM goals and measures elaborated here, and to take active roles in defining their own mechanisms for participating in these goals".

Each tenant is thus a different type of partner in the overall goal to reduce reliance on single-occupant vehicle trips. That said, certain basic components provide the basis for all of the ongoing conversations and collaborations with our tenants (and event partners). These have been part of the TDM menu for Thompson's Point since the project's inception, and we now have sufficient critical mass to be able to create more robust programming around them.

They are as follows:

- Parking and Carpooling
- METRO
- Amtrak
- Bicycle and pedestrian infrastructure and support

Parking

One of the more recent holistic policy implementations at Thompson's Point, which has come with the combination of increased development activity and infrastructure completion, has been the shift to paid parking. Paid parking has been part of the planning for Thompson's Point since the outset, but for the first few years of the development, other than large events such as concerts where we charged for on-site parking, there was no fee associated with daily parking on site. To the extent that any urban development site provides virtually unlimited free parking, this serves as a defacto disincentive to effectively encouraging regular use of alternative modes. The shift to paid parking does help encourage tenants, employees, patrons, and guests to see parking as a finite resource that has a cost associated with it and has helped move the needle on a general openness to looking at different transit practices across the board.

Our ongoing surveys with our tenants are seeking to determine the extent to which our efforts to encourage carpooling are bearing fruit. We have certainly seen evidence that this is the case for our event business, where the industry average of 3.5 patrons per vehicle parked has been by far the low end of our spectrum – we've seen this ratio as high as 10:1 thanks to the effective implementation of the various modes described herein. We are continuing to vet the results of many hundreds of concert-attendee surveys (distributed by the State Theatre as a way to help us better track data about visitor parking/transit preferences) to determine how our patrons are continuing to get to and from Thompson's Point for large events. These surveys follow the format previously submitted (please see Appendix 3).

We continue to utilize off-site parking by agreement with various lot owners (Mercy Hospital, etc.) for large events, as demand requires, so that we can effectively serve all of the uses at Thompson's Point.

METRO

The ability to have METRO service at our front door has always been a tremendous opportunity for Thompson's Point. Over the last year, we have begun various types of outreach with METRO to enhance and expand our collaborations. These include:

- facilitating meetings and ongoing conversations between our tenants and METRO representatives to explore ways that METRO and its expanded routes (now including BREEZ service) can be a viable transit option for employees and visitors;

- creating a "METRO Express" lane at our outdoor concert venue to allow METRO riders (as well as Amtrak and Bicycle Benefits patrons) to bypass the long ticket line at concert opening and get into the venue immediately when doors open;

- active promotion of METRO, including updated route information, on our summer concerts website;

- METRO inclusion of Thompson's Point in its transit guide;

- Creative "sponsorship" collaborations with METRO for our various ongoing events, such as the Sunaana music festival

Amtrak (Downeaster):

The Amtrak Downeaster service at the Portland Transportation Center is a great amenity for Thompson's Point, and as we have added significantly to our development program over the last two years, our offerings have become an amenity for them as well. In addition to hosting the Amtrak Downeaster station meeting in Brick South this spring, where Thompson's Point as a Transit Oriented Development and active partner with NNEPRA was highlighted, we have continued to evolve our programming and transit offerings with NNEPRA and plan to continue this over time:

- we have facilitated meetings and ongoing conversations between our tenants and event partners regarding how the Downeaster Service could play a viable role in getting their patrons to and from Thompson's Point, both for events (concerts, Brick South events such as the Flower Show, etc.) and for ongoing business activities (Circus Maine cabarets and classes, Bissell

Brothers tasting room visits and beer launches, Cellardoor events, and International Cryptozoology Museum visits);

- with our event partners, we developed the "Sunaana Express", whereby we worked with NNEPRA to reserve a separate car from Boston's North Station to Portland on the eve of the Sunaana festival (March 4, 2017), and partnered with Allagash Brewing Co. and local folk rock musician Conor Garvey to create a festival experience on the train taking folks to Bissell Brothers for the Friday night launch event (with Icelandic band Mammut playing at the Brewery) – this initiative will expand for the 2018 Sunaana event, and has helped us and NNEPRA catalyze ongoing efforts to conceive of the train ride itself as an extension of the experience of Thompson's Point, with other modes of programming in the works for this winter and beyond;

- offering Amtrak Downeaster ticketholders access to the "METRO Express" lane at our outdoor concert;

- exploration of reciprocal marketing possibilities with the Downeaster to leverage co-promotional opportunities

Bicycle and pedestrian infrastructure and support

The partnership with Portland Trails has been very fruitful, and their active encouragement of walking and bicycling to Thompson's Point has been a major force in our ability to see such reductions in SOV use. The "parklet" project at the end of the point, at the tail end of the trail, has been a great amenity for visitors, tenants, and guests ranging from wedding parties to concert go-ers, and the completion of the Libbytown area traffic calming and pedestrian infrastructure improvements (in partnership between MaineDOT, the City of Portland, PACTS, Northern New England Passenger Railway, and Forefront Partners through the Economic Development Administration and Federal Highway Administration grant package and our private local match dollars), has resulted in a substantial package of bike/ped improvements. We have sought to encourage the use of this infrastructure in the following ways:

- facilitating conversations with tenants to encourage use of bicycle racks for their employees and guests

- collaborative sponsorship with Cyclemania to provide over 70 bicycle racks for summer concerts, and co-promotional partnership with Portland Trails to help promote the use of these racks for concert attendees

- creative partnership with Portland Trails to build pop-up parklet at the entrance to Brick South for the Sunaana festival in March 2017

- Bissell Brothers and Libbytown Neighborhood Association partnership on Trails Cleanup Days

- Special programming for local residents such as the recent "Tree of 40 Fruit Grove" artist talk with Sam Van Aken for Libbytown Neighborhood Association gardeners (with concert ticket giveaway in collaboration with the State Theatre and Thompson's Point) to encourage creative placemaking opportunities within walking distance for Libbytown neighbors

The above represents a set of highlights from the past year of programming at Thompson's Point. A more robust report out on these activities, together with the results of our ongoing data gathering and interviewing processes, will be packaged together with the Soli DG team by the end of December. We are very excited about the opportunity to continue to push the envelope with our TDM offerings, and feel that the future components of Thompson's Point (namely the hotel and Children's Museum and Theatre of Maine, which are the next two most immediate projects), will make substantial and meaningful contributions, through their "Micro TDMs", to the overall Thompson's Point TDM effort.

In closing, please see the updated interim table of action items; this follows from the 2015 Addendum, and notes status on various items, as well as indicating the December 2017 Two Year TDM Program as the next substantial milestone.

Action Item	**Original Timeframe for Implementation per 2015 Addendum**	**Updated Timeframe (September 2017)**
Finale TDM Funding Package based upon City of Portland's priorities for funding from its share of Transit TIF revenues generated by Forefront	Fall 2011	TBD pending City review process
Provide update to City regarding progress on TDM plan implementation and status of TMA ("macro TDM")	Completed Fall 2015	
Appoint/Confirm TDM Coordinator	Completed Fall 2015	
TDM Plan Implementation	Anticipated 2017 for Brick	Completed (ongoing) and

/ On-site Parking Monitoring	North/South and event area	outlined in more detail above, and to be further elaborated in Two Year TDM Program (noted below)
Assess success of first six months of TDM Program and Report to City on initial effectiveness	Completed Fall 2015	
Submit Year Two TDM Program with needed modifications (and annually thereafter)	December 2017 *(Permits one full year of operation for Brick North/South and 90 days to compile data and prepare update)*	On track for December 2017 submission

APPENDICES

Appendix 1: The Forefront at Thompson's Point Transportation Demand Management Plan, September 13, 2011, reapproved in January 2014 with Event Management Plan for The Forefront at Thompson's Point, January 13, 2014

The Forefront at Thompson's Point | Transportation Demand Management (TDM) Plan

September 13, 2011

Project Description

The Forefront at Thompson's Point is a unique project proposed for the City of Portland. It consists of a transit-oriented mixed-use development whose program elements range from Class A office space, a 125-room hotel, an event center that will be the new home of the Portland Red Claws NBA D-League team, a concert hall, a restaurant, a sports medicine facility, a parking garage, and various public amenities such as pedestrian/bike trails and access to the Fore River. The Forefront will pursue a minimum of LEED-Silver certification, and is intended to be a gateway development that will bring life to an under-utilized part of the City—a place as well as a project.

As part of its approvals for this project, the City of Portland will require the creation and issuance of a Transportation Demand Management (TDM) Plan; given the pivotal role that efficient public access to and from the Forefront will play in its commercial success, a thoughtful approach to TDM is crucial. What follows is a Transportation Demand Management Plan that addresses and the City's sustainability goals by outlining and committing to a series of measures that encourage and promote bicycling, walking, carpooling, and use of public transit.

Given both the scope of this mixed-use project, and the necessity of having buy-in from our prospective tenants, the proposal that follows contemplates a two-tiered approach to the TDM, consisting of:

(a) Macro TDM: an overall approach to TDM for the Forefront, consisting of TDM goals, the proposed methodologies for undertaking them, including steps for implementation, approaches to staffing, modes of monitoring and assessing successes and areas for improvement, and proposed frameworks for more tenant-specific plans, and:

(b) Micro TDM(s): tenant-specific plans, the "DNA" of which is articulated in the Macro TDM but which are to be more fully elaborated in dialogue with the Forefront's respective tenants (namely, office users, hotel operator, restaurant operator, sports medicine facility operators, event center operator, concert hall operator, parking garage operator), each of whom will have different constituencies with varying travel patterns and habits, and who will thus require different approaches which must nevertheless be well orchestrated. Although it is not practicable to outline these plans in substantive detail until more formal agreements with tenants are in place, it is important to stress that tenants are expected to be active participants in the overall TDM goals and measures elaborated here, and to take active roles in defining their own mechanisms for participating in these goals; this expectation will be outlined in lease arrangements with tenants.

In its utilization of this tiered approach ("macro" and "micro"), the proposed framework effectively functions as a project-wide Transportation Management Association, linking the various operating businesses in a set of shared strategies, and ultimately coordinated by the TDM Coordinator, of which more below.

The Forefront will be a major employer as well as a major draw for visitors, from Portland and beyond. Thus its approach to TDM represents a significant opportunity to reduce the number of Single Occupant Vehicles (SOVs).

Proximity to Transit

The Forefront is a unique project in the City of Portland, and for that matter, the state of Maine. Thompson's Point lies adjacent to the Portland Transportation Center, which hosts the following transit services:

- *Downeaster (AMTRAK)*: This intercity passenger rail service provides connections from Portland to Saco, Old Orchard Beach, and other southerly stops including Boston's North Station. The service will connect northerly to Freeport and Brunswick, providing a direct link to the Maine Eastern Railroad, which provides seasonal service as far as Rockland in 2012. The service currently runs five round trips to and from North Station, with an additional trip anticipated following the opening of the extension to Brunswick.
- *Concord Coach (Formerly Concord Trailways)*: This intercity bus service provides non-stop service to South Station in Boston, and northerly both to Augusta and Bangor, Maine, as well as the mid coast region. During the day, buses arrive and depart about once per hour. This service allows for connections to various intercity buses, Amtrak and MBTA commuter rail services at South Station, as well as direct connections to all terminals at Boston's Logan International Airport. In addition, the Bangor bus allows for a connection to the Cyr Bus service, providing a once-daily connection to several destinations in Aroostook County.
- *Metro Route #5, Maine Mall*: Portland METRO provides twice an hour service to the Portland Transportation Center with other major stops including the Maine Mall and

UNUM. It also allows for access to the Portland International Jetport and the Elm Street METRO facility. A limited service combining Routes 1 and 5 is provided on Sundays.

Given its adjacency to these amenities, the Forefront is uniquely suited to take advantage of non-motorized vehicle trips, especially transit trips.

Further, the Forefront has the opportunity to pursue water shuttle and water taxi service from the site to downtown Portland and other locations in Casco Bay. The Forefront will partner with Portland Trails to upgrade the existing public trail around the Thompson's Point peninsula; working collaboratively with the City, the PTC, Portland Trails, MDOT and others this trail may be able to be better linked with the larger trails network. The use of bicycles and other non-motorized modes of conveyance by employees and visitors is something the Forefront will encourage (of which more below).

Purpose of Plan

The City of Portland requires the creation of a Transportation Demand Management Plan for all projects in excess of 50,000 square feet, or with 100 or more employees or students. The Forefront at Thompson's Point meets both of these criteria. However, in the case of this project, the TDM Plan serves a series of important needs. Given the designation of the Forefront as a Transit Oriented Development (TOD), a TDM plan is key to maximizing the synergies between the project and the transit modes (existing and not yet existing) adjacent to it. "Transit Oriented Development," as the Federal Transit Administration defines it, is "compact, mixed-use development within walking distance of public transportation," and TOD is "a key element of livable and sustainable communities." As the TFA notes, there is a well-documented symbiotic relationship between economic development and transit, and a convergence of public and private interests around TOD, which "increases transit ridership and reduces automobile congestion, providing value for both the public and private sectors."

To this end, the objectives of the Forefront's TDM plan are:

- Make maximum use of existing transit infrastructure adjacent to the project
- Propose partnerships with the City, MDOT and others aimed at increasing transit opportunities and, in the words of MDOT, contribute to providing "a safe, efficient and reliable transportation system that supports economic opportunity and quality of life."
- Reduce peak hour trip impacts to, and the effects of traffic congestion upon, adjacent roadway infrastructure
- Reduce the amount of needed parking on-site, and thus the amount of land that could have a higher and better use than surface parking
- Encourage healthy activities such as biking, kayaking, and walking among Forefront employees and visitors

It is important to note that this Plan should not be viewed as a series of fixed strategies. Rather it is a living document intended to be reviewed and updated on a regular basis as the Forefront works with its tenants to address changes in local transportation patterns, preferences, and prices; by means of effective coordination, goal-setting, and goal-monitoring measures the Forefront will endeavor to reach the goals articulated in this Plan in a way that is not financially or operationally burdensome to the tenants who ultimately must support the Plan. Ultimately, the goal will be to make significant reductions in peak hour single-occupancy vehicle (SOV)

activity on the local street network as well as the need for on-site parking in a way that is financially and operationally sustainable for all concerned.

Employee Transportation Coordinator (TDM Coordinator)

The Forefront at Thompson's Point will employ a TDM Coordinator, charged with coordinating the TDM plan. The TDM coordinator will liaise with the chief operating officers of each of the Forefront's tenant organizations in order to create an effective overall approach to the following goals:

- Coordinate and promote rideshare opportunities
- Coordinate and promote the use of the following alternatives to SOV travel:
  - AMTRAK
  - Concord Coach and other bus lines as may be applicable
  - METRO
  - U Car Share
  - Car rental companies
- Monitoring parking usage in conjunction with parking facility management
- Overseeing event scheduling
- Encouraging the greater use of bicycling, walking, and bus-based transit
- Overseeing ongoing monitoring and updating of the plan
- Convening a committee, ideally comprised of decision-makers representing each of the tenants/users at the Forefront, who will assist the coordinator in TDM planning and assessment
- Filing annual reports with the City

Given the centrality of the event center to the overall success and vitality of the project; given that the majority of traffic demand will be attributable to this and the adjacent concert hall; and given that the success of the event center depends upon efficient management of traffic and parking use by all the various uses (including parking use by visitors to the Portland Transportation Center), it is anticipated that the TDM Coordinator for the project will be a staff member of the event center's operating company.

The TDM Coordinator will work with tenants at the MICRO TDM level to explore how to create effective partnerships and incentive packages with AMTRAK, Concord Coach, and METRO; the Coordinator will liaise with tenants and help them identify strategies such as incentives (free or subsidized bus passes for employees, gift coupons or periodic prize drawings to foster use of alternative modes)and how to establish subsidies and payroll deductions for employee transit passes where this is appropriate for a tenant.

Surveys - Employees

Six months after initial occupancy of the Forefront facilities, and annually thereafter, Forefront employees will be surveyed regarding their transportation choices such as automobile/bicycle/

motorcycle-scooter ownership, parking demand, and the frequency of trips using bicycling, walking, U Car Share, carpool/vanpool, and the bus. The survey will follow the format of the "TDM2go Employee Survey", a copy of which is attached hereto, but may be expanded from time to time by the TDM Coordinator. The surveys will be conducted to determine:

- Mode of travel to and from work (car/carpool/biking/walking/bus)
- Preferences or concerns with model of travel
- The flexibility and receptivity of employees to utilizing various travel modes to access Thompson's Point (and, crucially, to ascertain whether individual employees make use of multiple modes during the course of a given year, or a given season)

Various questions will be created in the survey to determine which measures to encourage increased use of transit, for example, either via costs for parking or stronger subsidies of METRO passes, etc. The TDM Coordinator may seek to partner with the academic and/or the public sector, and public funding, to increase the efficacy of these surveys and mine the information contained therein.

Surveys - Visitors

For visitors to the Forefront, surveys will also be included. These will be provided in the following manner:

- Conference packet for convention employees
- With ticket receipt for concert goers
- Inside game pamphlet for Red Claws fans

The surveys will be conducted to determine:

- Mode of travel to and from a conference, concert or game (car/carpool/biking/walking/bus)
- Preferences or concerns with model of travel
- The flexibility and receptivity of visitors to utilizing various travel modes to access Thompson's Point.

Surveys will need to be simple and convenient; they could be filled out at a Red Claws game, or completed with a link on-line (such as Survey Monkey) to do it afterward. Hotel guests may represent an important source of survey information. Various questions will be created in the survey to determine measures to encourage increased use of transit, for example, either via costs for parking or greater promotion of transit uses. The TDM Coordinator will work with the tenants at the MICRO TDM level to determine what kinds of incentives could elicit consistent and engaged participation in these surveys.

Car Pooling and Sharing

Through various promotional strategies (flyers, email blasts, web updates, social media, and occasional gatherings) the Forefront TDM Coordinator will make visitors, workers and guests aware of and encourage use of these services,

U Car Share/Rental Cars

Portland is one of 20 cities in the United States served by U Car Share. In Portland, the service currently provides a total of four vehicles. These vehicles are available on an hourly or daily basis. It is recommended that the Forefront negotiate the use of two additional vehicles with U Car Share for visitors to use on an as-needed basis, as well as traditional rental cars. This will allow for the use of a car for certain trips, which can aid in a traveler to or from the Forefront to choose transit for a mode. Information will be provided to hotel guests, office workers, and convention attendees. Following the first survey, additions to U Car Share may be made if employees desire their use in significant numbers; U-Car share may be an attractive option for local residents who are employed by one of the various tenants at the Forefront.

- Primary User: Visitors, Employees (if found desirable)
- Responsibility: Forefront, U Car Share, Rental agencies

Carpooling/Vanpooling

The TDM coordinator, working in conjunction with the GO MAINE Commuter Services Program, will work with the employers located at the Forefront to locate employees with similar schedules and home addresses to create a carpooling or GO MAINE vanpooling plan. Working with the employers, the TDM coordinator will serve as a resource in devising incentives for those employees who participate. A reasonable portion of the preferred parking spaces to be established shall be dedicated to U-Car Share/carpool/vanpool parking in order to incentivize these alternatives, and shall be designated as such by means of signage.

- Primary User: Employees
- Responsibility: Forefront

Education for Visitors

As discussed, the Forefront's TDM coordinator will provide transit route maps, schedules, and ticket information in packets for visitors. There will also be a travel kiosk in the event center offering interactive Google-based travel planning with various vehicular modes; in addition, maps, routes, and ticket information will be posted clearly in the entry areas at the event center and the office buildings. The TDM coordinator will be available, in person and/or virtually, to assist visitors and employees who have questions about travel tips and ideas.

- Primary User: Visitors
- Responsibility: Forefront

Submission of Monitoring Information/Updated TDM Plan

Based upon the results of the monitoring, the Forefront will update the TDM Plan and submit a draft plan to the City's TDM Manager for review and comments.

The primary goal would be to reduce employee and visitor SOV trips to 80 percent of the total trips, at a minimum, within the first five years of the project.

The secondary goal for the initial year will be to reduce the parking demand five percent from the calculated demand, with additional annual reductions of five percent, until parking demand is reduced by a minimum of twenty percent (e.g. 290 vehicles out of an original 1,450). This aggregate targeted reduction shall also include individual targets for the following alternative modes: increase use of transit by employees and visitors by 5% annually; increase carpooling and vanpooling by employees and event attendees by 5% annually; increase bicycle and pedestrian trips by employees and visitors by 5-7% annually; until the overall goal of a 20% reduction is reached. The goal will be to achieve this overall 20% reduction by the end of the fifth operating year. At this point, it would be appropriate to reassess the ways in which the TDM plan should be recast in order to set additional goals for the sixth operating year and beyond. Each monitoring period will be accompanied by a parking count of the Forefront's facilities, in accordance with the methodology discussed in the parking count section.

In our amended Traffic Impact Study, with an addendum dated 30 August 2011, we have noted this reduction goal of 20%, which we feel is an ambitious albeit achievable goal.

An important responsibility for the TDM Coordinator will discuss future options as they become available with the City of Portland and GO MAINE, an organization charged with finding transportation options for the state.

Transit TIF Opportunities for Single Occupancy Reduction

The City of Portland designated the Thompson's Point Transit-Oriented Development and Tax Increment Financing District and adopted a development program therefor pursuant to Chapter 206 of Title 30-A of the Maine Revised Statutes, as amended, by action of the Portland City Council on June 20, 2011; the City submitted the resultant Credit Enhancement Agreement to the Department of Economic and Community Development for its review and ultimate approval, creating the Thompson's Point Transit-Oriented Development and Tax Increment Financing District and Development Program. The City designated the Thompson's Point Transit-Oriented Development and Tax Increment Financing District, adopted the related Development Program, and entered into the related Credit Enhancement Agreement in order to induce the Developer to redevelop Thompson's Point into a gateway destination in a manner that includes a substantial investment in infrastructure, including a large above-ground parking structure, transportation improvements, creation of an at-grade public rail crossing, extensions of public roads, utility investments and expanded walking and biking trails, and to support the Developer's investment into the Project by enabling the City to contribute toward the capital cost of the Project in the amounts contemplated by the Development Program and the Credit Enhancement Agreement; and the City Council voted unanimously to capture one hundred percent of the net new tax revenue generated by the Forefront and to dedicate its share of said revenue to funding alternative transportation.
The City may wish to consider utilizing its portion of net new tax revenue generated by the Forefront, and captured by means of the Transit TIF, to fund the following initiative:

Funding of METRO Route 5E

Forefront will explore with METRO and the City of Portland the feasibility of an additional bus service running mainly on the Route 5 route. Potentially called Route 5E, this bus would serve as

an express service and would run seven days a week. It would stop at the Portland Jetport, Portland Transportation Center, the Forefront, the Greyhound Terminal at the intersection of St. John and Congress Street (inbound only), and the Metro Pulse Center on Elm Street. It would be clearly marked as an express bus to major transit hubs. The provision of a single bus would allow for hourly service, and would be in addition to the existing Route 5. Those visitors arriving at the Portland Jetport will be given passes for two rides on the 5E service (or the 5). The Forefront will work with METRO to explore the potential for a stop at the Forefront for the 5 line.

- Primary User: Visitors
- Responsibility: City of Portland (Transit TIF)

Additional Transit Opportunities

The Forefront will generate substantial tax revenue that will be used by the City for transit funding. The City has requested that the Forefront play an integral role in working with the City to define and establish "Transit TIF"-funded programs.

Program Elements

The following components are to be incorporated into the Forefront's development program:

Bicycle Parking

In addition to the standard bicycle racks provided outside of the buildings at the Forefront (anticipated to include 88 bicycle spaces in racks distributed around the site per site plan requirements), the developer will endeavor to incorporate secure storage for up to 150 bicycles inside the facilities for tenants who wish to have them. These spaces are envisioned to be wall-mounted lockable racks within controlled-access rooms. This configuration will provide for bicycle security, convenience, and protection from the weather. Similarly to carpoolers, bicyclists will be given stickers for their bicycles that would have matching numbers with a specific bicycle locker, which would come with a locker-specific bicycle lock. The space would either be in the office component or the convention facility component, depending upon the work location of the employees.

- Primary User: Employees
- Responsibility: Forefront

Scooter/Motorcycle Parking

50 spaces are recommended for this use, with the potential for more in the future. Those using scooters or motorcycles will also obtain a ticket to be matched with a specific space in the Forefront garage. These spaces may be subject to random compliance checks.

- Primary User: Employees
- Responsibility: Forefront

Bus Shelter

The Forefront is willing to locate a bus shelter on site, for those coming on and off the 5E bus (discussed above), which will further encourage use of buses by visitors and employees alike.

- Primary User: Visitors, Employees
- Responsibility: Forefront

Peninsula Shuttle

On days with conventions, should attendee demand warrant it, the Forefront may operate a van-based shuttle that will take visitors to major points of interest on the Portland Peninsula, including Congress Square, Monument Square, and Commercial Street. This shuttle will run regularly as may be warranted by demand, and shall be free of charge for conference attendees. Following an initial survey, if it is determined that employees at the Forefront would strongly desire to have access to a shuttle, a reduced service during lunch hours may also be provided.

- Primary User: Visitors, Employees (if found desirable)
- Responsibility: Forefront

Parking Demand and Supply

As discussed in the parking calculations, based on shared parking calculations, and without accounting for access to transit, the Forefront will typically incur a peak weekday parking demand of approximately 1,450 spaces, and up to 1,900 spaces during special concert events. Proposed for the facility will be a 700-space parking garage and surface parking, potentially for a total of 1,450 spaces.

The Forefront proposes to provide:

- 1,400 automobile parking spaces (a portion, to be determined, will be dedicated for the preferred use of hybrid/electric vehicles)
- 150 bicycle parking spaces (with secure facilities, contingent upon tenant interest)
- 50 motorcycle/scooter parking spaces

Parking for Special Events

The concert hall / event center can support seating for 4,500 to 4,800 people. In the event of a full concert, the demand may exceed supply by approximately 450 spaces, or possibly less depending upon the success of the TDM measures. Indeed, to the degree that the TDM measures do succeed, it may be determined that the existing surface and structured parking spaces are adequate to support the demand created by these concerts. However, these events will be in the evening. Significant parking exists in lots for Norway Savings Bank, Rheumatology Associates, and others off of Sewall Street and the drive connecting Sewall Street to Massachusetts Avenue and Congress Street, as well as along the Fore River Parkway and other locations in proximity to Thompson's Point which may be suitable. It is understood that the existence of leases, or other satisfactory arrangements that reliably provide for off-site parking during these larger concerts, shall be a requirement of site plan approval.

It is recommended that the Forefront explore agreements for utilizing these lots for overflow during events, providing that it does not open doors to concerts until after 6:00, when the employee and customer demand at adjacent facilities has greatly diminished. Forefront can employ individuals to control traffic and collect parking fees for use of these lots based on a revenue-sharing agreement. In addition, the peninsula shuttle will be repurposed for these evening events to travel through these lots and to the concert hall.

The Forefront has developed an Event Management Plan, submitted together with this TDM Plan, which more fully discusses the proposed approach to handling traffic flow in and out of the site during mid-sized events (upwards of 2,500 attendees).

Monitoring

Parking Counts

As part of its TDM Plan monitoring program, the Forefront TDM Coordinator will oversee assessment of the use of its various operational components, starting one month after the opening of the event center and annually thereafter. As one critical component of the TDM program will be to reduce parking demand, the first part of each monitoring effort will include an hourly parking count of the facility from 11:00 AM to 11:00 PM on a weekday and a Saturday (this will require evening events, preferably concerts, as this will generate the greatest parking demand).

Timetable for Action Items

Action Item	Timeframe for Implementation
Finalize TDM Funding Package based upon City of Portland's priorities for funding from its share of Transit TIF revenues generated by the Forefront	Fall 2011
Provide update to City regarding progress on TDM plan implementation and status of TMA ("macro TDM")	Fall 2012
Appoint/Confirm TDM Coordinator	6 months prior to opening of the Forefront Event Center, anticipated to be spring 2013
Assemble "Micro TDM" plans with tenants and create TDM Packets; share complete TDM plan, including Micro-TDM targets and proposed monitoring, with City	Summer 2013
TDM Plan Implementation / On-site Parking Monitoring	Anticipated for Spring 2014, assuming final occupancy Summer/Fall 2013
Assess success of first six months of TDM Program and Report to City on initial effectiveness	Fall 2014

Submit Year Two TDM Program with needed modifications (and annually thereafter)	Spring 2015

Appendix 2: Addendum to Transportation Demand Management Plan, November 4, 2015

Addendum to Transportation Demand Management Plan

November 4, 2015

The Transportation Demand Management Plan (TDM) for Thompson's Point was first approved in September, 2011 and subsequently re-approved in February, 2013 with Master Development Plan approval.

With the combination of the year round outdoor event area (including ice skating and related winter entertainment, as well as concerts, festivals, weddings, and outdoor summer events), and the Brick North and Brick South renovations, the Thompson's Point project has reached a stage of sufficient development (>50,000SF) to warrant this addendum whose purpose is both to provide an update on TDM measures that have been implemented over the past year and a half, and to outline measures that we intend to bring online concurrent with the completion of the mixed-use Brick North project and the Brick South event space.

The fundamental principles of the original TDM plan continue to guide our efforts. The original plan begins with a statement of our goals, and these are still integral to our planning and operational efforts.

> *…given the pivotal role that efficient public access to and from the Forefront will play in its commercial success, a thoughtful approach to TDM is crucial. What follows is a Transportation Demand Management Plan that addresses our and the City's sustainability goals by outlining and committing to a series of measures that encourage and promote bicycling, walking, carpooling, and use of public transit."*

Because the original TDM plan covers the component parts of our approach in detail, we will refer the reader to that plan for substantive detail on the goals and strategies that continue to inform our efforts.

The TDM plan has always been conceived of as a two-tiered approach, blending "Macro TDM" and "Micro TDM(s)." This facilitates having both an overarching, forward-looking strategy to effectuate our TDM goals, as well as more focused, tenant-oriented measures that help carry out that broader set of goals and, conversely and crucially, help inform the broader strategies themselves.

As we all know from experience, broad strategic goals are one thing; their operational and tactical implementation are quite another, and it is often the case that "facts on the ground" need to be interpolated and integrated into the reframing of strategy (versus the all too frequent alternative: facts that don't fit the strategic blueprint get ignored, leading to percolating problems that then become major operational problems). This was part of the rationale behind the "Macro-Micro" relationship as it was first presented. Though we had not yet (up until Brick North and the pending Brick South) triggered the 100-employee/50,000SF threshold, we have nevertheless been working with various TDM measures as described in our TDM plan, both for large event management and for our current Brick North tenants.

To this end, it may be most useful as a way of updating our TDM to begin by reflecting on historical results from both the series of large outdoor events we have had on site[1] and the activities of the several tenants we have currently.

Our recent large events have included two varieties: larger events that met exceeded (or had the potential to exceed) the 2,500 attendee threshold that triggers our Event Management Plan; and smaller events, including private gatherings, corporate events, weddings, fundraisers, that were well below the 2,500 attendee threshold. We have provided historical data for the former, which are divided into two categories:

Concerts, staged and operated by the State Theatre as part of a long-term partnership;

Other events, including festivals

Additionally, we currently have three operating tenants on the site:

Circus Maine; Color Me Mine; and Big Room Studios (in the "West Wing" of Brick North); we propose to circulate surveys (see Exhibit G attached hereto) to our Brick North tenants over the winter, with the goal of creating a "Micro-TDM" plan for Brick North by Summer 2016.

Recent large events: 2014

Our first year of operation under the Master Plan was effectively 2014, which saw two large outdoor events in the summer: Sierra Nevada's Beer Camp and Town Square Media's Clash Bash & Bar-B-Que.

<u>Sierra Nevada's Beer Camp</u>

[1] The year-round outdoor event area is consistent with all of our prior approvals, both the original approved site plan and the subsequent Master Development Plan. Though we have been operating by means of a series of seasonal and one-off event licenses in the absence of a clear licensing strategy, which we are working to develop in collaboration with the City, we have treated these events as though they were "permanent uses," even if the underlying approvals treat them as temporary, and managed them accordingly.

Friday, August 1, 2014

Attendance: 2,892 paid plus 220 staff and comps

Working with professional parking management, we parked 367 cars on site, yielding an on-site parking ratio, including staff and comps, of 8.5 attendees per car.

We worked with Bicycle Coalition of Maine to test a "Bike Valet" model that allowed attendees to park their bicycles inside the Brick South building (with open garage doors on both north and south facades allowing a kind of open flowing "main entrance" into the event) and parked approximately 70 bicycles.

We also worked with professional parking management to operate a shuttle service from the Top of the Old Port parking lot on Congress Street near City Hall.

We provided information detailing the parking options for on-site parking, off-site shuttles, and bike valet on the event website and via a PDF "guest guide" provided to all ticket buyers. (See Exhibit A attached hereto). We saw a considerable volume of pedestrians walk to the venue.

Town Square Media's Clash Bash & Bar-b-que

Saturday, August 14, 2014

Attendance: 1,497 plus 42 staff

Working with professional parking management, we parked 356 cars on site, yielding an on-site parking ratio, including staff, of 4.3 attendees per car.

This event saw few pedestrians and bicycles (perhaps 25-30 bicycles).

We also worked with professional parking management to operate a shuttle service from the Mercy Hospital parking lot on the Fore River Parkway. Both the shuttle and the off-site parking were free of charge, whereas parking on site was paid. We have not yet found evidence that offering free parking offsite versus paid parking on-site results in a substantial disincentive to drive and park at the event venue.

We provided information detailing the parking options for on-site and off-site parking on the Town Square Media event website, and encouraged the use of Amtrak/public transit (see Exhibit B attached hereto).

Recent large events: 2015

Townsquare Media Summer Bash

Saturday, July 11

Attendance: 400 plus 34 staff

Working with professional parking management, we parked 80 cars on site, yielding an on-site parking ratio, including staff, of 5.4 attendees per car.

This event saw few pedestrians and bicycles (under 5 bicycles).

We also worked with professional parking management to oversee free parking at the Mercy Hospital parking lot on the Fore River Parkway.

Maine Brewer's Guild Summer Session Beer Festival

Saturday, July 25

Attendance: 1600 plus 44 staff

Working with professional parking management, we parked 256 cars on site, yielding an on-site parking ratio, including staff, of 7.25 attendees per car.

We also worked with professional parking management to oversee free parking at the Mercy Hospital parking lot on the Fore River Parkway.

This event saw a large number of pedestrians and bicycles (approximately 30-35 bicycles).

To encourage the use of designated drivers, the Guild provided a special Designated Driver ticket at 1/3 of the General Admission price, which encouraged carpooling. The ticketing site also encouraged the use of Amtrak and Concord Coach lines, and coordinated in-town Portland pickups via public transit. (See Exhibit C attached hereto)

State Theatre Presents: Primus in concert

Monday, July 27

Attendance: 2,620 including staff

Working with professional parking management, we parked 404 cars on site, yielding an on-site parking ratio, including staff, of 6.5 attendees per car.

We also worked with professional parking management to oversee free parking at the Mercy Hospital parking lot on the Fore River Parkway.

This event saw a large number of pedestrians and bicycles (approximately 40 bicycles).

Parking information, including location for free off-site parking at Mercy Hospital, was provided on the State Theatre website and promoted via the State Theatre's social platforms (see Exhibit D attached hereto). The Theatre also sent out an email to all ticketed patrons explaining parking and transit details (see Exhibit E attached hereto), and captured statistics on how many people opened and made use of that email (see Exhibit F attached hereto). These measures were pursued for every

State Theatre concert. As we move into our second season, with some operating history and a foundation of patron familiarity with the site and its booking systems, we intend to begin to implement the surveying systems discussed in the TDM plan.

State Theatre Presents: Grace Potter in concert

Saturday, August 1

Attendance: 3,636 including staff

Working with professional parking management, we parked 560 cars on site, yielding an on-site parking ratio, including staff, of 6.5 attendees per car.

We also worked with professional parking management to oversee free parking at the Mercy Hospital parking lot on the Fore River Parkway.

This event saw a large number of pedestrians and bicycles (approximately 45 bicycles).

Notes: Parking information, including location of free off-site parking at Mercy Hospital, on State Theatre website and promoted via the State Theatre's social platforms.

While we only have two actual outdoor concerts from which to gather data and draw conclusions, it is interesting that both of them show a 6.5:1 ratio of attendees to on-site parked vehicles, and both utilized virtually identical strategies; the other outdoor events range from a low of 4.3 (Town Square) to a high of 8.5 (Beer Camp), and average out at 6.4:1. Obviously the nature of outdoor events (which occur in warmer months and, generally, on days without rain) tend to be more inviting for pedestrians; we noted a heavy volume of pedestrian traffic for the Sierra Nevada Beer Camp event, for example. As we move into the first winter season, we will track parking data associated with the use of the rink and its related activities. And as we move ahead with our planning for the second full season with the State Theatre, we are working on a simple survey option for ticketbuyers inviting them to comment on how they traveled to the concert (see Exhibit H attached hereto). We anticipate gathering results from these surveys over the course of Summer 2016, and can then consolidate them, review with our colleagues at the State Theatre, and craft a proposed "Micro-TDM" plan in the fall of 2016 that can be utilized for seasons 2017 and beyond.

Updated Timetable for Action Items

For purposes of comparison, we have included the original TDM plan's action items and proposed timeframes for implementation, which were first outlined back in 2011, together with a third column outlining our updated timeframes. It is important to note that the original TDM assumed almost simultaneous delivery of the entire building program; there was no concept of a phased delivery, which only came later when the Master Plan tool became available.

However, certain of the action items have been accomplished ahead of full buildout, and we can now predict with some certainty when the first (Brick North/South) Micro TDM plans can be generated, with subsequent action items unfolding from there.

We have also appointed a TDM coordinator, and she has developed a survey for our tenants, along with an introductory letter, that we propose to circulate to our Brick North tenants this winter (see Exhibit G attached hereto).

Action Item	**Original Timeframe for Implementation per 2011 Site Plan version of TDM**	**Updated Timeframe**
Finalize TDM Funding Package based upon City of Portland's priorities for funding from its share of Transit TIF revenues generated by Forefront	Fall 2011	TBD pending City review process
Provide update to City regarding progress on TDM plan implementation and status of TMA ("macro TDM")	Fall 2012	Completed (Fall 2015)
Appoint/Confirm TDM Coordinator	6 months prior to opening of the Forefront Event Center, anticipated to be spring 2013	Completed (Fall 2015)
Assemble "Micro TDM" plans with tenants and create TDM Packets; share complete TDM plan, including Micro-TDM targets and proposed monitoring, with City	Summer 2013	Summer 2016 *(coincides with opening of fully occupied Brick North building and renovated Brick South building)*
TDM Plan Implementation / On-site Parking Monitoring	Anticipated for Spring 2014, assuming final occupancy Summer/Fall 2013	Anticipated 2017 for Brick North/South and event area *(preliminary implementation and monitoring to date is detailed in this update above)*
Assess success of first six months of TDM Program and Report to City on initial effectiveness	Fall 2014	Completed (Fall 2015)

Submit Year Two TDM Program with needed modifications (and annually thereafter)	Spring 2015	December 2017 *(Permits one full year of operation for Brick North/South and 90 days to compile data and prepare update)*

Exhibit A: Sierra Nevada Beer Camp PDF “Guest Guide”

Beer Camp Across America New England Edition

Thompson's Point

Portland, ME

Friday, August 1, 2014, 5-10 pm

YOUR TICKET INCLUDES

- A souvenir Beer Camp Across America tasting glass
- Unlimited samplings of your favorite regional brews
- The music spectacle MarchFourth Marching Band complete with stilt-walking acrobatics, enchanting dancers, and percussion that's more layered than your club sandwich. Check them out at http://marchfourthmarchingband.com/
- FREE Bike Valet, FREE shuttle from 385 Congress Street and drinking water- bring your water bottle!

WHAT DO I NEED TO KNOW / BRING?

Other than your lovely self, you will NEED to bring:

- **YOUR PRINTED TICKET**
  Please bring a printed copy of your ticket to ensure a quick entry into the festival. **Tickets will be available for purchase the day of the event** if you would like to bring along a few extra Beer Campers! General attendee tickets will be available for $70, and designated driver tickets will be available for $40.

- **YOUR I.D. VERIFYING YOU ARE OF LEGAL DRINKING AGE**
  It's like looking through the crates at the humane society: we'd like to, but we can't. Legally we have to make sure everyone inside the event is over 21. Bring your driver's license, passport or any other government issued photo I.D. and you'll be good to go!

What else?

- **There are a few things you need to leave behind…**
  To ensure a safe and awesome event for everyone, bags will be checked upon entry for the following (in other words, please don't bring these so we can let you in right away!):
  - **Firearms and weapons** – if you can't take it on a plane, you DEFINITELY shouldn't bring it to Beer Camp.
  - **Outside food or beverages** – there will be plenty to eat and drink. We promise!
- **This event is for humans 21+ only.**
  Sorry, no one under the age of 21 will be admitted; this includes your pooch and babies – even if you're carrying them around.
- **Have cash handy.**
  We're working with vendors – primarily food trucks – to ensure there's a killer spread of local food to complement the beer lineup. Food is not included in your ticket, so be sure to bring some dough so you can sample away to your heart's content.
  In addition to food, **we will also have some awesome Beer Camp Across America and Sierra Nevada gear on-site for purchase**. Our mobile gift shop accepts both cash and card, so start saving so you can take home some sweet swag!
- **Bring a water bottle.**
  Yes, there will be lots of tasty beer to drink, but it will be good to stay hydrated with water too. We are doing our best to make this a zero-waste event, so remember to bring your reusable water bottle to fill up at the many water stations we will have at the festival.

- **Be prepared for the weather – Beer Camp Across America is happening RAIN OR SHINE!** Mother Nature can be wily, so be prepared with your sunscreen, but also a sweater or some other kind of shell just in case she throws a little wind or rain our way.

For more info and tips for the festival, check out our FAQ section of the Beer Camp Across America site at: http://beercamp.sierranevada.com/faq/.

GETTING HERE

FREE SHUTTLES

- Shuttle services will be provided by Maine Bus Rentals: http://mainebusrentals.com/transportation.
- Shuttle pick-up and drop-off location: 385 Congress Street parking lot (map of shuttle bus location can be found at the end of the guide).
- Shuttle schedule is as follows:
  Shuttles start at 3:30 pm and **stop** at 11:30 pm.
- To find parking garages near shuttle location, visit www.google.com/maps and search for 385 Congress Street, Portland, Maine, and then, using the "search nearby" option, look up parking garages.

PARKING

- Thompson's Point has an onsite parking lot for 700 cars. Follow signs to parking lot, which is the only parking location on site. Parking is $10.
- Map of all downtown Portland parking garages: https://maps.google.com/maps/ms?msid=209939093816258135294.0004abcede3a072a262d4&msa=0
- Alternate lots: Chestnut Street Garage, Public Market Street Garage & Mercy Hospital Fore River Campus (map of parking garages & shuttle bus pick-up/drop-off location can be found at the end of guide).

1. **Shuttle Bus Pick-up Location:** 385 Congress Street, Portland, ME; $10 flat rate- car can be left overnight
2. **Chestnut Street Parking Garage:** Corner of Chestnut Street and Oxford Street, Portland, ME
   Lot phone number: (207) 450- 6129; $10 flat rate- car can be left overnight
3. **Public Market Garage:** 315 Cumberland Avenue, Portland, ME
   Lot phone number: (207) 699- 2927; $10 flat rate- car can be left overnight
4. **Mercy Hospital (not pictured):** Fore River Campus: 195 Fore River Pkwy #160, Portland, ME (see map at end of guide). Free.

PUBLIC TRANSPORTATION

- **Public Transportation website:** http://www.portlandmaine.com/getting-around/transportation/
- **Casco Bay Ferry**: http://www.cascobaylines.com/
- **Concord Coach Lines:** Concord Coach Lines serves points in New Hampshire and Maine to Boston South Station and Boston's Logan International Airport: http://www.concordcoachlines.com/
- **The Downeaster:** The Downeaster operates daily round trips between Brunswick, ME, and Boston, MA: http://www.amtrakdowneaster.com/
- **Greyhound Bus**: https://www.greyhound.com/default.aspx
- **METRO Greater Portland Transit District bus:** METRO Greater Portland Transit District bus provides nine safe, efficent, and reliable routes throughout the greater Portland region. METRO Route #5 stops at the Portland Transportation Center (PTC) located adjancent to Thompson Point (map of drop-off location can be found at the end of the guide). Also vist: http://gpmetrobus.net/

FREE BIKE VALET

Bike-enthusiasts are in luck! The **Bike Coalition of Maine (BCM)** http://www.bikemaine.org/will be providing FREE bike valet services during the event where attendees can avoid traffic, parking issues, and additional carbon emissions. The bike valet service will be set up at the entrance of Thompson Point.

BIKE RACKS DOWNTOWN

- Maine has been named the second most bike-friendly state in the country and navigating Portland is easy and fun! There are plenty of places to park your bike downtown and take a shuttle to Beer Camp! Click here for a map of bike rack locations or visit: https://maps.google.com/maps/ms?msid=209939093816258135294.000469bc0c189cf3f3622&msa=0&ll=43.655981,-70.257418&spn=0.010774,0.032938

TAXIS

- **Airport Cab**: (207) 899-5335
- **ABC Taxi**: (207) 772-8685
- **Old Port Taxi**: (207) 772-8294
- **Jetport Taxi**: (207) 775-6990
- **Elite Taxi**: (207) 871-7274
- **Family Taxi**: (207) 615-9353
- **ASAP Taxi**: (207) 791-2727

FRIENDS

- Don't forget, we are also selling Designated Driver tickets for $30 at: https://sierranevada.ticketleap.com/bcaa-newengland/dates/Aug-01-2014_at_0500PM

DRIVING DIRECTIONS:

BY CAR:

1. From I-95 North (Boston, Massachusetts)

a. From I-95 North, keep right on I-295 N, follow signs for S. Portland/Downtown Portland.
b. Take exit 5 for ME-22 E and follow signs for Maine 22/ U.S. 1 Alternate.
c. Keep right and merge onto Fore River Pkwy.
d. Turn left onto Thompson's Point.

2. From Portland International Jetport: 1001 Westbrook Street, Portland, Maine

a. Head northeast on Johnson Road toward City Line Drive.
b. Continue straight onto Congress Street.
c. Turn right onto Fore River Parkway.
d. Take first right onto Thompsons Point.
e. Arrive at Thompson's Point.

3. From Portland's Downtown District: 549 Congress Street, Portland, Maine

a. Head southwest on Congress Street toward Forest Avenue.
b. Take first right on Forest Ave.
c. Slight right to merge onto I-295 S/ U.S. 1 S toward South Portland
d. Take exit 5A toward ME- 22/ U.S. 1 Alternate/ Congress St.
e. Keep left at fork and follow signs for Portland/Waterfront/Casco bay/Fore River.
f. Continue straight onto Thompsons Point
g. Arrive at Thompson's Point.

HELPFUL SITES

Beer Camp Across America	http://beercamp.sierranevada.com/
Portland, Maine city website	http://www.portlandmaine.gov/
Public Transportation website	http://www.portlandmaine.com/getting-around/transportation/
Portland Downtown District website	http://www.portlandmaine.com/
Downtown Portland parking garages	http://en.parkopedia.com/parking/portland_me/

STAYING AWHILE?

So you want to keep the party going? Or you came in from afar? Hey, thanks for making the trek! Don't forget, lots of tasty options will be available at the festival, but for before and after see what the locals and others have to say about some spots nearby:

HOTELS

Hilton Garden Inn Portland Downtown Waterfront (207) 780-0780
Holiday Inn By the Bay (207) 775-2311
Hyatt Place Portland-Old Port (207) 775-1000
Portland Harbor Hotel (207) 775-9090
Portland Regency Hotel (207) 774-4200
Westin Portland Harborview Hotel (207) 775-5411

Eco Friendly Hotel Options in Portland Maine:
Village Cove Inn, Kennebunkport (207) 967-3993
Nonantum Resort, Kennebunkport (207) 967-4050
Courtyard by Marriott Portland Airport, South Portland (207) 253-5005
The Kennebunk Inn, Kennebunk (207) 985-3351

Additional Hotel Options in Downtown Portland: http://directory.portlandmaine.com/travel/hotels/2786/

Campgrounds (within 15 miles of Thompson Point, Maine):

1. Wassamki Spring Camping Area: 56 Saco Street - Scarborough, ME 04074 (207) 839-4276
2. Wild Duck Campground: 39 Dunstan Landing Road- Scarborough, ME 04074 (207) 883-4432
3. Cascadia Park: 911 Portland Road- Saco, ME 04072 (207) 282-1666
4. Bayley's Camping Resort: 275 Pine Point Road- Scarborough, ME 04074 (207) 883-6043.

VISIT PORTLAND: http://www.visitportland.com/

HOTELS AND RESTAURANTS NEAR THOMPSON'S POINT:
https://maps.google.com/maps?q=Hotels+and+Restaurants&sll=43.652485,-70.291988&sspn=0.010076,0.022724&near=Thompsons+Point,+Portland,+ME+04102&geocode=CQi9B97UNOSJFYUVmgId7G3P-ymjrXua-ZuyTDFacSkRAuKP2A&hq=Hotels+and+Restaurants&t=m&z=9

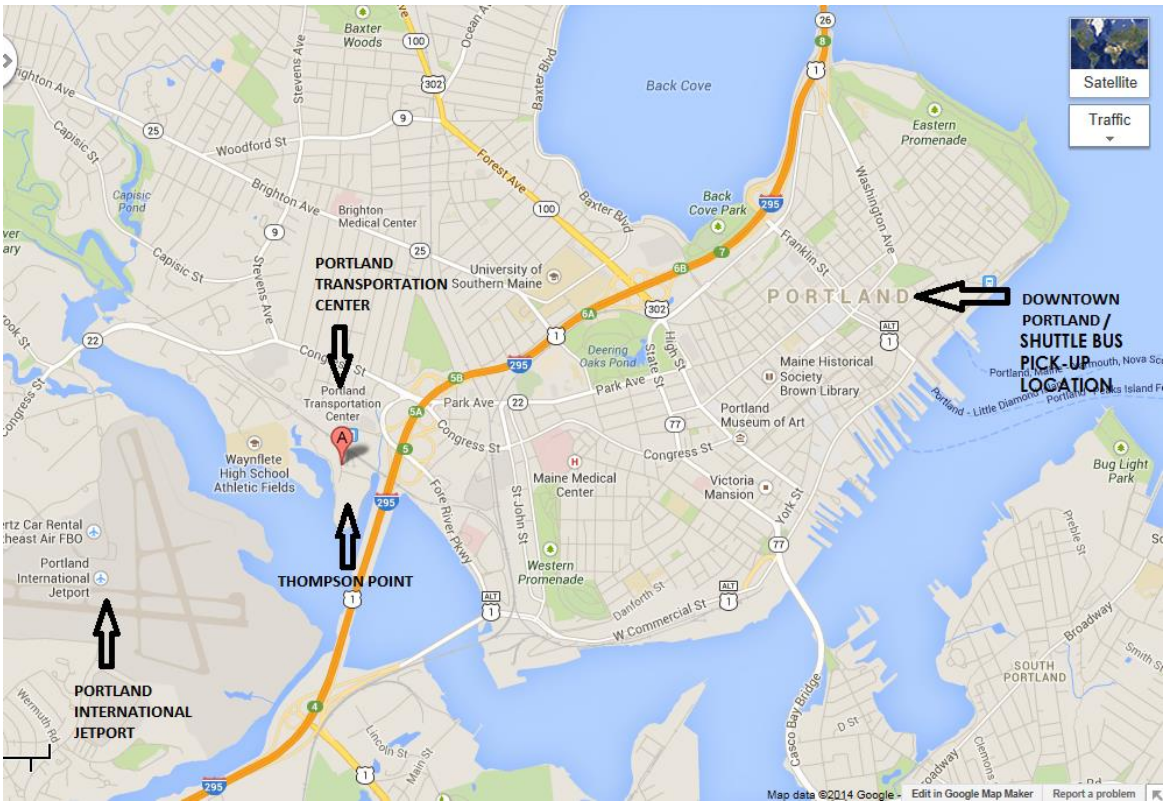
SIERRA NEVADA BEER LOCATOR: http://www.sierranevada.com/beer-locator?brand=all&miles=10&Zip=04101

BREWERS LIST

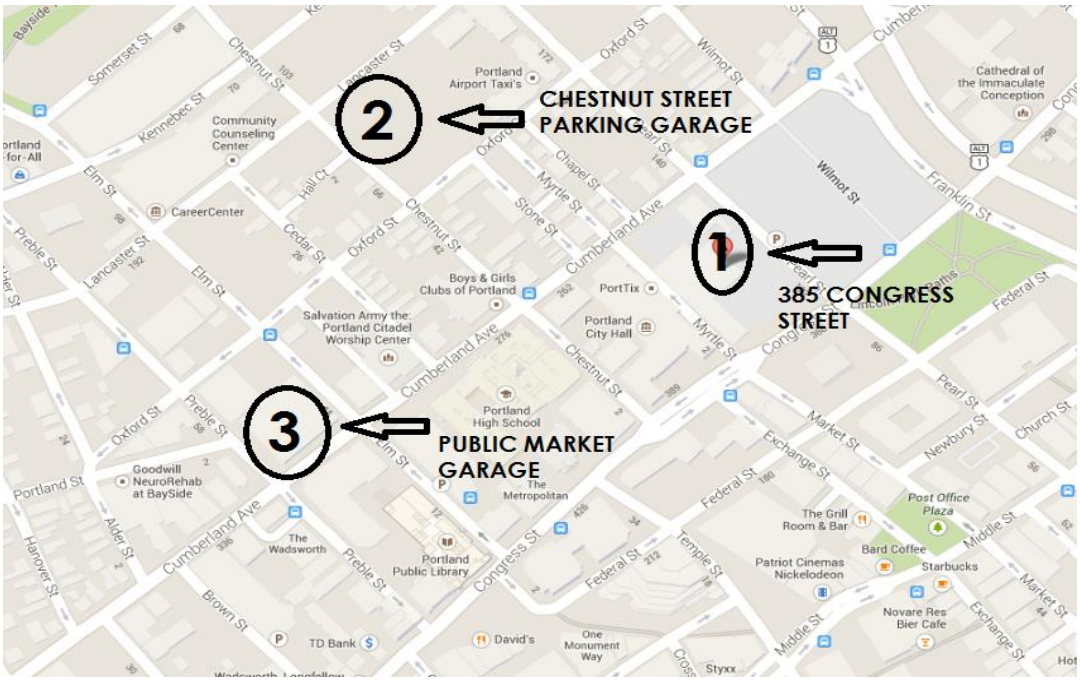
Smuttynose Brewing Co.
Tuckerman Brewing Co
Moonlight Meadery LLC
White Birch Brewing
Boothbay Craft Brewery
One Love Brewery @ 7th Settlement
Sheepscot Valley Brewing Co.
Olde Burnside Brewing
Lost Nation Brewing
Narragansett Brewing Company
BAXTER BREWING COMPANY, LLC
Northern Outdoors dba Kennebec River Brewery
Relic Brewing Co
Geaghan Brothers Brewing Company
Sackets Harbor Brewing Company
Shipyard Brewing Co., LLC
Amherst Brewing Co.
Two Roads Brewing Company
Yonkers Brewing Co.
7th Settlement Brewery
Gneiss Brewing Company
Banded Horn Brewing Company
Oxbow Brewing Co
FUNKY BOW BREWERY AND BEER CO.
Foundation Brewing Company
Bigelow Brewing Company
Federal Jack's
Sea Dog Brewing Company
Gritty McDuff's Brewing Co
Rising Tide Brewing Company
Samuel Adams
Strong Brewing Co.
Harpoon Brewery
Sebago Brewing Co
Maine Mead Works
Moustache Brewing Co.
SoMe Brewing Company
Marshall Wharf Brewing Co
Barrage Brewing Company LLC
Long Trail Brewing Company
Otter Creek Brewing
Black Bear Brewery
BISSELL BROTHERS
Magic Hat Brewing Company
Throwback Brewery LLC
Penobscot Bay Brewery
Brooklyn Brewery
Newburgh Brewing Company
603 Brewery
Rushing Duck Brewing Company
Willimantic Brewing Company
Watch City Brewing Company
Switchback Brewing Company
Pretty Things Beer & Ale Project
Geary Brewing Co.
Foolproof Brewing
Maine Beer Company
High and Mighty Beer CO
Atlantic Brewing Company
Lively Brewing
Rock Harbor Brewing Co.
Earth Eagle Brewings
Bunker Brewing Co
CH Evans Brewing Co
Cottrell Brewing
Monhegan Brewing Company
Thomas Hooker Brewing Co
Ipswich Ale Brewery
RiverWalk Brewing Company
Proclamation Ale Company
Woodstock Inn Brewery
Zero Gravity Craft Brewery
Back East Brewery
The Run of the Mill Public House & Brewery
Battle Road Brewing Company
Martha's Exchange
The Liberal Cup
Moat Mountain Brewing Co.
Chatham Brewing, LLC
Stoneface Brewing Co
Andrew's Brewing Co.
Newburyport Brewing Company
Covered Bridge Craft Brewery, LLC
Black Hog Brewing Co
Mayflower Brewing Company
In'finiti Fermentation & Distillation
Tap Brewing Company
Somerville Brewing Company/Slumbrew
ELM CITY BREWING COMPANY
Southampton Publick House
Cambridge House Brew Pub
Shmaltz Brewery
Barreled Souls
Berkshire Brewing Company Inc.
Flying Goose Brew Pub
Rockaway Brewing Company
Rare Form Brewing Company
Hop City Brewing Co.
The Traveler Beer Company
Clown Shoes Beer
Saint James Brewery
Wormtown Brewery
Crooked Ladder Brewing Company
Cape Ann Brewing Company
Binghamton Brewing Co
Trinity Brewhouse
The Prodigal Brewery
Portsmouth Brewery
Peak Organic Brewing Co.
Hidden Cove Brewing Co.
Great Rhythm Brewing Company
Austin Street Brewery
Aeronaut Brewing Co.
Pennesseewassee Brewing Co., LLC
Idle Hands Craft Ales
Shebeen Brewing Company

* Current at time of compiling, subject to change

MAP OF VENUE THOMPSON'S POINT



MAP OF SHUTTLE BUS PICKUP/DROP-OFF LOCATION



MAP OF METRO ROUTE #5- PORTLAND TRANSPORTATION CENTER (PTC)

Exhibit B: Town Square Media Clash Bash Website

WJBQ Q97.9 HIT MUSIC!

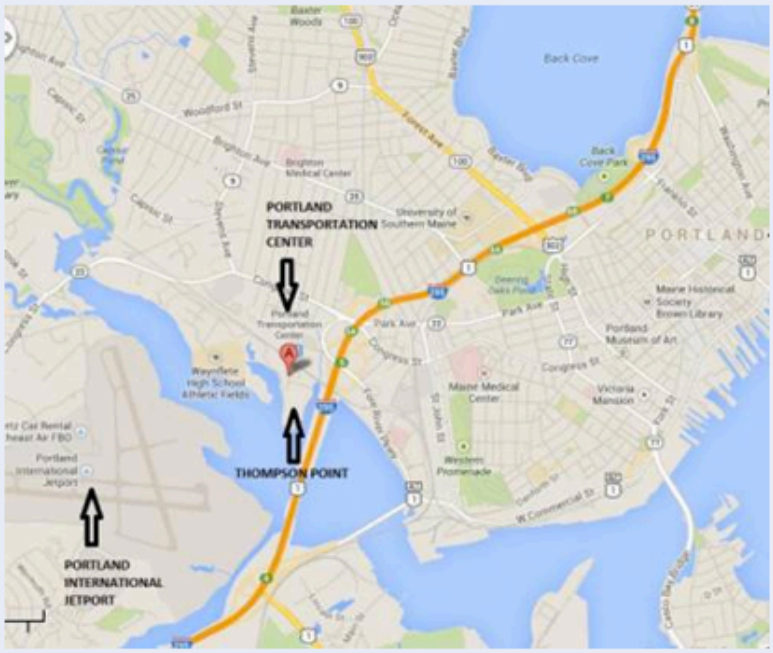
HOME ON-AIR LISTEN PLAYLISTS EVENTS Q INSIDER SEIZE THE D

TRENDING: SPIRIT OF PORTLAND 2015 | MSTY HALLOWEEN CONTEST | PRO FOOTBALL PICK 'EM | LOCAL EXPERTS | Q

Directions To The Clash Bash & BBQ

By Jeff Parsons August 1, 2014 1:08 PM

Share on Facebook Share on Twitter



Thompson's Point is located directly behind the Portland Transportation Center off of outer Congress Street and easily accessible from 295.

Drive by car and park on site

Take the Amtrak Downesater www.amtrak.com

Call a Taxi
Elite Taxi: (207) 871-7274
Family Taxi: (207) 615-9353
ASAP Taxi: (207) 791-2727

NO MATTER WHAT, PLEASE BE SURE YOU HAVE A DESIGNATED DRIVER.

DRIVING DIRECTIONS

From Portland's Downtown District
a. Head southwest on Congress Street toward Forest Avenue

Exhibit C: Summer Session: Maine Brewers' Guild Website

Summer Session: Maine Brewers' Guild 2015 Beer Festival

Maine Brewers' Guild
Saturday, July 25, 2015 from 1:00 PM to 5:00 PM (EDT)
Portland, ME

Ticket Information

TICKET TYPE	SALES END	PRICE	FEE	QUANTITY
VIP Session (inc.'s general admission)	Ended	$60.00	$3.99	**Sold Out**
Designated Driver	Ended	$20.00	$1.99	**N/A**
Day Of Event General Admission more info	Ended	$55.00	$3.74	**N/A**

Enter promotional code

Share Summer Session: Maine Brewers' Guild 2015 Beer Festival

Share Tweet Like 1,066 people like this. Sign Up to see what your friends like

Event Details

UPDATE: 11:13AM Saturday July 25th -

this event is SOLD OUT.

No tickets will be available at the door.

We hope to see you next year

The Maine Brewers' Guild is slated to be the biggest brewfest in Maine and your best chance to try Maine's best beers. Summer Session is the only brewfest run by and in support of the Maine craft beer industry - we know what beer fans love, and we want to share our love of beer with you while creating the perfect festival environment. So come join us in the vast expanse of Thompson's Point waterfront venue in Portland - outdoors and under the sun for our **annual Maine Brewers' Guild festival - Summer Session 2015** on Saturday July 25th, from 1-5PM, with a VIP session starting at noon.

TICKETS: $45/ general admission, $60/ VIP (limited qty available), $55/ Day of Event (general admission only).

All tickets include unlimited beer samples from all breweries, souvenir taster glass, access to beer school classes, live music. Food available for purchase from a huge variety of food trucks.

What makes our festival so awesome? We're glad you asked...

- **BEST BEER IN MAINE** - Maine's best brewers will be showcasing their wares from all across the state.
- **GUEST BREWERIES** - For the first time, we're doing an invitational format - our Maine brewers have invited their friends from out-of-state breweries so we'll have beers on tap that you've never tried, from breweries who don't normally sell their beer in Maine.
- **LIVE MUSIC** - we'll jam out to music from the Maine Marimba Ensemble and Down East Soul Coalition - but we'll keep it far enough away from the beer so you can still interact with the brewers and ask your questions.
- **PLENTY OF SPACE** to spread out - Thompson's Point is acres and acres of waterfront land. No crowded gymnasiums here.
- **LAWN CHAIRS WELCOME** – we want you to get comfortable, so bring your lawn chairs, picnic blankets, cornhole set, and make a day of it!
- **BEER SCHOOL CLASSES** - Learn from Maine's brewers in short, 10-15 minute 'classes' within the brewfest discussing all sorts of topics related to beer and brewing and giving you the chance to ask those burning questions and learn from the pros. No registration required. (list of classes is below)
- **The 1ST ANNUAL 'HOMEGROWN BEER' COMPETITION** - sponsored by Maine Malt House - over 15 brewers will be brewing a beer made with Maine grown grains malted in Maine Malt House's brand new facility in Mapleton, ME. All attendees will have the chance to try them all and vote on your favorite to see which brewery will take home the trophy! #DrinkLocal
- **FOOD TRUCKS** - They'll be there and ready to serve you, from the beginning to the end - so bring an appetite! Participating trucks include: Fishin' Ships, Hella Good Tacos, Love Kupcakes, Pizza Pie on the Fly, The Sophisticated Sausage, Squeeze ME, The Roast, and PB&ME.
- **SUPPORTS YOUR LOCAL CRAFT BEER COMMUNITY** - Proceeds from our brewfest benefit the Maine Brewers' Guild in their work to promote and protect craft beer. (We're the people who changed the laws so brewers could pour their own beer at these festivals!) This is our biggest event of the year and the primary fundraiser for our nonprofit. Drink beer in support of beer!
- **TIME TO CATCH YOUR BREATH** - Although we'll have to stop serving beer at 5PM, you'll be welcome to hang out till around 6PM, grab a bite to eat from one of the food trucks, and take in the beauty of an evening on the water in Portland surrounded by thousands of your closest friends.
- **PUBLIC TRANSPORT** - We're working to figure out ways to get you to and from the festival safely. And if you're coming from Boston, the bus or trains heading into Portland will drop you right to the festival site. (The event is right behind the Amtrak and Concord Coach station). We'll also coordinate in-town Portland pick ups via public transport.

POURING AT THIS FESTIVAL:

Exhibit D: State Theatre Presents concert website

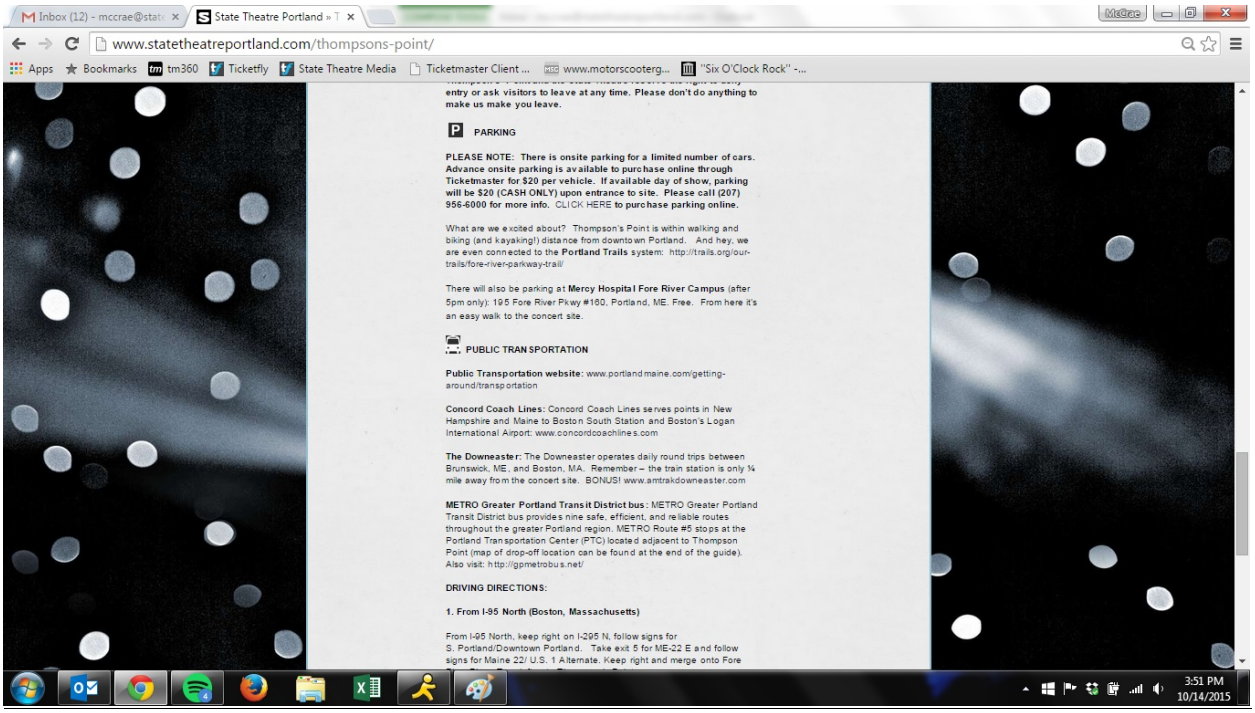

Inbox (12) - mccrae@stat
State Theatre Portland
www.statetheatreportland.com/thompsons-point/
Apps
Bookmarks
tm360
Ticketfly
State Theatre Media
Ticketmaster Client ...
www.motorscooterg...
"Six O'Clock Rock" -...
entry or ask visitors to leave at any time. Please don't do anything to make us make you leave.
PARKING
PLEASE NOTE: There is onsite parking for a limited number of cars. Advance onsite parking is available to purchase online through Ticketmaster for $20 per vehicle. If available day of show, parking will be $20 (CASH ONLY) upon entrance to site. Please call (207) 956-6000 for more info. CLICK HERE to purchase parking online.
What are we excited about? Thompson's Point is within walking and biking (and kayaking!) distance from downtown Portland. And hey, we are even connected to the Portland Trails system: http://trails.org/our-trails/fore-river-parkway-trail/
There will also be parking at Mercy Hospital Fore River Campus (after 5pm only): 195 Fore River Pkwy #160, Portland, ME. Free. From here it's an easy walk to the concert site.
PUBLIC TRANSPORTATION
Public Transportation website: www.portlandmaine.com/getting-around/transportation
Concord Coach Lines: Concord Coach Lines serves points in New Hampshire and Maine to Boston South Station and Boston's Logan International Airport: www.concordcoachlines.com
The Downeaster: The Downeaster operates daily round trips between Brunswick, ME, and Boston, MA. Remember – the train station is only ¼ mile away from the concert site. BONUS! www.amtrakdowneaster.com
METRO Greater Portland Transit District bus: METRO Greater Portland Transit District bus provides nine safe, efficient, and reliable routes throughout the greater Portland region. METRO Route #5 stops at the Portland Transportation Center (PTC) located adjacent to Thompson Point (map of drop-off location can be found at the end of the guide). Also visit: http://gpmetrobus.net/
DRIVING DIRECTIONS:
1. From I-95 North (Boston, Massachusetts)
From I-95 North, keep right on I-295 N, follow signs for S. Portland/Downtown Portland. Take exit 5 for ME-22 E and follow signs for Maine 22/ U.S. 1 Alternate. Keep right and merge onto Fore
3:51 PM
10/14/2015

Exhibit E: State Theatre Presents parking and transit email to ticketholders

McCrae Hathaway

From: State Theatre <concerts@statetheatreportland.com>
Sent: Monday, June 22, 2015 11:48 AM
To: lauren@statetheatreportland.com
Cc: mccrae@statetheatreportland.com
Subject: Test Send - Info regarding Ingrid Michaelson at Thompson's Point

To view this email as a web page, go here.

STATE THEATRE PRESENTS AT THOMPSON'S POINT

10 Thompson's Point, Portland, ME
June 19, 2015

LIVE AT THOMPSON'S POINT

A SUMMER NIGHT OUT WITH INGRID MICHAELSON
JUKEBOX THE GHOST SECRET SOMEBONES

SUNDAY JUNE 28

STATE THEATRE PRESENTS AT THOMPSON'S POINT

We are so excited to celebrate our very first show at Thompson's Point outdoor venue with Ingrid and YOU. Here is some helpful info for you as you start making your plans for June 28.

The concert venue at Thompson's Point is located on the southern tip of "The Point"- the peninsula of land (and new lawn!) that juts out into the Fore River. When you arrive on TP, whether by car or by foot, follow the signs (and throngs of people) to the entrance gates.

Please note: All 2015 shows are General Admission events.

WHAT DO I NEED TO KNOW?

AGES

Thompson's Point is an ALL AGES venue. Children 2 and under are free.

REFUNDS

There are no refunds or exchanges on any tickets on any events unless an event is cancelled or postponed.

BOX OFFICE / CREDIT CARDS

While cash is king, we will accept credit cards at the box office – which will be located right next to the entrance gates. **CASH ONLY at concessions**. There will be ATMs on site.

PARKING

There is onsite parking for a limited number of cars. Advance onsite parking is available to purchase online for $20 per vehicle. If available day of show, parking will be $20 (**CASH ONLY**) upon entrance to site. Please call (207) 956-6000 for more info.

CLICK HERE to purchase parking online in advance.

RE-ENTRY

There will be no re-entry once your ticket has been scanned.

FOOD

There will be plenty of food available. We have hand-picked some of the best food trucks and vendors in Maine to fulfill any craving.

ALCOHOL

We are proud to serve draft beer selections from Shipyard Brewing Company and Sierra Nevada Brewing Co. as well as selections from Baxter Brewing, Deep Eddy Vodka, Cellar Door Winery and Downeast Cider (gluten free!) throughout the concert at our main concessions area under "The Depot". Please remember – if you are 21+ and plan on enjoying an alcoholic beverage, don't forget your government issued ID. **PLEASE NOTE: ALL BARS ARE CASH ONLY.**

ATM

We will be providing ATMs on site... just in case that first visit to the food truck wasn't enough, or you need to get that extra t-shirt for a friend.

SMOKING

There is a strict no-smoking policy at Thompson's Point.

ADA SEATING

ADA seating will be made available by request when you arrive at Thompson's Point.

Parking is available for guests with disabilities including a drop-off location near the entrance. Van accessible parking spaces are located near the entrance. These spaces are well-marked and are monitored by our staff. Please remember that all vehicles must display state-issued accessible parking tags or placards to park in these spaces.

The entrance to the venue is at street level. There are no steps or ramps to maneuver in and out of the entrances however there is a large portion of lawn between the entrance and the ADA seating section.

For more information on ADA seating at Thompson's Point, please call the State Theatre at 1-207-956-6000.

BE PREPARED FOR THE WEATHER – THE SHOW WILL GO ON RAIN OR SHINE

Thompson's Point is on the Fore River and it's still New England- it has the potential to be very hot or cool even in the summer. Prepare yourself. Wear a hat, breathable clothing, apply sunscreen. Hey – bring a raincoat! Be sure to check the weather before you travel to Thompson's Point. Plan ahead. Layers, people!

STAY HYDRATED!

Drink water. Lots of water. Dehydration causes unhappiness and we don't want that.

WHAT AND WHAT NOT TO BRING:

YOUR TICKET or ID FOR WILL CALL TICKETS

Please bring a printed copy of your ticket to ensure a quick entry into the show. If you are picking up your tickets at will call, please bring your ID to our will call window at the box office next to the entrance gates to pick up your tickets.

YOUR I.D.

If you have to pick up your ticket at will-call or plan on drinking any alcohol, bring your driver's license, passport or any other government issued photo I.D. and you'll be good to go!

THESE THINGS MIGHT ALSO HELP YOU AND ARE OK TO BRING:

SMALL beach or soft camp chairs

(**NOTE**: Out of respect for fellow concert-goers, chairs **must** be low profile, beach-style - *legs no higher than 4" off of the ground and chair backs no higher than 27" off the ground)*

Blankets or beach towels

Security reserves the right to redirect chair and blanket placement for the comfort and safety of patrons.

Hats (one hat per head probably a good formula), sunglasses, sunscreen, raincoat or poncho, a Color Me Badd CD, valid driver's license for will-call and/or to drink alcohol, a jacket, two thumbs up.

THERE ARE A FEW THINGS YOU NEED TO LEAVE BEHIND (and not limited to):

To ensure a safe and awesome event for everyone, bags will be checked upon entry for the following (in other words, please don't bring these so we can let you in right away): Pets, outside food & drink, glass bottles, cans or coolers, alcoholic beverages, illegal or illicit substances of any kind, weapons (including ninja stars), fireworks, umbrellas, professional photo/audio/video equipment, glow sticks or wands, laser pointers, a bad attitude.

Thompson's Point and the State Theatre reserve the right to deny entry or ask visitors to leave at any time. Please don't do anything to make us make you leave.

PARKING

PLEASE NOTE: There is onsite parking for a limited number of cars. Advance onsite parking is available to purchase online through Ticketmaster for $20 per vehicle. If available day of show, parking will be $20 (CASH ONLY) upon entrance to site. Please call (207) 956-6000 for more info. CLICK HERE **to purchase parking online.**

What are we excited about? Thompson's Point is within walking and biking (and kayaking!) distance from downtown Portland. And hey, we are even connected to the **Portland Trails** system: http://trails.org/our-trails/fore-river-parkway-trail/

There will also be parking at **Mercy Hospital Fore River Campus** (after 5pm only): 195 Fore River Pkwy #160, Portland, ME. Free. From here it's an easy walk to the concert site.

PUBLIC TRANSPORTATION

Public Transportation website: www.portlandmaine.com/getting-around/transportation

Concord Coach Lines: Concord Coach Lines serves points in New Hampshire and Maine to Boston South Station and Boston's Logan International Airport: www.concordcoachlines.com

The Downeaster: The Downeaster operates daily round trips between Brunswick, ME, and Boston, MA. Remember – the train station is only ¼ mile away from the concert site. BONUS! www.amtrakdowneaster.com

METRO Greater Portland Transit District bus: METRO Greater Portland Transit District bus provides nine safe, efficient, and reliable routes throughout the greater Portland region. METRO Route #5 stops at the Portland Transportation Center (PTC) located adjacent to Thompson Point (map of drop-off location can be found at the end of the guide). Also visit:http://gpmetrobus.net/

Pedicab: Want someone else to pedal you up to the site? Call Maine Pedicab for a ride. Park in a garage downtown and get picked up in style. Don't forget they work for tips only so it's pay what you want! Call (207) 430-7011 to get to the festival in style.

DRIVING DIRECTIONS:

1. From I-95 North (Boston, Massachusetts)

From I-95 North, keep right on I-295 N, follow signs for S. Portland/Downtown Portland. Take exit 5 for ME-22 E and follow signs for Maine 22/ U.S. 1 Alternate. Keep right and merge onto Fore River Pkwy. Turn left onto Thompson's Point.

2. From Portland International Jetport: 1001 Westbrook Street, Portland, Maine

Head northeast on Johnson Road toward City Line Drive. Continue straight onto Congress Street. Turn right onto Fore River Parkway. Take first right onto Thompson's Point. Arrive at Thompson's Point.

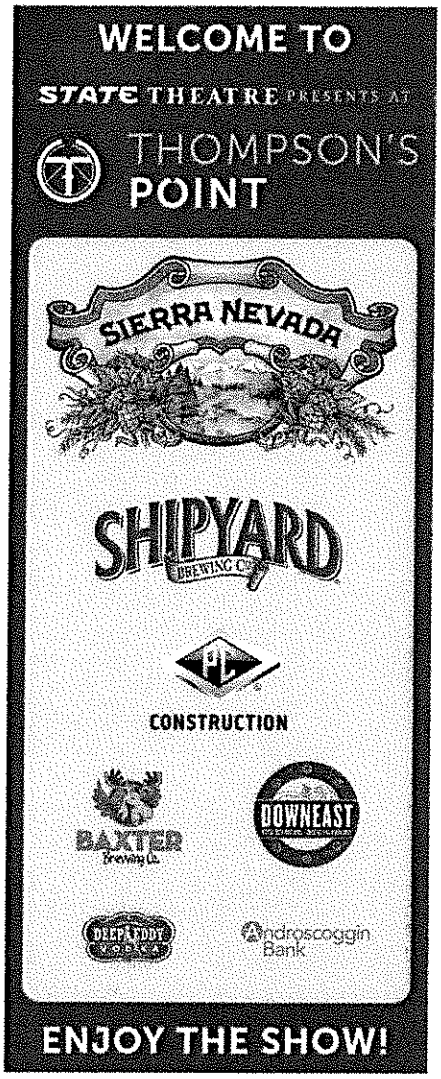
3. From Portland's Downtown District: 549 Congress Street, Portland, Maine

Head southwest on Congress Street toward Forest Avenue. Take first right on Forest Avenue. Slight right to merge onto I-295 S/ U.S. 1 S toward South Portland. Take exit 5A toward ME- 22/ U.S. 1 Alternate/ Congress Street. Keep left at fork and follow signs to Thompson's Point.

CLICK HERE **to enter driving directions on Google Maps.**

For any other questions, please call (207) 956-6000 or email us at info@statetheatreportland.com

See you at the show!



BOX OFFICE

Buy tickets online at www.statetheatreportland.com, by phone at 1-800-745-3000 or in person at the State Theatre box office, Fridays 10am-2pm. The Thompson's Point box office is open one hour before doors night of show.

- PORTLAND **STATE THEATRE** MAINE -

This email was sent to lauren@statetheatreportland.com by State Theatre, 609 Congress Street, Portland, Maine 04101. You are receiving this email advertisement because your email address was used for a ticket purchase or you signed up via our website.

Update your profile & modify subscriptions | Unsubscribe | Contact Us

Exhibit F: State Theatre Presents email capture statistics

Name
TP Info

From
State Theatre
concerts@statetheatreportland.com

Subject
Info regarding Ingrid Michaelson at Thompson's Point

Segment
Ingrid Buyers

Overview	**63.1 %** (495) Opens	**12.9 %** (101) Clicks	**0.4 %** (3) Bounces	**0.1 %** (1) Unsubscribes
Delivery	**99.6 %** Delivery Rate	**785** Sent	**782** Delivered	
Opens	**63.1 %** Total Opens	**495** Unique Opens	**287** Did Not Open	
Clicks	**12.9 %** Net Click Through Rate	**149** Total	**101** Unique	

	Links	Clicks	Click Through Rate
1	parking http://www.ticketmaster.com/thompsons-po...	44	5.6%
2	ingrid http://www.statetheatreportland.com/even...	26	3.3%
3	http://www.ticketmaster.com/Thomps http://www.ticketmaster.com/Thompsons-Po...	15	1.9%
4	maps https://www.google.com/maps/dir//43.6497...	12	1.5%
5	http://www.statetheatreportland.com http://www.statetheatreportland.com/?cam...	9	1.1%
6	View as a Web Page http://view.tmclient.ticketmaster.com/?j...	7	0.9%

Exhibit G: Transportation Demand Management Surveys

Transportation Demand Management Survey

Date:

From: Sue Santerre, Thompson's Point Development Company

To: [Tenant]

On behalf of our team, I would like to welcome you to Thompson's Point! We are excited to have you join us in this dynamic mixed-use project. As a transit-oriented development, we are eager to do what we can to encourage the use of alternative forms of transportation. While use of Single Occupant Vehicles (SOVs) continues to be necessary for many of our tenants, visitors, and guests, we are nevertheless interested to work together as a community of businesses to find other ways of getting people to and from the Point. My role is to help further these goals. Our team will help coordinate and promote rideshare opportunities; use of AMTRAK and Concord Coach lines; METRO bus; and U Car Share/Uber; monitoring parking usage in conjunction with parking management; monitoring parking usage in conjunction with parking facility management; coordinating event scheduling; encouraging greater use of bicycling, walking, and bus-based transit; and convening meetings of decision-makers representing the tenants/users at Thompson's Point, who will assist the coordinator in facilitating these overall goals.

To help me better understand your company's needs, I would be grateful if you would distribute the enclosed survey to your employees and ask them to fill it out and return it to me at: sue@thompsonspointmaine.com at their earliest opportunity. If you have any questions or would like to set up a time to discuss, please do not hesitate to contact me.

Yours sincerely,

Sue Santerre

Transportation Demand Management Coordinator

PHONE (207) 747-5288 x104
FAX (207) 747-5941
WEB www.thompsonspointmaine.com

Question	Yes	No	Response
Do you drive to work?			
If so, do you drive alone?			
If not, how many ride with you?			
If you ride alone, would you consider carpooling?			
Have you used Uber?			
Have you used Uber to get to/from work?			
If not, would you consider it?			
Do you take METRO to work?			
If so, how often?			
If not, why not?			
If not, what would make you consider taking METRO?			
How long is your commute to work?			
Do you ride a bicycle or walk to work?			
If so, how often?			
If not, why not?			
If not, would you consider riding a bicycle or walking to work if you had facilities (shower, bike racks, etc.) to make this a better experience?			
Are there any other comments you would like to offer as we consider how to facilitate better access to alternative transportation for Thompson's Point?			

THOMPSON'S POINT

Concert Transportation Demand Management Survey

Question	Yes	No	Response
Did you drive to the concert?			
If so, did you drive alone?			
If not, how did you get to the concert?			
Would you consider carpooling?			
Have you used Uber?			
Would you use Uber to travel to a concert with others?			
Have you taken the METRO bus?			
Would you take the METRO bus to a concert at Thompson's Point?			
If not, why not, and what could get you to consider taking METRO?			
Where did you travel from, and how long did it take you to get to the concert?			
If you drove, would you ever consider riding a bicycle or walking to a concert?			
Are there any other comments you would like to offer as we consider how to facilitate better access to alternative transportation to concerts at Thompson's Point?			

PHONE
(207) 747-5288 x104

FAX
(207) 747-5941

WEB
www.thompsonspointmaine.com

Appendix 3: Summer Concert Survey invitation and template

Email to State Theatre ticketholder list:

Dear Thompson's Point concert-goer,

We would like to thank you for your patronage and hope you enjoyed your concert experience at Thompson's Point as much as we did!

As a transit oriented development, Thompson's Point (and our concert partners at the State Theatre) are eager to do what we can to encourage the use of alternative forms of transportation. While use of Single Occupant Vehicles (SOVs) continues to be necessary for many of our tenants, visitors, and guests, we are nevertheless interested to work together as a community of businesses to encourage other ways of getting people to and from the Point.

In order to help us better understand how people are getting to and from our concerts we have put together a brief survey. We would be very grateful if you would take a moment to fill out the survey and provide any feedback you may have. Thompson's Point has evolved by listening to the input of our patrons, and your feedback will help us make the Thompson's Point concert experience even better.

Thank you for your time and we look forward to hearing from you!

Please send completed surveys to:

neighbors@thompsonspointmaine.com

[add copy of survey]

| Hotel | Portland - Neighborhood Meeting

MINUTES JANUARY 3, 2018 5:30 PM YURT @ RINK AT THOMPSON'S POINT

MEETING CALLED BY	Forefront Hoteliers, LLC
TYPE OF MEETING	Neighborhood Meeting
FACILITATOR	Chris Thompson and Jed Troubh, Forefront Hoteliers LLC Bo Kennedy, Placemaker Partners, LLC
NOTE TAKER	Sue Santerre
ATTENDEES	See attached sign in sheets

TOPIC	**Level III Site Plan Application – Hotel Portland @ Thompson's Point**

Introduction - Overall Master Plan and Project to Date

A paper copy of the current Thompson's Point Master Plan was displayed for public to see. Chris Thompson of Forefront Hoteliers, LLC discussed the Forefront at Thompson's Point project as a whole summarizing the following points:

- Development planning and permitting started back in 2009 and current approved Master Plan is on file with the City of Portland,

- One of our first investments was the local cash match for a $6,000,000 off-site infrastructure improvement project in collaboration with Maine DOT and City of Portland. The U.S. EDA provided a grant for a portion of the work. The project included but was not limited to widening Thompson's Point Road from the intersection of Fore River Parkway, Congress Street & Fore River Parkway intersection and interstate ramp improvements, multi-modal improvements throughout the adjacent streets as well as inclusion of a multi-use trail connection from Fore River Parkway to Thompson's Point, and traffic calming measures in Libbytown neighborhood. All improvements were designed and constructed with the traffic assumption that the full-build out of the approved Thompson's Point uses were in-place, so this buildout supported the full Master Plan and event programming.

- We completed the rehabilitation of the Depot pavilion structure next, an outdoor venue where we host a variety of outdoor events year round – the Summer Concert Series in the spring/summer, along with other types of events, and The Rink at Thompson's Point, which is in its third season this winter.

- Brick North was the first existing brick building renovated and houses a variety of tenants – Big Room Studios, Color Me Mine, Circus Arts Maine, Cellardoor, Bissell Brothers, Stroudwater Distillery, Int'l Cryptozoology Museum, and Big Jay's Chicken Shack.

- Brick South is the most recent existing building renovation project completed and it came online last spring (March 2017). It is a 25,000-square foot event space and 8,000 square foot annex that houses restrooms, breakout rooms, a catering kitchen, and full-service bar. The space is approved to have a maximum of 2,500 visitors plus employees/staff.

Development On the Horizon

- We began the process of relocating Suburban Propane in 2011 and are in the final stages of securing property on Riverside Drive to build Suburban a new facility thus opening up three and a half acres of land on site.

Level III Site Plan Application – Proposed Hotel

We recently submitted a Levell III Site Plan to the City of Portland for the hotel. We are proposing a 148 room full service hotel. Hotel Portland will be a boutique hotel under the Marriott brand.

Bo Kennedy, Site Civil Engineer with Placemaker Partners, LLC was introduced and showcased the modified Master Development Plan with the recently approved Children's Museum and Theatre of Maine (CMTM) as well as the relocated Hotel to its currently proposed location. A quick overview of the displayed Master Development plan highlighting the completed elements described by Chris Thompson. Bo reviewed the Hotel Portland Site Plan and Proposed Building Elevations while summarizing specific site work and infrastructure that will be required with the development of the hotel lot such as utility services and storm water management provisions. We have completed a public water main extension, private sanitary sewer main extension, gas service extension, and an electrical and communication duct bank to the hotel site of which all services will stem off from. The water main extension project introduced two new public hydrants in close proximity to the hotel property. Sanitary sewer including a grease trap for the food service will connect into new sewer main extension. New stormwater collection and management infrastructure will be installed to serve the hotel lot. Storm water is collected, treated (in compliance with the state and city Stormwater regulations), and is discharged to the Fore River through a new stormwater discharge location.

Main entrance of hotel will be central to the building and facing south at the center of the Depot Structure. Sidewalks from the hotel will connect to the pedestrian infrastructure circumventing the entire property. The hotel site plan includes improvements to a substantial pedestrian only alley in the central portion of site connecting services from the north to the south of the point property. It was noted that the ped alley will act as an area with an inviting and vibrant feel particularly with the addition of the main entrances to the CMTM and hotel food service outdoor dining area.

Between the hotel and Brick South buildings there will be an event lawn and outdoor breakout space to be shared by either building.

Timeline places construction of hotel along with construction of Children's Museum. Starting in 2018 and projected to be finished late summer of 2019.

End of Presentation: Floor was opened for questions from the public.

PUBLIC COMMENTS AND CONCERNS
Question by Unidentified Attendee: Will the main road go all the way through the project?
Response by Chris Thompson: Yes, Thompson's Point Road will go around the entire point and the pedestrian alley will cut through the center of site. There will be a full continuous route, and the radius of the road was created with the premise that a full-size METRO bus, service vehicles, and emergency vehicles will utilize the main loop roadway.
Question by Unidentified Attendee: Do you have a sense of timeline for Suburban Propane?
Response by Chris Thompson: The building permit for the replacement facility on Riverside Street in Portland was submitted to the City of Portland and the plan is to start construction this winter. It has an approximately nine month build out. By one year from today we hope to have the Suburban Propane Certificate of Occupancy for the Riverside property and Suburban Propane can move to the

new facility. We plan to keep the brick building and demolish the remaining buildings giving us three acres of surface parking until garage is completed.

Question by Unidentified Attendee: Is Suburban Propane happy with this?

Response by Chris Thompson: They are happy with the agreed development proposal..

Question by Unidentified Attendee: How will valet parking work?

Response by Chris Thompson: Valet parking will be handled on site. There are several areas on the Thompson's Point property where this parking can be located.

Statement by Unidentified Attendee: I am a resident in Libbytown and I feel this hotel will have a huge impact on the traffic pattern in Libbytown. As it is we can hardly make a right turn out of our neighborhood roads and trying to get in the left lane to head towards interstate is near impossible. We have a huge concern about airport travelers staying at hotel and using local gas stations, grocery stores and restaurants and clogging up traffic even more. This hotel only looks to aggravate a bad situation.

Response by Chris Thompson: You have raised several issues and concerns and I will speak to the ones that I can. Relative to the hotel, it is important to note that while there will be traffic associated with the hotel, these hotel trips themselves are not a major source of traffic, and they, along with the full buildout of the Master Plan, were contemplated in the Traffic Movement Permit and in the $6 million of improvements that were made to the surrounding Libbytown area. But that said, it is rare to have maximum occupancy every night. A full serve hotel running at 70% occupancy is very successful hotel. In our experience, it is often the case that you would see two guest rooms worth of guests traveling in one car. The site can also easily be accessed by METRO, Shuttle, Uber, Lyft, by bike, and on foot. As part of the Thompson's Point project we have a Transit TIF. We build the site and this buildout creates additional tax revenue for the city. A portion of the tax dollars are committed to stay in a fund specifically for alternative transportation purposes. These additional funds are protected from ending up in the city's general fund where they can be allocated to other uses. There are funds available for developing transit oriented improvements including alternative transportation that would connect the Jetport, Portland Transportation Center, and Downtown. I can't argue the hotel won't bring vehicles, but this impact was factored into our Master Plan and infrastructure buildout, and in our view the impact on surrounding roads is likely minimal.

Statement by Unidentified Attendee: I live off Congress Street in a hidden driveway and have a hard time getting in and out of driveway.

Response by Chris Thompson. My sense is this part of Portland will continue to grow. We are one piece of a complex puzzle, and I know that the City is taking a hard look at how to grow Portland responsibly. Our EDA project invested $6,000,000 to build up vehicle and pedestrian infrastructure in areas surrounding Thompon's Point and followed the guidance of the City, State, PACTS, and many planning and design meetings to serve the needs that these parties put forth. The improvements made were a collaborative effort, and we believe the City will continue to work collaboratively with developers to try and make traffic better. I understand that dealing with traffic on Congress Street can be challenging. For our part, we intend to be neighbors for a long time, and we want to get it right, and to this end we've made major contributions to the buildout that was designed to help improve traffic flow.

Question by Unidentified Attendee: Is there any way to incentivize people to use Fore River Parkway for traffic leaving events?

Response by Chris Thompson: With large events, our policy is to only allow right turns out of property onto the Fore River Parkway, to avoid sending vehicles out to Congress Street.

Question by Unidentified Attendee: I live on one of the side streets and during events people park on my street. I own three vehicles, and can only park two in my driveway, and sometimes I have trouble finding parking for my extra vehicle when the street is busy. I have discussed implementing a sticker program with the City like what they do for the Seadogs neighborhood.

Response by Unidentified Attendee. I'm not sure we want to get involved with the sticker program. It sounds good at first glance but then you are left with only parking spaces for the number of spots you have. What if you want to have a graduation party or holiday dinner and only have three parking permits? I'm not sure that is the way we want to go. I think that the project does okay with parking during concert events and they aren't that frequent. The issue for me is the daily traffic on Congress Street.

Question by Unidentified Attendee: Is there going to be any literature to encourage alternative modes of transportation? .

Response by Chris Thompson. Yes. We have this now and will continue to expand upon it. We have a Transportation Demand Management plan that encourages all visitors, staff, and guests of Thompson's Point to utilize alternative methods of transportation. Having maps, in print and online, for hotel guests to explore the area on foot rather than by car is an excellent marketing tool and we will incentivize walking, biking, using METRO, and other modes as much as we can. We have worked hard to develop a great relationship with Portland Trails and they have a significant presence on site -- and the Transportation Center is adjacent to the property as well. We expect Concord Coach Lines and AMTRAK to be significant resources for our hotel guests as well.

Question by Unidentified Attendee: Who maintains the trails? .

Response by Chris Thompson. The trail system on site has two components. First, there is an easement we provided to the City of Porltand for the portion of the trail that runs from the Portland Water District pump station area here, across the panhandle portion of the site, and over toward Waynflete School. The City partners with Portland Trails for this easement upkeep. Second, for the area starting at the pump station and running along the westerly edge of the site down to the point, there is a license agreement with Portland Trails for use of our property.. Portland Trails handles that upkeep. They've also done great pop-up events and projects such as the "parklet" that visitors to the point have enjoyed.

Question by Unidentified Attendee: When is the hotel and Children's Museum projected to open?

Response by Chris Thompson: Hotel construction is projected to start Spring of 2018 with completion expected Summer of 2019. The Children's Museum anticipated starting in summer of 2018. They have a longer build time given their exhibition displays, but both projects should be under construction about same time.

Question by Unidentified Attendee: What will Brick South space be used for when it is complete?

Response by Chris Thompson: Brick South was completed in spring of 2017. We tried to stay as close as we could to the original aesthetic of the building and preserve the brick and beam character.

Question by Unidentified Attendee: What is on the floor?

Response by Chris Thompson: The floor is a new polished concrete slab. The building is intended to be a blank space for all types of events, and it is meant to serve variety of community and corporate events. There were major renovation elements (namely the addition of life safety improvements, bathrooms, bar, and a catering kitchen).

Question by Unidentified Attendee: Do you have your own Storm water System or are you part of City of Portland?
Response by Bo Kennedy: We have our own treatment system that is completely independent of the City of Portland storm water infrastructure. The system is installed in pieces as additional development on the point occurs and is approved by the City of Portland. The installed infrastructure is inspected and maintained at regular intervals. We treat the storm water run-off and then discharge it into Fore River.

Question by Unidentified Attendee: Do you foresee residential condos in the future?
Response by Chris Thompson: We like the idea of making this a residential area as well as commercial project that will have a true neighborhood feel. We have not put together specific plans for our residential buildout as yet. We're evaluating the idea of apartments.

Question by Unidentified Attendee: Where can we see the site plan?
Response by Chris Thompson: You can go on City of Portland's website to see the full updated site plan materials that were submitted. We plan to show updated plans on our website as well when complete.
Question by Unidentified Attendee: How many stories will the hotel have? How tall will it be?
Response by Chris Thompson. The hotel is five floors and approximately 55 ft of vertical height. The site zoning is approved for 120 ft of building height.

Question by Unidentified Attendee: Is a parking garage a priority as soon as Suburban Propane s off site?
Response by Chris Thompson. We do intend to build a garage and would like to do that as soon as it is feasible. Once Suburban is relocated we will have an additional 3 1/2 acres of surface parking. Last August 5th we had the biggest concert of the season on site, Alabama Shakes with over 7,000 people, a 300 person wedding in Brick South, a busy night at Brick North with Bissell Brothers and Circus going strong -- I spent most of the evening walking around the site and we never maxed out parking. There were always additional spaces available. We do think that this is a testament to the alternative modes of transportation used to access the site and the event management plan executed successfully.

Conclusion:

We thank you for coming and for your participation. We are open to suggestions from local residents as we want this project to be the best it can be. Thank you!

Meeting Sign In

Project: Hotel Forefont
Facilitator:
Place/Room: Yurt

Date: 3-Jan-18
Time: 5:30 PM

	PRINT NAME	ORGANIZATION	TITLE	PHONE	EMAIL
1.	Heather Lavoque	Clarion Hotel	DOS	553-4594	heather.l@[illegible]
2.	Kimberly Sweeney	Resident	—	357-1747	[illegible]
3.	Michele + David Allen	Neighbor		838-5501	allenamm@aol.com
4.	Jeff Grinvalsky	[illegible] Resident		405-7666	jgrinvalsky@[illegible].org
5.	Scott Rheault	Resident	—	207-899-6965	smrheault@hotmail.c[illegible]
6.	DANA KNAPP	[illegible] Line		[illegible]-1023	[illegible]@maine.[illegible]
☆ 7.	[illegible] CUSHMAN	CONSULTANT		200-1910	[illegible]
8.	J P DeVriney, Esq.	Petrella Hldgs		671-1388	johndevriney@gmail.co[illegible]
☆ 9.	Sue Santerre	FPI	EA	747-5288	sue@thompsonspoint maine.com
☆ 10.	Jed Troubh	FPI		914 450-7355	JTROUBH@GMAIL.com
☆ 11.	Chris Thompson	FPI		207 347-1614	Parallaxpartners@gmail.com
☆ 12.	Bo Kennedy	Placemaker	Engineer	207 747-5288	Bo@placemaker-partners.com
13.					
14.	*(stared) names identify members of the develompment team				
15.					
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PLACEMAKER PARTNERS, LLC
501 Danforth Street
Portland, ME 04102

March 5, 2018

Ms. Shukria Wiar
Planning and Development Department
City of Portland, Maine
389 Congress Street
Portland, Maine 04101-3509

Subject: The Forefront at Thompson's Point – Hotel Portland
Level III – Site Plan Application – Design Review Letter of Response

Dear Shukria:

We have received and reviewed peer review comments and offer our responses to these comments. For ease of reference we have repeated each comment in *italics* with our response following.

DESIGN REVIEW COMMENTS FROM TY LIN – TOM ERRICO DATED 03.01.2018

Comment 1:

Tom Errico wanted a parking analysis for the projects; allocation of parking for the hotel, event planning, and how will be handled.

Response:

Please find the enclosed parking projection model for the proposed hotel. The Thompson's Point development will consist of more than 700 surface parking spaces upon the completion of the Children's Museum & Theatre of Maine and Hotel Portland development projects which is more than adequate to accommodate all existing and upcoming uses planned for Thompson's Point. All "Special Events" of larger than 2,500 attendees will be managed in accordance with the Updated Event Management Plan(EMP). The EMP was provided to the city staff as an attachment to the Transportation Demand Management Annual Update for review on Jan. 23, 2018.

DESIGN REVIEW COMMENTS FROM CITY STAFF DATED 03.01.2018

Comment 1:

The fencing around the outdoor dining, is this a removal one or a permanent?

Response:

The barrier enclosing the outdoor dining area will be semi-permanent. Some elements are anticipated to mark the corners and key support location and likely be fixed in their location. While the gaps can be removed during winter months for ease of snow clearing.

DESIGN REVIEW COMMENTS FROM PORTLAND FIRE DEPT. DATED 03.01.2018

Comment 1:

We will have to have a 20' access road along the entire front of the Children's Museum, the south side of the building. I don't know if these projects are with the same developer, but if the hotel is built with the sidewalk and seating area they should be told an access road will be abutting this area. Without this road there would be no access to the museum, as currently planned.

Response:

The proposed site plan considers this need for access for emergency vehicles and occasional service vehicles. The plan provides for a 20 ft wide clear path the length of the corridor. The developer has engaged a discussion with the fire department to ensure that any minor adjustment to the site plan for adequate emergency access can be accommodated.

If you have any questions regarding these materials, please contact this office.

Sincerely,

PLACEMAKER PARTNERS, LLC

Bo Kennedy, P.E.
Project Manager/Engineer

Attachments

c: Barbara Barhydt, City of Portland Planning
Chris Thompson, Forefront Partners I, LP
Jed Troubh, Forefront Partners, I, LP

ATTACHMENT A

Parking Assessment

Forefront Hoteliers, LLC
501 Danforth Street
Portland, ME 04102

3.2.2018

From: **Chris Thompson**
Forefront Hoteliers, LLC

To: **Shukria Wiar, Planner**
Planning and Urban Development

RE: **Hotel Portland anticipated parking demand**

Dear Shukria,

I am pleased to present for staff's consideration this memorandum regarding anticipated parking demand for our 148 room Hotel Portland project.

Historically, based on our experience managing the Sheraton Portsmouth Harborside Hotel (Portsmouth, NH); the Hampton Inn and Suites (Exeter, NH); the Hilton Garden Inn Auburn Riverwatch (Auburn, ME); and the Hampton Inn Lewiston Auburn (Lewiston, ME), we have found that, on average, we provide parking spaces for approximately 60% of our occupied rooms (which factors in hotel and restaurant as well as FTE employee demand). The reason for this is that, apart from guests who travel by other means (taxi, Uber/Lyft, bus/train, etc.), for guests coming by car, one vehicle will often be used by two or more guests who occupy two or more rooms (for example, two business associates traveling together in one car and each staying in his or her own room; a family traveling with children in one car and who will typically occupy two rooms; etc.).

So, to calculate normal year round parking demand, we would first begin by calculating our anticipated occupied rooms and applying a forecasted stabilized occupancy. We are suggesting 70% which is likely to be on the high side for a full-serve hotel and thus, we feel, conservative for the purposes of planning parking. This amounts to 104 occupied rooms (148 x .70). We would then apply the 60% car usage factor to our 104 occupied rooms to derive a total average parking need of 63 spaces.

Note that these figures are conservative in assuming a self-park model. The Tribute hotel will utilize a valet parking model, where we can effectively park 1.3 cars per space (requiring a total of approximately 50 spaces in valet mode).

Additionally, because of the type of hotel and its location, we expect that a significant number of guests will utilize Amtrak's Downeaster service and Concord Coach Lines' service, or will fly into the Portland Jetport and utilize taxis, Uber/Lyft, etc. (Note that our other hotel properties mentioned above have not had the benefit of proximity to a multimodal transportation facility with interstate transit providers, so the 60% factor we typically use in our ongoing management is likely to be highly conservative when applied to the Thompson's Point location).

The hotel use peak parking demand is complementary to the other uses currently residing on Thompson's Point. While there will be some overlapping of parking uses, a majority of the hotel parking is used overnight while the other uses are closed and have minimum demand.

All tolled, we believe that we are more than adequately supplied with parking on the Thompson's Point property through our on-site (Lot 6) spaces and the availability of over 700 existing shared use surface spaces on the property as shown on the enclosed Interim Parking Plan. Further, as a practical matter, with the increasing trend toward use of rideshare and other alternative modes, we foresee active management of our TDM plan reducing the overall parking demand beyond those assumptions made above.

Please do not hesitate to contact me with any questions or to discuss further.

Yours sincerely,

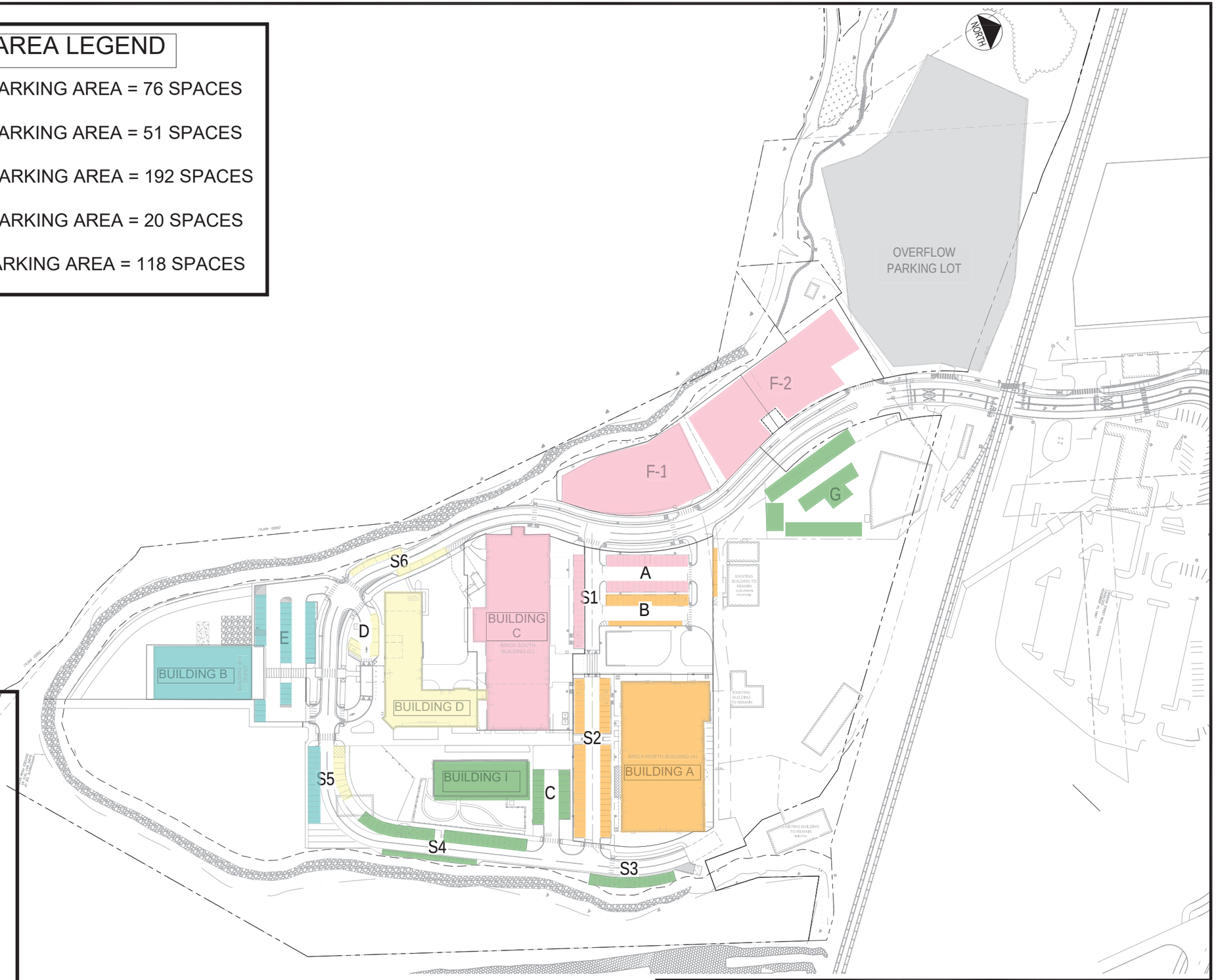
Chris Thompson

ATTACHMENT B

Plan Sheet – Parking Plan

PARKING AREA LEGEND

- BUILDING A PARKING AREA = 76 SPACES
- BUILDING B PARKING AREA = 51 SPACES
- BUILDING C PARKING AREA = 192 SPACES
- BUILDING D PARKING AREA = 20 SPACES
- BUILDING I PARKING AREA = 118 SPACES



PARKING LOT SUMMARY

- LOT A = 30 SPACES
- LOT B = 24 SPACES
- LOT C = 18 SPACES
- LOT D = 5 SPACES
- LOT E = 37 SPACES
- LOT F-1 = 67 SPACES
- LOT F-2 = 79 SPACES
- LOT G = 50 SPACES
- STREET S1 = 16 SPACES
- STREET S2 = 52 SPACES
- STREET S3 = 16 SPACES
- STREET S4 = 34 SPACES
- STREET S5 = 14 SPACES
- STREET S6 = 8 SPACES

REV	DATE	DESCRIPTION
1		

REVISIONS

PROJECT
THE FOREFRONT AT THOMPSON'S POINT
CHILDREN'S MUSEUM & THEATRE OF MAINE

SHEET TITLE
PARKING PLAN

CLIENT
FOREFRONT PARTNERS I, LP

PLACEMAKER PARTNERS, LLC
501 DANFORTH STREET
PORTLAND, ME 04102
bo@placemakerpartners.com

DRAWN: BEK	DATE: DEC. 2017
DESIGNED: BEK	SCALE: N.T.S
FILE NAME: CMTM-PARKING LEASE PLAN.dwg	
SHEET	EXHIBIT___

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The Forefront at Thompson's Point

Transportation Demand Management Report

January 22, 2018

Overview of Transportation Demand Management (TDM) at Thompson's Point using the City of Portland's draft TDM Report Template:

Date of Report **1/22/2018**

Property Description

Name of Property/Development	Forefront at Thompson's Point
Address	#1-11 Thompson's Point Road (Office location: 501 Danforth Street, Portland, ME 04102)
Owner	Forefront Partners I LP

Property/Development Program

	Square Feet	*Units/Rooms*	*Employees*	***Parking Spaces***		
				On-site		*Off-site*
				Paved	*Unpaved*	
Residential (none)	**0**	0	0			
Office (Suburban)	2,927		10			
Office (Big Room)	3,450		14			
Office Subtotal	6,377					
Hotel Restaurant	5,650		10			
Big J's	1,852		4			
Restaurant Subtotal	**7,502**					
Retail - Color Me Mine	2,136		2			
Retail - Stroudwater Distillery	5,284		3			
Retail - Bissell Brothers Brewing	10,068		8			
Retail - Cellardoor Winery	5,890		5			
Retail Subtotal	**23,378**					
Cultural/Educational-International Cryptozoology Museum	993		1			
Cultural/Educational-Circus Maine	6,800		4			
Cultural/Educational-Children's Museum and Theatre of Maine	24,250		6			
Cultural/Educational Subtotal	**32,043**					
Hotel	**90,000**	148	10			
Event	**34,000**					
Unleased	0					
Property/Development Total	**193,300**					
				217	**516 +/-**	**300 +/-**

TDM Coordinator

Contact Person	Chelsea O'Reilly, General Manager
Company/Organization	Forefront Partners
Mailing Address	501 Danforth Street, Portland, ME 04102
Phone	(917) 254-7587 cell
Email	chelsea@thompsonspointmaine.com

TDM Plan & Targets

Date of TDM Plan	*9/13/2011*	*Date of Most Recent Update (if any)*	11/4/2015; 9/19/2017 (interim)

		TDM Plan Target (if applicable)	*Current Data*
Peak Hour Trips	*AM*	No target given	Projected: 246 (10/6/17 – includes museum & hotel)
	PM	No target given	Projected: 354 (10/6/17 – includes museum & hotel)
Mode Split	*Single-Occupancy Vehicle*	Reduce SOV trips to 80% of total, within first 5 years of project	Initial estimate from 2017 concert survey data: ~5% SOV rate traveling to concerts.
	Bicycle	Increase by 5-7% annually until overall 20% reduction in parking is reached	Initial estimate from 2017 concert survey data: 2.8%. Plans for additional data collection.
	Walk	Increase by 5-7% annually until overall 20% reduction in parking is reached	Initial estimate from 2017 concert survey data: 8.7%. Plans for additional data collection.
	Local Transit	Increase by 5% annually until overall 20% reduction in parking is reached	Initial estimate from 2017 concert survey data: 0.7%. Plans for add'l data collection.
Parking Demand		Reduce parking demand annually by 5% until a minimum of 20% reduction is reached - from peak weekday demand of ~1,450 spaces and up to ~1,900 spaces during special events (for full build out)	Initial estimates from 2016-2017 retail and events parking data: an average of 5.08 persons per vehicle for events and concerts. Plans for additional data collection.
Other: Carpooling/Vanpooling		Increase by 5% annually until overall 20% reduction in parking is reached	Initial estimate from 2017 concert survey data: 63.4%. Plans for additional data collection.
Other: Intercity Bus or Rail		No target given	Initial estimate from 2017 concert survey data: 0.3%. Plans for add'l data collection.

TDM Strategies

Note strategies identified in original TDM Plan and current status.

Strategy	***Status***
Coordinate & promote rideshare (carpooling)	Currently promoted. Exploring possibilities for additional coordination, e.g. using groupcarpool.com for events.
Coordinate & promote local and intercity public transportation (METRO, AMTRAK, Concord Coach, shuttle from Mercy Hospital)	Currently promoted. Concert shuttle from Mercy hospital reactivated. Plans for additional cross-promotion and collaboration with local and intercity transit; e.g., AMTRAK promotions and continuing exploration of METRO transit link between Old Port and Thompson's Point.
Promote walking and bicycling	Currently promote bicycle and pedestrian access. Growing sidewalk and bicycle parking infrastructure on site. Cross-promotion with trails work at and near site. Improvements to nearby Neighborhood Byway network expected in Summer 2018.
Strategic parking management	Initial parking constructed and now charging for parking. Under management by Unified Parking Partners and enforcement by Park Select. Collecting data and in communication for best event management practices.
Event scheduling and management	Full implementation of Event Management Plan and ongoing updates based on management experience. Weekly event scheduling check-in with tenants.
Transit-Oriented Development TIF	TIF property tax revenue from the development is accumulating for transit improvements. City working on plan to use funding for local transit linkage between the Jetport, PTC/TP, and the Old Port via the Congress Street corridor.

A. Development Program and Commitment to TDM

As with most large build-out projects and in part due to the effects of the Great Recession, along with its deliberate approach to adaptive development, Thompson's Point has evolved more slowly – and in slightly different ways than perhaps originally expected – than the provisions laid out in its first Transportation Demand Management (TDM) Plan. That plan was written in 2011, well before even the City's implementation of the Master Development Plan permitting methodology. The development team's experience with TDM has also grown over time from what was first proposed on paper to what has worked so far on the ground. This understanding helps to inform Thompson's Point's way forward for desired next steps for its TDM program.

The Thompson's Point development team deeply understands the value of the site's existing and future Transportation Demand Management efforts. The team also conceives of alternate transportation – walking, bicycling, carpooling and taking transit - as an extension of the Thompson's Point experience. For example, sharing a ride with friends (or strangers) to a summer concert builds community and anticipation of the event even before the group arrives on site. As the developers have stated, it is in their best interest to get it right, in order to grow as a multi-faceted destination and facilitate the ease of travel for tenants, visitors, neighbors and commuters.

As such, Forefront Partners is excited to have engaged a new General Manager and TDM Coordinator, Chelsea O'Reilly. Chelsea brings event TDM experience from her former work with the Bowery Presents and their various venues around the country, including more specifically the State Theater and the Thompson's Point Summer Concert Series. She is a good fit for managing the TDM team and the day-to-day operations of the site's TDM program.

Additional team members include staff from Soli DG, with whom Forefront Partners contracted in the summer of 2017 to help assess the TDM program. The firm assists with

Quick overview of TP's TDM planning & reporting history:

- *September 2011:* The Transportation Demand Management Plan for the Forefront at Thompson's Point was first approved
- *February 2013:* The plan was re-approved in February 2013 with Master Development Plan approval
- *November 2015:* Forefront Partners presented an Addendum to the Transportation Demand Management Plan which was approved in conjunction with the combined Brick North and Brick South Level III site plan approval (and concomitant subdivision/master plan re-approval) in early 2016
- *September 2017:* Forefront Partners provided an Interim Update to the TDM Plan as part of the Children's Museum site approval process
- *January 2018:* Forefront Partners provides this TDM Report and next steps for updating the Thompson's Point TDM Plan and future data collection

The Thompson's Point TDM coordinator is responsible for:

- Encouraging greater use of preferred modes – walking, bicycling, carpooling and taking bus or rail transit - through central online platform, social media, any on-site kiosks and site-wide promotion
- Working with Unified Parking Partners to ensure strategic parking management and monitor parking usage
- Overseeing event scheduling
- Coordinating site and tenant TDM policies and incentives
- Overseeing/conducting surveying of tenant employees and visitors
- Overseeing any trip counts
- Filing annual reports and updating the plan with the City
- Exploration of additional TDM strategies

operational and logistics management for the Maine Port Authority and provides creative and forward-thinking consulting on complex transportation infrastructures and the operational, communications, and marketing systems required to grow and manage them sustainably. DG staff have demonstrated this creativity and strategic thinking in the group's initial months of TDM program evaluation work.

In addition, the Thompson's Point TDM team has also contracted recently on this report and the updating of its TDM plan and data collection process with local TDM specialist firm, Cushman Transportation Consulting, LLC (CTC). The developers plan to continue to engage CTC on an ongoing basis to help refine overall TDM objectives and assist in creating and implementing specific TDM initiatives and the metrics and data collection tools to assess their efficacy. The Thompson's Point development team's TDM experience and project history, together with Soli DG's familiarity with Portland and regional transit infrastructures, transportation analysis, and marketing and communications, along with CTC's understanding of the local and national TDM landscape, make for an exceptional partnership. The developers believe the combined team is developing the organic, authentic, flexible, progressive and interdisciplinary TDM planning and ongoing assessment that the Forefront project requires, and which a single individual or firm would have difficulty providing.

Together, the group has begun to explore more broadly the TDM programs at evolving, multi-faceted development sites similar to Thompson's Point (e.g. in California and Northern Virginia) – including how they handle their trip and reduction targets. The team also plans to consult the upcoming release of an Urban Land Institute resource reviewing latest large site TDM program implementation and monitoring methods.

The intention is to deliver, by March 31, 2018, an updated best-practice TDM plan for Thompson's Point moving forward.

Updated Thompson's Point TDM Plan (to be delivered 3/31/18) will further clarify:

- **Implementation:**
  - operations
  - trip and parking reduction incentives and strategies
  - outreach and marketing plan – with alternate "micro TDM" proposal
  - infrastructure development
- **Monitoring & Reporting:**
  - Process for quantitative and qualitative data collection and analysis; example items likely to include:
    - Updated trip and parking reduction targets
    - Specifics on peak trip and parking demand counts
    - Specifics for assessing modal splits for non-drive alone trips – and whether modal split targets make sense vs. pure reduction on SOV trips
    - Revamped employee and visitor survey tools and methodologies
    - Best time(s) of year and intervals for data collection (e.g., annual counts between summer and fall and surveying every two years)
    - Specific goals for data analysis
    - Other best practices
  - Reporting – likely to include clarifications for:
    - Annual/biennial report with data from counts and any surveying, details of TDM activities conducted, tenant snapshots, changes to the TDM plan during the year, and plans for the following year.

Furthermore, as the TDM team has worked to flesh out initial "micro TDM" possibilities for individual leaseholders, questions have arisen regarding whether this model is truly the best fit for the site. This is in part because TDM coordination seems to work best – and serve tenants best - when it is centralized at the level of the site's overseeing management. Drafting narrative micro TDM plans for every tenant also seems to be repetitive, with little payoff in terms of providing creative solutions that don't already exist within the evolving macro TDM plan.

Tenant TDM Snapshots & Marketing for Priority Groups – to be delivered 6/30/18

- Individual tenant TDM snapshots (see Appendix A for example)
- Specific marketing plans to address the needs of different employee and visitor types

The "macro vs. micro" framework was developed by the Thompson's Point team initially in 2011, in advance of having actual tenants and operational partners engaged in real time business activities. While it functions well as a theoretical structure for organizing information, it appears to have shortcomings when it comes time to translate strategic principles into operational models that actual tenants, visitors, and guests can embrace and consider authentic and genuine. Without that authenticity and the ability to engage site users at that more immanent level and work with them to develop shared goals and meaningful performance measures, there is less chance of meeting TDM targets. What has actually unfolded over the past couple of years of operations at Thompson's Point represents the beginnings of a highly successful TDM program that has real buy-in from a diverse mix of users, and is a fertile ground for future innovation and exemplary performance.

Thus, what seems most useful to address tenants' TDM needs and meet Thompson's Point's larger TDM goals is to:

1. Provide the city with *individual tenant TDM snapshots* during the regular TDM reporting process. These snapshots will include specifics on tenant activities, employees, visitors, transportation mode share, TDM initiatives and other pertinent information. *An example of a tenant snapshot using plans for Hotel Portland can be found in Appendix A.*
2. Develop *marketing and outreach plans that specifically address* the transportation behavior and *needs of different employee and visitor types, also known as "Priority Groups*." These will incorporated in the site's updated TDM Plan. The site's marketing quite often piggybacks on the various users' and tenants' own marketing efforts. The TDM team seeks to leverage those marketing synchronicities, as tenants are best equipped to reach their patrons, employees, and visitors in a genuine fashion.

The TDM team proposes these pieces as the "micro TDM" alternative. It is the team's view these will provide much more succinct and meaningful targets and cogent descriptions of proposed initiatives than the micro TDM plans first conceived in 2011, in the absence of the diverse user group that is in place today. *The developers welcome city staff's feedback on this methodology. The TDM team plans to deliver these individual tenant snapshots and priority group marketing plans by June 30, 2018 (with the exception of the snapshot for the Hotel Portland, which is attached hereto).*

The TDM team then expects to collect the next round of data and conduct surveys under the new TDM plan between June and December 2018. This will likely be based on seasonal use of the site, e.g., summer concert data collection and then more regular daytime use in fall and early winter, that still includes events at Brick South and tenant activities in Brick North.

New Data Collection (June-Dec. 2018) and Next Annual Report (Jan. 2019)

- Updated data collection and surveying to be conducted between June-December 2018
- Submission of next annual report under the revised TDM plan in January 2019

In January 2019, the Thompson's Point team plans to produce its next annual report under the revised TDM plan, using the updated targets and data collection process.

B. Property Description & Transportation Context

Within the context of Portland's current growth and after decades of Thompson's Point being fairly underutilized as an industrial site, Forefront Partners is ever mindful of its responsibility to help form a coherent new neighborhood, with a vibrant mix of land uses that help the area thrive for the long term.

Photo above: Pre-development photo of TP's regional context: http://www.portlandmaine.gov/PhotoGallery/17/_mg_6442%20-%20thompson%20point,%20fore%20river,%20portland,%20maine.jpg

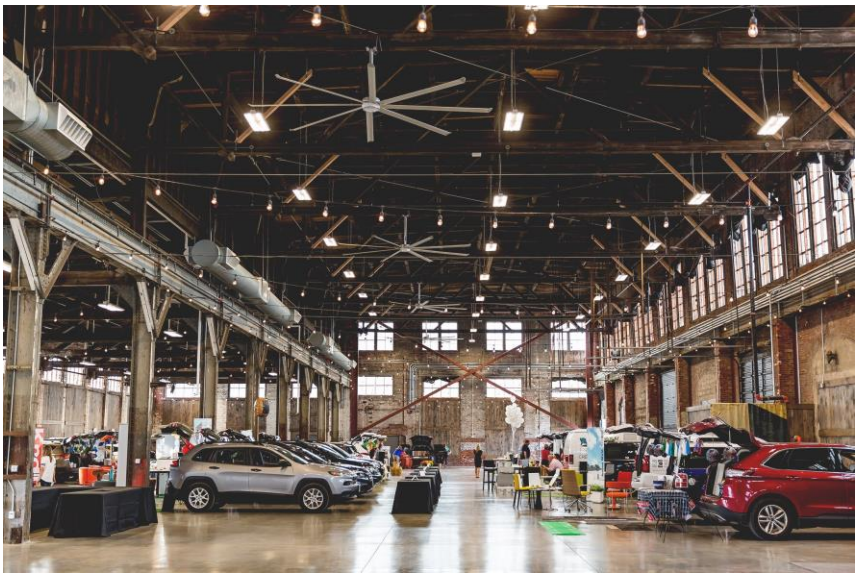
The development team is also conscious of Thompson's Point's unique location in the City of Portland and in the region - just off the Portland Peninsula and near the Libbytown neighborhood, plus served by intercity and local public transportation, local walking and bicycling networks, and Interstate 295. In addition, the site is highly visible to people traveling through the region by bus, train and via the highway. The peninsular nature and geographic boundaries of the point that make the site so interesting also encourage the use of alternate transportation, given that there is only one route for automobile traffic onto and off of the site.

As a multi-use site with cultural amenities, such as Circus Maine and the Cryptozoology Museum, and varied events, such as Bissell Brothers' beer releases, Cellar Door wine and food pairings, and the State Theatre concert series, Thompson's Point is fortunate to draw both visitors who are local and also those from across Maine and New England and beyond.

In addition, the developers have worked hard to restore specific buildings and structures to connect the site with its shipping and rail roots. Examples include refurbishing and modernizing Brick North and Brick South, which were used for train repair and storage. There is also the renovation of the former Union Station rail platform shed, which now serves as an outdoor venue for concerts, festivals, weddings, and other events, as well a seasonal ice skating rink from November through March. Earlier in Portland's history, Thompson's Point served boat and barge traffic on the Fore River and the Cumberland and Oxford Canal. The plan to restore water access to the site is another exciting part of its transportation context.

C. Recent TDM Data Collection, Surveying & Assessment Work

The Thompson's Point TDM team has spent this past fall cumulating qualitative and quantitative data gathered over the past two years to self-evaluate, inform the city of its TDM program and plan for next steps. This has included working with Unified Parking Partners to gather parking numbers for different occasions in 2016 and 2017. Forefront Partners has also worked with its various partners, tenants and vendors to determine the number of attendees at events at the multiple venues on the point during these same two years, including the summer concert series and events at the newly-opened Brick South building. The data show an average of 5.08 patrons per parked vehicle for events and concerts.



Recent Surveying & Data Collection

- Consolidating parking and event attendee data - average of 5.08 patrons per parked vehicle for retail customers and events goers
- Interviews with partners and tenants
- Survey data from event attendees
    - SOV: 4.7% of respondents
    - Carpool: 63%
    - Ridehailing (e.g. Uber): 19.5%
    - Walk: 8.7%
    - Bicycle: 2.8%
    - Local Transit: .7%
    - Intercity Bus/Rail: .3%
- Unstructured conversations with city officials
- Unstructured conversations with community leaders and members
- Plans for revising data collection and surveying process

The State Theatre conducted an online survey program with Thompson's Point concert patrons from this past summer of 2017, using the survey tool developed with the City for the 2015 Addendum to the TDM Plan (attached as Appendix B). Six hundred eighty-three attendees responded, offering a snapshot of event goers' travel behavior and experiences. Survey participants included people coming not only from Maine but also from around New England and the Maritimes - as well as from places as far away as New Jersey and Illinois. Only 4.7% of those completing the survey drove alone to the concert. The portrait of how the rest of the attendees reached the concert included carpooling (63%), ridehailing (19.5% - via Uber, Lyft, taxi, hotel shuttle, or being dropped off by private vehicle), walking from home or a friend's house or a nearby hotel (8.7%), bicycling (2.8%), taking METRO (0.7%) and using intercity bus or rail (0.3%). Fifteen percent of survey participants had used METRO service at some point and 45% said they would take METRO to a concert at Thompson's Point – this obviously only applied to those attendees who were from Greater Portland.

In addition to the data collection and surveying this fall, the TDM team has conducted individual interviews with its tenants and partners to identify how employees and visitors access the point and to document tenants' TDM interests, needs and concerns. The minutes of each interview can be found in Appendix C. A number of common threads emerged from these interviews that have helped greatly to hone Thompson's Points objectives and plans for next steps in its TDM work. Examples include:

- Continued interest in the need for stronger public transportation connections between the Old Port/Waterfront to help cruise ship and hotel visitors access the site - and conversely, in the near future, for Thompson's Point hotel guests to reach the Old Port.

- Encouraging dropoff and pickup for ridehailing trips (Uber, Lyft, taxi, etc.***)*** at the end of Sewall Street - as well as at an on-site taxi stand.
- Improving visitor wayfinding and multi-modal information to access the site - via a central online resource, local tourist maps, GPS, and physical signage.
- Need for TDM resources for employees as the employee pool expands on the site.

The developers are excited to use this feedback and guidance to create expanded tools and resources to address these needs.

As mentioned in Section A and planned for the updated TDM Plan to be delivered in March 2018, the team is also looking at TDM programs and data collection at other multi-use development sites to make recommendations for the best practice data analysis and reporting process going forward.

D. Current Thompson's Point TDM Marketing, Strategies and Best Practices

As stated above, the Thompson's Point TDM program has evolved over the past several years of development and the team's TDM practice has grown greatly through its on-the-ground experience. The following narrative describes the current strategies, incentives and disincentives the group actively utilizes to reduce drive alone trips and parking demand. The team is also excited to be exploring additional strategies for the updated TDM Plan.

Strategic Parking Management

The Thompson's Point development team understands that fully managed and shared parking will produce the strongest results for reducing single-occupancy vehicle trips to the site. With the increase in development activity and the completion of initial parking infrastructure (217 paved spaces, 516 +/- unpaved, and 300 offsite paved) Thompson's Point has recently made the important shift to paid parking. This is managed by Unified Parking Partners and under the enforcement efforts of Park Select, whose employees are in regular communication with the developers and the TDM team, including for events.

Parking

- Initial parking constructed: 217 paved spaces, 516 unpaved
- Fully managed (Unified Parking Partners) and shared – now charging for parking on site
- Agreement with Mercy on the Fore to use an additional 300 spaces for overflow parking for events

Paid parking has been part of the Thompson's Point plan since the outset, but for the first few years of the development - other than large events such as concerts where patrons were charged for on-site parking - there was no fee associated with daily parking on-site. Providing virtually unlimited free parking serves as a *de facto* disincentive to effectively encourage the regular use of alternate modes of travel. The move to paid parking helps encourage tenants, employees, patrons and guests to see

parking as a finite resource with an associated cost and improves openness to looking at different transportation practices across the board.

Thompson's Point also has an ongoing agreement with Mercy Hospital to utilize the approximately 300 spaces in its Fore River lot for overflow parking for events. This enables Thompson's Point's use of the lot on evenings and weekends, subject to providing prior notice. Staffing and security is at Thompson's Point's sole cost and the patrons are charged a lower fee than on the point. This fee covers the cost of operation with any surplus going to a charity. Forefront does not profit from this parking.

Rideshare

While the TDM team actively promotes carpooling to Thompson's Point, the very nature of many of the tenant activities – e.g., food and beverage establishments, event purveyors and cultural attractions like the skating rink and Cryptozoology Museum – tend to attract people coming in groups. Couples, friend groups and families most often arrive in passenger vehicles carrying more than one person. Thus, carpooling is the most common preferred mode of transportation that visitors use to access the site.

Rideshare

- Active promotion of carpooling for visitors
- Most common alternate mode of transportation to site

Promotion of Local and Intercity Public Transportation

The Thompson's Point development team is very cognizant of its role as a transit-oriented development (TOD) and its status as a TOD tax increment financing district within the City of Portland. Having METRO, Concord Coach and Amtrak service at the point's front door continues to be a tremendous opportunity for the site. Moreover, as Thompson's Point has developed over the past two years, the site's offerings have become an amenity for these transportation providers as well. In 2016 and 2017 the TDM team conducted outreach to enhance and expand collaboration with these key partners. This included:

Transit

- VIP express lane for transit riders to enter outdoor concert venue
- Active promotion of METRO, Concord Coach and Amtrak for visitors
- Active promotion of METRO service for employees

- For all three providers:
    - Creating an "Express" lane at the outdoor concert venue to allow METRO, Concord Coach and Amtrak riders (as well as Bicycle Benefits patrons) to bypass the long ticket line and enter the venue immediately when doors open;

- Active promotion of METRO, Concord Coach and Amtrak on the summer concerts website;
- Facilitating meetings and ongoing conversations between tenants and event partners regarding how METRO, Concord Coach and Amtrak can play a viable role in getting their patrons to and from Thompson's Point - both for events (concerts, Brick South events such as the Flower Show, etc.) and also for ongoing business activities (Circus Maine cabarets and classes, Bissell Brothers tasting room visits and beer launches, Cellardoor events, and International Cryptozoology Museum visits)

- Exploring "sponsorship" collaborations, such as the Sunaana music festival (see Amtrak below) and other reciprocal marketing possibilities to co-promote events on the point and access to them via transit
- Inclusion and participation of all providers in public meetings and other planning for the next steps of the site's development (e.g., Children's Museum and hotel).

- *METRO:*
  - Facilitating meetings and ongoing conversations between tenants and METRO representatives to explore ways that METRO and its expanded routes can be a viable transit option for employees and visitors;
  - METRO inclusion of Thompson's Point in its transit guide;
  - Continued discussions regarding the hoped for implementation of the "hub link" study and connecting the Portland Transportation Center with the Old Port/Waterfront.

- *Amtrak Downeaster/Northern New England Passenger Rail Authority (NNEPRA):*
    - Forefront Partners, in concert with event partners, developed the "Sunaana Express". The groups worked with NNEPRA to reserve a separate car from Boston's North Station to Portland on the eve of the Sunaana festival (March 4, 2017). The developers also partnered with Allagash Brewing Co. and local folk rock musician Conor Garvey to create a festival experience on the train, as patrons traveled to Bissell Brothers for the Friday night launch event (with Icelandic band Mammut playing at the Brewery). This initiative will expand for the 2018 Sunaana event.
    - Similarly, Thompson's Point has developed, and continues to explore ways to grow and innovate, other cross promotions like the Maine Brewers Guild Winter Session this month (photo at right)

    - Thompson's Point and the Rink at Thompson's Point worked with NNEPRA to cross-promote the rink and NNEPRA's "Ride With Santa" event in early December, and to explore ways to utilize the Downeaster for more regular transit to and from Thompson's Point (say, residents in Biddeford/Saco coming to the rink, or to one of the Brick North businesses, for instance).
    - Providing hosting space for the Downeaster station meeting at Brick South.

Walking & Bicycling

Thompson's Point is located near a growing pedestrian and bicycle network, including the Fore River Parkway multi-use path, Congress Street bike lanes, the Fore River Trail, neighborhood sidewalks and the expansion of the Portland Neighborhood Byway to connect the Portland Transportation Center with Deering Center. Forefront Partners' relationship with Portland Trails has been very

Walking & Bicycling

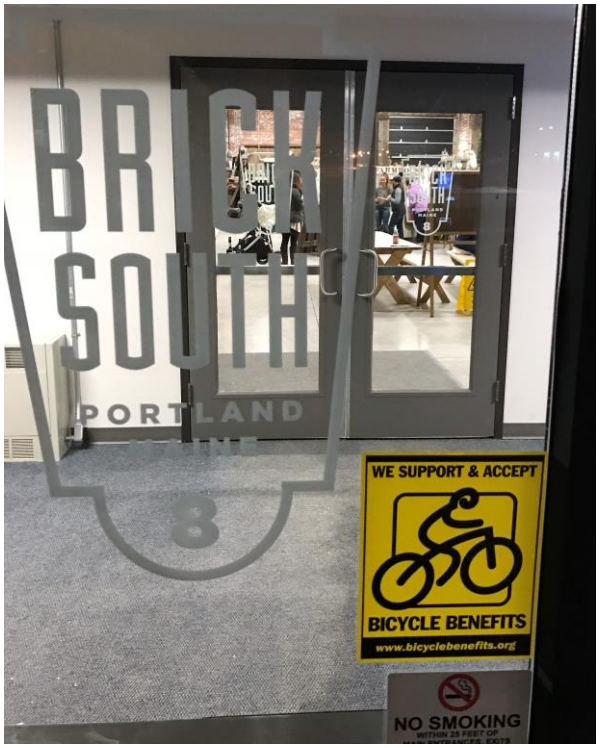
- On-site bicycle parking and additional seasonal bike racks
- VIP express lane for Bicycle Benefits riders to enter outdoor concert venue
- Active promotion of walking and bicycling for visitors

fruitful – both in terms of increasing trail connections to and near the point and also tapping into the organization's mission to promote active transportation and community engagement. Portland Trails' encouragement of walking and bicycling to Thompson's Point has been a major force in the development's ability to increase walk and bike mode share and reduce drive alone trips.

Thompson's Point and Portland Trails have partnered on various creative placemaking activities, such as the inclusion of the "Parklet" area at the end of Thompson's Point, which has become a popular spot for residents, tenants, and event visitors alike.

The TDM team has sought to encourage the use of this walking and bicycling infrastructure in the following ways:

- Collaborative sponsorship with Cyclemania to provide over 70 bicycle racks for summer concerts, and co-promotional partnership with Portland Trails to help promote the use of these racks for concert attendees;
- Creating a "METRO Express" lane at our outdoor concert venue to allow Bicycle Benefits patrons (as well as METRO, Concord Coach and Amtrak riders) to bypass the long ticket line and get into the venue immediately when doors open;
- Active promotion of walking and bicycling on the summer concerts website;
- Facilitating conversations with tenants to encourage use of bicycle racks for their employees and guests;
- Bissell Brothers and Libbytown Neighborhood Association partnership on Trail Cleanup Days
- Featured destination and Thompson's Point trail mapping on the Portland Trails web site.
- Commitment to Portland Trails collaboration through dedication of easement and license agreements
- Promotion of Portland Trails during events at the pocket park

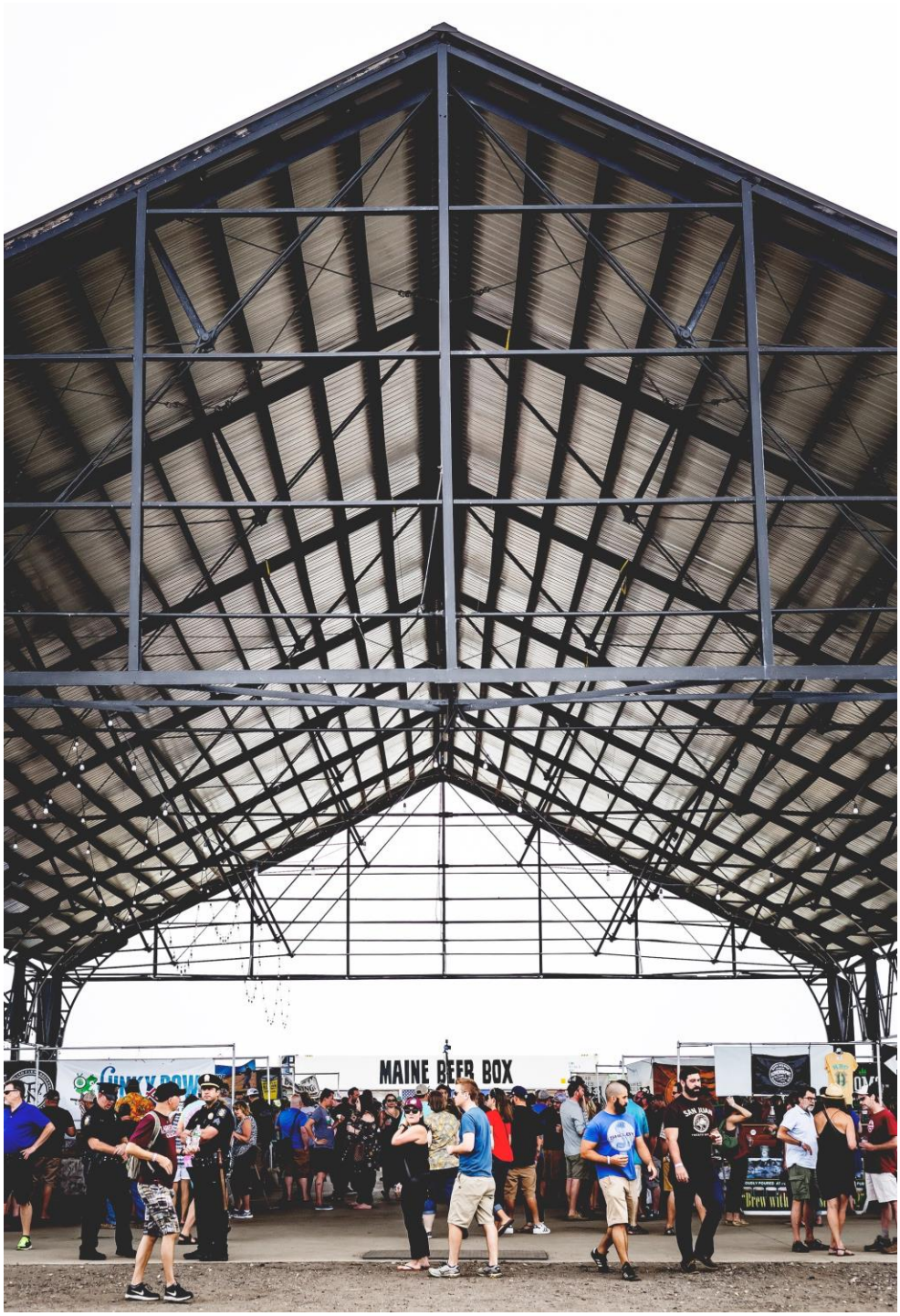


- Co-promotion in July 2017, with Portland Trails, the Libbytown Neighborhood Association, Brick South, and the State Theatre/Summer Concert Series of a "meet and greet" and grove tour with artist Sam Van Aken, creator of the "Tree of 40 Fruit" grove of hybrid heirloom stonefruit trees at Thompson's Point; combined with Brick South beer hall and Libbytown Neighborhood Association concert ticket giveaway.

Event Management

The TDM team and its event partners have fully implemented the site's 2014 Event Management Plan and an extensively expanded plan (attached as Appendix D). The group checks in with all tenants on a weekly basis to manage the site's event schedule. After three full summer concerts seasons and ten months of Brick South rentals, the TDM team and Unified Parking Partners have a wealth of experience in how best to facilitate pedestrian, bicycle and vehicular traffic and parking on the site.

Following are two case studies of proactive event management from this past year, showing the type of active learning the TDM team seeks to practice in order to learn lessons and improve performance as Thompson's Point grows.



TDM Team Report: A Great Convergence of Events

Saturday, August 5, 2017: *Thompson's Point held one of our larger summer concerts, the Alabama Shakes, with attendance over 7,300 people, along with a 300+ person wedding in Brick South. While we'd held many large concerts and multiple Brick South events prior to this date, it was the first time we'd had both overlapping on the same day. Additionally, as with most summer concert Saturdays, things were busy at Brick North (Bissell Brothers, Cellardoor, Circus Maine).*

It represented the first real test of our capacity to execute our Event Management Plan with the combination of all of these uses on the same day and same time, while also preserving parking turnover for Brick North tenant visitors.

One of our team members spent the afternoon and evening walking the site and inspecting the condition of entering traffic, parking availability, and pedestrian flow. At no point was the entering traffic congested at either the Fore River Parkway or on either side of the rail crossing, nor was there ever a shortage of Brick North parking. Inspection was made at 10 minute intervals, and at each observation, there were at least three and often up to ten parking spaces available on Lot 1 (the lot immediately to the south of Brick North's primary tenant storefronts) and Lot 2 (the lot immediately to the west of the Circus Maine space and outdoor plaza).

The one observation that staff made that has resulted in an operational change is that, given the high volume of pedestrian traffic on the sidewalk just south of the rail crossing prior to the beginning of the concert, it was often difficult for parking staff to direct cars into Lots 4-5 (the two lots on the westerly side of the site, proximate to the Portland Water District pump station area) as the entrance to those lots was often blocked by the flow of pedestrians. For this reason, we have modified the Event Management Plan to direct parking staff to station an attendant at the entrance to these lots to pause pedestrians temporarily to permit cars to turn in (the inverse is already practiced during concert exit, where staff is stationed to direct vehicles to ensure pedestrian safety.

Otherwise, this represented the first instance where all of the various event types (and in the case of the concert, one of the higher volume attendances) were successfully balanced and the Event Management Plan (as amended) was properly executed. And even then, we found room for improvement!

Photo above: the wedding party rocks out in the VIP area.

The Maine FLOWER SHOW

TDM Team Report: Lessons from the Early Birds – and they're all early birds

Wednesday, March 29 – Sunday, April 2, 2017: *Brick South had its second major event post-renovation, the Maine Landscape Nursery Association's Flower Show, which is a repeat annual event. This was, and remains, by far our highest attended event (topping 16,000 visitors between the gala on March 29 and the four event days—March 30 through April 2, 2017—and quite likely would have topped 20,000 but for the winter snow storm on Saturday, April 1).*

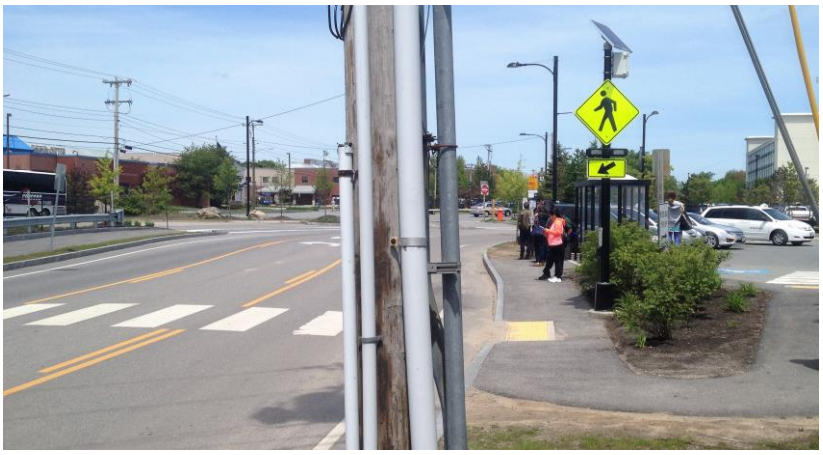
Overall this event was a significant success in terms of following the Event Management Plan over the course of a several day event with peaks and troughs in attendance.

The one significant failure came on the first morning of the event, Thursday, March 30, when our team failed to anticipate the number of visitors who decided to arrive 20-30 minutes in advance of the venue opening to the public at 9:00am. Our previous large events had largely occurred on evenings or weekends, and would often see visitors arriving over the course of one or more hours prior to the event start time. In this case, though we had staff stationed at the right locations and prepared for the event's start time, our team and the event's organizers were simply caught by surprise by the number of attendees who arrived all at once in order to be the first ones inside the venue. Since this event, we've had other large attendance trade shows with a similar tendency to foster a desire to be "first through the door," and have staffed accordingly, with the result that we've been able to avoid this backup of traffic entering the site. On that particular morning, because we were caught off guard, we ended up with significant delays entering the site until approximately 12:00pm when we saw the first wave of visitors exit; from that point on, we avoided a repeat of this scenario, including the following morning, Friday, March 31, when an even greater number of attendees arrived for the 9:00am opening time.

For this reason, we've amended our Event Management Plan to provide for staffing in anticipation of the maximum number of attendees anticipated at any one time for a weekday trade show at least one hour prior to its opening. That is to say, rather than imagine that we'll see an event's average attendance on site at any one "turn" during that event and staffing for that, we plan that we'll see the total capacity for the event arrive at the same time at the opening of the event, staff for that, and then potentially release staff as the event unfolds over the course of the day.

E. Report on Project-Specific Infrastructure Improvements

General Contribution to Area Transportation Improvements



The Thompson's Point project has produced and leveraged a number of traffic calming and pedestrian infrastructure improvements in the Libbytown and the Portland Transportation Center area. These were made possible through the developers' private local match dollars and the Economic Development Administration and Federal Highway Administration grant package for Forefront Partners – as well as through the project's partnership with MaineDOT, the City of Portland, the Portland Area Comprehensive Transportation System and NNEPRA.

Sidewalk & Crossing Improvements

The development team has built approximately 50% of the Thompson's Point circular road, with accompanying sidewalks, crosswalks and signage. This ties the site in further with the original pedestrian amenities and traffic calming improvements mentioned above. Another 25% of the circular road and pedestrian accommodations will be built with the addition of the Children's Museum and the hotel. The TDM team is also looking forward to the City's Summer 2018 construction of the expanded Portland Neighborhood Byway network, with wayfinding and crossing improvements connecting Thompson's Point and the Portland Transportation Center to Deering Center.

Bicycle Storage and Shower Facilities

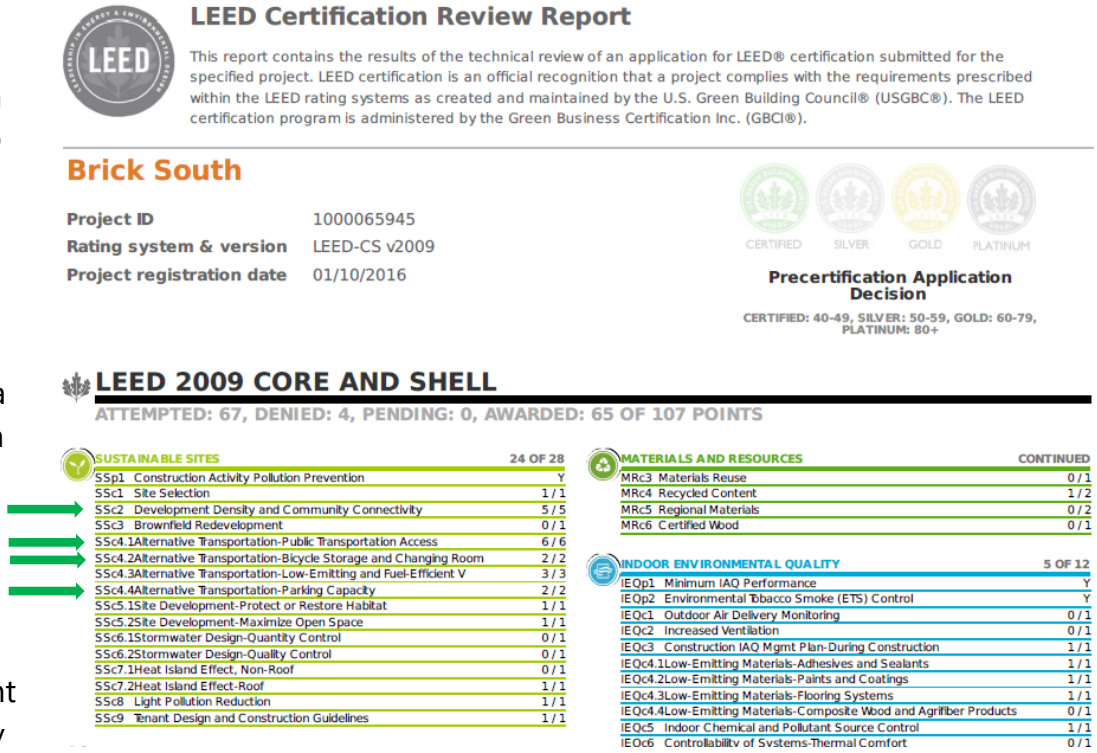
Under each building's LEED certification, Thompson's Point has met or exceeded the provisions for bicycle storage and shower/changing room facilities (this includes shower and changing rooms in Brick North and Brick South). The site currently has 8 fixed bike parking lollipop racks (2 spaces per rack) and two moveable bike corrals (18 spaces per rack) currently parked in front of Brick South – thus providing a total of 52 bicycle parking spaces.

Proposed METRO Transit Stop on Thompson's Point

The developers are working with METRO to coordinate the optimal location of a new METRO transit stop and shelter on the south end of the point. They anticipate it being either proximate to the hotel and the Children's Museum of Maine entrance on the south side of the pedestrian alley, or in front of Brick South. The TDM team's understanding is that this would be an added stop on the existing Route 1.

LEED Certification with Associated Transportation Credits

Thompson's Point has pursued a minimum of LEED Silver certification for all of its projects (to date, Brick North, Brick South, and the Hotel Portland project – see example certification review of Brick South below), and has taken a campus-wide approach to sustainability and LEED certification efforts. The buildings have all been awarded full point scoring for support of development density and community connectivity, not exceeding any minimum parking requirements, and providing public transit access and bicycle storage.



LEED Certification Review Report

This report contains the results of the technical review of an application for LEED® certification submitted for the specified project. LEED certification is an official recognition that a project complies with the requirements prescribed within the LEED rating systems as created and maintained by the U.S. Green Building Council® (USGBC®). The LEED certification program is administered by the Green Business Certification Inc. (GBCI®).

Brick South

Project ID	1000065945
Rating system & version	LEED-CS v2009
Project registration date	01/10/2016

CERTIFIED SILVER GOLD PLATINUM

Precertification Application Decision

CERTIFIED: 40-49, SILVER: 50-59, GOLD: 60-79, PLATINUM: 80+

LEED 2009 CORE AND SHELL

ATTEMPTED: 67, DENIED: 4, PENDING: 0, AWARDED: 65 OF 107 POINTS

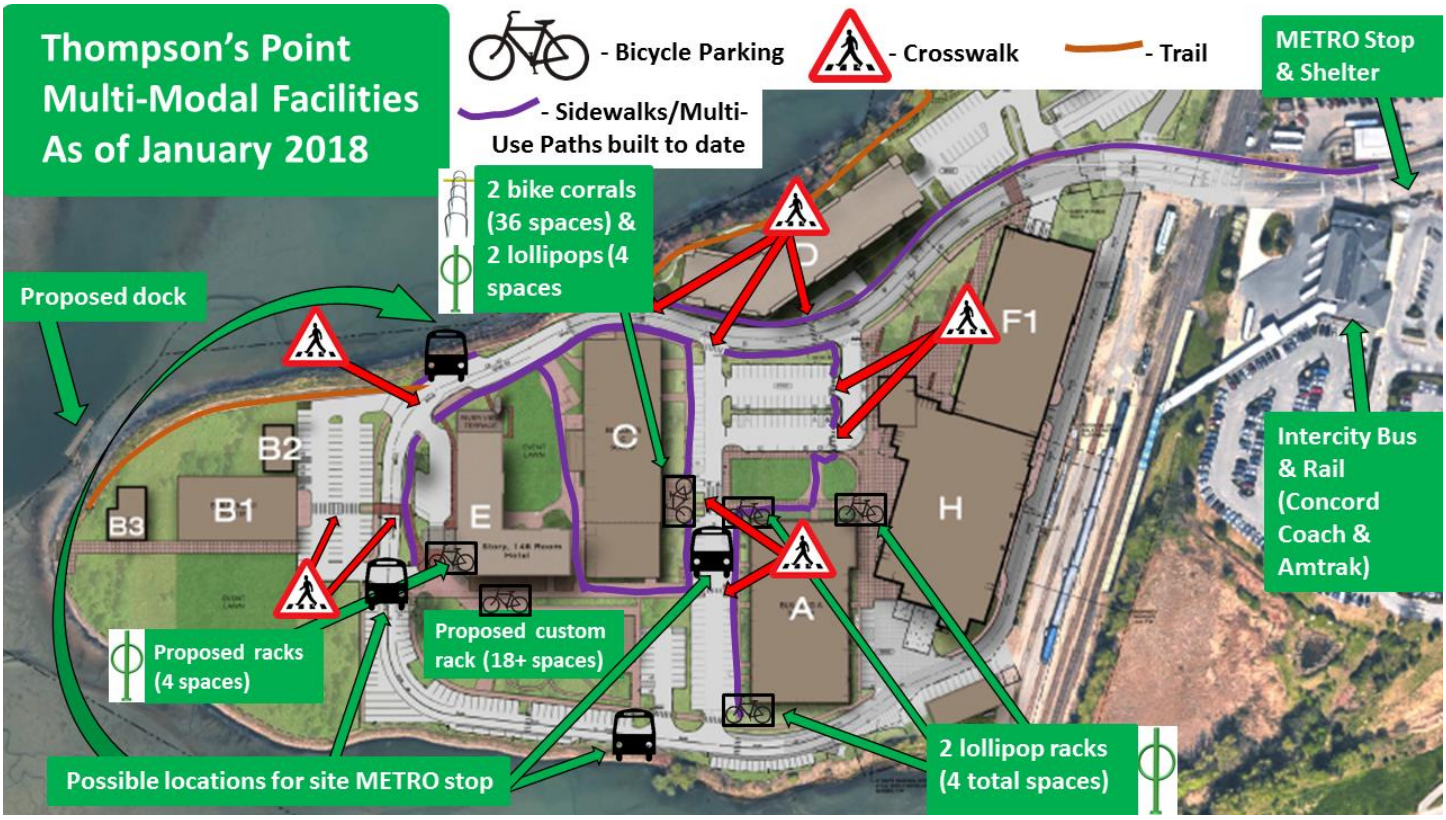
SUSTAINABLE SITES	24 OF 28
SSp1 Construction Activity Pollution Prevention	Y
SSc1 Site Selection	1 / 1
SSc2 Development Density and Community Connectivity	5 / 5
SSc3 Brownfield Redevelopment	0 / 1
SSc4.1Alternative Transportation-Public Transportation Access	6 / 6
SSc4.2Alternative Transportation-Bicycle Storage and Changing Room	2 / 2
SSc4.3Alternative Transportation-Low-Emitting and Fuel-Efficient V	3 / 3
SSc4.4Alternative Transportation-Parking Capacity	2 / 2
SSc5.1Site Development-Protect or Restore Habitat	1 / 1
SSc5.2Site Development-Maximize Open Space	1 / 1
SSc6.1Stormwater Design-Quantity Control	0 / 1
SSc6.2Stormwater Design-Quality Control	0 / 1
SSc7.1Heat Island Effect, Non-Roof	0 / 1
SSc7.2Heat Island Effect-Roof	1 / 1
SSc8 Light Pollution Reduction	1 / 1
SSc9 Tenant Design and Construction Guidelines	1 / 1

MATERIALS AND RESOURCES	CONTINUED
MRc3 Materials Reuse	0 / 1
MRc4 Recycled Content	1 / 2
MRc5 Regional Materials	0 / 2
MRc6 Certified Wood	0 / 1

INDOOR ENVIRONMENTAL QUALITY	5 OF 12
IEQp1 Minimum IAQ Performance	Y
IEQp2 Environmental Tobacco Smoke (ETS) Control	Y
IEQc1 Outdoor Air Delivery Monitoring	0 / 1
IEQc2 Increased Ventilation	0 / 1
IEQc3 Construction IAQ Mgmt Plan-During Construction	1 / 1
IEQc4.1Low-Emitting Materials-Adhesives and Sealants	1 / 1
IEQc4.2Low-Emitting Materials-Paints and Coatings	1 / 1
IEQc4.3Low-Emitting Materials-Flooring Systems	1 / 1
IEQc4.4Low-Emitting Materials-Composite Wood and Agrifiber Products	0 / 1
IEQc5 Indoor Chemical and Pollutant Source Control	1 / 1
IEQc6 Controllability of Systems-Thermal Comfort	0 / 1

Proposed Water Access to Site

As mentioned in section B and as shown in the image at right, during the buildout of the hotel and related infrastructure the development team plans to construct a seasonal dock at the southwestern edge of the point. The dock and float would connect to the Fore River channel. Thompson's Point will manage the dock and access to it, which will provide for water taxi and water shuttle service to the Old Port and Casco Bay, as well as providing for the launch of kayaks, canoes, paddleboards, and related programming.



The Thompson's Point development team is proud of the TDM infrastructure, programmatic and assessment work of the work of the past two years, feeling it has met well the spirit and intent of what was promised in the 2015 Addendum to the TDM Plan. In addition, this sense of accomplishment also comes from Forefront Partners' extensive efforts to grow its TDM knowledge base, enhance its methodologies, and add capacity and expertise through additional partners. Based on all that has been attained within this time frame, the group looks forward with great anticipation to the TDM execution and outcomes of the next two years.

F. Appendices

A. Hotel Portland Tenant Snapshot
B. Thompson's Point Concert Feedback Survey
C. Minutes from individual tenant interviews
D. Updated Event Management Plan – January 2018

Appendix A: Hotel Portland Tenant Snapshot

TENANT TDM SNAPSHOT

Company Information

Company Name: Forefront Hoteliers, LLC

Website: www.hotelportland.com

TDM Contact: Shari Young

Ph: 603.559.2606

Email: shari@northernhospitality.com

Business profile and additional comments: Hotel Portland is a 148 room full serve hotel, part of the Tribute by Marriott portfolio.

Sq. ft.: 90,000

# of emplys: 20+/-

Estimated customer volumes:

	U 50	50-200	200-500	500+
Daily:				
Special events:				

Employee Focused TDM Information

Modal Split
Employee Commute Methods

Transportation Mode

SOV	%	PUBLIC	%
	45		5
CARPOOL		BIKE	
	10		5
TAXI (UBER, LYFT)		FOOT	
	30		5

OTHER / COMMENTS: Estimate based on other hotels under management.

Employee Focused TDM Initiatives

		% ADOPTION
Initiative 1:	METRO ride to work (target)	10
Initiative 2:	Bike to work	2
Initiative 3:	Carpool	10

DETAILED DESCRIPTIONS ON PAGE 2

Customer Focused TDM Information

Modal Split
Customer Commute Methods

Transportation Mode

SOV	%	PUBLIC	%
	20		5
CARPOOL		BIKE	
	65		
TAXI (UBER, LYFT)		FOOT	
	10		

OTHER / COMMENTS: Estimates based on other hotel properties under management.

Customer Focused TDM Initiatives

		% ADOPTION
Initiative 1:	Promote use of Amtrak Downeaster	
Initiative 2:	Promote use of water taxi/shuttle to and	
Initiative 3:	Promote METRO use to and from	

DETAILED DESCRIPTIONS ON PAGE 2

Customer Information - Check all that apply

Age Groups

U 21	%
	10
21 - 35	
	35
36 - 59	
	35
60 +	
	20

OTHER / COMMENTS: Forecasted.

Details

FAMILIES	SCHOOLS	
LARGE GROUPS	BUSINESSES	
LOCAL	NON-PROFITS	
OUT OF STATE	GOVERNMENT	

OTHER / COMMENTS: All apply as part of hotel guest profile.

You may fill out by using an updated version of Adobe Reader and saving a copy, or by printing and returning to the Thompson's Point TDM Coordinator.

TDM Coordinator - Chelsea O'Reilly
Thompson's Point. 501 Danforth Street. Portland, ME 04102
917.254.7587 chelsea@thompsonspointmaine.com

TENANT TDM SNAPSHOT

Employee Focused TDM Initiatives

Initiative 1:

Hotel Portland will actively encourage its employees who live on or near a transit line (METRO, South Portland, Shuttlebus/ZOOM, Lakes Region Explorer, etc.). We will pay half the cost of annual rider passes for our FTE employees, and/or offer other promotional benefits such as free concert tickets, raffling off vacation time to multi-modal employees, etc.

Initiative 2:

Hotel Portland will actively encourage bicycling/walking to work by offering a METRO or other transit pass to employees who bicycle to work at least 50% of the time, as well as offering one free annual bicycle maintenance visit to a bike shop, free concert tickets and other promotional items.

Initiative 3:

Hotel will participate in GoMaine efforts to encourage carpooling and provide free concert tickets and other offerings to employees who carpool at least 50% of the time.

Future initiatives, TDM developments

To be evaluated after the first year of occupancy.

Customer Focused TDM Initiatives

Initiative 1:

Hotel Portland will actively promote the use of the Amtrak Downeaster as a transit option to and from Thompson's Point. This will take the form of co-promotional and marketing efforts that will offer hotel stay packages that include Amtrak travel, both to get to and from Portland, as well as for day trips from Thompson's Point during the guests' stay.

Initiative 2:

Hotel Portland will work with Thompson's Point to establish and promote the use of water shuttle and water taxi conveyance from the to-be-built seasonal dock at Thompson's Point to and from the Old Port area. This, together with the encouragement of METRO (below), is part of a larger effort to demonstrate that a stay in Portland can be made efficient, enjoyable, and sustainable without requiring guests to have vehicles of their own (either to get to and from Hotel Portland, or to travel around Portland during their stay).

Initiative 3:

Hotel Portland, together with other Thompson's Point businesses, will actively promote the use of METRO (the regular service as well as the forthcoming direct service running from the Jetport/PTC/Old Port via Congress). This will include offering printable free METRO day passes pre-trip, with clear directions for taking the bus from the airport, as well as downtown. The hotel will also endeavor to headline info on METRO and other preferred modes of travel before offering visitor driving directions and parking information.

Future initiatives, TDM developments

To be assessed after the first full year of occupany.

You may fill out by using an updated version of Adobe Reader and saving a copy, or by printing and returning to the Thompson's Point TDM Coordinator.

TDM Coordinator - Chelsea O'Reilly
Thompson's Point. 501 Danforth Street. Portland, ME 04102
917.254.7587 chelsea@thompsonspointmaine.com

Appendix B:

Thompson's Point Concert Feedback Survey

REQUEST EDIT ACCESS

Thompson's Point Concert Feedback

Dear Thompson's Point concert-goer,

We would like to thank you for your patronage and hope you enjoyed your concert experience at Thompson's Point as much as we did!

As a transit oriented development, Thompson's Point (and our concert partners at the State Theatre) are eager to do what we can to encourage the use of alternative forms of transportation. While use of Single Occupant Vehicles (SOVs) continues to be necessary for many of our tenants, visitors, and guests, we are nevertheless interested to work together as a community of businesses to encourage other ways of getting people to and from the Point.

In order to help us better understand how people are getting to and from our concerts we have put together a brief survey. We would be very grateful if you would take a moment to fill out the survey and provide any feedback you may have. Thompson's Point has evolved by listening to the input of our patrons, and your feedback will help us make the Thompson's Point concert experience even better.

Thank you for your time and we look forward to hearing from you!

* Required

Email address *

Your email

Did you drive to the concert? *

- [ ] Yes
- [ ] No

If so, did you drive alone?

- [ ] Yes
- [ ] No

If not, how did you get to the concert?

Your answer

Would you consider carpooling? *

- [ ] Yes
- [ ] No

Have you used Uber / Lyft? *

- [ ] Yes
- [ ] No

Would you use Uber / Lyft to travel to a concert with others? *

- [ ] Yes
- [ ] No

Have you taken the METRO bus? *

- [ ] Yes
- [ ] No

Would you take the METRO bus to a concert at Thompson's Point? *

- [ ] Yes
- [ ] No

If not, why not, and what could get you to consider taking METRO?

Your answer

Where did you travel from and how long did it take you to get to the concert? *

Your answer

If you drove, would you ever consider riding a bicycle or walking to the concert? *

- [ ] Yes
- [ ] No

SUBMIT

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Google Forms

Appendix C: Tenant Interviews

SEMI-STRUCTURED TENANT INTERVIEW
Tenant: Big J's
Date: 11/22/17

TENANT SNAPSHOT:

- Business description: food service
- Customer Age: a diversity of ages, with the core customer base falling in the 25-50 range
- Customer Gender: undefined
- Customer Origination: a strong greater-Portland and Maine contingent, with the customer demographics that mimic those of larger format events held on Thompson's Point
- Observed transportation tendencies of customers and employees:
    - No data available
- **Primary Areas of TDM Interest:**
    - Lobby for improved public or mass transportation options that would bring customers and employees to and from the Point
    - Communicate to customers and employees simple parking policies and Alternatives
    - Improve public or mass transportation resources so that there are new customers arriving on it daily basis, and existing customers/employees have more options for accessing the Point

GUIDING QUESTIONS:

- How much of your business would you estimate comes from repeat customers (none, little, some, most, all), and would you be able to reasonably estimate a percentage?
- How many of your customers would you estimate travel to the point by means other than SOVs (none, little, some, most, all), and would you be able to reasonably estimate a percentage?
    - What are some of the ways people arrive at your establishment other than SOVs? Carpooling counts here!
- What, if any, efforts are you currently engaged in as a company that you feel might qualify as serving the objectives of TDM?
- What are some of your concerns regarding the transportation of customers and employees to and from Thompson's Point and your business

INTERVIEW NOTES:

Thompson's Point venue and access signage

- It would be great if the parking way finding signage could be more visible at the entrance to the point

Public/Mass Transportation

- There is no current convenient public or mass transportation options that service Thompson's Point consistently enough to be useful to either customers or employees. Increased frequency and connectivity from Old Port to the Portland Transportation Center and eventually Thompson's Point.

Non-vehicular access

- Big J's has a very strong overlap with Bissell Brothers customers, and sees similar non-vehicular access trends primarily focused on trails and bicycle visitors

- Additional support for visitors arriving by bicycle would be great including racks, secure storage, and incentives

Areas of Improvement

- Currently, implementing universal understanding of the parking policies on Thompson's Point and an easy way to share information with those who have questions regarding how to get to the point and what to expect upon arrival

Miscellaneous notes

- A greater collaborative communication strategy surrounding large-format events on the Point would be appreciated (this is not directly TDM)

SEMI-STRUCTURED TENANT INTERVIEW
Tenant: Big Room
Date: 10/27/17

TENANT SNAPSHOT:

- Business description: digital technology services
- Customer Age: undefined
- Customer Gender: undefined
- Customer Origination: undefined
- Observed transportation tendencies of customers and employees:
    - Personal vehicles
        - Because Big Room operates by appointment, customers and guests typically drive up
        - Employees travel from near and far and park on-site because there is no other known convenient option
        - Events hosted by Big Room fall into the same predicament as the situations mentioned above, with attendees traveling to their destination by personal vehicle
- **Primary Areas of TDM Interest:**
    - There is a strong desire to improve employee access to Thompson's Point, this includes bicycle storage, personal lockers, parking for motorcycles, parking for mopeds
    - Unlike some of the other tenants at the Point, due to the business dynamics of Big Room, the company is less focused on providing resources for customers and more focused on improving options for employees and project supporters
    - Improved clarity on parking policies as they relate to guests attending Big Room professional development events

GUIDING QUESTIONS:

- How much of your business would you estimate comes from repeat customers (none, little, some, most, all), and would you be able to reasonably estimate a percentage?
- How many of your customers would you estimate travel to the point by means other than SOVs (none, little, some, most, all), and would you be able to reasonably estimate a percentage?
    - What are some of the ways people arrive at your establishment other than SOVs? Carpooling counts here!
- What, if any, efforts are you currently engaged in as a company that you feel might qualify as serving the objectives of TDM?
- What are some of your concerns regarding the transportation of customers and employees to and from Thompson's Point and your business

INTERVIEW NOTES:

Thompson's Point venue and access signage

- Wayfinding Signage improvement on local roads and within the point would only improve navigation of those trying to access
    - This includes delivery drivers as well as event attendees and customers

Public/Mass Transportation

- METRO is the single most underutilized asset that could support both customers and employees trying to access Thompson's Point, and improvements to scheduling need to be made

Non-vehicular access

- Improvement in Thompson's Point infrastructure that supports non-vehicular access would yield a higher number of employees and event attendees coming to the point by alternative transportation means
    - This includes secure bike storage, facility showers for employees who bike in to work but are subjected to harsher environmental conditions on the commute, and walkers/joggers who experience the same challenges

Areas of Improvement

- Recognize the employee and help the tenant enhance f parking alternatives at Thompson's point when folks come to work
- Improve easy public transportation option to bring employees, customers or guests to Thompson's Point

SEMI-STRUCTURED TENANT INTERVIEW
Tenant: Bissell Brothers
Date: 10/18/17

TENANT SNAPSHOT:

- Business description: taproom, brewery, events
- Customer Age: a diversity of ages, with the core customer base falling in the 25-45 range
- Customer Gender: skews strongly towards male
- Customer Origination: a strong greater-Portland and Maine contingent visits daily, but on weekends and special beer launches, there is notable traffic from out of state
- Observed transportation tendencies of customers and employees:
    - Mass transportation includes the Beer bus, hotel shuttles
    - Small amount of people come via trails and by bike
    - Can launches attract smaller ratios of passengers per vehicle because people visit the point to purchase product and leave
- **Primary Areas of TDM Interest:**
    - Broader use of Portland Trails
    - Improved infrastructure on terminal for bikers
    - Safe and more readily accessible transportation services to get visitors home
    - Clear parking policies

GUIDING QUESTIONS:

- How much of your business would you estimate comes from repeat customers (none, little, some, most, all), and would you be able to reasonably estimate a percentage?
- How many of your customers would you estimate travel to the point by means other than SOVs (none, little, some, most, all), and would you be able to reasonably estimate a percentage?
    - What are some of the ways people arrive at your establishment other than SOVs? Carpooling counts here!
- What, if any, efforts are you currently engaged in as a company that you feel might qualify as serving the objectives of TDM?
- What are some of your concerns regarding the transportation of customers and employees to and from Thompson's Point and your business

INTERVIEW NOTES:

Thompson's Point parking

Advanced notice of parking policies would be beneficial for customers and employeesThis can be accomplished both digitally and in print, but in a centralized fashion

Thompson's Point venue and access signage

- Signage needs to start at the transportation center and percolate down into Thompson's Point, but also spread outward onto the surrounding roads

Public/Mass Transportation

- High-volume transportation options are not a high priority because the volume of customers that visit the brewery on a regular basis are so high
    - The goal would not be to bring cruise passengers by the busload to Bissell Brothers, but to increase public transportation options that customers could embrace when they decide they would like to access the Point
- It is a long-term objective to get METRO more involved with the functions that take place on the Point to help with customer volumes as well as providing safe forms of transportation home

Non-vehicular access

- Currently engaged in providing a trail map for accessing Thompson's Point from the greater Portland community
    - This document is shared in the taproom as a means of encouraging non-vehicular access of the Point
- There is interest amongst those associated with the trail network to create a waypoint system that would ultimately increase interactivity and encourage use
    - The end-product in this case could take on many forms, and have different points of interactivity with the end goal being to promote non-vehicular access avenues to Thompson's Point

Areas of Improvement

- There is greater bike infrastructure needed at the point for both customers and employees

Miscellaneous notes

- Bissell Brothers Brewing wants mission statement to reflect TDM
- Local guests most likely will be the ones to use alternative methods, not customers coming from out of state for beer (Thompson's Point to suggest Amtrak or Concord Bus trips or destination trips)

SEMI-STRUCTURED TENANT INTERVIEW
Tenant: Cellardoor
Date: 10/20/17

TENANT SNAPSHOT:

- Business description: wine bar, food service, retail, events
- Customer Age: primarily 30s and older
- Customer Gender: active participants skew more female than male, exact ratio hard to know
- Customer Origination: there is a core of repeat customers in the greater Portland area, but the winery attracts many folks from out of town and out-of-state
- Observed transportation tendencies of customers and employees:
    - Non-event customers typically come in groups of two or more and arrived by privately owned vehicles
    - Most customers visit with the intention of staying for a period of time versus to just buy something
    - Taxi services prevalent but not dominant (standard taxis, Uber, Lyft)
- **Primary Areas of TDM Interest:**
    - Greater representation of alternative methods that customers can use to access Thompson's Point,in particular, the Portland Trails connecting to the West End
    - Improved public or mass transportation options would greatly increase "foot traffic" and connect Cellardoor to customer populations associated with cruise ships and the Old Port
    - Signage on the point and the surrounding roads and centralized policies would help make the process of accessing Thompson's Point easier for planning

GUIDING QUESTIONS:

- How much of your business would you estimate comes from repeat customers (none, little, some, most, all), and would you be able to reasonably estimate a percentage?
- How many of your customers would you estimate travel to the point by means other than SOVs (none, little, some, most, all), and would you be able to reasonably estimate a percentage?
    - What are some of the ways people arrive at your establishment other than SOVs? Carpooling counts here!
- What, if any, efforts are you currently engaged in as a company that you feel might qualify as serving the objectives of TDM?
- What are some of your concerns regarding the transportation of customers and employees to and from Thompson's Point and your business

INTERVIEW NOTES:

Thompson's Point parking

- Pay to park is incentive for people to car pool
- A clearly defined set of parking policies makes it more likely that customers and employees will have a positive experience, and it facilitates transportation planning

Thompson's Point venue and access signage

- Signage off interstate for Thompson's Point exit would make the process of getting to the winery easier for customers as well as creating navigational points that employees can direct people to when they receive inquiries about directions

Public/Mass Transportation

- Employees/customers would benefit greatly from improved public or mass transportation options
- There will be a METRO stop on Thompson's Point to service the children's Museum and hotel
- The road on the Point is engineered to handle buses
- Improving the line of communication between Thompson's Point and hotels so that shuttles can easily get in and out

Non-vehicular access

- Strong interest in highlighting Thompson's Point access via foot and bike
- Social or community event such as a 5K designed to benefit Portland Trails and to highlight trail connectivity from the West End to Thompson's Point, Earth Day campaign to promote non-vehicular access
- More bike friendly infrastructure on the Point would help encourage an increase in bike traffic
- Bike Benefits is something to consider

Miscellaneous notes

- Can we get more specific signage on roads for museums? Cellardoor could piggy back off them for signage due to road blocks pertaining to wine.
- Digital and web resources that centralized transportation resources and Thompson's Point access information, parking policies would be helpful for employees and customers

SEMI-STRUCTURED TENANT INTERVIEW
Tenant: Circus Maine
Date: 11/20/17

TENANT SNAPSHOT:

- Business description: circus school, training and education, performances, events
- Customer Age: children through young adults for school and training, mid-20s to mid-40s for performances and events
- Customer Gender: undefined
- Customer Origination: undefined
- Observed transportation tendencies of customers and employees:
    - Employees and students attending school arrive primarily via single vehicle or drop off
        - Very few use public transportation or come by non-vehicular means
    - Customers primarily arrive by a mix of transportation methods that include single vehicle, carpooling and taxi services
- **Primary Areas of TDM Interest:**
    - Development of a priority based parking system so that free or reduced cost parking options can be provided to employees during nonpeak hours
    - Identify a collection of off-site parking venues and a protocol that supports their utilization
    - Improve how public transportation services Thompson's Point so that low income students who don't have access to vehicles can reliably get to and from the facility

GUIDING QUESTIONS:

- How much of your business would you estimate comes from repeat customers (none, little, some, most, all), and would you be able to reasonably estimate a percentage?
- How many of your customers would you estimate travel to the point by means other than SOVs (none, little, some, most, all), and would you be able to reasonably estimate a percentage?
    - What are some of the ways people arrive at your establishment other than SOVs? Carpooling counts here!
- What, if any, efforts are you currently engaged in as a company that you feel might qualify as serving the objectives of TDM?
- What are some of your concerns regarding the transportation of customers and employees to and from Thompson's Point and your business

INTERVIEW NOTES:

Thompson's Point parking

- Look more critically at how a tiered parking system could be implemented to help offset the cost of employee and customer parking during nonpeak hours when there may be ample space is available
    - Such a model would stand to benefit all tenants financially and logistically and could be employed in designated areas only to meet the needs of the Point
- Identify easy-to-find, proximal, and reliable off-site parking resources to accomplish the following:
    - Benefit students who can't afford to pay for parking (if the walking distance was short)
    - Develop a clear protocol for securing additional parking in support of larger Circus Maine functions when spaces on the Point have been presold to other tenants/events
- Develop an interface, such as a website, that customers can access to address parking inquiries

Thompson's Point venue and access signage

- Not discussed

Public/Mass Transportation

- METRO needs to greatly amplify its support of Thompson's Point to accomplish a myriad of goals:
    - Increase the flow of customers from the Old Port to the Point to allow for the development of new business and customers
    - Provide more reliable public transportation to students in need of attending class at Circus Maine
    - Create alternative transportation options as matter of easing the logistical concerns associated with parking during busy times at the Point

Non-vehicular access

- Emphasis needs to be placed on the Portland Trails network and continued improvement of infrastructure to support bicyclists on the point

Miscellaneous notes

- Cruise Maine and its passengers is a notable target of the Circus Maine staff, and working with mass transportation providers to facilitate flow between Commercial Street and Thompson's Point is a priority to explore further

SEMI-STRUCTURED TENANT INTERVIEW
Tenant: Color Me Mine
Date: 10/24/17

TENANT SNAPSHOT:

- Business description: arts and crafts, creative pottery, events,
- Customer Age: a diversity of ages, but a heavy focus on children
- Customer Gender: active participants skew towards female in adult-aged customers, no data on children
- Customer Origination: limited clarity but a majority seem to originate from within the greater Portland area
- Observed transportation tendencies of customers and employees:
    - Single attendees tend to arrive via personal vehicles
    - There is some overlap with other Thompson's Point tenants, and groups will come in one car to attend both Color Me Mine as well as other destinations
    - Very little public transportation
    - Bike, Trail biggest non-traditional modes of transportation
- **Primary Areas of TDM Interest:**
    - Point-wide collaboration on product packages so guests can easily flow from one tenant to the next
    - Centralized signage that represents businesses on the Point to improve navigation
    - A centralized point of access where employees and customers can go to gather up-to-date information about policies and news associated with Thompson's Point

GUIDING QUESTIONS:

- How much of your business would you estimate comes from repeat customers (none, little, some, most, all), and would you be able to reasonably estimate a percentage?
- How many of your customers would you estimate travel to the point by means other than SOVs (none, little, some, most, all), and would you be able to reasonably estimate a percentage?
    - What are some of the ways people arrive at your establishment other than SOVs? Carpooling counts here!
- What, if any, efforts are you currently engaged in as a company that you feel might qualify as serving the objectives of TDM?
- What are some of your concerns regarding the transportation of customers and employees to and from Thompson's Point and your business

INTERVIEW NOTES:

Thompson's Point parking

- Passport is currently underutilized, services or parking options could be created and implemented to make planning easier
- Important to create learning opportunities regarding Passport for both tenants and customers
- Designated Driver discount or benefit – a means of making it easy to not drive if you drink too much
    - Create policy and a pass that tenants can place in vehicles if driver was impaired and decided not to drive

Thompson's Point venue and access signage

- Signage on the roads surrounding Thompson's point would be beneficial to customers

- Creating a central message board either digital or physical would allow for easier and faster sharing of transportation resources and parking policies
- Creation of a Brick North map or floor plan to improve customer experience once at Thompson's Point
- Create and mark a specific drop off location on Google maps for the Point

Public/Mass Transportation

- No METRO users at Color Me Mine due to lack of timely services
- Uber and Lyft not commonly used

Non-vehicular access

- People do come on trails and bikes to paint, but are limited to needing vehicles when they are picking up finished work to keep the fragile pottery secure
- Willing to offer discounts and incentives to encourage people to travel to Thompson's Point on foot or by bike

Areas of Improvements

- Questioned activities and security on trails, walking in the dark has been referenced as uncomfortable, lighting may help encourage people to use the trails more

Miscellaneous notes

- Having a small number of employees with a diversity of backgrounds and living situations, makes it difficult for any will single transportation solution to reach all of them
- Rink and Color Me Mine collaboration. Discounts if go same day to both businesses
- Website – use access page and enter to win month of free parking or 5 hours of parking, etc.
- Color Me Mine and Cellardoor collaboration, discount on wine if at Color Me Mine and discount on painting if at Cellardoor

SEMI-STRUCTURED TENANT INTERVIEW
Tenant: International Cryptozoology Museum
Date: 11/10/17

TENANT SNAPSHOT:

- Business description: Museum focused on cryptozoology
- Customer Age: families, college students, and destination visitors ranging from 30s – 60s
- Customer Gender: undefined
- Customer Origination: consistent flow of local visitors, but the Museum is a destination that attracts folks from all over the country
- Observed transportation tendencies of customers and employees:
    - Personal vehicles are the dominant form of transportation that brings customers to the Museum
    - It was noted that the lack of frequent and reliable public transportation options has a notable and negative impact on visitors per year
- **Primary Areas of TDM Interest:**
    - Establish Thompson's Point as an accessible destination via the many available public transportation resources already present in the area
    - Facilitate conversations with METRO in order attract passengers that arrive in Portland via the many cruise vessels
    - Improve the Point's visibility on local tourism maps (Discovery Maps)

GUIDING QUESTIONS:

- How much of your business would you estimate comes from repeat customers (none, little, some, most, all), and would you be able to reasonably estimate a percentage?
- How many of your customers would you estimate travel to the point by means other than SOVs (none, little, some, most, all), and would you be able to reasonably estimate a percentage?
    - What are some of the ways people arrive at your establishment other than SOVs? Carpooling counts here!
- What, if any, efforts are you currently engaged in as a company that you feel might qualify as serving the objectives of TDM?
- What are some of your concerns regarding the transportation of customers and employees to and from Thompson's Point and your business

INTERVIEW NOTES:

Thompson's Point parking

Thompson's Point venue and access signage

- Strong desire to pursue signage on the highway, especially to help the many guests that travel from far distances to visit the Cryptozoology Museum

Public/Mass Transportation

- Increased METRO frequency is a high priority because it is the gateway to tapping into Cruise Maine passengers and those shopping in the Old Port

Non-vehicular access

- Collaborative campaigns embraced by all tenants of the Point that call attention to the various non-vehicular means of access would serve to establish a stronger community amongst businesses
    - The Museum wishes to be affiliated with efforts that speak to Portland Trails and bike access
    - Ensure campaigns have an inclusive voice so that all tenants stand to benefit from such outreach

<u>Areas of Improvements</u>

<u>Miscellaneous notes</u>

- Discovery Maps
    - Advertising costs $700 per year and up,
    - It would be beneficial to organize a critical mass of supporters from Thompson's Point to improve exposure on map through collective advertising
    - The Cryptozoology Museum has a strong desire to facilitate a conversation with Discovery Maps to redraw the Old Port to include a focus on Thompson's Point in tenants
    - Improved exposure on these maps as well as more frequent public transportation would serve as a strong platform for capturing new tourist traffic
- Cruise passengers
    - At its previous location, the Museum had very direct access to passengers arriving in Portland aboard cruise vessels
    - Advertising was purchased to support the Museum's exposure amongst this customer base
    - Since moving to Thompson's Point, participation by cruise passengers has fallen off almost entirely
    - The Museum is excited to explore new ways to attract these passengers to the Point

SEMI-STRUCTURED TENANT INTERVIEW
Tenant: State Theatre
Date: 11/27/17

TENANT SNAPSHOT:

- Business description: summertime musical event series
- Customer Age: a diversity of ages, with the core customer base falling in the 25-50 range
- Customer Gender: undefined
- Customer Origination: a strong greater-Portland and Maine contingent, with bigger names drawing from the entire Northeast
- Observed transportation tendencies of customers and employees:
    - Some use shuttles
    - Many come by Uber and Lyft, as well as standard taxi services
    - Because concerts are held in the warmer part of the year, many folks embrace access by foot and bike
- **Primary Areas of TDM Interest:**
    - Lyft and Uber turnaround point at Sewall Street with a turnaround waypoint that makes it easier for drivers to locate
    - Thompson's Point and State Theater involvement in conversations with the surrounding neighborhoods and the City of Portland as a mechanism to demonstrate concern with event related traffic volumes, develop collaborative objectives
    - Establish a long-term transportation conversation with the City focused on drop-off points and improved METRO service

GUIDING QUESTIONS:

- How much of your business would you estimate comes from repeat customers (none, little, some, most, all), and would you be able to reasonably estimate a percentage?
- How many of your customers would you estimate travel to the point by means other than SOVs (none, little, some, most, all), and would you be able to reasonably estimate a percentage?
    - What are some of the ways people arrive at your establishment other than SOVs? Carpooling counts here!
- What, if any, efforts are you currently engaged in as a company that you feel might qualify as serving the objectives of TDM?
- What are some of your concerns regarding the transportation of customers and employees to and from Thompson's Point and your business

INTERVIEW NOTES:

Thompson's Point parking

- Parking policies and transportation resources could be better centralized and represented online and echoed across social media
    - State Theatre has all of this information on ticket pages, but it would be beneficial if Thompson's Point had it as well
- All parking information resources need to include information that helps mitigate some of the parking demand onsite
    - Thompson's Point could echo some of those displayed by State Theatre, including paid parking resources across the city and satellite parking options

- Work with Uber and Lyft to create official drop-off and pickup points outside of the Point, perhaps near the Transportation Center

Thompson's Point venue and access signage

- Engage the City of Portland to discuss if the Sewall Street date can be opened on concert nights as a means of establishing a efficient drop off point for attendees
    - Enabling this logistical dynamic would support the Uber and Lyft drop-off point mentioned above

Public/Mass Transportation

- A regularly occurring METRO stop on Thompson's Point is long overdue
    - Immediate conversations should be undertaken and a plan should be put in place, and once everything is formalized, perhaps it could be advertised in a bus wrap via collaborative sponsorship

Non-vehicular access

- Portland Trails and Bicycle Coalition of Maine at both led to notable amounts of people accessing concerts under human power, but these stories need to be celebrated
- Call attention to these avenues of access with structured campaigns (social media, web, print)
- There are many creative solutions that could be implemented to support the biking community, including:
    - Secure bike check space and brick South with an operator
    - Secure bike check containers with an operator (similar to a coat check)
    - Secured, fenced-in, bike check area somewhere on the premises with an operator

Areas of Improvement

- The Event Management Plan that is currently in place is effective, but understanding how the surrounding neighborhoods perceive Point activity will be an important part of ensuring concerns don't become larger

Miscellaneous notes

- Event Management Plan for concerts is an integral piece two managing the influx of Thompson's Point visitors
- United Parking Partners to provide Chris Thompson with additional parking data, speaking to traffic volumes associated with Summer Concert Series
- With concerts, it will be important to "demonstrate" proactivity that speaks to attempts made by Thompson's Point to improve management of event influx

SEMI-STRUCTURED TENANT INTERVIEW
Tenant: Stroudwater
Date: 11/06/17

TENANT SNAPSHOT:

- Business description: distillery, cocktail service, small plates, retail
- Customer Age: mid-30s to 60s
- Customer Gender: relatively even mix
- Customer Origination: proportionally undefined, strong representation from local and out-of-state origins
- Observed transportation tendencies of customers and employees:
    - Customers directly bound for Stroudwater arrive primarily via personal vehicle
    - There is considerable customer overlap with events held at the brewery as well as in Brick South or outdoors on Thompson's Point
    - Carpooling and taking taxi services to the above-mentioned events as well as traveling to the Point by foot and bike are the most common forms of transportation that bring customers to the distillery other than single occupant vehicle
- **Primary Areas of TDM Interest:**
    - Improving parking policy presentation and communication so that access is understood, smooth and enjoyable for customers and guests
    - Engage in conversation with mass transportation providers (NNEPRA, METRO) as a means of bringing more people to Thompson's Point and to allow for tenants to engage new customers
    - High visibility promotional campaigns and events that present the many ways people can access the Point

GUIDING QUESTIONS:

- How much of your business would you estimate comes from repeat customers (none, little, some, most, all), and would you be able to reasonably estimate a percentage?
- How many of your customers would you estimate travel to the point by means other than SOVs (none, little, some, most, all), and would you be able to reasonably estimate a percentage?
    - What are some of the ways people arrive at your establishment other than SOVs? Carpooling counts here!
- What, if any, efforts are you currently engaged in as a company that you feel might qualify as serving the objectives of TDM?
- What are some of your concerns regarding the transportation of customers and employees to and from Thompson's Point and your business

INTERVIEW NOTES:

Thompson's Point parking

-

Thompson's Point venue and access signage

- Added attention to digital databases as a means of ensuring Thompson's Point and associated tenant addresses show up accurately will help with taxi and delivery services
- Signage on the highway and surrounding roads is an important avenue to pursue as a means of reducing uncertainty of drivers and improving general traffic flow through stoplights and intersections

Public/Mass Transportation

- METRO has never been an attractive option for those heading out to eat, drink or shop, and has always been viewed as a resource for those who don't have access to vehicles
    - This can be improved by increasing the number of stops, frequency and reach
    - Creation of a small high-frequency loop that services Thompson's Point would open access to entirely new customer bases, but a promotional campaign will be necessary to improve awareness
- The Downeaster and rail in general is underutilized and the connectivity offered by this form of transportation is underrepresented
    - A conversation with NNEPRA aimed at improving frequency and/or promoting awareness of Thompson's Point access to passengers will be integral in establishing rail as a legitimate transportation resource
        - This is likely a part of a larger marketing conversation that includes highlighting activities found at other stops along the way

Non-vehicular access

- The Portland Trails network along with the Bicycle Coalition of Maine are the most visible drivers of people to Thompson's Point under human power
- Awareness of these resources should be promoted via specific promotional campaigns and improved infrastructure on Thompson's Point

Areas of Improvement

Miscellaneous notes

- As the offerings of tenants grow, it would be useful if there was a centralized forum that helped to project this to customers
    - Example: the distillery is now serving Portland Pie Pizza
        - If examples such as this that demonstrate incremental growth are broadcasted, then it diversifies the reasons that someone might come to the Point, and could change the way in which customers plan their visit
        - The more people are aware of what is going on, the more likely it is that they will come in larger groups
        - Cataloging activities available at Thompson's Point and making this information readily accessible will help customers plan their visit more effectively

Appendix D:

Updated Event Management Plan – January 2018

Event Management Plan for
The Forefront at Thompson's Point
Portland, Maine
January, 2018

The traffic management plan ("Plan") for "Special Events" is an important component of making this project work. For the purposes of implementation, we propose that a Special Event be considered any event, or combination of events, that equals or exceeds 2500 people on site at the same time. A Special Event, as it is intended in the context of this Event Management Plan, would not include those typical modes of gathering and circulation related to the customary visitation and enjoyment of the site and its various commercial uses and public amenities. For example, a gathering of visitors in an outdoor dining area would not be considered a Special Event, nor would that visitor count contribute to the overall 2,500 capacity threshold, but a gathering of visitors in the outdoor seating area adjacent to the Mixed-Use "Depot" Building for the purposes of attending a musical performance would be considered a Special Event assuming it met, or in conjunction with other special events on site contributed to meeting, the 2,500-person threshold. Special Events generally relate to those occurrences that are planned by the Forefront at Thompson's Point as part of the programming associated with the Brick South Event Center (including, from time to time, its adjacent plaza) and Mixed-Use "Depot" Building (and its outdoor seating area). The Forefront at Thompson's Point's Management shall use its discretion in determining whether an event with a planned attendance under 2,500 shall be considered a Special Event. To accomplish the special event implementation, the applicant is approaching this from different aspects.

I. Event Timing: the first aspect is timing of the Special Event. If the event is on a weekday, Special Events are anticipated to start outside the hours of 4:00PM to 7:00PM to avoid the PM rush hour of the adjacent street traffic. Weekday Special Events conclude later in the evening when traffic on the adjacent roadway network is anticipated to be minimal compared to during a typical commuter hour. If the event is on a Saturday or Sunday, commuter traffic will not be on the roads.

II. Special Event Facilities and Accommodations: the second angle to the special event approach is to provide accommodations for large numbers of vehicles to enter or exit the site. To accomplish this, the Forefront At Thompson's Point Management utilizes the following:

- I. Signing – This includes not only signing for drivers on which lanes are for what purpose, but also to direct drivers to points of interest; such as event parking. Additional signs should also be erected to identify to the drivers destined for the bus and train facilities where they should be going such that they do not get intertwined in the traffic destined for the events. These signs are both permanent and temporary and may be positioned both onsite and offsite.

- II. Reversible Lane – This is an additional lane in the center of Thompsons Point Road that is used for incoming traffic at the beginning of an event and then reversed and used as an exit lane when the event(s) conclude. An example of this layout is depicted on Sheets C-9.1, C-9.2 and C-9.3 and enclosed in Appendix A.

- III. Traffic Control Devices – This includes devices such as traffic cones to regulate access to the lower lots on the site during special events. The use of cones would be useful in directing drivers to where you want them to be as well as restricting them from areas where access is prohibited. These can be especially useful to assist in the functionality of the reversible lane used to enter and exit the Forefront at Thompsons Point. Temporary cone barriers are used as a supplemental device to the permanently installed overhead reversible lane signals.

- IV. Police Officers – For Special Events, Thompson's Point Management shall endeavor to secure the presence of a police officer, either to direct traffic or supervise Thompson's Point parking/traffic staff's direction of traffic, at the signalized intersection of Thompsons Point / Fore River Parkway. The number of police officers shall be determined by the Portland Police Department in coordination with Thompson's Point's Management. This number is anticipated to be established relative to the capacity of the event (one officer for events of approximately 2,500, more for larger events such as concerts with attendance upwards of 8,000).

- V. Traffic Control Personnel ("TCP") – These personnel do not need to be police and are allowed to assist traffic on-site and at un-signalized roadway locations. This would include persons at each of the entrances / exits for both the train and bus to assist both customers and the buses themselves in entering and exiting. There would also be TCP at the crosswalk to Sewall Street assisting pedestrians with crossing. In addition, TCP will be positioned on either side of the RR crossing to ensure that vehicles do not stop on the RR tracks, as well as at entrances to parking areas on Thompson's Point where there might be high pedestrian traffic entering or exiting the event. We anticipate a minimum of 5 or 6 TCP per special event.

- VI. Monitoring – Special Events have been monitored since opening by a dedicated observer for each event. That observer reported after each event what worked, what is not working, and provided recommendations for improvement. This practice is ongoing as Special Events continue to occur. This monitoring includes meeting with representatives of the bus and train station to receive their input. Special Event monitoring shall also be coordinated with and/or by the Transportation Demand Management Coordinator to ensure that the development's TDM opportunities are well integrated with respect to Special Events.

- VII. Integration of TDM – Forefront management strives to encourage and integrate applicable TDM best practices into each specific Event Management Plan. The TDM Coordinator is responsible for expanding the number of best practices available and/or making the most practical practice readily available for each special event.

- VIII. Parking garage – The parking garage is designed with three lanes on the west end, with the center of the three lanes being reversible and two reversible lanes on the north side. It is anticipated that that during normal business hours, only two lanes (one in and one out) at each end of the garage will be needed. However, the third lane is available to process traffic should it become necessary.

  During a Special Event, when the Event Management Plan is in place, the parking garage is anticipated to be operated with all five lanes used. At the beginning of a Special Event, we anticipate that two entering lanes and a single exit lane will be available at the west end (total of 3 entering lanes and 2 exit lanes). The gates will be up and attendants will be accepting money on a fixed fee basis to process the traffic quicker, or we may implement other payment options, such as Passport-based technology, to assist with expediting payment processing. For certain Special Events, visitors will have pre-purchased event tickets that include event parking, so they would simply need to show their ticket to gain entrance to the garage. During Special Events, each lane would process 300 vehicles per hour with a non-gated, pay on entry flat-fee, with attendants taking money at the entry and directing vehicles to the parking spaces. This would theoretically fill the garage in 37 minutes for a Special Event, which relates to a 'good' Level-of-Service of "B".

  In addition, for larger Special Events, attendants may be positioned within the garage to assist directing incoming cars such that parking levels are filled one at a time with no empty spaces. This will improve efficiency and get the most capacity from the garage. These attendants will also be able to convey when the garage is near capacity so that they can make the proper call and appropriate signs can be put up both onsite and offsite identifying the garage is full. The

parking garage has also been designed as a double helix such that entering and exiting vehicles can turn either way exiting their parking space to go up or down. This means that you do not have to go up to the top level of the garage in order to come down to the lower levels.

When an event concludes, there will be two exit lanes at each end (for a total of four exit lanes) such that vehicles will be able to flow freely from the garage without stopping at a gate, thus considerably reducing the amount of time it takes to exit the vehicles from the garage.

Until the garage is built, Thompson's Point will utilize various parking areas on site to accommodate Special Event parking.

- IX. Offsite Parking for Special Events – on certain occasions, notably summer concerts but also occasionally for other events, remote parking may occur off site in one or more satellite lots, including but not limited to the overflow lot at Mercy Hospital on the Fore River Parkway. The use of this lot, together with the strategies outlined in the Transportation Demand Management plan to encourage use of alternative modes, assists with helping to offset the use of public streets in Libbytown neighborhood for Special Event parking.

- X. Trail and Bicycle Access – the inclusion of the dedicated pedestrian lane at the westerly side of the Thompson's Point Road rail crossing, and the extensive pedestrian improvements to the Thompson's Point Road area and adjacent facilities (Fore River Parkway; Sewall Street; etc.) contributed by Thompson's Point in fulfillment of its Master Plan infrastructure, have permitted the integration of Thompson's Point with the Portland Trails network. This has provided an important pedestrian facility to help provide a legitimate alternative to vehicular travel to Thompsons' Point for Special Events.

- XI. METRO; Amtrak; Concord Coach – these transit options are discussed in more detail in the Transportation Demand Management Plan. However, relative to the Event Management Plan, it is important to note that the Portland Transportation Center, which currently provides a hub for service for all of these modes, is linked to Thompson's Point by our new pedestrian improvements and visitors to our Special Events are increasingly traveling via these modes.

III. Emergency Preparedness: the third angle to a well-managed Special Event is being prepared for emergency situations and executing a documented Life Safety Plan. The outdoor event Life Safety Plan is enclosed in Appendix B of this EMP. The enclosed Life Safety Plan has been utilized effectively on several occasions to evacuate a small number of events classified as "Special Events" to date but should be reviewed by the event management team prior to each event to coordinate all anticipated aspects of site conditions on the day(s) of the event.

Appendix A

Off-Site Event Roadway Management Plans

CONTINUE PROPOSED 6' WIDE SIDEWALK TO MEET EXISTING SEWALL STREET SIDEWALK

PARKING

N/F
STATE OF MAINE

(LAYOUT OF TRANSPORTATION FACILITY BASED ON INTERPOLATION OF AERIAL IMAGE)

PROPOSED EMERGENCY ACCESS ROUTE

GATE TO BE PROVIDED BY DEVELOPER

EXISTING EMERGENCY ROUTE (TO REMAIN AS PEDESTRIAN WAY ONLY)

EXISTING CROSSWALK TO BE DISCONTINUED

SEWALL STREET

HOOPER STREET

PEDESTRIAN FLASHER, TYP

8' (MIN) SHARED USE PATH AND 3' ESPLANADE

OVERHEAD MAST ARM SUPPORTED DIRECTIONAL SIGNAGE

PROPOSED FOREFRONT AT THOMPSON'S POINT AND PORTLAND TRANSPORTATION CENTER SIGN TO BE COORDINATED WITH CITY OF PORTLAND, MDOT, NNEPRA AND CONCORD TRAILWAYS

PROPOSED WIDENING IMPROVEMENTS PER TRAFFIC MOVEMENT PERMIT

NORTH

FORE RIVER PARKWAY

FORE RIVER PARKWAY TRAIL

PROPOSED TAXI CAB QUEUING LANE

39' WIDE TRAVEL WAY TO INCLUDE THREE - 11' LANES AND 3' SHOULDER ON EACH SIDE

EXISTING 5' WIDE SIDEWALK

EXISTING BUS STOP SHELTER

GARAGE

PORTLAND TRANSPORTATION TERMINAL

N/F
LANGDON STREET REAL ESTATE, INC.

(LAYOUT OF TRANSPORTATION FACILITY BASED ON INTERPOLATION OF AERIAL IMAGE)

TERMINAL

N/F
PORTLAND TERMINAL COMPANY

SEE PLANS BY TEC ASSOCIATES FOR CROSSING

PROPOSED CHAIN LINK FENCE, TYP

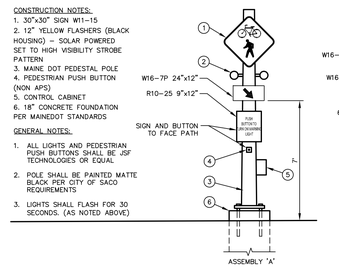
EXISTING 5/8" REBAR, 2" BELOW GRADE, VALUATION STATION 42+00, 45' RT

APPROXIMATE ENTRANCE TO NNEPRA SITE

SEE SITE LAYOUT PLAN WEST FOR CONTINUATION

CONSTRUCTION NOTES:
1. 30"x30" SIGN W11-15
2. 12" YELLOW FLASHERS (BLACK HOUSING) – SOLAR POWERED SET TO HIGH VISIBILITY STROBE PATTERN
3. MAINE DOT PEDESTAL POLE
4. PEDESTRIAN PUSH BUTTON (NON APS)
5. CONTROL CABINET
6. 18" CONCRETE FOUNDATION PER MAINEDOT STANDARDS

GENERAL NOTES:
1. ALL LIGHTS AND PEDESTRIAN PUSH BUTTONS SHALL BE JSF TECHNOLOGIES OR EQUAL
2. POLE SHALL BE PAINTED MATTE BLACK PER CITY OF SACO REQUIREMENTS
3. LIGHTS SHALL FLASH FOR 30 SECONDS. (AS NOTED ABOVE)



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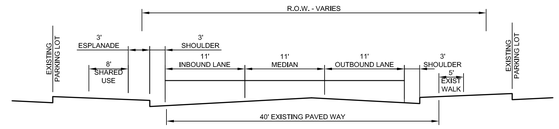
PEDESTRIAN FLASHER
N.T.S.



TYPICAL CROSS SECTION A-A
THOMPSON POINT CONNECTOR
N.T.S.

NOTE:
EXISTING CONDITIONS TAKEN FROM A SURVEY BY SEBAGO TECHNICS ENTITLED ALTA/ACSM LAND TITLE SURVEY DATED MAY 27, 2011 WITH REVISION 'E' 11-23-2011.

PRELIMINARY - NOT FOR CONSTRUCTION

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(IN FEET)
1 inch = 25 ft.

REV	DATE	DESCRIPTION
2	04.17.12	REVISED PER SITE PLAN APPLICATION REVIEW COMMENTS
1	03.20.12	FINAL SITE PLAN APPLICATION SUBMISSION

REVISIONS

STATE OF MAINE
STEPHEN R. BUSHEY
LICENSED PROFESSIONAL ENGINEER

P.E. STEPHEN R. BUSHEY
LIC. # 7429

PROJECT
THE FOREFRONT AT THOMPSON'S POINT

SHEET TITLE
THOMPSON'S POINT CONNECTOR ROAD AND SEWALL STREET LAYOUT PLAN

CLIENT
FOREFRONT PARTNERS I, LP

DeLUCA-HOFFMAN ASSOCIATES, INC.
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DRAWN:	DED	DATE:	AUGUST 2011
DESIGNED:	BEK	SCALE:	1" = 25'
CHECKED:	SRB	JOB NO.	2982.01
FILE NAME:	2982-TPC LAYOUT		
SHEET	C-9.0		

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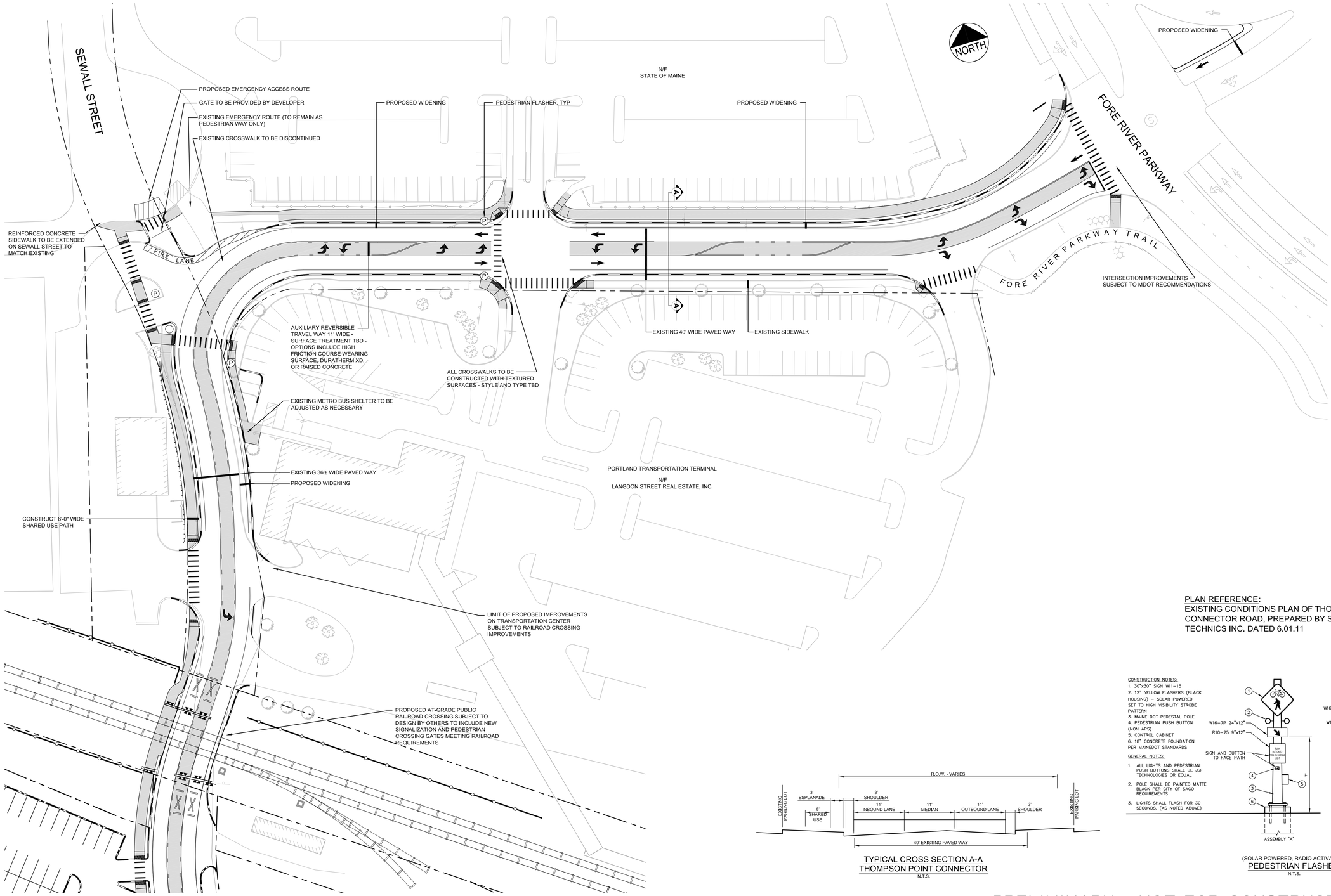
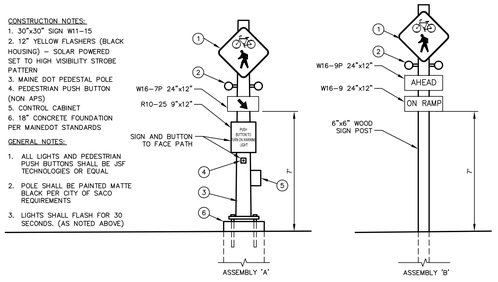


PLAN REFERENCE:
EXISTING CONDITIONS PLAN OF THOMPSON POINT CONNECTOR ROAD, PREPARED BY SEBAGO TECHNICS INC. DATED 6.01.11

TYPICAL CROSS SECTION A-A
THOMPSON POINT CONNECTOR
N.T.S.



(SOLAR POWERED, RADIO ACTIVATED)
PEDESTRIAN FLASHER
N.T.S.

PRELIMINARY - NOT FOR CONSTRUCTION

GRAPHIC SCALE
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(IN FEET)
1 inch = 30 ft.

REV	DATE	DESCRIPTION
1	03.20.12	FINAL SITE PLAN APPLICATION SUBMISSION

REVISIONS

STATE OF MAINE
STEPHEN R. BUSHEY
LICENSED PROFESSIONAL ENGINEER
P.E. STEPHEN R. BUSHEY
LIC. # 7429

PROJECT
THE FOREFRONT
AT THOMPSON'S POINT

SHEET TITLE
THOMPSON'S POINT CONNECTOR ROAD
EVENT MANAGEMENT PLAN - NO EVENT

CLIENT
FOREFRONT PARTNERS I, LP

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DRAWN:	DED	DATE:	AUGUST 2011
DESIGNED:	BEK	SCALE:	1" = 30'
CHECKED:	SRB	JOB NO.	2982.01
FILE NAME:	2982-CONCEPT5		
SHEET	C-9.1		

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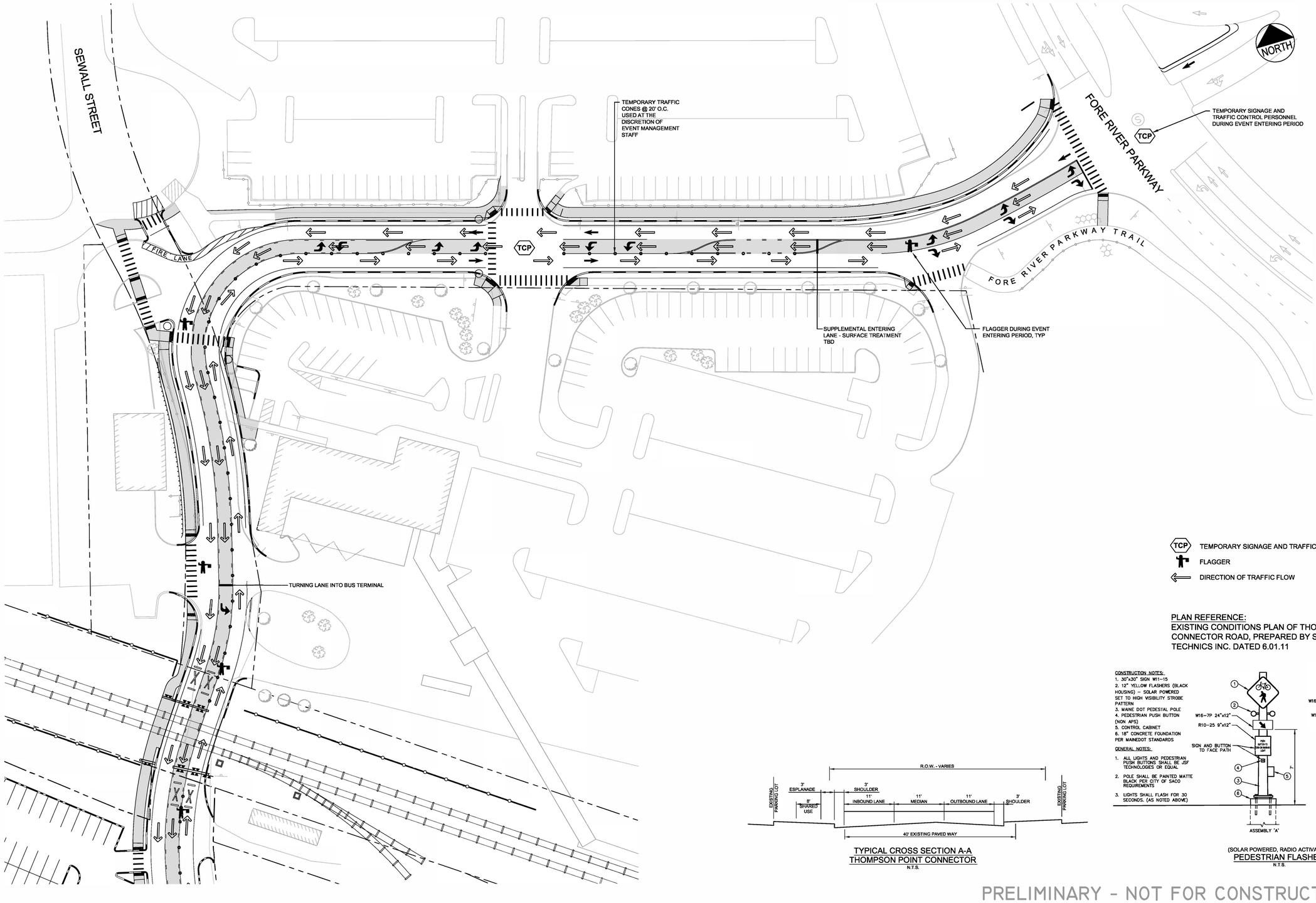

TCP TEMPORARY SIGNAGE AND TRAFFIC CONTROL PERSONNEL

FLAGGER

DIRECTION OF TRAFFIC FLOW

PLAN REFERENCE:
EXISTING CONDITIONS PLAN OF THOMPSON POINT CONNECTOR ROAD, PREPARED BY SEBAGO TECHNICS INC. DATED 6.01.11

TYPICAL CROSS SECTION A-A
THOMPSON POINT CONNECTOR
N.T.S.

CONSTRUCTION NOTES:
1. 30"x30" SIGN W11-15
2. 12" YELLOW FLASHERS (BLACK HOUSING) - SOLAR POWERED SET TO HIGH VISIBILITY STROBE PATTERN
3. MAINE DOT PEDESTAL POLE
4. PEDESTRIAN PUSH BUTTON (NON APS)
5. CONTROL CABINET
6. 18" CONCRETE FOUNDATION PER MAINEDOT STANDARDS

GENERAL NOTES:
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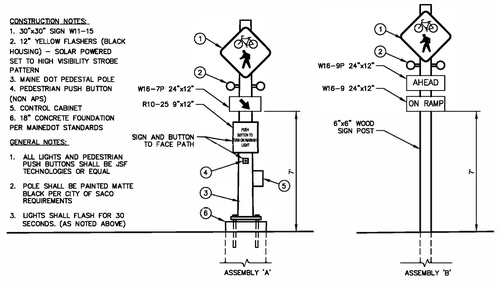
2. POLE SHALL BE PAINTED MATTIE BLACK PER CITY OF SACO REQUIREMENTS
3. LIGHTS SHALL FLASH FOR 30 SECONDS. (AS NOTED ABOVE)



(SOLAR POWERED, RADIO ACTIVATED)
PEDESTRIAN FLASHER
N.T.S.

PRELIMINARY - NOT FOR CONSTRUCTION

GRAPHIC SCALE
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(IN FEET)
1 inch = 30 ft.

REV	DATE	DESCRIPTION
1	03.20.12	FINAL SITE PLAN APPLICATION SUBMISSION

REVISIONS

STATE OF MAINE STEPHEN R. BUSHEY LICENSED PROFESSIONAL ENGINEER

P.E. STEPHEN R. BUSHEY
LIC. # 7429

PROJECT: THE FOREFRONT AT THOMPSON'S POINT

SHEET TITLE: THOMPSON'S POINT CONNECTOR ROAD EVENT MANAGEMENT PLAN - ENTERING CONDITIONS

CLIENT: FOREFRONT PARTNERS I, LP

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207.775.1121
WWW.DELUCAHOFFMAN.COM

DRAWN:	DED	DATE:	AUGUST 2011
DESIGNED:	BEK	SCALE:	1" = 30'
CHECKED:	SRB	JOB NO.	2982.01
FILE NAME:	2982-CONCEPT5		
SHEET	C-9.2		

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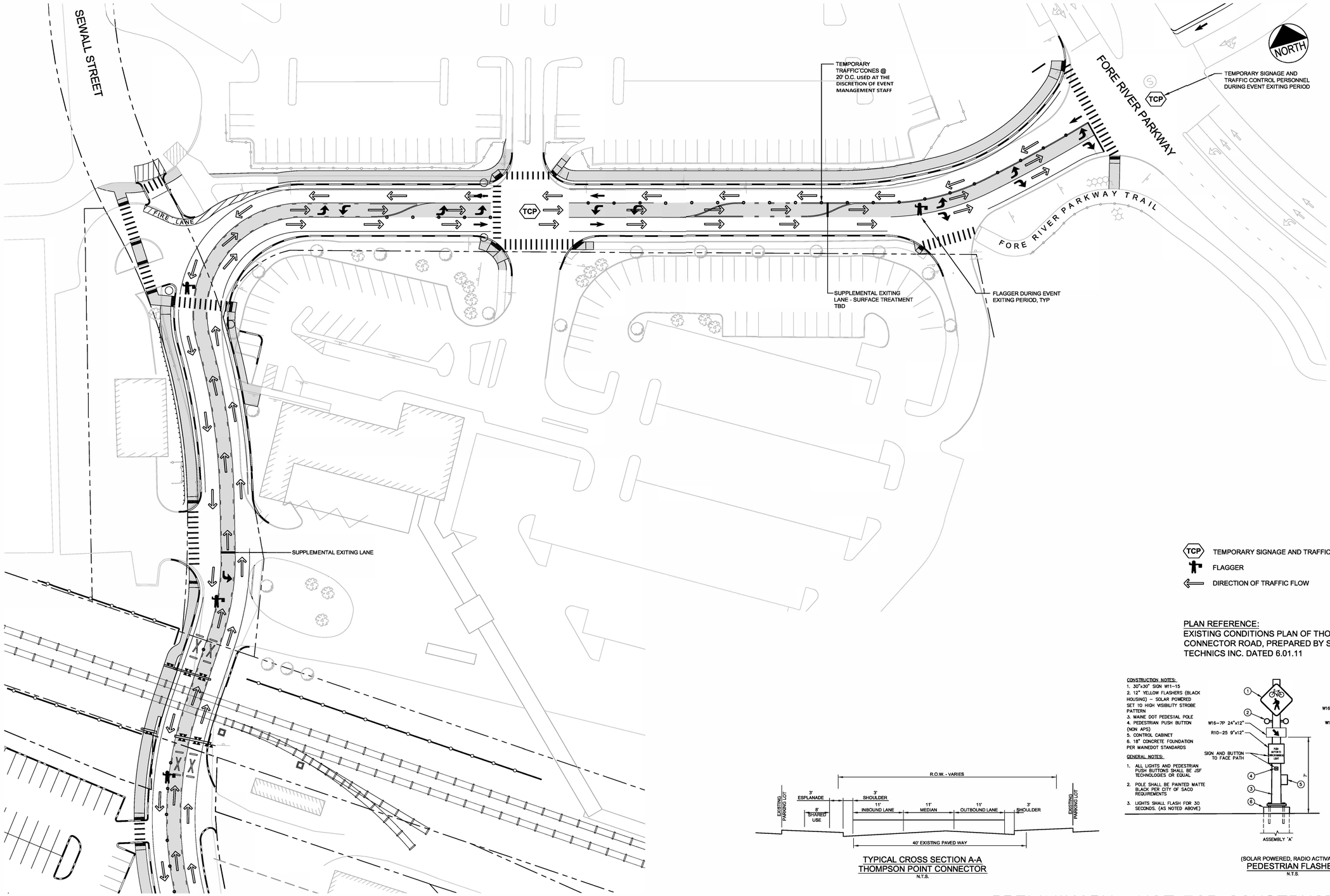

TCP TEMPORARY SIGNAGE AND TRAFFIC CONTROL PERSONNEL

FLAGGER

DIRECTION OF TRAFFIC FLOW

PLAN REFERENCE:
EXISTING CONDITIONS PLAN OF THOMPSON POINT CONNECTOR ROAD, PREPARED BY SEBAGO TECHNICS INC. DATED 6.01.11

TYPICAL CROSS SECTION A-A
THOMPSON POINT CONNECTOR
N.T.S.

CONSTRUCTION NOTES:
1. 30"x30" SIGN W11-15
2. 12" YELLOW FLASHERS (BLACK HOUSING) – SOLAR POWERED SET TO HIGH VISIBILITY STROBE PATTERN
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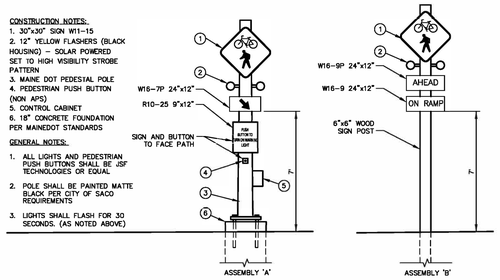

(SOLAR POWERED, RADIO ACTIVATED)
PEDESTRIAN FLASHER
N.T.S.

PRELIMINARY - NOT FOR CONSTRUCTION

GRAPHIC SCALE
30 0 15 30 60
(IN FEET)
1 inch = 30 ft.

REV	DATE	DESCRIPTION
1	03.20.12	FINAL SITE PLAN APPLICATION SUBMISSION

REVISIONS

STATE OF MAINE STEPHEN R. BUSHEY LICENSED PROFESSIONAL ENGINEER

P.E. STEPHEN R. BUSHEY
LIC. # 7429

PROJECT: THE FOREFRONT AT THOMPSON'S POINT

SHEET TITLE: THOMPSON'S POINT CONNECTOR ROAD EVENT MANAGEMENT PLAN - EXITING CONDITIONS

CLIENT: FOREFRONT PARTNERS I, LP

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DRAWN:	DED	DATE:	AUGUST 2011
DESIGNED:	BEK	SCALE:	1" = 30'
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FILE NAME:	2982-CONCEPT5		
SHEET	C-9.3		

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Appendix B

Life Safety Plan

Thompson's Point Amphitheater
Life Safety Plan
January 2018

INTRODUCTION

In connection with the major redevelopment of the area of Portland, ME known as Thompson's Point, the southernmost portion of the Point will be configured as concert and event amphitheater suitable to host a range of outdoor public events. The venue includes an 85'x165' open-air pavilion referred to as the "Depot," and an existing one-story 4,600 ft^2 cinder block construction building which is to be used as support space for 2018. Additional infrastructure needed to support concerts and events will be installed on a seasonal basis.

The events that will be held at the amphitheater will generally fall into one of three categories:

1) Small events for up to 1000 attendees and which are mainly located within the area of the Depot structure itself. Generally these will be private events, such as weddings or company outings, but may also include "free admission" public receptions or events, or small "pay per attendance" concerts or performing arts events.
2) Small events for less than 2000 attendees and which occupy additional area adjacent to the Depot structure, where the area dedicated for attendees of the event will extend beyond the structure. Generally these will be private events, such as weddings or company outings, but may also include "free admission" public receptions or events, markets, or small "pay per attendance" concerts, performing arts events, or trade shows.
3) "Pay for attendance" concerts, festivals, or similar events with more than 2000 and up to 8000 attendees.

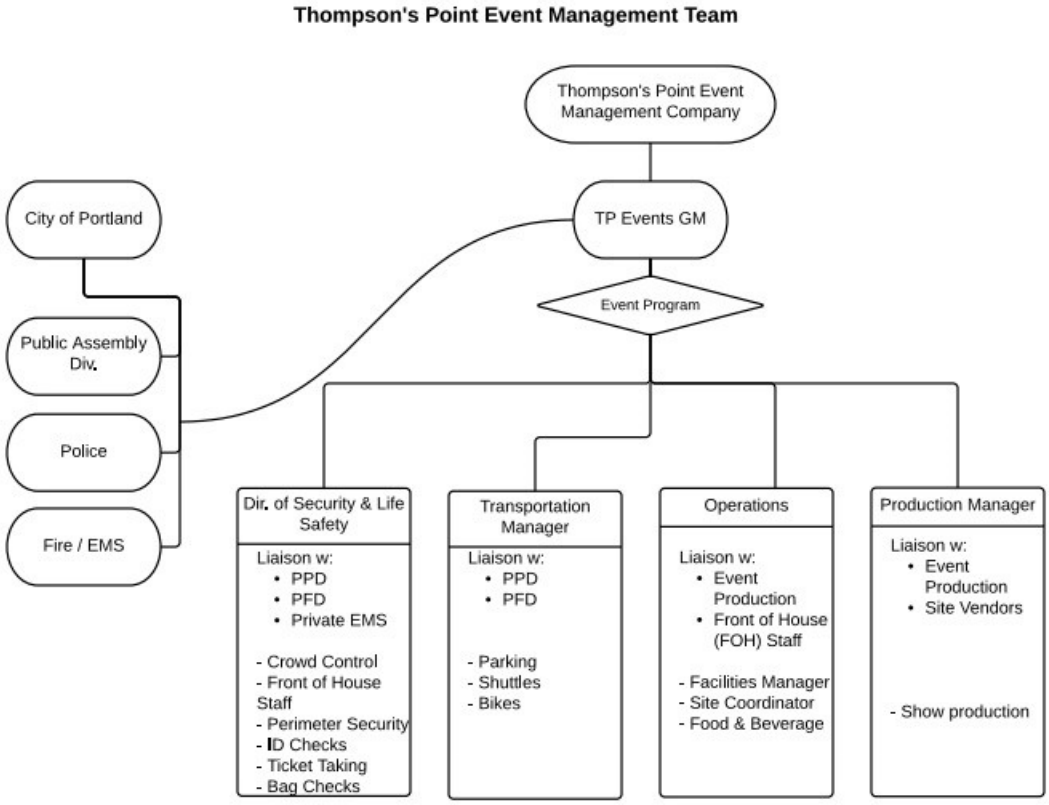
This plan provides general guidelines that address the life safety aspects of venue design and event management to be used in the planning and management of outdoor events on Thompson's Point.

A primary focus for the fire and life safety (FLS) evaluation of Thompson's Point outdoor amphitheater is to assess any fire or other potential hazards that may be present during the event that may detrimentally impact public safety. A key component to ensuring the safety of the general public is to provide adequate means of egress from the venue, such that should an emergency situation occur, the public can readily and safely evacuate the venue in a timely manner. The evaluation below demonstrates that adequate access to the venue is available for emergency responders, and outlines a plan of action that includes safety measures that may be implemented to minimize and/or mitigate any hazards to life safety that might exist within the venue.

EVENT MANAGEMENT AND STAFFING

Forefront Events, LLC ("Operator"), an affiliate of Forefront Partners I, LP, will have the overall responsibility for operation and management of all Thompson's Point (TP)-sponsored events, but will also maintain oversight and approval authority over all events that are occurring within Thompson's Point-owned venues, and will coordinate with and the City of Portland to ensure adequate life safety is afforded all who attend and support these events.

The Operator will be responsible for providing security, public safety, and crowd control for all TP-sponsored events or non-TP-sponsored events located on Thompson's Point, both inside and outside the event amphitheater, along with the integration of the requisite City of Portland Emergency Responders, including for fire protection and medical emergencies, and City of Portland Law Enforcement Personnel. The Operator's Event Coordinator will be supported by a number of other personnel, along with the contractor's event operational and administrative staff. The following represents a basic organization chart for an event's Management Team. Should an emergency situation arise, this Team also represents the Command structure for the Emergency Response Organization (ERO).



The first "line of defense" in providing security, public safety, and ensuring the safe conduct of any event is the Event Security Staff. These individuals will have as their

primary responsibility to maintain security and crowd control within the perimeter of the event area. These individuals will have been specifically trained to support events such as those occurring at Thompson's Point's, including providing the necessary "crowd management" functions as outlined by the National Fire Protection Association's Life Safety Code® (NFPA 101). Throughout all events, these individuals will, at a minimum, be performing the following functions:

- Ticket takers
- Street barricade monitors
- Patron bag checks
- I.D. checks (when alcohol is served)
- Stage barricade security
- Backstage security
- Perimeter roaming teams (inside & outside the fenced area)
- Emergency egress support

The number of personnel needed to support crowd management will be a function of the number of patrons that are anticipated to attend the event and the type of event. Basic guidelines provided within NFPA 101 indicate a minimum of at least one crowd manager for each 250 patrons in attendance at the event.

The event's operational and administrative staff will assist the Event Security personnel when/as needed to support crowd control functions, along with responding to the Event Coordinator's direction regarding the conduct of the event's activities and providing liaison with the various individual vendors that may be located on site to ensure they adhere to all the event's fire protection and life safety requirements.

The City of Portland's Police Department (PPD) will support the overall security around the site, along with providing traffic control for the surrounding streets. Depending upon the event type and projected attendance, the PPD will dedicate an adequate number of police officers to ensure the safety of the public at the event. This support may include the following services:

- Patrol of the surrounding neighborhood(s) / areas,
- Assist Event Security personnel with civil misconduct, as needed,
- Manage law enforcement issues that might arise during the event, and
- Provide off-site traffic control

Although the need for police support in the peripheral areas around the event venue is as much a function of the location and size (area) of the venue as it is a function of the number of patrons, it is often easier to develop a set of guidelines based on the anticipated level of attendance and type of event. Depending on the type of event and the anticipated level of attendance for that specific event, the Event Coordinator will coordinate with the

Portland Police Department, to ensure that the appropriate number of police officers are assigned to support the specific event.

The City of Portland's Fire Department (PFD) will provide support in the area of fire and life safety, including inspections of the venue and the various facilities that will be located at the site during the event. Contracted EMS medical staff shall provide primary medical personnel, equipment, and transport. The level of staffing for any onsite medical personnel and the equipment provided will be a function of the size and type of the specific event. However, the following medical staffing plan is recommended for use as a general set of guidelines for medical support for all events at Thompson's Point:

1) Events with Public Attendance greater than 5,000

- Two (2) roving Medical Teams [4EMTs]
- Two (2)Paramedics
- One (1) ALS Ambulance stationed on site; with one (1) alternate on standby for replacement Should transport be needed
- One [1] All Terrain Vehicle (Gator or Golf Cart), configured to allow the transport of injured if access throughout the event area by ambulance is not feasible.

One (1) medical tent is to be provided, which will be staffed by the above listed personnel, and will be conspicuously located within the event area and provided with signage that identifies its use, such that patrons can readily note its location(s) upon entering the site and know where to go should they be in need of minor medical attention.

2) Events with Public attendance greater than 3,500 but less than 5,000

- One (1) roving Medical Team [2 EMT's]
- Two (2) Paramedics
- One (1) ALS Ambulance stationed on site; with one (1) alternate on standby for replacement should transport be needed.

Either a medical tent, which will be staffed by the above listed personnel, or the onsite ambulance if necessary, will be conspicuously located within the event area and provided with signage that such that patrons can readily note its location(s) upon entering the site and know where to go should they be in need of minor medical attention.

3) Events with Public attendance greater than 2,000 but less than 3,500

- One (1) Medical Team (2 EMT's)
- One (1) ALS Ambulance stationed on site

Either a medical tent, which will be staffed by the above listed personnel, or the onsite ambulance if necessary, will be conspicuously located within the event area and provided with signage that such that patrons can readily note its location(s) upon entering the site and know where to go should they be in need of minor medical attention.

The Event Coordinator will be responsible for ensuring proper coordination and communications are provided with each member of the Management Team outlined in the organization chart above. All communications between the various Management Team members, as well as their supporting staffs, is to be via portable radios.

Although not to be considered part of the ERO, the Event Coordinator will also liaise with both the local U.S. Coast Guard Command and the City of Portland's Harbor Master. Due to the nature of specific events and the location of Thompson's Point near navigable waters, although highly unlikely, it is conceivable that boats will gather offshore in the immediate vicinity of the Thompson's Point to listen to concert events; either at anchor or drifting. Such "congested" boating in close proximity to the shore could result in incidents that would result in the need for a response by the maritime authorities. Ensuring that these authorities are aware of the upcoming event will allow them to prepare as they deem necessary.

HAZARDS ASSESSMENT

Due to the nature and locations of most of the anticipated outdoor events, the numbers and types of hazards that could potentially threaten the general health and well-being (life safety) of the staff and public at large are relatively limited. The majority of the hazards that must be addressed are those that are inherent with the operation of the event itself, including those associated with the various vendor facilities that are to be participating in an event, along with those that may arise due to severe weather events.

Fire Hazards

The fire hazards associated with most outdoor events are primarily limited to the cooking/heating facilities that are inherent with the food vendors that may be on site, as well as the equipment and materials associated with a stage(s) that is likely to be present at most events. In both instances, the amount of either flammable or combustible materials/liquids will be relatively limited and any fire that might occur would likely be restricted to the source of origin. To minimize the potential for a fire emergency, each food truck/trailer/tent that has cooking/heating equipment present shall also have at least one portable fire extinguisher installed. In general, these extinguishers should be the type that is intended to extinguish a range of fires and of sufficient size to have a reasonable chance of extinguishment; such as a type 2A:10BC. If a deep oil fryer is being used, an additional, type K (wet chemical) extinguisher is to be provided adjacent to the cooking area. Additionally, a minimum separation distance of at least 10 feet should be maintained

between any food trucks/trailers/tents that have cooking equipment and any other structure. If any of the vendors will be using a portable propane tank as a fuel source, this fact must be brought to the attention of the Event Coordinator and the Fire Safety Lead, such that should a fire occur within that particular facility, the emergency responders will have knowledge that this hazard exists and can take the appropriate actions; both in terms of fire fighting and public safety. A minimum of two (2) portable fire extinguishers are to be located at any stage that is erected at the event venue, such that they are readily accessible and remotely located from one another such that a fire at anyone location of the stage will not prevent access to at least one of the extinguishers.

Medical Hazards

Although the potential exists for medical casualties to occur at events held at Thompson's Point, historically the majority tend to be minor in nature, such as cuts from broken glass or a variety of sprained muscles or ligaments. However, due to the nature the types of events that may occur at this venue, along with the likely diversity in the age of the crowds and the potential for hot, humid weather during an event, a wide range of other potential casualties should be anticipated. At a minimum, these should include:

- Heat stroke, dehydration
- Injuries from missile hazards, such as bottles and cans
- Fainting and exhaustion
- Trampling or crushing from crowd pressure
- Injuries from "Crowd surfing" or "stage diving"
- Respiratory issues
- Age-related illnesses
- Complications from the use of illicit dugs or alcohol abuse
- Epilepsy attack resulting from strobe lighting

All injuries or medical emergencies are to be immediately reported to the Event Coordinator and/or Security Chief, such that site medical personnel can be dispatched to the location of the injured person. If the injured person is not ambulatory, measures will be implemented to move that individual to the nearest medical tent or ambulance for further evaluation, treatment, and possible transport to a local hospital.

For most events, it is likely that onsite vendors will be selling bottled water. The Event Coordinator shall be monitoring the heat index to assess if the environmental conditions warrant the need to implement additional measures to prevent the mass onset of heat stroke and/or dehydration amongst the general public. Preventative measures to mitigate the possible onset of multiple cases of dehydration include: cooling/misting station(s) located within the event area and accessible by all patrons; drinking water stations accessible by all patrons; and if conditions require, additional bottled water made available to the public, free of charge.

The roving medical team(s) will be monitoring the crowd throughout the event to assist in the early identification/notification of, and response to, any medical issues that may arise.

Severe/Adverse Weather Hazards

In general, the two weather hazards that represent the greatest likelihood of occurrence at outdoor venues are lightning and high wind events, which could include both hurricanes and tornados. Lightning can both cause severe injury or death if an individual(s) is (are) struck, or can be the source of a fire initiation if a structure or equipment is struck.

Given the nature of weather events that involve either hurricanes or other storms that can spawn tornados, it is unlikely that significant warning from the National Weather Service would not be provided for such weather circumstances well in advance of the event start time. However, during the summer months, it is not unusual for rapidly developing thunder-storms to occur. Although events may not be cancelled or postponed for a "rain only" event, such thunder-storms can also involve both lighting and high winds.

The Event Coordinator shall ensure that the local area weather is being routinely monitored. Should adverse weather, such as thunder-storms, be identified within the general northern New England region, the frequency at which the weather is being reviewed shall be increased; especially if the storms include the potential for lightning and/or high winds are being forecasted as having a future impact on the greater Portland area. Should any storms involving high winds and/or lighting be forecasted as moving into the greater Portland area, the Event Coordinator shall implement an evacuation of the event site prior to the leading edge of any such storm formation approaching to within 15 miles of the site. This distance may be modified depending on the speed at which the storm is moving, but a minimum of 30 minutes should be provided prior to the weather beginning to deteriorate to allow site evacuation and to provide patrons sufficient time to reach a safe location. Depending on the timing of the storms arrival and its expected duration, the Event Coordinator will make a determination, in conjunction with the Emergency Response Organization (ERO) as to whether the event is to be cancelled at the time of evacuation or postponed until the severe weather is clear of the area and conditions are safe to resume the event.

When only high winds are predicted, with or without a rain event, it may not be necessary to evacuate the site, but actions must still be implemented to protect the public from potential missile hazards, which may include suspending the event operations. The Event Coordinator shall ensure that all vendors take appropriate actions to secure any materials/equipment/tents/etc. that are not designed to resist high winds; such as sustained or wind gusts at or exceeding 25 to 30 mph. The specific wind-load limitations that have been determined by the appropriate professional(s), such as a professional engineer or manufacturer’s representative, for all structures and equipment that are to be located at the venue shall be provided to the Event Coordinator. The lowest value associated with any of

the structures/equipment used for the event, with a minimum of an applied 10% safety factor, shall be used as the "metric" to determine when the event operations must be halted due to high winds.

Chemical Exposure Hazards

It is not anticipated that any toxic materials will be used to support any event at Thompson's Point. Equally, with the conversion of the Thompson's Point area from one that was industrial in nature to one that will now focus on business and residential uses, it is not anticipated that the venue would be impacted by any activity associated within the adjacent buildings. The potential exists that an accident could occur offsite that could have an impact on personnel at Thompson's Point, depending on prevailing winds. Should such an offsite accident occur that might involve the development of a "smoke" plume that contained toxic or noxious fumes, it is possible that event participants could be exposed if the fumes migrated toward the event site. In general, the Department of Transportation (DoT) guidelines recommend that should an event such as that occur, that areas downwind of the accident site be evacuated for a distance of 1.3 miles wide by 2 miles long. Should a fire/explosion accident occur offsite that involved the release of fumes within a smoke plume/cloud and the wind direction is toward Thompson's Point, it would be necessary to evacuate the event.

There are no specific preventative measures that can be implemented at an event venue to alleviate or minimize the risk of exposure to a potential chemical spill at an adjacent site. However, the Event Coordinator shall review the areas surrounding any planned event venue to assess if a potential exposure hazard exists due to the nature of work performed at adjacent sites. If the potential exists for an exposure hazard to exist, the Event Coordinator shall contact those businesses to ensure that they are aware that an event will be occurring and should any accident or spill occur, immediate notification must be provided to the Portland Fire Department and the Event Coordinator.

External Threats

Although it is considered as highly unlikely, the potential always exist that a public event could be targeted for an external threat, such as a bomb threat. The Event Security will be monitoring all items brought on site in an effort to detect any potentially dangerous items, However, given the locations of the outdoor events, each will still be exposed to potential threats from areas "outside the fence."

Should a specific threat to an event and its occupants be received, this information shall be immediately relayed to the Event Coordinator who will coordinate the PPD representative on site to determine the appropriate course of action. All efforts will be directed toward ensuing the safety of all the event participants, both the general public and event staff.

LIFE SAFETY

Although these events occur outside, a primary life safety concern continues to be providing adequate means of egress should an evacuation of the site be required. As such, the primary code for reference for evaluating this aspect of an event venue is the National Fire Protection Association's *Lift Safety Code®,* NFPA 101. In general, most of the life safety requirements outlined in NFPA 101 do not readily apply to an outdoor venue, including most that pertain to providing adequate means of egress, However, it is common practice to utilize the factors within NFPA 101 (Chapter 7) for calculating occupant loading and determining the number and size of exits for enclosed outdoor venues. Although it is likely that such an approach provides "conservative" results, in terms of the means of egress, no other data exist that have been widely accepted as being valid for such an evaluation.

In general, the amphitheater is to be treated as "Assembly Occupancy" as defined by NFPA 101. Based on this occupancy classification, general requirements for providing adequate means of egress are developed that are a function of estimated maximum number of people that will be located within the event venue; the event's maximum "occupant load." To establish the maximum occupant load for outdoor venues, it is common practice to use the NFPA occupant load factor for assembly areas where it is anticipated that the occupants would be mostly standing; which is 7 ft^2 per person and defined as a factor for "concentrated use without fixed seating." However, this factor should only be applied to the area(s) of the venue that will be accessible to the general public. During most events, a significant amount of a venue's total area will be dedicated to other uses; such as providing a stage(s) and its associated "back stage" areas, along with areas occupied by food or merchandise vendors, portable toilets, etc. Therefore, a reduction is applied to the overall venue area to account for these ancillary uses and assess the actual area that will be available for public access prior to calculating the estimated occupant load for a specific venue.

NFPA 101 also has additional restrictions that must be applied to events that involve a large public attendance. For example, for any event where the occupant load is expected to exceed 6000, unless a detailed life safety evaluation is to be developed for that specific event, an occupant load factor of 15 ft^2 per person is to be used to calculate the allowable occupant load (vs. 7 ft^2/person) within that areas open to the public.

Although NFPA 101 also has a requirement that all assembly occupancies have a "main entrance" and that this entrance should have the ability to accommodate up to 2/3's of the total occupant load for the event, such a requirement may not be feasible for venues that are intended to accommodate very large numbers of people. Equally, the premise behind this requirement is a function of concern over the time needed to safety egress before conditions prevent escape. This premise is not applicable to outdoor events. Similarly, the capacity factors used to determine the size of a means of egress are also based on the

premise that the time needed to egress may be a critical factor. Although the capacity factors associated with means of egress, such as for aisle and doorway widths, will continue to be used as general guidelines when evaluating the required total width of egress openings from the venue, strict compliance with these factors is not considered to be necessary. It is not anticipated that ambient conditions within the venue could be caused to deteriorate to a point that safe egress from all available exits is threatened as a result of any hazard or activity associated with the event itself. Means of egress must be configured to ensure that all occupants have an available exit pathway that is sufficiently remote from any potential hazard such that they can safely egress the venue in a timely manner. Other than the approach of severe weather, the exit configuration for each venue is to be arranged such that ambient conditions within at least 1/2 of the available means of egress will always remain tenable/accessible.

Based on the above factors and the requirements within NFPA 101, the outdoor concert and amphitheater at Thompson's Point has been evaluated to determine the maximum number of allowable occupants (public and staff), along with the number and configuration for the means of egress.

Size

The publically accessible area of the venue for events (not inclusive of the stage and other areas dedicated to production equipment) encompasses approximately 155,500 ft^2. After a reduction in available area is made for food and beverage concessions, trucks/trailers/tents and other administrative uses, it is estimated the maximum area available for use by the public will be approximately 105,000 ft^2.

Capacity

The maximum capacity for events at the Thompson's Point amphitheater contemplated in this plan is 8,000. In accordance with life safety criteria outlined in the NFPA 101, the occupant load and egress capacity of the venue are used to define the capacity for attendees of the venue. The configuration of the public assembly area for attendees in the venue and the capacity of all events at the Thompson's Point amphitheater shall conform to the occupant load and egress capacity requirements of NFPA 101 as follows:

Occupant Load

Based on the occupant loading requirements outlined in the NFPA 101 for an outdoor event, the maximum number of occupants at this venue would be approximately 15,700; using an occupant load factor of 7 ft^2/person.

Any event that would be expected to exceed 6000 persons is required by NFPA 101 to have a life safety evaluation performed that specifically addresses all aspects of that particular event, including how adequate egress is to be provided in the event of an emergency. The intention of this document is to provide the basis for

complying with all life-safety requirements and conditions as required by NFPA 101 for events with up to 8,000 occupants.

This venue may be configured to accommodate attendees in a "general admission" (standing) area, a seated area, or a combination of "general admission" (standing) and seated areas. The occupant loading factor of 15 ft^2/person shall be used to determine the occupant load for any portions of this venue configured as "general admission" for the attendees. The occupant loading factor of 7 ft^2/person is used to determine the occupant load for any portions of this venue configured with seating for the attendees.

Any combination of standing and seated attendees will never exceed 8,000.

Egress

The capacity of the available means of egress will be a function of the total number of attendees expected at each event. NFPA 101 uses an exit capacity factor of 0.2 inches / person to determine the total width of exits that must be provided to ensure adequate means of egress are available from each event.

NFPA 101, Section 12.2.4.4, also includes requirements for the number of available exits for fenced outdoor assembly areas, based on the number of persons expected to be present. Although it is required that any enclosed area be provided with a minimum of two widely separated means of egress (exits), for any enclosed area with an occupant load that exceeds 6000, the area must be provided with a minimum of three (3) widely separated means of egress. However, given that access/egress to/from this site is limited to only the northern boundary, it isplanned that all events will be provided with a minimum of three separate exits from the venue to better ensure that an expeditious and orderly evacuation will be possible if the need arises.

The following table provides a summary of the minimum exit requirements for scenarios defined by maximum occupancy of 1000, 2000, 5000, and 8000, based on having three (3) available exits:

Maximum Attendance	Minimum Number of Exits	Minimum Total of "Clear" Exit Width [in. (ft.)]	Average "Clear" Width per Exit (ft.)
1000	**3**	**200 (17)**	**5.5**
2000	**3**	**400 (33)**	**11.1**
5000	**3**	**1000 (83.3)**	**27.8**
8000	**3**	**1600 (133.3)**	**44.4**

The actual design (numbers and clear width) of the exit arrangement may vary depending on the anticipated occupant load for a specific event at the venue. The general arrangements for the planned exits for all events are depicted in **Appendix A**. These documents indicate how events at The Point are to be generally configured, including depicting the paths for access by emergency responders and for exiting by the public.

The maximum occupant load for any event that is to be contained within a secured area will be controlled by available ticket sales. Although this number does not include the event staff that may also be within the fenced enclosure that is open to the general public, sufficient egress capacity will be provided for all occupants within this area of the event, general public and staff included. Based on the proposed layout for events that will be located within a "fenced" area, at least three (3) separate exit locations will be provided that will be available / accessible to general public;

1. A main site entrance (ticketing) centrally located along the fence line,
2. An emergency exit at the far east end of the fence, and
3. An emergency exit at the far west end of the fence.

Additional egress gates will be provided as required by the occupant load. The emergency exit gates located at the far east and west end of the fence will also be designed to accommodate access by emergency vehicles; providing at least 20 ft. of clearance.

Site Lighting

All exits must be prominently marked to indicate that they are an exit from the site and shall be provided with adequate lighting. Lighting units, fixed or portable, are to be located throughout the amphitheater to provide lighting of not only the exits, but the general areas where the public is to be located. Each of these lighting is to be provided with its own means of reliable[1] power, including the use of an electric generator if necessary. The lighting is to be located such that the loss of any single unit will not result in the total loss of ambient light within any single portion of the public area that would detrimentally impact the ability to safely egress the site (perform way-finding). Should any of the general lighting for the public area(s) be provided by a source that does not have a dedicated power source, an emergency backup power source is to be provided for those lights.

Public Address System

[1] *In this instance, "reliable" indicates that the source of power is not subject to a single-source failure other than at the unit itself, whereby all other units being fed from that power source, will continue to operate.*

A public announcing (PA) system is to be provided that ensure any general or emergency announcements can be clearly heard / understood from all areas within the public portion of the event. This system is to be provided with an emergency (back up) power source to ensure that the system remains operational if the normal power source is lost. This system will be essential in providing effective and timely communications with the general public should an emergency situation arise.

Other

It should be noted that from purely a "life safety" aspect, the use of the "beer garden" approach should be discouraged if at all possible. This configuration further isolates the public from ready access to an exit from the venue and will result in an increased time to evacuate should the need arise. Because of the higher "density" of patrons within these areas, there is also a greater risk of crowd "crush" if an evacuation is needed; thereby increasing the potential for risk of injury.

EMERGENCY RESPONSE

Should an emergency situation arise, the Event Management organization that is outlined above will become the command structure for the Emergency Response Organization (ERO). All members of the ERO will then move to a common location that will become the Incident Command Center. For larger events that include the use of an Event Administrative Trailer, this may be used to support the requirements of the Incident Command. The Event Coordinator is to initially become the Incident Commander, with all other members of the ERO providing input and expertise within their respective areas; security (crowd control), law enforcement and traffic control, medical, and fire. Based on the nature and severity of the emergency situation, the Incident Command will determine if a site evacuation is warranted.

If a site evacuation is warranted, the Event Security Staff will be directed to begin to move all occupants to the nearest exit from the site and provide additional instructions regarding movement away from the site to safer locations. Depending on the nature of the event, the Incident Command may also determine that it is necessary to contact the maritime authorities to inform them of the emergency situation, such that this can be relayed to any boaters that are located immediately offshore and could be impacted by the situation.

Severe Weather Emergency

An emergency due to the approach of severe weather will be initiated subsequent to the Event Coordinator making a determination that the onset of a severe weather event is imminent. At that time, the ERO will be activated. Depending on the type and nature of the severe weather, the site may be evacuated. Should the emergency only involve high winds that are in excess of the maximum allowed, the Event Coordinator will discontinue all operations on any stage(s) and within any tents or other portable structures that may be

subject to wind damage, and direct his staff to take the necessary measures to secure each from the effects of high wind forces, This includes immediately disassembling any of the ticket, medical, or vendor tents that cannot withstand the expected wind velocities and placing them in a safe configuration. Equally, all vendors will be notified to secure their trucks and trailers as necessary, such that they do not represent a source for potential missile hazards.

If the weather emergency is such that the site must be evacuated to ensure the safety of the occupants, such as the approach of a thunder-storm involving lightning, the evacuation shall begin at least 30 minutes prior to the expected arrival of the severe weather. It is estimated that a minimum of 20 minutes, from the time of the announcement, will be needed to safely evacuate the venue. It is incumbent upon the Event Security staff to ensure that all exits (gates) are immediately opened. Equally, the Security Staff are to direct the public in a manner that distributes the site occupants among all available exits; thereby minimizing the potential for a significant "backlog" at any single exit.

Any severe weather event, such as extreme temperatures, that result in the potential for medical casualties will be addressed in the *Medical Emergency* section below.

Fire Emergency

Localized fires that can be extinguished using a portable extinguisher shall be reported to the Event Security Director and the ERO Lead for Fire Safety, but shall not be considered an "emergency," thereby not requiring the ERO to be activated. However, any fire that develops beyond the point that cannot be extinguished with the available portable extinguisher shall be deemed to represent an emergency. The Incident Command will direct the ERO Lead for Fire Safety to take the necessary measures to prevent or minimize the spread of fire beyond the source of origin. All requests for offsite assistance from the PFD will be via the event's Fire Safety Lead.

The Event Security staff will immediately move all personnel away from the fire area. The Incident Command will advise all emergency responders of the nature of the fire event; especially if compressed flammable gas storage tanks may be involved.
The severity and location of the fire event will dictate the need to postpone or cancel the event activities. All event structures must be readily accessible to responding fire department vehicles. At a minimum, an emergency access lane must be designated as part the pre-event planning and be properly identified at the venue, The PPD and Event Security will ensure that the access lane to the fire area by any responding emergency vehicles remains clear. Should the fire emergency warrant the need to evacuate the site, all occupants will be directed by the Event Security staff toward the exits; ensuring that all occupants remain clear of the emergency access lane.

Medical Emergency

It is anticipated that most of the medical situations, even "emergencies," will primarily involve only one individual, or possibly several, for anyone situation. For such instances, it is not anticipated that it would be necessary to activate the *ERO*. These "limited" emergencies will be coordinated by the Event Security Staff and the Medical Lead. The Event Coordinator shall be informed of these emergencies and input from the rest of the Event Management staff would be on an "as requested" basis. Such medical emergencies would be handled in a manner that should have a minimal impact on the overall Event activities. The Medical Lead and his supporting staff will determine the necessary course of action, in terms of treatment, and implement the necessary actions; including transport to a local hospital.

Should the emergency involve the need to transport a patient from within the site, the Event Security will assist the Medical staff in crowd control, keeping the area around the patient(s) clear and providing a path for any needed transport vehicle, including ensuring that the emergency access lane remains clear and unobstructed.

Should a medical emergency arise that involves large numbers of persons, such as multiple cases of heat stress, dehydration, etc., the Event Coordinator will direct the initiation of the *ERO.* The *ERO* staff will evaluate the situation based on input from the Medical Lead and take the necessary measures to protect the health of the public. If the emergency is determined to be "wide spread" in nature and beyond the capabilities of the event staff and onsite equipment to mitigate the risk(s), then the Incident Command may elect to cancel further event activities and evacuate the venue.

Bomb / Terrorist Threat

Should notice of a bomb or other similar threat that could result in wide-spread damage and/or mass casualties be received by the Event Coordinator and/or the Security Lead, or PPD representative, the *ERO* will be immediately activated. The Incident Command will direct the Site Security Lead to take the necessary actions and to liaise with the PPD to initiate their specific threat protocol/actions. Should the determination be made that the site be evacuated, the Event Coordinator will issue a directive that all event operations be ceased and a general announcement would be made over the PA system to facilitate the orderly evacuation of the venue. All Event and Site Security staff will be used to support the evacuation process, directing the crowd in whatever direction is indicated by the PPD.

Appendix A

Event Exit/Evacuation Plan

NORTH

PEDESTRIAN ROUTE

MAIN GATE

APPROXIMATE ROADWAY CONSTRUCTION/STAGING/ STOCKPILE AREA (CLOSED TO PUBLIC)

GRAVEL PARKING LOT

EVENT MANAGED PARKING AREA

EVENT MANAGED PARKING AREA

EVENT MANAGED PARKING AREA

EXISTING BUILDING TO REMAIN
SUBURBAN PROPANE

EXISTING BUILDING TO REMAIN

EXISTING BUILDING TO REMAIN
NNEPRA

BRICK SOUTH
PORTLAND MAINE
8

THOMPSON'S POINT

BAR

BEER GARDEN/ OUTDOOR DINING AREA

NORTH ENTRANCE

24' WIDE GATE

12' WIDE GATE

30' DIA. YURT CONCESSIONS

TOILETS

TEMP. FENCE W/ GATE

12' WIDE GATE

20' X20' MERCHANDISE TENT

DEPOT PAVILION

40' WIDE MAIN GATE

24' WIDE GATE (AFTER SHOW / EMERGENCY USE ONLY)

TEMPORARY BLOCK DURING EVENTS

VIP, EMERGENCY AND ACCESSIBLE PARKING AREA

35' WIDE GATE

6' X 40' BOX OFFICE & WILL CALL

12' WIDE GATE (EMS)

STORAGE CONTAINER

EMS TENT (10' X 10')

12' WIDE GATE

24' WIDE GATE

GENERATOR POWER

LIGHT TOWER (TYP.)

LAWN AREA

FOOD TRUCK (TYP.)

SOD LAWN AREA

FOH TENT (20' X 20')

POWER

24' WIDE GATE

16' X 16' WING

20' X 24' LOADING

40' X 40' STAGE

16' X 16' WING

EXPANDED STAGE LANDING AREA

LIGHT TOWER (TYP.)

STORAGE CONTAINERS

GRAVEL PARKING LOT

24' WIDE GATE

BOX CONTAINER BAR (TYP.)

LIGHT TOWER (TYP.)

EARTH MOUND

VIP LOUNGE

LIGHT TOWER (TYP.)

40' WIDE GATE

TEMPORARY EVENT FENCING (TYP.)

30' X 30' CATERING TENT

40' WIDE GATE

BATHROOM TRAILER

SHOWER TRAILER

CIRCUS OF MAINE SHELTER IN PLACE

STROUDWATER DISTI SHELTER IN PLACE

BRICK NORTH BUILDING (A)
(SEE ARCHITECTURAL PLANS BY ARCHETYPE, PA)

BISSELL BROTHERS SHELTER IN PLACE

CELLAR DOOR SHELTER IN PLACE

POTENTIAL SHELTER IN PLACE - LIMITED OR NO CAPACITY MAY APPLY; AVAILABILITY TO BE CONFIRMED BY EVENT COORIDNATOR PRIOR TO EVENT

REV	DATE	DESCRIPTION

REVISIONS

PROJECT
THE FOREFRONT AT THOMPSON'S POINT

SHEET TITLE
OUTDOOR SITE LAYOUT PLAN
2017 EVENTS

OWNER
FOREFRONT EVENTS, LLC
10 THOMPSONS POINT RD, PORTLAND, MAINE 04102

PLACEMAKER PARTNERS, LLC
501 DANFORTH STREET
PORTLAND, ME 04102
bo@placemakerpartners.com

DRAWN:	BEK	DATE:	FEB. 2017
DESIGNED:	BEK	SCALE:	N.T.S
FILE NAME:	OE-SITE LAYOUT.DWG		
SHEET	1 OF 1		

From:	Bo Kennedy
To:	"Shukria Wiar"
Cc:	Chris Thompson - GMAIL; Jed Troubh - GMAIL
Subject:	RE: Hotel Portland - Letter of Response
Date:	Wednesday, March 7, 2018 3:32:00 PM
Attachments:	Att F - Right, Tittle and Interest and Agent Letter.pdf A-1 Building Elevations.pdf A-1 Building Elevations E-N.PDF 2017.11.22 Recorded Amended Sectional 1 Subdivision Plat.pdf

1. The proposed building is 55 ft tall as shown on the submitted elevations (eplan) and attached for ease of reference.
2. Right, Title, and Interested is attached in Att F of the Submitted application (eplan) and attached for ease of reference. Also, attached is the recorded subdivision plan which identifies the proposed development lot as having Forefront Partners I, LP as the Owner of Record.

Thank you,

Bo Kennedy P.E.
Project Manager/Engineer

Placemaker Partners, LLC
501 Danforth Street
Portland, ME 04102
Tel. (207) 747-5288 Ext. 112
bo@placemakerpartners.com

From: Shukria Wiar <shukriaw@portlandmaine.gov>
Sent: Wednesday, March 7, 2018 3:18 PM
To: Bo Kennedy <bo@placemakerpartners.com>
Cc: Chris Thompson - GMAIL <parallaxpartners@gmail.com>; Jed Troubh - GMAIL <jtroubh@gmail.com>
Subject: Re: Hotel Portland - Letter of Response

Hello Bo,

I have forwarded this to Tom Errico for his review. I am draft the Planning Board memo and had a couple of questions:

1. What is the average height of the proposed building?
2. There is not Right, Title, and Interest submitted as part of the application. Please submit this information.

Thanks.

Shukria

On Tue, Mar 6, 2018 at 5:08 PM, Bo Kennedy <bo@placemakerpartners.com> wrote:

> Shukria,
>
> Please find the attached responses to the development staff review comments received thus far. I did speak with CPT Mike Thompson – PO FD earlier today and he indicated that he was satisfied with the plan with a couple of provisions which are currently already shown on the site plan. He was going to indicate this on eplan review board.
>
> Good luck on your software training!
>
> Bo
>
> Bo Kennedy P.E.
> *Project Manager/Engineer*
>
> ***Placemaker Partners, LLC***
> 501 Danforth Street
> Portland, ME 04102
> Tel. (207) 747-5288 Ext. 112
> bo@placemakerpartners.com

--

Shukria Wiar, Planner
Planning Division
City of Portland 389 Congress Street
Portland, ME 04101
Ph: 207.756.8083
Fax: 207.756.8258

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

PLACEMAKER PARTNERS, LLC
501 Danforth Street
Portland, ME 04102

June 8, 2018

Ms. Shukria Wiar
Planning and Development Department
City of Portland, Maine
389 Congress Street
Portland, Maine 04101-3509

Subject: The Forefront at Thompson's Point – Hotel Portland
Level III – Site Plan Application – Design Review Letter of Response # 4

Dear Shukria:

We have received and reviewed peer review comments as well as cumulated the feedback from our March 22, 2018 Workshop meeting with the Planning Board and offer our responses to these comments. For ease of reference we have repeated each comment in *italics* with our response following.

DESIGN REVIEW COMMENTS FROM PUBLIC SAFETY AND FIRE PREVENTION AND PLANNING STAFF

Comment 1:

The overhanging canopy, at the front of the hotel must maintain a minimum height of 13'6".

Response:

This request has been relayed to the project architect and a notation has been added to the elevation view.

Comment 2:

The fire department met with the applicant's engineer to review the hotel site plan alongside the Children's Museum and Theatre of Maine's (CMTM) site plan. With the provisions for a flush sidewalk ramp at the south end of the pedestrian ally, a clear 20 ft wide drivable path for emergency vehicles to the front entrance of the CMTM, and widened pavement section between the Hotel and Brick South buildings such that an emergency vehicle can access the courtyard area our access concerns have been addressed.

Response:
Our office concurs that the site plan as presented provides for the requested life safety access. As requested by the planning board our office has prepared some additional Computer-Generated Vehicle Turning Movement Simulations. A figure showing the new simulations are enclosed in Attachment A.

Comment 3:

Due to the close proximity to the Portland Jetport, a confirmation from the Federal Aviation Administration that the proposed building height meets their standards.

Response:

The Design Build Contractor, Opechee Construction, will be required to clear their plan with the FAA for the crane necessary to construct the hotel building. This approval process will occur concurrently with the building permit request and be forwarded to city staff upon receipt.

It is noted that this topic was reviewed when the Thompson's Point B5 Zoning Law Text Amendment was approved in 2013 which allows buildings up to 120 ft. Documentation is on file with the city and available upon request. The proposed hotel is approximately 54-55 ft high pursuant to the submitted elevation drawings. Furthermore, the proposed hotel building height is similar to the Children's Museum and Theatre of Maine (CMTM) being constructed on the adjacent property to the east. The FAA has recently issued the approval to construct the CMTM building. We are confident that this development will receive the same clearances.

Comment 4:

The applicant has not provided letters indicating the capacity to serve for water, sewer, gas, and power.

Response:

The applicant provided proof of capacity to serve for utilities in Attachment E of the original site plan application package dated 10.31.2017 as well as a City of Portland Wastewater Capacity Application. Since this application process began, the applicant received a letter affirmatively stating the city has the capacity to accept waste water from the proposed hotel project. Additionally, Unitil Natural Gas has provided an updated letter of ability to serve for the hotel project. The Wastewater Capacity Authorization letter and Unitil Ability to Serve letter are in enclosed in Attachment B.

Comment 5:

Standard (1) b. Buildings and Uses shall be located close to the street . . .Corner lots shall fill into the corner and shall provide an architectural presence and focus to mark the corner…..”The board may decide, however, given the unique site conditions, this orientation may be acceptable and meet the intent of the standard”

Response:

The applicant believes that the building has been thoughtfully designed to synergize with the adjacent uses (especially the Brick South Building and Children's Museum and Theatre of Maine), flow of the site, and that the design has met the intent of the standard to the extent practicable. We respectfully request that the board approve this project as presented.

Comment 6:

Standard (1) d. Parking lots shall be located to the maximum extent practicable toward the rear.

Response:

The site plan has minimized onsite parking and parking in the front of the building to the maximum extent practicable. These spaces are a minimum requirement to support the proposed hotel brand and normal hotel operations. The hotel avails itself of a site-wide shared parking field. The applicant has in fact met this standard by providing off-site (on-campus) valet/managed parking and intentionally located parking away from the front of the building. The "rear" of the building is an important outdoor area and a compelling and attractive amenity for both the hotel and the Brick South event venue, and to locate parking there would compromise the effective operation of the hotel and event venue for no practical purpose when sufficient parking is available elsewhere on campus.

DESIGN REVIEW COMMENTS FROM TY LIN – TOM ERRICIO DATED 03.02.2018

Comment 1:

I would suggest that the crosswalk leading to the "point" be widened to the width of the crosswalk opposite the hotel.

Response:

The crosswalk of note has been widened 3 ft to match the 15 ft width across from the hotel.

Comment 2:

It is noted in the application that some off-hour truck deliveries may occur along the east side of the hotel. The applicant should provide specific details on deliveries and the type of trucks anticipated.

Response:

The applicant does not anticipate normal delivery trucks will regularly access the pedestrian alley along the easterly side of the building. Delivery activities will occur in designated locations on the westerly and northerly sides of the hotel and Brick South buildings, respectively. However, it is noted that the pedestrian hardscape area is designed with enough clear space and structural support to accommodate the occasional emergency vehicle and/or single-unit commercial vehicle. The commercial vehicle access will be limited to those with prior written permission and staffed oversight. Examples of a commercial vehicle that may access the area are the occasional food truck (provided it is parked in a location which does not impede the path of emergency vehicles or pedestrian flow) or a vehicle delivering a catering element such as a barbeque trailer. Deliveries are discussed in greater detail in a response below.

DESIGN REVIEW COMMENTS FROM LAUREN SWETT DATED 03.02.2018

Comment 1:

It is noted that the City of Portland has recently changed their standard for sidewalk ramp detectable warning panels from composite to cast iron. It is our understanding that all of the internal streets at Thompson's Point will be private, and the warning panels wouldn't need to meet

the City's standard, but it is mentioned in case the Applicant would like to remain consistent with the current standard.

Response:

The applicant will take this comment into consideration when preparing the final construction documents.

Comment 2:

The curbing layout at the entrance to the hotel driveway is unclear. Two curblines are shown, and both appear as "existing." The existing and/or proposed condition should be clarified.

Response:

The site plan has been updated to clarify this confusion. It is noted that the project match line is synonymous with the property line and therefore the driveway entrance will be re-constructed as part of the roadway extension project in advance of hotel construction.

Comment 3:

(1) Basic Standard: Plans, notes, and details have been provided to address erosion and sediment control requirements, inspection and maintenance requirements, and good housekeeping practices in accordance with Appendix A, B, & C of MaineDEP Chapter 500. Please provide the following information:
(i) Please expand the erosion control notes to address winter construction and site stabilization in greater detail.
(ii) Please show locations of siltation barrier on the Erosion Control and Construction Management Plan.

Response:

(i) The erosion control notes on plan sheet C-6.0 have been expanded to refer the contractor to the winter time construction requirements for erosion and sediment control as detailed in the full Erosion and Sediment Control report previously approved for the overall project. Additionally, the contractor is required to meet all erosion control measures detailed in the "Maine Erosion and Sediment Control Handbook for Construction: Best Management Practices" as noted on Plan Sheet C-1.2 General Notes and Legend. The manual includes provisions for wintertime construction.

(ii) The site is currently and will remain internally draining for the duration of the project; therefore, site grading dictates that a typical "perimeter siltation barrier" is not required. All inlets receiving runoff from the project site and surrounding areas will be required to have siltation barriers as noted on the Erosion and Sediment Control Plan. It is also noted that the Erosion and Sediment Control Plan represents the minimum requirements and the contractor is responsible by law and contract with the owner to follow the full narrative. If temporary site construction conditions warrant a linear silt barrier as determined by the engineer of record and/or city inspection officials then the contractor is required to comply.

Comment 4:

(i) The Applicant should review the stormwater materials for inconsistencies in zone labeling. The labeling should be consistent on the plan and the table, but it does not appear that there will be any changes to the stormwater calculations.
(ii) A Stormwater Maintenance Agreement and a Post-Construction Stormwater Inspection & Maintenance Plan to include all components of the stormwater systems on site should be provided. It is assumed that these exist already for other areas of Thompson's Point, and they should be updated to include the new systems.

Response:

(i) The labeling on the updated site plans and computation tables (Sheet C-5.1 and C-5.2 respectively) are current and matching; however, the "Supplemental Stormwater Management Report for Hotel (Lot 6) Level III Site Plan Application" dated 09-2017 has been revised to be consistent with the most recent plans and enclosed in Attachment C. The reviewer is correct that labeling revisions did not affect the computations.

(ii) The reviewer is correct in their assumption of an existing Stormwater Maintenance Agreement and Post-Construction Stormwater Inspection & Maintenance Plan. The applicant has most recently entered into a revised agreement with the city dated 2017.06.06 and is available upon request. This agreement will be extended to apply to the new development as part of the City of Portland Standard Conditions of Site Plan Approval.

COMMENTS FROM PLANNING BOARD DATED 03.22.2018

Comment 1:

A board member requested to see a night time rendering with downlighting as it might be seen from the highway.

Response:

A night-time rendering has been prepared by Opechee Construction Design-Build Firm and enclosed in Attachment D.

Comment 2:

A board member requested to see an elevation/rendering of the easterly façade having some type of storefront level presence (restaurant/bar entrance, canopies over doorways, etc)

Response:

An updated rendering has been prepared by Opechee Construction Design-Build Firm showing the easterly façade as it matches the most current draft floor plan and is enclosed in Attachment D.

Comment 3:

Board members felt a modification to the westerly elevation would help provide a sense of arrival and added interest to the side of the building first seen from an approaching vehicle.

Response:

An updated rendering has been prepared by Opechee Construction Design-Build Firm showing the westerly façade improvements and is enclosed in Attachment D. The proposed painted graphic on the westerly façade will provide an improvement to its visual appearance as well as helpful wayfinding.

Comment 4:

Board members requested a more detailed picture of how deliveries would work.

Response:

Delivery and Service areas for the hotel have been separated into smaller areas around the Thompson's Point Campus based on type of delivery. We believe this approach will provide more convenience for delivery vehicles and reduce the impact of deliveries for Hotel Portland and Brick South patrons. Designated "Commercial Loading Zones" will be signed and striped proximite to the destination of the anticipated deliverable. Site plan improvements for delivery and service vehicles are shown on the enclosed Plan Sheet C-3.0 and summarized in the list below.

- Type 1 - Hotel Services Delivery Items (i.e. linen, large furniture delivery, pool/utility services, etc.)
    - Type 1 deliveries will occur on the westerly side of the building. The parallel parking stalls will be restriped with chevrons and signed for Commercial Vehicles Only. This location is proximate to the hotel service elevator and the back of house support staff offices and laundry room.
- Type 2 – Trash/Recyclable Enclosure
    - Type 2 service will also occur on the westerly side of the building in the existing dumpster enclosure. This will be a shared service with the Brick South Event Venue. Smaller trash receptacles will be temporarily stored inside or in the space between Brick South and Hotel Porltand east of the buildings
- Type 3 – Food & Beverage Delivery
    - Type 3 deliveries will occur on the northerly side of the Brick South Venue in a re-configured area of the existing parking lot. This re-configured area will provide a 12' wide parallel parking stall with a length sized to accommodate two single-unit box trucks or one tractor trailer truck at a time. The sidewalk will be widened from 8 ft wide to 14 ft wide in this area. This "on-street" delivery location is the most proximate location to the proposed hotel and existing Brick South kitchen services with-out permitting vehicles into the pedestrian alley or courtyard space. This delivery area will function the same as on-street commercial zones in the downtown area.

Comment 5 :

Board members recommended a site wide wayfinding plan is explored.

Response:

The applicant is dedicated to improving wayfinding around the site as part of the ongoing TDM initiatives and at the request of the existing tenants and visitors alike; therefore, this issue is currently being addressed in collaboration with all the other users of Thompson's Point including but not limited to Children's Museum and Theatre of Maine, Brick North Tenants, and Portland Trails. The applicant proposes to have a campus wide way-finding plan available for staff review prior to the occupancy of the hotel.

Comment 6 :

A board member requested clarification to the amount of available parking on the panhandle.

Response:

The "Panhandle" is estimated to have the capacity for 325-400 vehicles depending on how much of the lot is actively managed. The applicant has given a notice of termination to Concord Coach Lines for the previously discussed parking lease. The termination of this lease will free all "Panhandle" parking spaces by 5/31/2019 and in advance of the hotel opening.

Comment 7 :

A board member requested the city review a coordinated construction sequencing plan between the CMTM and the Hotel.

Response:

The applicant has submitted a detailed preliminary construction management plan including an approximate schedule to complete based on a start date. In good faith the applicant is open to sharing a coordinated schedule to the extent practicable with the information available at the time of construction; however, the CMTM schedule is out of the hotel applicants control. The hotel and CMTM projects on Thompson's Point are located on a private road and outside of the public ROW; therefore, the project areas can be shut down to the public as the projects require. The applicant requests that this project is approved without condition because the construction management plan as submitted meets the ordinance.

Comment 8 :

A board member requested to see a plan or summary of the total number of bike racks current and anticipated on all of Thompson's Point.

Response:

Currently, the existing site substantially exceeds the minimum ordinance requirements for bike racks with a total of 52 spaces. As shown on page 19 of the updated TDM plan dated 03-30-2018 the site will have a minimum of 74 onsite bicycle spaces upon completion of the hotel and CMTM projects. It is noted that, this is a minimum number of spaces because tenants have elected to add additional racks for use by their employees which have not been accounted for in the statistics above.

Comment 9:

A board member requested further examination of the potential use of Sewall Street in the TDM plan.

Response:

Suggestions for formalizing and enhancing existing uses with-in the Sewall Street ROW included in the recently updated TDM document comes as a result of feedback to our management and planning team from the general public and independent transportation consultant. The applicant is receptive to this feedback but will defer to city staff on its viability and implementation.

End of Comments.

If you have any questions regarding these materials, please contact this office.

Sincerely,

PLACEMAKER PARTNERS, LLC

Bo Kennedy, P.E.
Project Manager/Engineer

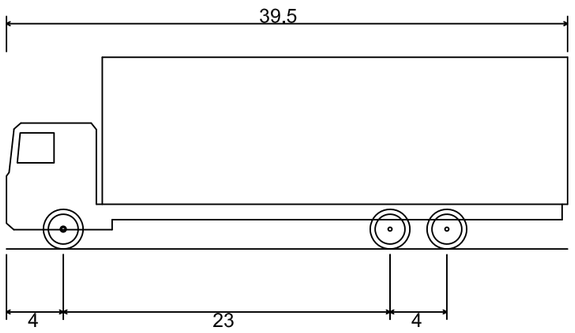
Attachments

c: Barbara Barhydt, City of Portland Planning
Chris Thompson, Forefront Partners I, LP
Jed Troubh, Forefront Partners, I, LP

ATTACHMENT A

AutoCAD Truck Simulation Figures

TURNING MOVEMENT SIMULATION FOR SINGLE UNIT (AASHTO 2011 SU-40) TRUCK



SU-40 - Single Unit Truck	
Overall Length	39.500ft
Overall Width	8.000ft
Overall Body Height	13.500ft
Min Body Ground Clearance	1.367ft
Track Width	8.000ft
Lock-to-lock time	5.00s
Max Steering Angle (Virtual)	31.80°

PLACEMAKER PARTNERS, LLC
501 DANFORTH STREET
PORTLAND, ME 04102
bo@placemakerpartners.com

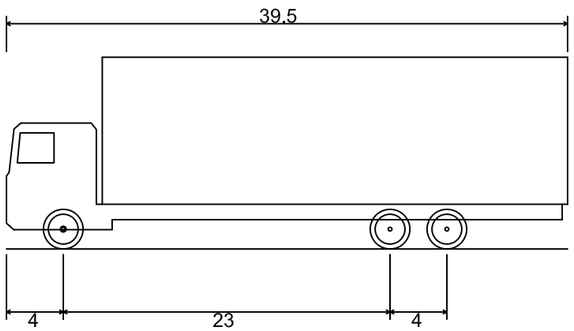
DRAWN:	BEK	DATE:	06.11.2018
DESIGNED:	N/A	SCALE:	1" = 20'
CHECKED:	BEK		

THE FOREFRONT AT THOMPSON'S POINT
HOTEL PORTLAND

TURNING MOVEMENT SIMULATION - DELIVERY TRUCK - AREA 1

FIGURE
1

TURNING MOVEMENT SIMULATION FOR SINGLE UNIT (AASHTO 2011 SU-40) TRUCK. TRASH PICK UP



SU-40 - Single Unit Truck

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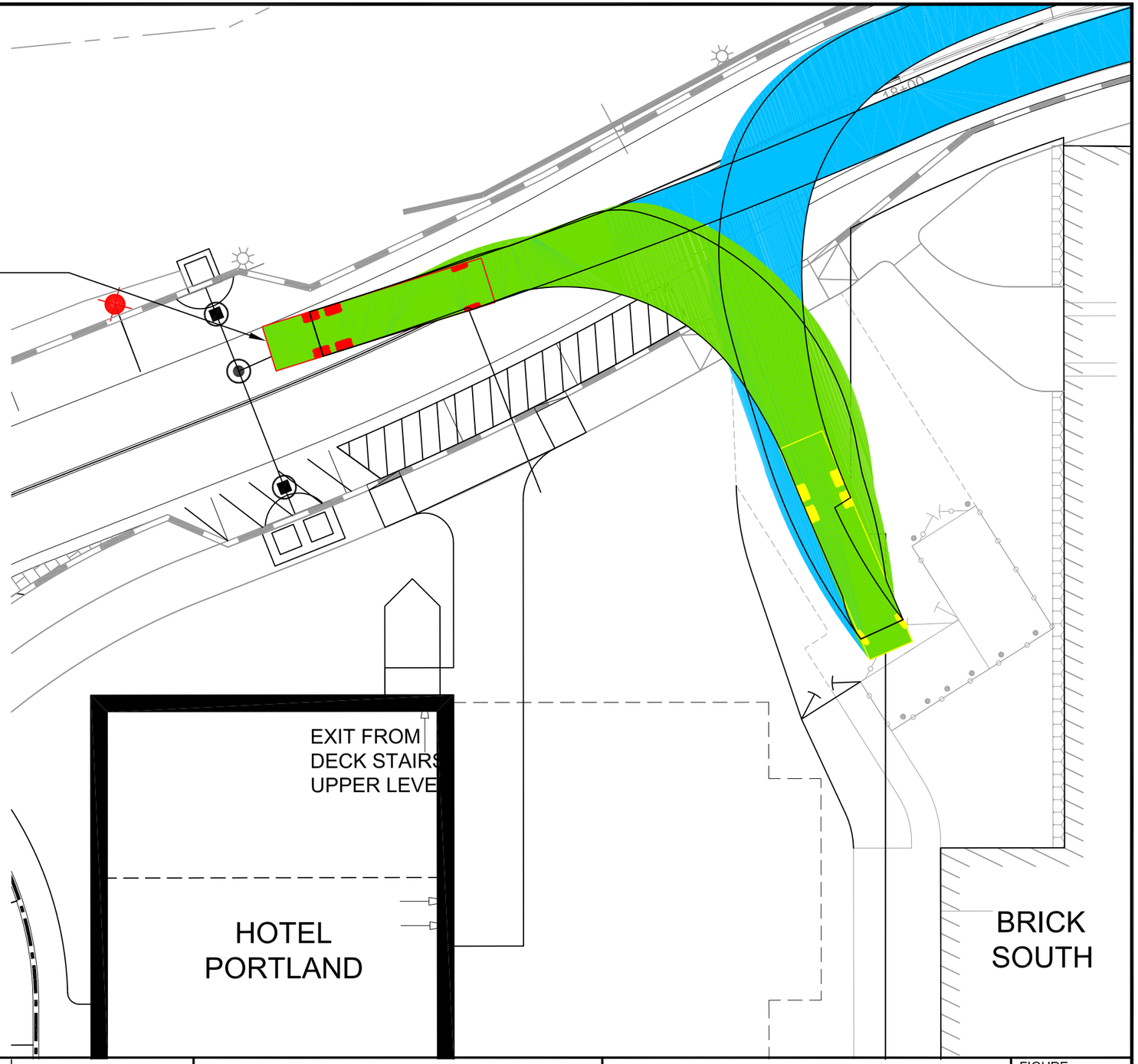

PLACEMAKER PARTNERS, LLC
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PORTLAND, ME 04102
bo@placemakerpartners.com

DRAWN:	BEK	DATE:	06.11.2018
DESIGNED:	N/A	SCALE:	1" = 20'
CHECKED:	BEK		

THE FOREFRONT AT THOMPSON'S POINT
HOTEL PORTLAND

TURNING MOVEMENT SIMULATION - DELIVERY TRUCK - AREA 2

FIGURE
2

3. CODE SUMMARY PER NFPA 1 AND FIRE DEPT. STANDARDS FOR PROPOSED HOTEL

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 (4) MUNICIPAL FIRE HYDRANTS LOCATED WITHIN 500 FEET RADIUS OF THE BUILDING. PLEASE SEE THE ATTACHED FIRE SAFETY COMPLIANCE PLAN C-9.0.

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 THOMPSON'S POINT ACCESS ROAD FOR 2 SIDES OF THE BUILDING.

-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:

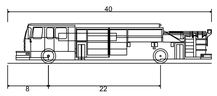
-NOT APPLICABLE

TECHNICAL STANDARD 3.6 - SUBDIVISION STANDARDS:

-NOT APPLICABLE

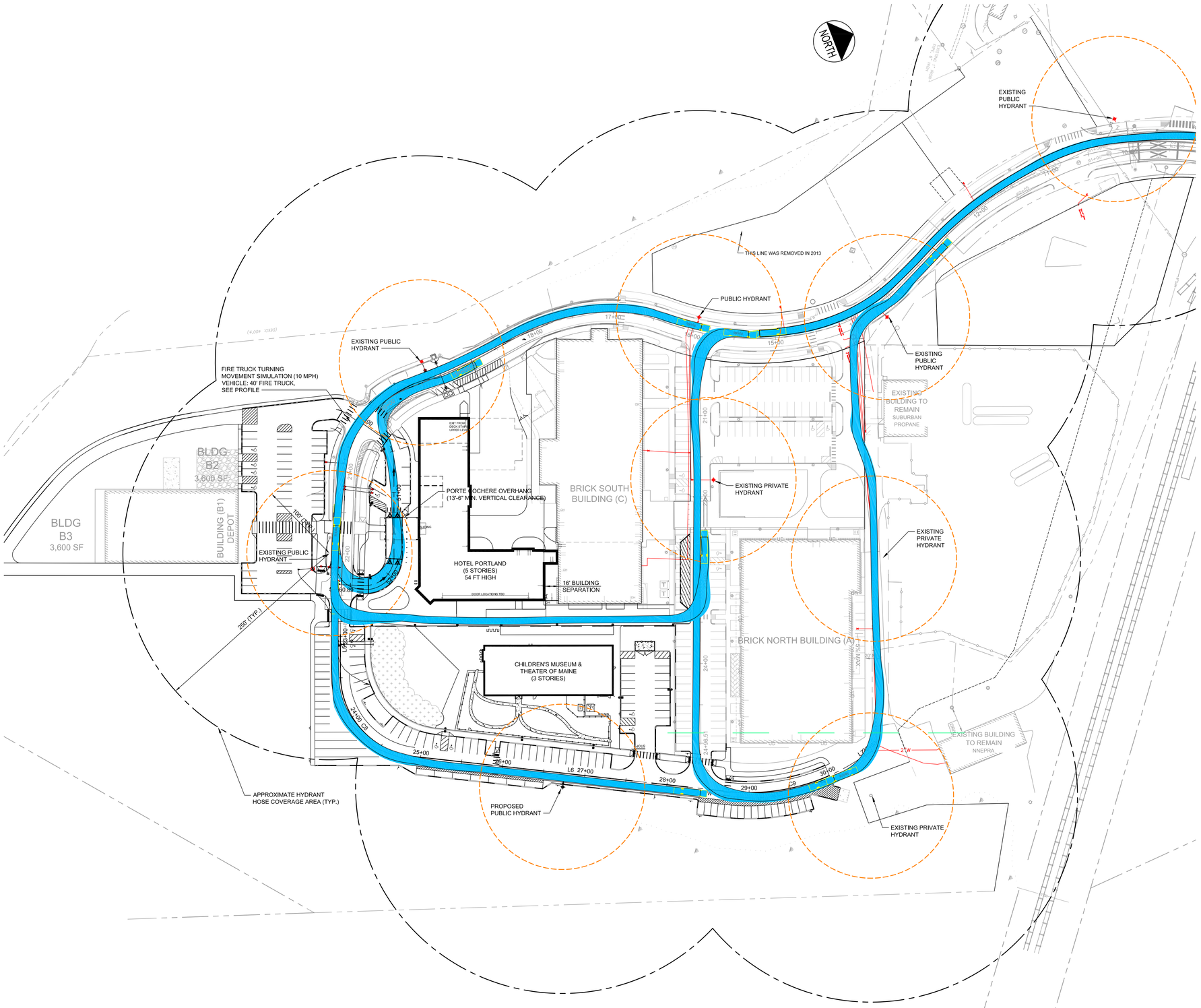
TECHNICAL STANDARDS 3.7 THROUGH 3.11 - STANDARDS FOR BLASTING AND REGULATION OF EXPLOSIVES:

-GEOTECHNICAL EXPLORATIONS WERE PERFORMED AND THE SUBSURFACE CONDITION DOES NOT CONTAIN BEDROCK. BASED ON THE FINDINGS, LARGE BLAST OPERATIONS ARE NOT ANTICIPATED.



Pumper Fire Truck	
Overall Length	40.000ft
Overall Width	8.167ft
Overall Body Height	7.745ft
Min Body Ground Clearance	0.656ft
Track Width	8.167ft
Lock-to-lock time	5.00s
Max Wheel Angle	45.00°

FIRE TRUCK VEHICLE PROFILE
N.T.S



PRELIMINARY – NOT FOR CONSTRUCTION

REV	DATE	DESCRIPTION
3	6/8/2018	REVISED SITE PLANS PER CITY COMMENTS
2	2/02/18	RE-SUBMISSION PER CITY STAFF COMMENTS
1	9/25/2017	FINAL SITE PLAN SUBMISSION

REVISIONS

STATE OF MAINE — BO KENNEDY No. 11994 — LICENSED PROFESSIONAL ENGINEER — 06-08-18

P.E. BO KENNEDY
LIC. #11994

PROJECT
THE FOREFRONT AT THOMPSON'S POINT
HOTEL PORTLAND

SHEET TITLE
FIRE SAFETY COMPLIANCE PLAN

CLIENT
FOREFRONT HOTELIERS, LLC

PLACEMAKER PARTNERS, LLC
501 DANFORTH STREET
PORTLAND, ME 04102
bo@placemakerpartners.com

DRAWN: DB	DATE: AUG. 2017
DESIGNED: BEK	SCALE: 1" = 50'
FILE NAME: HOTEL-FIRE SAFETY.dwg	
SHEET C-9.0	

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ATTACHMENT B

Utility Ability To Serve Letters

1. Wastewater Capacity Letter from City of Portland- Public Works
2. Unitil Ability to Serve Letter

Portland, Maine Yes. Life's good here.

Christopher C. Branch, P.E.
Director of Public Works

Date: April 12, 2018

Re: Wastewater Capacity Authorization

Address: Thompsons Point - Forefront Hotel
Applicant: Forefront Hoteliers, LLC

Planner: Shukria Wiar

Anticipated Wastewater Flow:

Estimate of Anticipated Design Flows				
Development	Unit Size	Number of Units	Gallons per Day per Unit	Total Gallons per Day
Proposed flow				
Hotels with Private Bath	# Bedrooms	148	100 GPD/Bedroom	14800
Hotels with Private Bath	# Employees	18	12 GPD/Employee	216
Eating Place – 3 meals/day	# Seats	174	30 GPD/Seat	5220
Eating Place – 3 meals/day	# Employees	15	12 GPD/Employee	180
			Net Change	**+20,416**
*Values based on STATE OF MAINE: SUBSURFACE WASTEWATER DISPOSAL RULES, most recent edition				

Comments:
The Department of Public Works, which includes the Water Resource Division, have reviewed and determined that the downstream sewers from the project address and the Portland Water District's Thompsons Point pump station have the capacity to convey the estimated dry weather wastewater flows which will be generated from this development.

If the City can be of further assistance, please contact me at all 874-8840 or brad@portlandmaine.gov
Sincerely,
CITY OF PORTLAND

Bradley A. Roland, P.E.
Senior Project Engineer

January 16, 2018

Bo Kennedy P.E
Placemaker Partners, LLC
501 Danforth Street
Portland, ME 04102

Re: 148 room full serve hotel Thompson's Point Rd., Portland, Maine

Dear Bo,

Thank you for your interest in using natural gas for the above referenced project.

Unitil has natural gas on Thompson's Point Rd and can serve the hotel's expected gas load based on similar size hotels. If the load is significantly different than other similar sized hotels, we reserve the right to change our response.

As the project progresses, please send me the breakdown of natural gas equipment so that the information can be added to our records. If you have any further questions or require additional information, please contact me directly at (207) 541-2543 or at carpenters@unitil.com.

Sincerely,

Scott Carpenter

Scott Carpenter
Senior Business Development Representative
Unitil Corporation
(o) 207-541-2543 (f) 207-541-2593

CC:
Jeffrey Levine, Director, Department of Planning and Urban Development, City of Portland
Stuart O'Brien, Planning Director, Department of Planning and Urban Development, City of Portland
Barbara Barhydt, Development Review Services Mgr., Dep't. of Planning and Urban Development, City of Portland

Keith Gray, City Engineer/Engineering Manager, Portland Department of Public Works

Nancy Gallinaro, Water Resources Manager, Portland Department of Public Works
Ben Pearson, Compliance Coordinator, Portland Department of Public Works
John Emerson, Wastewater Coordinator, Portland Department of Public Works

Lauren Swett, Woodard & Curran, DPW Development Review
Scott Firmin, Director of Wastewater, Portland Water District
Charlene Poulin, Wastewater Chief Operator – Systems

ATTACHMENT C

1. Updated Supplemental Stormwater Management Report

SUPPLEMENTAL STORMWATER MANAGEMENT REPORT FOR HOTEL (LOT 6) LEVEL III SITE PLAN APPLICATION (GENERAL AND BASIC STANDARDS)

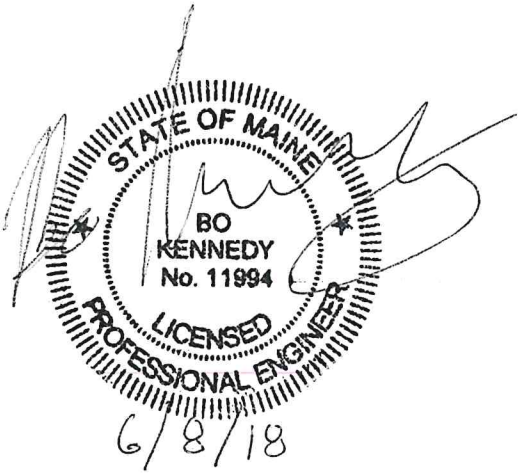
THE FOREFRONT AT THOMPSON'S POINT
FOREFRONT HOTEL
PORTLAND, ME

PREPARED FOR:

FOREFRONT HOTELIERS, LLC
501 DANFORTH STREET
PORTLAND, MAINE 04102
(207) 747-5288

PREPARED BY:

PLACEMAKER PARTNERS, LLC
501 DANFORTH STREET
PORTLAND, MAINE 04102
(207) 747-5288



SEPTEMBER 2017
UPDATED JUNE 2018

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3.2	Zone C (Hotel Roof, Driveway, and Pedestrian Hardscapes):	3
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5.0	Appendices	5

List of Appendices

Appendix A – FocalPoint Approval and Sizing letter from MeDEP
Appendix B – FocalPoint Design Checklist and HydroCAD Model Summary
Appendix C – JellyFish™ HydroCAD Model Summary
Appendix D – Summary of Water Quality Treatment Zones C & D(partial)
Appendix E – Stormwater Management Plan-1 C-5.1

SUPPLEMENTAL STORMWATER MANAGEMENT REPORT

1.0 Introduction

The proposed hotel is depicted on the Master Development Plan (approved Jan. 2015) and more specifically referenced on the Overall Subdivision Plan (approved January 12, 2016) in a linear configuration on development lots 4 & 5. The proposed hotel as presented here-in is configured in an L shape on development lot 6 in place of the previously contemplated educational building. The hotel plans contained in a standalone City of Portland Level III site plan application dated September 25, 2017 provides additional construction details and refines another area of the evolving Master Development Plan.

This supplemental report relies upon assumptions and design approaches previously discussed and approved as part of previous Stormwater Management Reports associated with The Forefont at Thompson's Point Master Development Plan Application, Subdivision Application, and Level II or III Site Plan applications. Some of these assumptions pertinent to this report include but are not limited the following list:

- A waiver from the Flooding Standards was previously approved;
- A waiver from Channel Protection requirements (such as isolator row requirements associated with Filterra Treebox filters or additional detention associated with FocalPoint systems) was previously approved; and
- Prorated treatment credits for treatment of stormwater runoff from on-site existing impervious surfaces (MeDEP Chapter 500 rules dated 2010) that have been retained (primarily consisting of renovated buildings) are applicable to the overall treatment percentage computation.

This supplemental report details the stormwater management systems proposed for the site plan improvements associated with the Forefront Hotel at Thompson's Point as well as demonstrates the integration of stormwater treatment and conveyance infrastructure approved under the Master Development and Subdivision Plans Stormwater Management Strategy. The enclosed computations show that this phase of the project has been designed to meet the Portland Stormwater Management Standards adopted 7/19/10, General Stormwater Standards of MeDEP (revised 2015), and Maine Stormwater Management Design Manual Technical Design Manual (Dated May 2016) and are consistent with the overall goals presented in previous Stormwater Reports. The intent and principals of the stormwater management design, erosion and sediment control, and Inspection and Maintenance Manual have remained the same as approved in June 5, 2012 and include full compliance with Chapter 32 of the City's Technical Manual Stormwater rules and Chapter 500 of the MeDEP Stormwater law.

This phase of the project will have a cumulative redeveloped area of 1.46 acres of which 1.14 acres are newly constructed impervious surfaces.

2.0 Stormwater Management Zone Revisions

This supplemental report summarizes the changes to the water quality treatment zones and provides detailed land cover computations of development tributary to the respective stormwater management systems sized to convey and treat stormwater runoff from the proposed re-development.

The proposed hotel site plan is divided into two major drainage discharge zones identified as Zone D and Zone C on the Overall Stormwater Management Plan C-4.1 dated 09.16.16 and

approved under the Subdivision application. The Stormwater Management Zones are organized and labeled based on tributary treatment area and discharge location.

A portion of the property between the new hotel building and the existing Brick South building will be an improved event lawn area with patio and walkways as well as and a portion of the existing Brick South Roof drains to the Zone D discharge. The drainage infrastructure from this subcatchment (D27) will be connected to an existing 12" storm drain stub installed as part of the roadway constructed during the summer of 2017 and discharge to the Fore River through an existing 36" SD pipe labeled as D0.

The new hotel roof (including a potential future expansion area), driveway loop, and adjacent pedestrian alley will be collected in a closed storm drainage system and discharge to a new storm drainage trunk line identified as Zone C on the Overall Stormwater Management Plan C-4.1 dated 09.16.16 and approved under the Subdivision application. The Zone C discharge will be a newly constructed piece of infrastructure discharging to the Fore River on the easterly side of the Thompson's Point peninsula. The trunk line is sized to accommodate stormwater runoff from stormwater management zones C and B.

The area of proposed development included with this application affects the zones and subzones identified on the Overall Stormwater Management Plan as Zone D and C and summarized in Table 1 below:

TABLE 1 – Summary of Changes to Stormwater Management Zones

Subdivision Plan Discharge Zone ID	CB Inlet ID	Description of Change
C – 501	C15A (roof)	The proposed roof area has been adjusted to reflect the currently proposed building size. The roof area has been broken into two drainage areas shown to minimize length of internal roof drainage piping. A portion of this area previously shown as roof will be developed as driveway and drain to Catch basin C7.
C – 502	D27	The developed area between the two buildings has been redirected to drainage to Zone D so it does not need to pass under the building.
C – 503	C-15B	This is the easterly portion of the proposed roof.
C - 703	C9 thru C13	The pedestrian alley drainage area discharging to Zone C has grown in size and will enter through a series of inlets with-in the hardscape. The larger Zone C area will reduce the overall size shown to be part of Zone B area 403.
B – 403	C ***8***	A portion of the Zone B area 403 that has been regraded to drain to Zone C.
C – 1	D27 and C13	A portion of the Brick South Building area previously included entirely in Zone C is now included in both Zone D and C treatment areas.

The C-5.1 Stormwater Management Plan – 1 shows the updated stormwater management zones and proposed stormwater infrastructure and is attached in Appendix E. An updated Water Quality Treatment table is shown on plan Sheet C-5.2 Stormwater Management Plan-2 and enclosed in Appendix D.

3.0 Stormwater Quality Treatment (General Standards)

3.1 Zone D (Event Lawn and Brick South Roof):

Zone D – Area D27

The stormwater treatment approach to this subcatchment utilizes a proprietary high-performance bio-filtration system known as FocalPoint manufactured and distributed by ACF Environmental. ***The owner reserves the right to use an or equal system by another manufacture provided it holds the same MeDEP proprietary preapproval and is sized per the approved criteria.*** The proposed FocalPoint system has been sized and configured in accordance with the preapproval letter from Maine DEP to ACF Environmental dated February 2, 2017 and enclosed for reference in Appendix A. A FocalPoint system is required to be sized based on three main criteria:

- 174 SF of filter area per prorated acre based on MeDEP Chapter 500 prescribed water quality of volume of 1" from all impervious surfaces and 0.4" from all pervious surfaces;
- Storage volume provided for a 0.95-inch Type III 24-hr rainfall event; and
- Flow rate (CFS) from 1 yr-24 hr storm

The resultant sizing computations are detailed in Appendix D and conclude a minimum filter surface of 86 Sq. Ft. and 7 Cultec 150XLHD (or approved equal) separator chambers are required. The design layout specifies a 96 Sq. Ft filter and 7 Cultec 150XLHD (or approved equal) are used. The additional 10 Sq. Ft. of filter area will provide two functions:

- City of Porltand Stormwater Fee Credits - Immediately, the system is oversized such that additional City of Porltand Stormwater Fee Credits can be applied to the owner's monthly bill.
- Future Design Changes - Secondly, should the event lawn area design change to include a higher percentage of impervious area. The oversized filter area equates to the conversion of approximately 2,175 Sq. Ft. of pervious surface to impervious surface and still meet all the design standards.

The proposed FocalPoint design considers ground water protection measures in the construction details as shown on the plan sheets Stormwater Details FocalPoint Separator Row C-7.3 & Stormwater Details FocalPoint System Details C-7.4 of the Level III Site Plan set. Separation of stormwater runoff from groundwater is a requirement of the MeDEP VRAP Groundwater Management Work Plan prepared by Credere Associates. The construction details provide for a separation between ground water and stormwater runoff passing through the FocalPoint system by wrapping the filter and adjacent separator row chambers with a heavy duty 30 mil PVC impervious liner.

The FocalPoint ***(or equal)*** filter is considered adequate to meet and exceed the Chapter 500 General Standards for water quality treatment.

3.2 Zone C (Hotel Roof, Driveway, Landscaping, and Pedestrian Hardscapes):

Zone C - Areas C7 thru C15

The Zone C subcatchment areas numbered C7 through C15 associated with the Hotel Site Plan are tributary to a Contech Jellyfish™ Treatment Unit.

Jellyfish™ units are precast concrete manholes that utilize membrane filtration treatment cartridges. Flow enters the Jellyfish™ from an upstream storage chamber system and flows into a settling tank portion of the unit. Once the settling tank is filled, flow from the bottom of the tank is forced up through hi-flow cartridges and continues to the outlet on the by-pass conveyance trunk line. A baffle wall is located between the inlet and outlet compartments to ensure that un-treated flow from small storm events is not mixed with treated flow. When the hi-flow treatment cartridge has filled, a drain down cartridge(s) is activated treating the remaining water quality volume. Horizontal orifices are located on top of the cartridges to control the outflow of the system. Each Jellyfish™ cartridge unit is designed to discharge the water quality volume at a rate not to exceed 80 GPM/cartridge.

To meet Chapter 500, the Water Quality Volume provided with-in a Jellyfish™ System must be equal to or greater than the following:

1"/12 x impervious area plus 0.4"/12 x landscaped area = Water Quality Volume (cubic feet)

Computations of Water Quality Volume for Zone C can be found in Appendix D. It is noted that the Zone C Jellyfish™ system is oversized to accommodate a potential future building expansion.

The water quality volume is provided in a subsurface arched chamber storage system. This portion of the design is identical to the system installed as part of the Brick North and Brick South development projects.

Jellyfish™ units are designed based on a mass sediment loading calculation. Each treatment hi-flow cartridge has a mass capacity of 125 1bs and each low-flow (draindown) cartridge has a capacity of 63 lbs. The mass loading for each zone was determined by Maine DEP sediment loading standards, assuming a 50% sediment removal from a designed pre-treatment StormTech® Isolator row.

Discharge from larger storm events are controlled over a broad crested weir housed in a precast concrete outlet control structure set above the water quality volume. The overflow piping network is sized to handle runoff from a 25-year storm event. A rain event exceeding the storm drainage network would likely flood the catch basin inlet, into the parking lot and over the curb line to the river.

Pretreatment for flow entering from all inlet pipes to the storage area will be provided via the installation of a StormTech® Isolator row(s).

Therefore, water quality goals for the Jellyfish™ Proprietary Systems meet the General Stormwater Standards of the November 2005 Chapter 500 Rules of MeDEP (rev. January 2015).

The Jellyfish™ treatment systems and Filterra® are considered adequate to meet the Chapter 500 General Standards.

4.0 Conclusion

The stormwater management strategy for this phase of the project presented herein are consistent with the Master Development Plan and Subdivision Plan Strategies. The overall Thompson's Point stormwater management strategy provides a blue print for treating a minimum of 95% of the net new redeveloped impervious area and 80% of the net new developed area. This phase of the amended site plan treats greater than 100% or 1.64 ac of the 1.46 ac. redeveloped area and greater than 100% or 1.33 ac. of the 1.14 ac. redeveloped impervious area. When a 60% credit is taken for the treatment of a portion of the existing Brick South Building the Hotel Phase of the

amended site plan treats 112.64% of the net developed area and 116.15% of the net developed impervious area. The individual systems have been adjusted to accommodate current detailed site plan revisions but ultimately the design strategies remain the same and meets or exceeds the City of Portland Stormwater Management Requirements.

5.0 Appendices

Appendix A – FocalPoint Approval and Sizing letter from MeDEP
Appendix B – FocalPoint Design Checklist and HydroCAD Model Summary
Appendix C – JellyFish™ HydroCAD Model Summary
Appendix D – Summary of Water Quality Treatment Zones C & D(partial)
Appendix E – Stormwater Management Plan-1 C-5.1

APPENDIX A

FocalPoint Approval and Sizing letter from MeDEP

STATE OF MAINE
DEPARTMENT OF ENVIRONMENTAL PROTECTION

PAUL R. LEPAGE
GOVERNOR

PAUL MERCER
COMMISSIONER

February 2, 2017

Stormwater Systems ACF-Convergent Water Technologies Alliance
23 Faith Drive
Gorham, ME 04038
ATTN: Robert Woodman and Scott Gorneau

Dear Mr. Woodman and Mr. Gorneau:

This letter replaces the May 16, 2016 approval from the Department of Environmental Protection (Department) that authorized the use of the FocalPoint system. The FocalPoint system (a high performance modular biofiltration system), when installed in series with a subsurface chamber-based treatment row, meets the requirements of the General Standards (Section 4.C.) of the Stormwater Management Rules (Chapter 500), provided that the system is filled with the FocalPoint engineered filter media; it is sized to meet the requirements of the General Standards (Section 4.B.); and it is installed, operated and maintained in accordance with the following provisions:

1. The FocalPoint system must be sized in accordance with the manufacturer's latest field test results with the goal of treating 90% of the annual runoff volume. To accomplish this, the system must be modelled in HydroCAD (or similar TR-55 modelling software) to demonstrate that the entire volume of a 0.95 inch Type III 24-hr storm is treated prior to activation of the bypass/overflow (typically set at 6" to 12" above the mulch surface). When sizing the FocalPoint system to meet Chapter 500, note that runoff from the entire contributing drainage area, including pervious areas, must be included in the modeled runoff values.

2. The surface area of the media within the FocalPoint must be a minimum of 174 square feet per 1 acre of impervious area treated (26 sq. ft. per 0.15 acres). The thickness of the media is to be no less than 1.5 ft. (18 inches) and the ratio of the surface area of the filter media bed in square feet to the ponding volume in cubic feet must be no less than 1 to 5.

3. The FocalPoint system consists of five components that include: 1) an open cell underdrain; 2) a wide aperture separation mesh wrap around the underdrain; 3) a layer of clean washed, 3/8" diameter bridging stone; 4) advanced high flow rate engineered media with an infiltration rate of 100 inches per hour; and 5) double shredded hardwood mulch. These components are built from the bottom up to create a mostly permeable profile that measures 3 feet from bottom of underdrain to top of mulch. The ponding

depth above the mulch surface is typically 6 to 12 inches and varies based on site conditions. An overflow outlet should be placed above the ponding depth.

4. The FocalPoint system requires the establishment of vegetation that is tolerant of wet and dry conditions. Plants that are not performing as desired should be replaced as needed. A list of appropriate plants for use in the FocalPoint system is provided at: http://www.acfenvironmental.com/products/stormwater-management/filtration/focal-point/.

5. The FocalPoint biofiltration system must be placed in-line with a subsurface chamber-based treatment row that is approved by the Department such that both the treated discharge and the bypass discharge from the FocalPoint system drain to the treatment row. The treatment row must be sized to treat the peak flow from a 1-year, 24-hour storm event. The treatment row structure must be continuous and without obstacle for cleaning, and must have access at both ends for the removal of accumulated sediment and debris. The treatment row must be underlain with a bottom surface consisting of 2 layers of woven geotextile (e.g., ACF S300) that extends 18 to 24 inches beyond all sides of the bottom of the structure.

6. Additional storage downstream of the FocalPoint and treatment row will be required to store at least the sum of 1.0 inch of runoff from the impervious areas and 0.4 inches of runoff from the lawn and landscaped areas that drain to the system unless attenuation of the channel protection volume is not required (i.e. direct discharge to a lake, tidal waters, or a major river). An external outlet control structure must control the flow out of a downstream storage system, sized for the entire channel protection volume, and drain in no less than 24 hours or more than 48 hours.

7. If required for flooding control, the storage system can be sized to provide for the storage and release of the peak flow with a regulated flow rate from 24-hour storms of the 2, 10, and 25-year frequencies such that the peak flows from the project site do not exceed the peak flow prior to undertaking the project.

8. The applicant must demonstrate that the design meets all the manufacturer's specifications and shall be reviewed by the manufacturer prior to submission to the Department for approval. Review and approval of the design by the manufacturer will be sufficient to demonstrate conformance with the manufacturer's specifications. The FocalPoint system must be installed by a manufacturer's certified installer or under the supervision of a manufacturer's representative.

9. Components of the system that are delivered in bulk (i.e., mulch, high flow media and clean washed bridging stone), should be contained in nylon super sacks to promote ease of storage and protection during on-site construction activities.

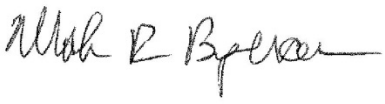
10. The FocalPoint and treatment row system should be inspected and maintained if necessary at least once every six months to maintain the established efficiency for pollutant removal. Prior to construction, a five-year binding inspection and maintenance contract must be provided prior to the Department for review and approval, and must be renewed before contract expiration. The contract will be with a professional with knowledge of erosion and stormwater control, including experience with the proposed system.

11. The overall stormwater management design must meet all Department criteria and sizing specifications and will be reviewed and approved by the Department prior to use.

12. This approval is conditional on full-scale, cold climate field testing results, performed in accordance with the Department's protocols, confirming that the pollutant removal efficiency and sizing of the FocalPoint system are appropriate. The "permit shield" provision (Section 14) of the Chapter 500 rules will apply, and the Department will not require the replacement of the system if, with proper maintenance, pollutant removals do not satisfy the General Standard Best Management Practices.

Questions concerning this decision should be directed to David Waddell at (207) 215-6932 or Jeff Dennis at (207) 215-6376.

Sincerely,



Mark Bergeron, P.E.
Director
Bureau of Land Resources

cc: Don Witherill, Maine DEP

FocalPoint

BIOFILTRATION SYSTEMS

HIGH PERFORMANCE MODULAR BIOFILTRATION SYSTEM (HPMBS)

Operations & Maintenance

ACF ENVIRONMENTAL

Customer Focused, Environmentally Committed

GENERAL DESCRIPTION

The following general specifications describe the general operations and maintenance requirements for the FocalPoint® High Performance Modular Biofiltration System (HPMBS). The system utilizes physical, chemical and biological mechanisms of a soil, plant and microbe complex to remove pollutants typically found in urban stormwater runoff. The treatment system is a fully equipped, modular, constructed in place system designed to treat contaminated runoff.

Stormwater enters the FocalPoint® HPMBS, is filtered by the High Flow Biofiltration Media and passes through to the underdrain/storage system where the treated water is detained, retained or infiltrated to sub-soils, prior to discharge to the storm sewer system of any remaining flow.

Higher flows bypass the FocalPoint® HPMBS via a downstream inlet or other overflow conveyance. Maintenance is a simple, inexpensive and safe operation that does not require confined space entry, pumping or vacuum equipment, or specialized tools. Properly trained landscape personnel can effectively maintain FocalPoint® HPMBS by following instructions in this manual.

BASIC OPERATIONS

FocalPoint® is a modular, high performance biofiltration system that often works in tandem with other integrated management practices (IMP). Contaminated stormwater runoff enters the biofiltration bed through a conveyance swale, planter box, or directly through a curb cut or false inlet. Energy is dissipated by a rock or vegetative dissipation device and is absorbed by a 3-inch layer of aged, double shredded hardwood mulch, with fines removed, (when specified) on the surface of the biofiltration media.

As the water passes through the mulch layer, most of the larger sediment particles and heavy metals are removed through sedimentation and chemical reactions with the organic material in the mulch. Water passes through the biofiltration media where the finer particles are removed and numerous chemical reactions take place to immobilize and capture pollutants in the soil media.

The cleansed water passes into the underdrain/storage system and remaining flows are directed to a storm sewer system or other appropriate discharge point. Once the pollutants are in the soil, bacteria begin to break down and metabolize the materials and the plants begin to uptake and metabolize the pollutants. Some pollutants such as heavy metals, which are chemically bound to organic particles in the mulch, are released over time as the organic matter decomposes to release the metals to the feeder roots of the plants and the cells of the bacteria in the soil where they remain and are recycled. Other pollutants such as phosphorus are chemically bound to the soil particles and released slowly back to the plants and bacteria and used in their metabolic processes. Nitrogen goes through a variety of very complex biochemical processes where it can ultimately end up in the plant/bacteria biomass, turned to nitrogen gas or dissolves back into the water column as nitrates depending on soil temperature, pH and the availability of oxygen. The pollutants ultimately are retained in the mulch, soil and biomass with some passing out of the system into the air or back into the water.

DESIGN AND INSTALLATION

Each project presents different scopes for the use of FocalPoint® HPMBS. To ensure the safe and specified function of this stormwater BMP, Convergent Water Technologies and/or its Value Added Resellers (VAR) review each application before supply. Information and design assistance is available to the design engineer during the planning process. Correct FocalPoint® sizing is essential to optimum performance. The engineer shall submit calculations for approval by the local jurisdiction when required. The contractor and/or VAR is responsible for the correct installation of FocalPoint® HPMBS units as described in approved plans. A comprehensive installation manual is available at www.convergentwater.com.

FocalPoint
BIOFILTRATION SYSTEMS

MAINTENANCE

Why Maintain?

All stormwater treatment systems require maintenance for effective operation. This necessity is often incorporated in your property's permitting process as a legally binding BMP maintenance agreement. Other reasons for maintenance include:

- Avoid legal challenges from your jurisdiction's maintenance enforcement program.
- Prolong the lifespan of your FocalPoint® HPMBS.
- Avoid costly repairs.
- Help reduce pollutant loads leaving your property.

Simple maintenance of the FocalPoint® HPMBS is required to continue effective pollutant removal from stormwater runoff before any discharge into downstream waters. This procedure will also extend the longevity of the living biofiltration system. The unit will recycle and accumulate pollutants within the biomass, but may also subjected to other materials entering the surface of the system. This may include trash, silt and leaves etc. which will be contained above the mulch and/or biofiltration media layer. Too much silt may inhibit the FocalPoint's® HPMBS flow rate, which is a primary reason for system maintenance. Removal of accumulated silt/sediment and/or replacement of the mulch layer (when specified), is an important activity that prevents over accumulation of such silt/sediment.

When to Maintain?

Convergent Water Technologies and/or its VAR includes a 1-year maintenance plan with each system purchased. Annual included maintenance consists of two (2) scheduled maintenance visits. Additional maintenance may be necessary depending on sediment and trash loading (by Owner or at additional cost). The start of the maintenance plan begins when the system is activated for full operation. Full operation is defined as when the site is appropriately stabilized, the unit is installed and activated (by VAR), i.e., when mulch (if specified) and plantings are added.

Activation should be avoided until the site is fully stabilized (full landscaping, grass cover, final paving and street sweeping completed). Maintenance visits are scheduled seasonally; the spring visit aims to clean up after winter loads including salts and sands. The fall visit helps the system by removing excessive leaf litter.

A first inspection to determine if maintenance is necessary should be performed at least twice annually after storm events of greater than (1) one inch total depth (subject to regional climate). Please refer to the maintenance checklist for specific conditions that indicate if maintenance is necessary.

It has been found that in regions which receive between 30-50 inches of annual rainfall, (2) two visits are generally required. Regions with less rainfall often only require (1) one visit per annum. Varying land uses can affect maintenance frequency.

Some sites may be subjected to extreme sediment or trash loads, requiring more frequent maintenance visits. This is the reason for detailed notes of maintenance actions per unit, helping the VAR/Maintenance contractor and Owner predict future maintenance frequencies, reflecting individual site conditions.

Owners must promptly notify the VAR/Maintenance contractor of any damage to the plant(s), which constitute(s) an integral part of the biofiltration technology. Owners should also advise other landscape or maintenance contractors to leave all maintenance of the FocalPoint® HPMBS to the VAR/Maintenance contractor (i.e. no pruning or fertilizing).

EXCLUSION OF SERVICES

It is the responsibility of the owner to provide adequate irrigation when necessary to the plant(s) in the FocalPoint® HPMBS.

Clean up due to major contamination such as oils, chemicals, toxic spills, etc. will result in additional costs and are not covered under the VAR/Maintenance contractor maintenance contract. Should a major contamination event occur, the Owner must block off the outlet pipe of the FocalPoint® (where the cleaned runoff drains to, such as drop-inlet) and block off the point where water enters of the FocalPoint® HPMBS. The VAR/Maintenance contractor should be informed immediately.

MAINTENANCE VISIT SUMMARY

Each maintenance visit consists of the following simple tasks (detailed instructions below).

1. Inspection of FocalPoint® HPMBS and surrounding area
2. Removal of debris, trash and mulch
3. Mulch replacement
4. Plant health evaluation (including measurements) and pruning or replacement as necessary
5. Clean area around FocalPoint® HPMBS
6. Complete paperwork, including date stamped photos of the tasks listed above.

MAINTENANCE TOOLS, SAFETY EQUIPMENT AND SUPPLIES

Ideal tools include: camera, bucket, shovel, broom, pruners, hoe/rake, and tape measure. Appropriate Personal Protective Equipment (PPE) should be used in accordance with local or company procedures. This may include impervious gloves where the type of trash is unknown, high visibility clothing and barricades when working in close proximity to traffic and also safety hats and shoes.

MAINTENANCE VISIT PROCEDURE

Inspection of FocalPoint® HPMBS and surrounding area

Record individual unit before maintenance with photograph (numbered). Record on Maintenance Report (see example in this document) the following:

- Standing Water yes | no
- Is Bypass Inlet Clear? yes | no
- Damage to HPMBS System yes | no
- to Overflow conveyance yes | no

Removal of Silt / Sediment / Clay

Dig out silt (if any) and mulch and remove trash & foreign items.

- Silt / Clay Found? yes | no
- Cups / Bags Found? yes | no
- Leaves? yes | no
- Volume of material removed _____ (volume or weight)

Removal of debris, trash and mulch

After removal of mulch and debris, measure distance from the top of the FocalPoint® HPMBS engineered media soil to the flow line elevation of the adjacent overflow conveyance. If this distance is greater than that specified on the plans (typ. 6" - 12"), add media (not top soil or other) to recharge to the distance specified.

- Distance to media surface to flow line of overflow conveyance (inches) _____
- # of Buckets of Media Added _____

Mulch Replacement

Most maintenance visits require only replacement mulch (if utilized) which must be, aged, double shredded hardwood mulch with fines removed. For smaller projects, one cubic foot of mulch will cover four square feet of biofiltration bed, and for larger projects, one cubic yard of mulch will cover 108 square feet of biofiltration bed. Some visits may require additional FocalPoint® HPMBS engineered soil media available from the VAR/Contractor.

- Add double shredded, aged hardwood mulch which has been screened to remove fines, evenly across the entire biofiltration media bed to a depth of 3".
- Clean accumulated sediment from energy dissipation system at the inlet to the FocalPoint® HPMBS to allow for entry of trash during a storm event.

Plant health evaluation and pruning or replacement as necessary

Examine the plant's health and replace if dead or dying.
Prune as necessary to encourage growth in the correct directions

- Height above Grate (feet) _____
- Width at Widest point (feet) _____
- Health alive | dead
- Damage to Plant yes | no

Clean area around FocalPoint® HPMBS

- Clean area around unit and remove all refuse to be disposed of appropriately.

Complete paperwork

- Deliver Maintenance Report and photographs as appropriate.
- Some jurisdictions may require submission of maintenance reports in accordance with approvals.
- It is the responsibility of the Owner to comply with local regulations.

FocalPoint Warranty

Seller warrants goods sold hereunder against defects in materials and workmanship only, for a period of (1) year from date the Seller activates the system into service. Seller makes no other warranties, express or implied.

Seller's liability hereunder shall be conditioned upon the Buyer's installation, maintenance, and service of the goods in strict compliance with the written instructions and specifications provided by the Seller. Any deviation from Seller's instructions and specifications or any abuse or neglect shall void warranties.

In the event of any claim upon Seller's warranty, the burden shall be upon the Buyer to prove strict compliance with all instructions and specifications provided by the Seller.

Seller's liability hereunder shall be limited only to the cost or replacement of the goods. Buyer agrees that Seller shall not be liable for any consequential losses arising from the purchase, installation, and/or use of the goods.

Maintenance Checklist

Element	Problem	What To Check	Should Exist	Action
Inlet	Excessive sediment or trash accumulation	Accumulation of sediment or trash impair free flow of water into FocalPoint	Inlet free of obstructions allowing free flow into FocalPoint System	Sediments or trash should be removed
Mulch Cover	Trash and floatable debris accumulation	Excessive trash or debris accumulation.	Minimal trash or other debris on mulch cover	Trash and debris should be removed and mulch cover raked level. Ensure that bark nugget
Mulch Cover	Ponding of water on mulch cover	Ponding in unit could be indicative of clogging due to excessive fine sediment accumulation or spill of petroleum oils	Stormwater should drain freely and evenly over mulch cover.	Contact VAR for advice.
Plants	Plants not growing, or in poor condition	Soil/mulch too wet, evidence of spill. Pest infestation. Vandalism to plants.	Plants should be healthy and pest free.	Contact VAR for advice.
Plants	Plant growth excessive	Plants should be appropriate to the species and location of FocalPoint		Trim/prune plants in accordance with typical landscaping and

APPENDIX B

FocalPoint Design Checklist and
HydroCAD Model Summary

ACF Environmental
2831 Cardwell Rd
Richmond, VA 23234

Bo Kennedy, PE
Placemaker Partners, LLC
501 Danforth Street
Portland, ME 04102

September 29, 2017,

SUBJECT: The Forefront at Thompson's Point – Forefront Hotel – Portland, Maine
Plan Review and Construction Oversight Commitment

Dear Bo,

Thank you for forwarding the permit plans for the proposed The Forefront at Thompson's Point – Forefront Hotel – Portland, Maine project to ACF environmental for review of the proposed FocalPoint biofiltration system.

Our team has reviewed the plans (with latest revision date of 9/25/2017) and made the following observations:

- There is one 96 sf FocalPoint system shown on the plans.
- The system has the approved FocalPoint section (3" mulch, 18" media, 6" bridging stone and 9" modular underdrain.
- The system has a peak elevation of less than 6 inches of temporary ponding volume for the 0.95" storm – which is within the recommended temporary ponding range for the system.
- The volume associated with the 0.95" 24hr storm is treated prior to activation of the overflow device (WQ goal met). (per review of HydroCAD output). A pair of 12" dia PVC domed risers with a filter insert is proposed for bypass.
- A 7 chamber Cultec 150XLHD separator row is proposed as required by the MeDEP FocalPoint design guidance.
- It is our understanding that Channel Protection and Flood Control is not needed for this project.

Overall, ACF takes no exceptions to the location and application of the FocalPoint system for this project.

It appears that the system has been designed in accordance with the design criteria set forth by Maine DEP in the FocalPoint system approval letter and meet the system specifications etc.

With regard to the installation, ACF Environmental will host a preconstruction meeting with the site contractor and will be on-site during the entire installation to ensure that the installation is being conducted in accordance with our standard installation procedures.

ACF Environmental will also provide the first year's maintenance on the FocalPoint bed area.

Please review and contact me with any questions from your office.

We look forward to working with you on this project.

Sincerely,

Robert J Woodman,
Senior Stormwater Engineer
ACF Environmental

Cc: Lee Jones, ACF Environmental

FOCALPOINT

HIGH PERFORMANCE MODULAR BIOFILTRATION SYSTEM

MAINE – CHAPTER 500 DESIGN WORKSHEET/CHECKLIST

1. FocalPoint Bed Area (min 174 square feet per acre of impervious area (e.g. 0.2 acres = 35 sf))

- Tributary Impervious area = 0.38 ac. (A)
- Tributary Pervious area = 0.34 ac. (B)
- Min FocalPoint bed area req'd = (((A) x 1.0) + ((B) x 0.4)) * 174 = 89.8 sf.
- FocalPoint Bed Area provided * = 96 sf.
- Dimensions of Proposed FocalPoint = 8 ft x 12 ft

* see criteria 2. to determine if minimum size is appropriate.

2. A 0.95 inch Type III 24hr rainfall event shall be modelled to demonstrate the entire storm volume is treated prior to activation of the overflow (typically set at 6-12" above the mulch)

- Temporary storage depth provided = 3"_____ inches (typ 6" to 12")
- Temporary storage volume provided at above depth = 129_____ cubic feet.
- Peak ponding depth from 0.95" 24hr storm event = __N/A_____ inches

3. Ratio of the surface area of the filter media (sf) to the temporary ponding volume (cf) shall be no less that 1:5

- Ratio of FocalPoint Bed Area : Temporary Storage Vol = 1:1.34

4. Subsurface Chamber Treatment Row must be sized to treat the peak flow from a 1 yr-24hr storm event.

- 1yr 24hr Peak Flowrate = 1.19_____ cfs
- Chamber model selected
  - Cultec 330 XLHD (1 chamber per 0.227 cfs) ☐
  - Cultec 150XLHD (1 chamber per 0.185 cfs) ☒

- Number of Chambers required = 1.19 / 0.185 = 6.43 ch
- Number of Chambers Provided = 7 EA Cultec 150XLHD

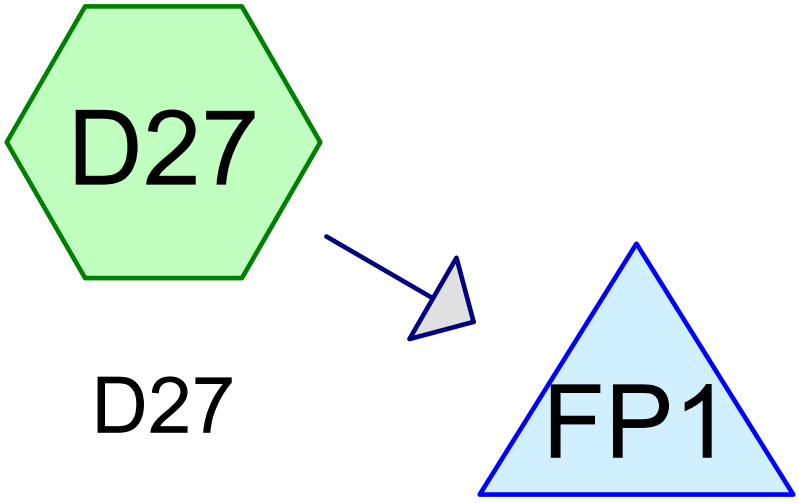
5. Controlled release of the Channel Protection over 24-48 hrs ---*N/A*

- Controlled release of the channel protection volume is being achieved by: ***N/A***
  - Expanded subsurface storage basin with OCS ☐***N/A***
  - Surface detention basin with OCS ☐***N/A***

6. The Design shall be reviewed by the manufacturer's representative prior to submission and installation will be overseen by the manufacturer's representative.

- The Design has been reviewed by ACF Environmental ☒
- Engineer will coordinate installation inspection with ACF ☒

Contact ACF Environmental at 1800 448 3636 with any questions
or contact Rob Woodman – Senior Stormwater Engineer at rwoodman@acfenv.com



FocalPoint 96sf

Subcat Reach Pond Link

Routing Diagram for 2017.09.01 Hotel Focal Point - Zone D
Prepared by Hewlett-Packard Company, Printed 9/28/2017
HydroCAD® 10.00-19 s/n 09708 © 2016 HydroCAD Software Solutions LLC

Area Listing (all nodes)

Area (sq-ft)	CN	Description (subcatchment-numbers)
14,750	74	>75% Grass cover, Good, HSG C (D27)
16,530	98	Unconnected pavement, HSG C (D27)
31,280	**87**	**TOTAL AREA**

Ground Covers (all nodes)

HSG-A (sq-ft)	HSG-B (sq-ft)	HSG-C (sq-ft)	HSG-D (sq-ft)	Other (sq-ft)	Total (sq-ft)	Ground Cover	Sub Num
0	0	14,750	0	0	14,750	>75% Grass cover, Good	
0	0	16,530	0	0	16,530	Unconnected pavement	
0	**0**	**31,280**	**0**	**0**	**31,280**	**TOTAL AREA**	

Time span=0.00-48.00 hrs, dt=0.01 hrs, 4801 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Dyn-Stor-Ind method - Pond routing by Dyn-Stor-Ind method

Subcatchment D27: D27 Runoff Area=31,280 sf 52.85% Impervious Runoff Depth=0.20"
Tc=6.0 min CN=87 Runoff=0.14 cfs 515 cf

Pond FP1: FocalPoint 96sf Peak Elev=11.78' Storage=1 cf Inflow=0.14 cfs 515 cf
Primary=0.14 cfs 515 cf Secondary=0.00 cfs 0 cf Outflow=0.14 cfs 515 cf

Total Runoff Area = 31,280 sf Runoff Volume = 515 cf Average Runoff Depth = 0.20"
47.15% Pervious = 14,750 sf 52.85% Impervious = 16,530 sf

Summary for Subcatchment D27: D27

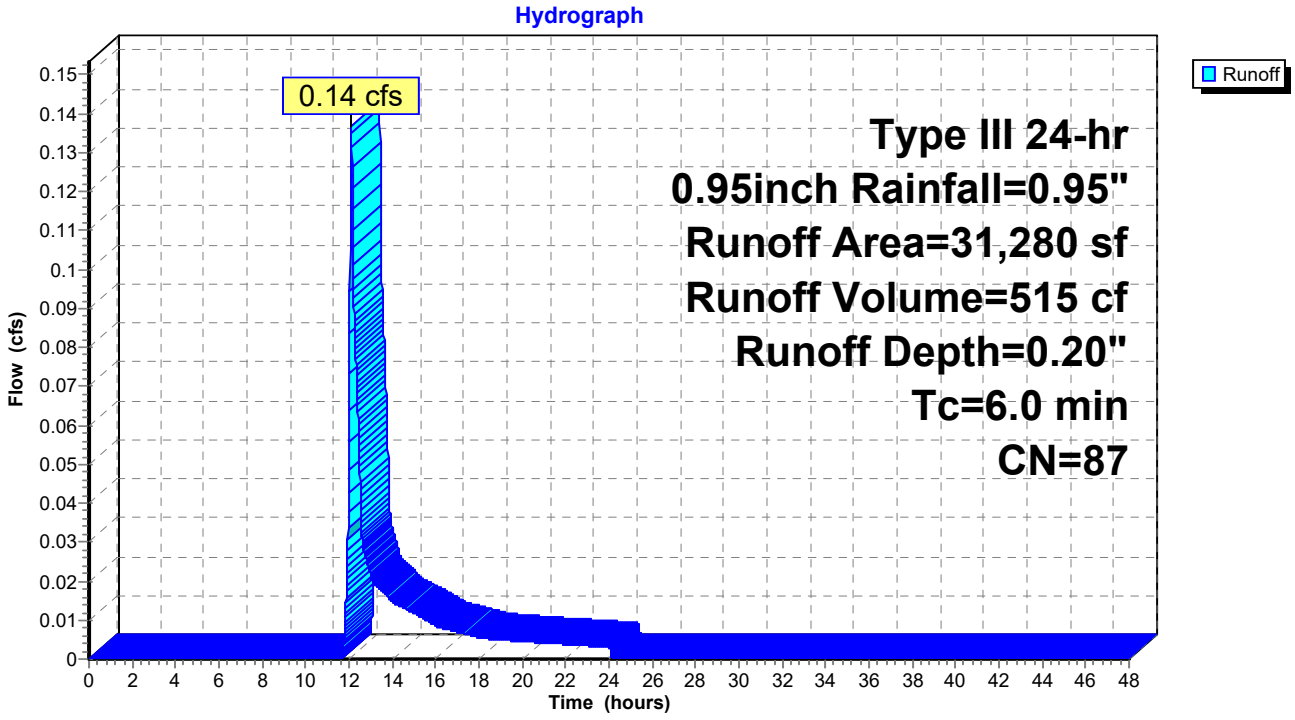
Runoff = 0.14 cfs @ 12.11 hrs, Volume= 515 cf, Depth= 0.20"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Type III 24-hr 0.95inch Rainfall=0.95"

Area (sf)	CN	Description
16,530	98	Unconnected pavement, HSG C
14,750	74	>75% Grass cover, Good, HSG C
31,280	87	Weighted Average
14,750		47.15% Pervious Area
16,530		52.85% Impervious Area
16,530		100.00% Unconnected

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					**Direct Entry,**

Subcatchment D27: D27



Summary for Pond FP1: FocalPoint 96sf

Inflow Area = 31,280 sf, 52.85% Impervious, Inflow Depth = 0.20" for 0.95inch event
Inflow = 0.14 cfs @ 12.11 hrs, Volume= 515 cf
Outflow = 0.14 cfs @ 12.11 hrs, Volume= 515 cf, Atten= 0%, Lag= 0.2 min
Primary = 0.14 cfs @ 12.11 hrs, Volume= 515 cf
Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0 cf

Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Peak Elev= 11.78' @ 12.11 hrs Surf.Area= 216 sf Storage= 1 cf

Plug-Flow detention time= 0.1 min calculated for 515 cf (100% of inflow)
Center-of-Mass det. time= 0.1 min (889.1 - 889.0)

Volume	Invert	Avail.Storage	Storage Description
#1	11.75'	97 cf	**18.00'W x 12.00'L x 2.25'H FocalPoint** 486 cf Overall x 20.0% Voids
#2	14.00'	267 cf	**Custom Stage Data (Irregular)**Listed below (Recalc) -Impervious
		365 cf	Total Available Storage

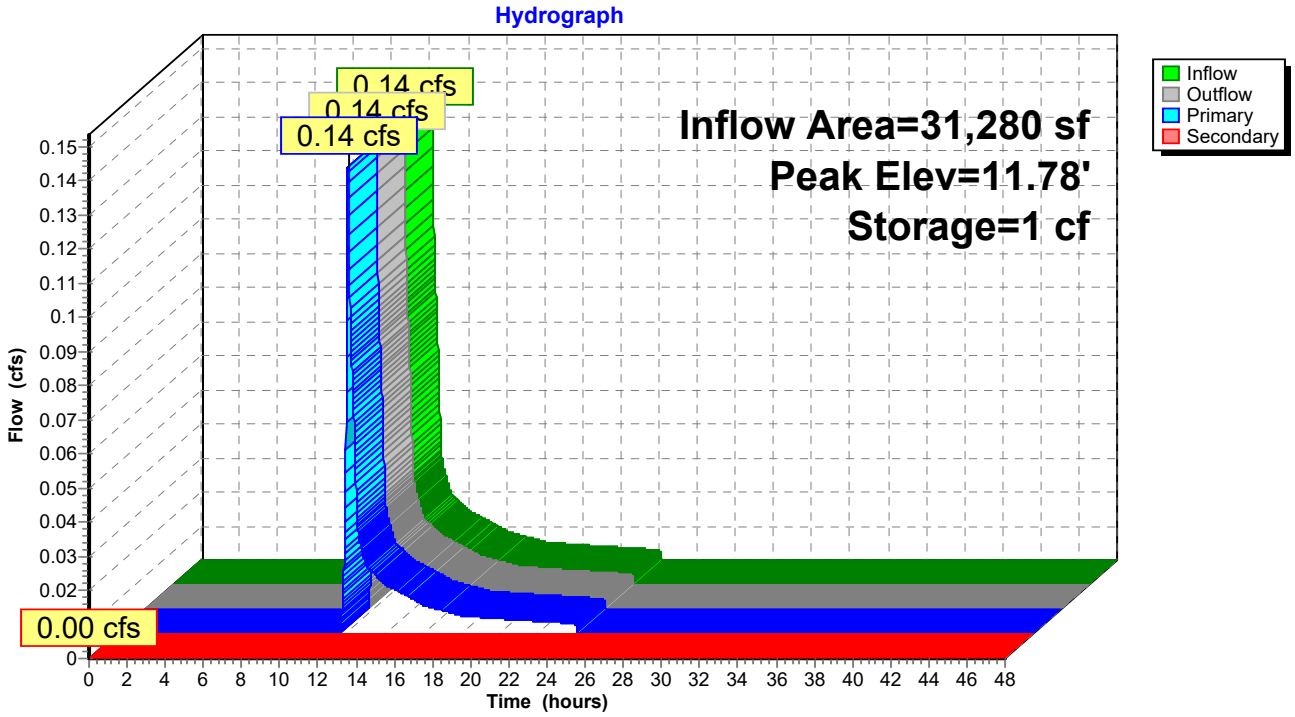
Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
14.00	96	40.0	0	0	96
14.50	250	65.0	83	83	307
15.00	500	96.0	184	267	706

Device	Routing	Invert	Outlet Devices
#1	Primary	11.75'	**100.000 in/hr Exfiltration over Surface area** Phase-In= 0.10'
#2	Secondary	14.25'	**12.0" Horiz. Orifice/Grate X 2.00** C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=0.14 cfs @ 12.11 hrs HW=11.78' (Free Discharge)
↑—**1=Exfiltration** (Exfiltration Controls 0.14 cfs)

Secondary OutFlow Max=0.00 cfs @ 0.00 hrs HW=11.75' (Free Discharge)
↑—**2=Orifice/Grate** (Controls 0.00 cfs)

Pond FP1: FocalPoint 96sf



Time span=0.00-48.00 hrs, dt=0.01 hrs, 4801 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Dyn-Stor-Ind method - Pond routing by Dyn-Stor-Ind method

Subcatchment D27: D27 Runoff Area=31,280 sf 52.85% Impervious Runoff Depth=1.41"
Tc=6.0 min CN=87 Runoff=1.19 cfs 3,681 cf

Pond FP1: FocalPoint 96sf Peak Elev=14.35' Storage=148 cf Inflow=1.19 cfs 3,681 cf
Primary=0.50 cfs 3,413 cf Secondary=0.68 cfs 267 cf Outflow=1.18 cfs 3,681 cf

Total Runoff Area = 31,280 sf Runoff Volume = 3,681 cf Average Runoff Depth = 1.41"
47.15% Pervious = 14,750 sf 52.85% Impervious = 16,530 sf

Summary for Subcatchment D27: D27

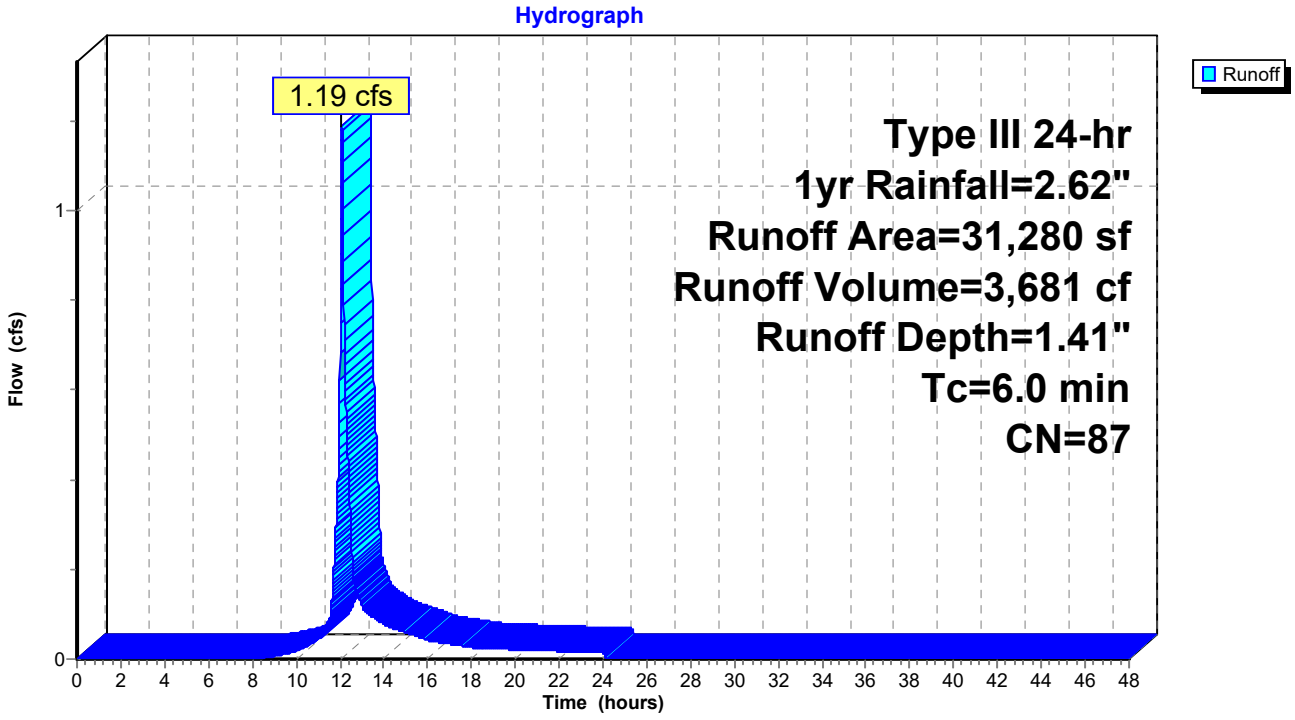
Runoff = 1.19 cfs @ 12.09 hrs, Volume= 3,681 cf, Depth= 1.41"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Type III 24-hr 1yr Rainfall=2.62"

Area (sf)	CN	Description
16,530	98	Unconnected pavement, HSG C
14,750	74	>75% Grass cover, Good, HSG C
31,280	87	Weighted Average
14,750		47.15% Pervious Area
16,530		52.85% Impervious Area
16,530		100.00% Unconnected

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					**Direct Entry,**

Subcatchment D27: D27



Summary for Pond FP1: FocalPoint 96sf

Inflow Area = 31,280 sf, 52.85% Impervious, Inflow Depth = 1.41" for 1yr event
Inflow = 1.19 cfs @ 12.09 hrs, Volume= 3,681 cf
Outflow = 1.18 cfs @ 12.10 hrs, Volume= 3,681 cf, Atten= 1%, Lag= 0.7 min
Primary = 0.50 cfs @ 11.98 hrs, Volume= 3,413 cf
Secondary = 0.68 cfs @ 12.10 hrs, Volume= 267 cf

Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Peak Elev= 14.35' @ 12.10 hrs Surf.Area= 216 sf Storage= 148 cf

Plug-Flow detention time= 1.1 min calculated for 3,680 cf (100% of inflow)
Center-of-Mass det. time= 1.1 min (828.7 - 827.6)

Volume	Invert	Avail.Storage	Storage Description
#1	11.75'	97 cf	**18.00'W x 12.00'L x 2.25'H FocalPoint** 486 cf Overall x 20.0% Voids
#2	14.00'	267 cf	**Custom Stage Data (Irregular)**Listed below (Recalc) -Impervious
		365 cf	Total Available Storage

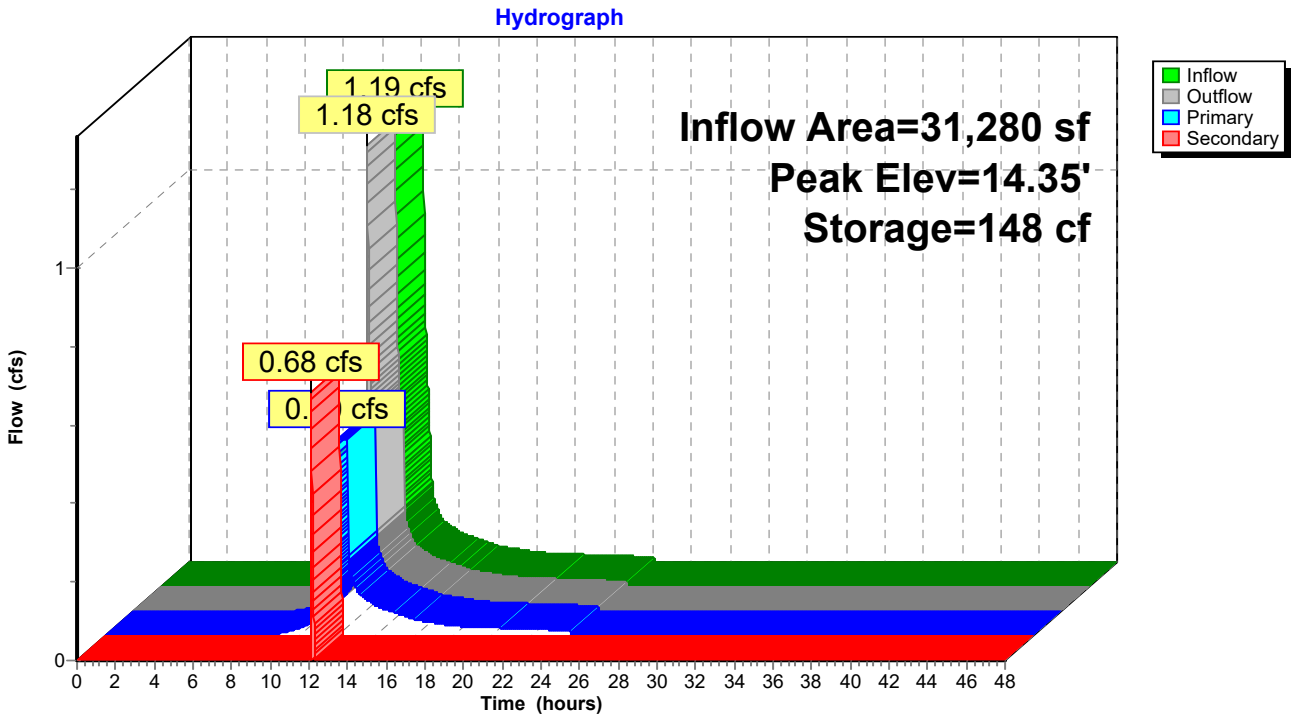
Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
14.00	96	40.0	0	0	96
14.50	250	65.0	83	83	307
15.00	500	96.0	184	267	706

Device	Routing	Invert	Outlet Devices
#1	Primary	11.75'	**100.000 in/hr Exfiltration over Surface area** Phase-In= 0.10'
#2	Secondary	14.25'	**12.0" Horiz. Orifice/Grate X 2.00** C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=0.50 cfs @ 11.98 hrs HW=11.90' (Free Discharge)
↑—**1=Exfiltration** (Exfiltration Controls 0.50 cfs)

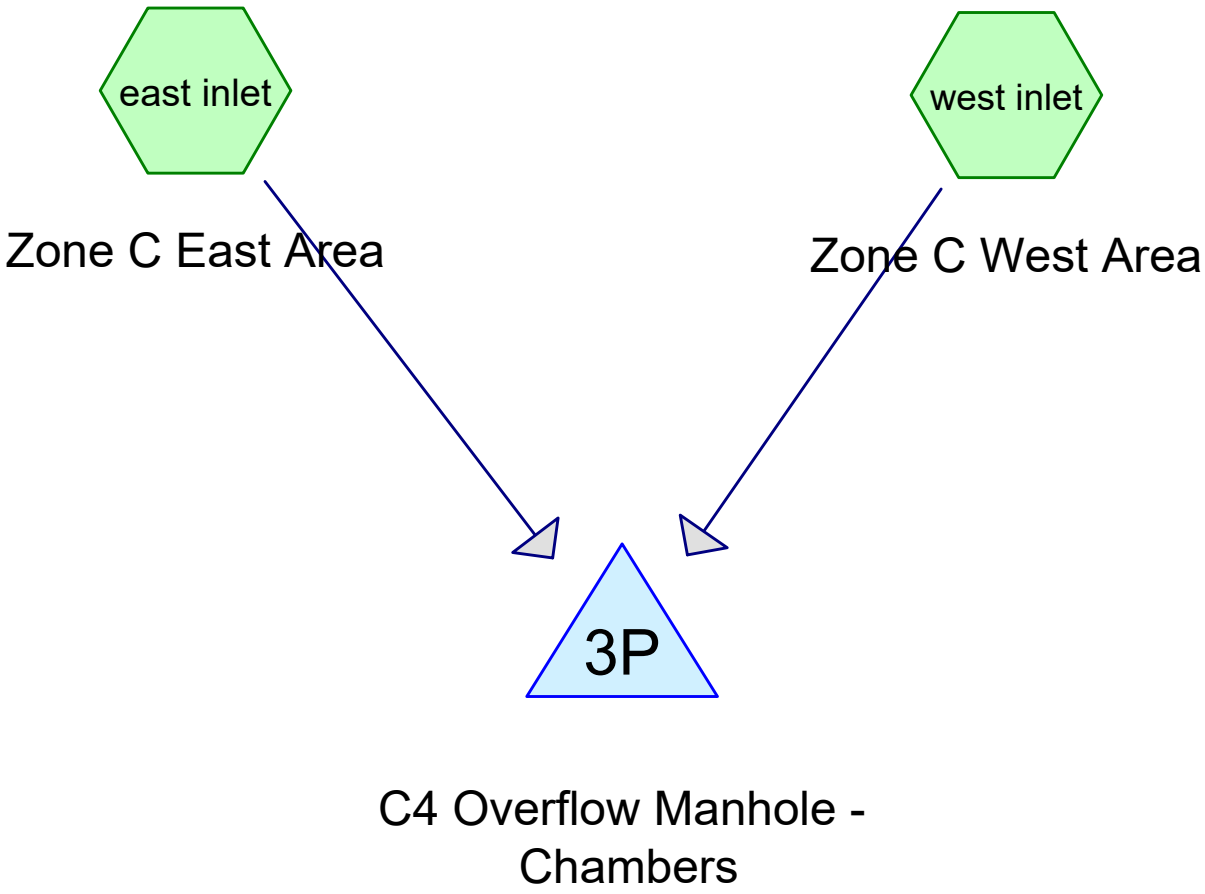
Secondary OutFlow Max=0.68 cfs @ 12.10 hrs HW=14.35' (Free Discharge)
↑—**2=Orifice/Grate** (Weir Controls 0.68 cfs @ 1.05 fps)

Pond FP1: FocalPoint 96sf



APPENDIX C

JellyFish™ HydroCAD Model Summary



Subcat Reach Pond Link

Routing Diagram for 2017.09.14 Hotel Jelly Fish - Zone C
Prepared by Hewlett-Packard Company, Printed 9/28/2017
HydroCAD® 10.00-19 s/n 09708 © 2016 HydroCAD Software Solutions LLC

Area Listing (all nodes)

Area (sq-ft)	CN	Description (subcatchment-numbers)
2,800	74	>75% Grass cover, Good, HSG C (east inlet, west inlet)
46,594	98	Paved parking, HSG C (east inlet, west inlet)
49,394	**97**	**TOTAL AREA**

Ground Covers (all nodes)

HSG-A (sq-ft)	HSG-B (sq-ft)	HSG-C (sq-ft)	HSG-D (sq-ft)	Other (sq-ft)	Total (sq-ft)	Ground Cover	Sub Num
0	0	2,800	0	0	2,800	>75% Grass cover, Good	
0	0	46,594	0	0	46,594	Paved parking	
0	**0**	**49,394**	**0**	**0**	**49,394**	**TOTAL AREA**	

Time span=0.00-48.00 hrs, dt=0.01 hrs, 4801 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Dyn-Stor-Ind method - Pond routing by Dyn-Stor-Ind method

Subcatchment east inlet: Zone C East Area Runoff Area=26,486 sf 96.69% Impervious Runoff Depth=0.66"
Tc=6.0 min CN=97 Runoff=0.46 cfs 1,454 cf

Subcatchment west inlet: Zone C West Runoff Area=22,908 sf 91.60% Impervious Runoff Depth=0.59"
Tc=6.0 min CN=96 Runoff=0.36 cfs 1,117 cf

Pond 3P: C4 Overflow Manhole - Chambers Peak Elev=11.58' Storage=2,571 cf Inflow=0.82 cfs 2,571 cf
Outflow=0.00 cfs 0 cf

Total Runoff Area = 49,394 sf Runoff Volume = 2,571 cf Average Runoff Depth = 0.62"
5.67% Pervious = 2,800 sf 94.33% Impervious = 46,594 sf

Summary for Subcatchment east inlet: Zone C East Area

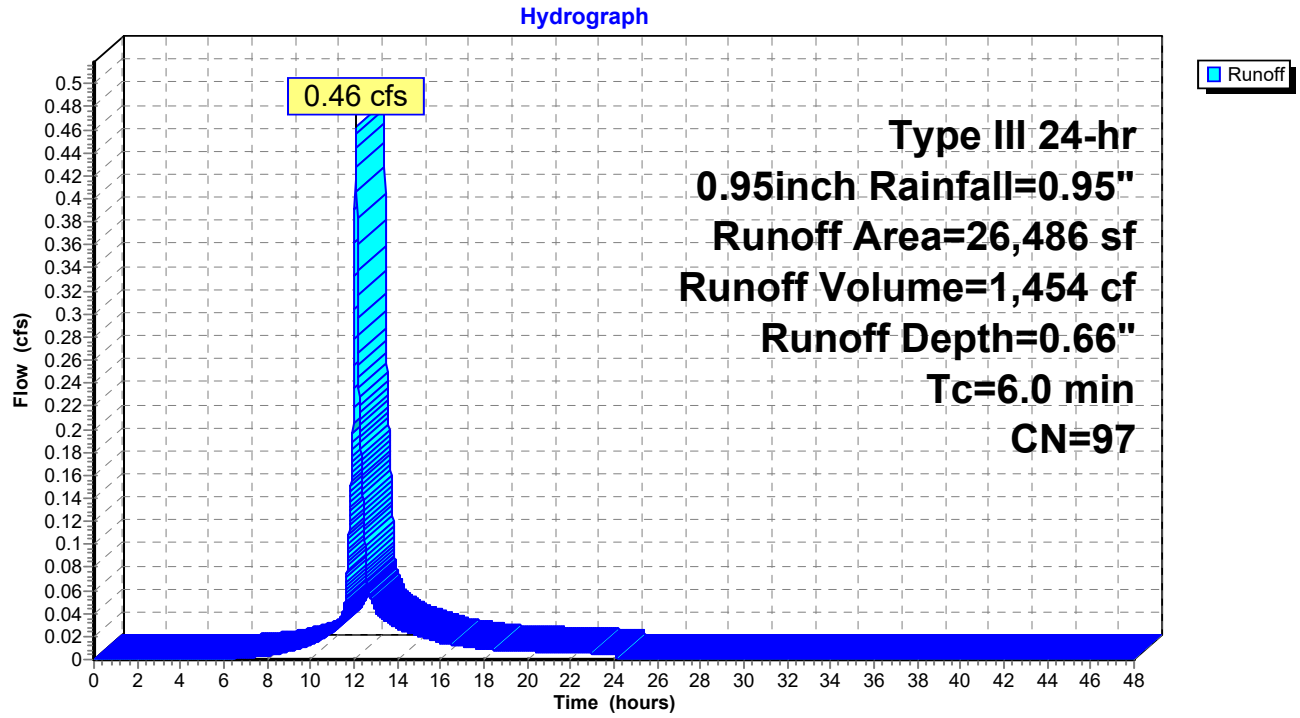
Runoff = 0.46 cfs @ 12.09 hrs, Volume= 1,454 cf, Depth= 0.66"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Type III 24-hr 0.95inch Rainfall=0.95"

Area (sf)	CN	Description
25,610	98	Paved parking, HSG C
876	74	>75% Grass cover, Good, HSG C
26,486	97	Weighted Average
876		3.31% Pervious Area
25,610		96.69% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					**Direct Entry,**

Subcatchment east inlet: Zone C East Area



Summary for Subcatchment west inlet: Zone C West Area

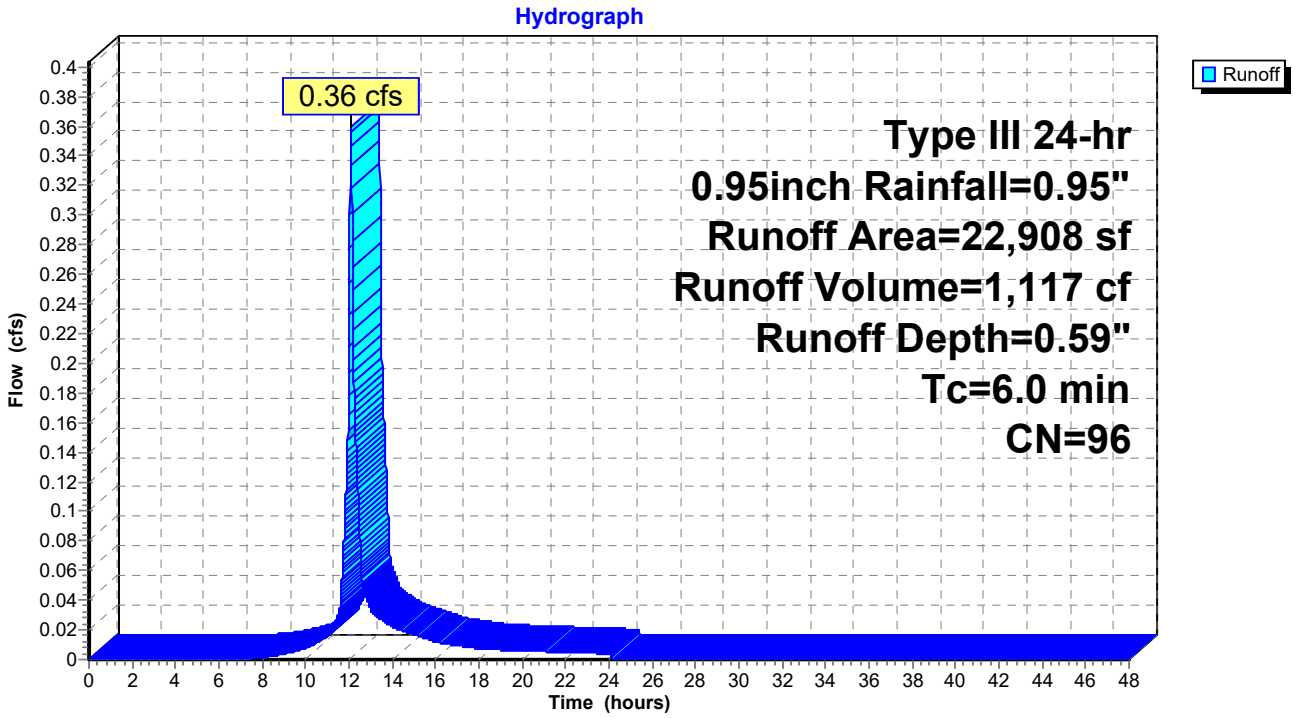
Runoff = 0.36 cfs @ 12.09 hrs, Volume= 1,117 cf, Depth= 0.59"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Type III 24-hr 0.95inch Rainfall=0.95"

Area (sf)	CN	Description
20,984	98	Paved parking, HSG C
1,924	74	>75% Grass cover, Good, HSG C
22,908	96	Weighted Average
1,924		8.40% Pervious Area
20,984		91.60% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					**Direct Entry,**

Subcatchment west inlet: Zone C West Area



Summary for Pond 3P: C4 Overflow Manhole - Chambers

Inflow Area = 49,394 sf, 94.33% Impervious, Inflow Depth = 0.62" for 0.95inch event
Inflow = 0.82 cfs @ 12.09 hrs, Volume= 2,571 cf
Outflow = 0.00 cfs @ 0.00 hrs, Volume= 0 cf, Atten= 100%, Lag= 0.0 min
Primary = 0.00 cfs @ 0.00 hrs, Volume= 0 cf

Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Peak Elev= 11.58' @ 24.34 hrs Surf.Area= 2,444 sf Storage= 2,571 cf

Plug-Flow detention time= (not calculated: initial storage exceeds outflow)
Center-of-Mass det. time= (not calculated: no outflow)

Volume	Invert	Avail.Storage	Storage Description
#1A	10.02'	810 cf	**14.75'W x 60.58'L x 3.50'H Field A** 3,127 cf Overall - 1,103 cf Embedded = 2,025 cf x 40.0% Voids
#2A	10.52'	1,103 cf	**ADS_StormTech SC-740 +Cap** x 24 Inside #1 Effective Size= 44.6"W x 30.0"H => 6.45 sf x 7.12'L = 45.9 cf Overall Size= 51.0"W x 30.0"H x 7.56'L with 0.44' Overlap 3 Rows of 8 Chambers
#3B	10.02'	1,399 cf	**29.00'W x 53.46'L x 3.50'H Field B** 5,426 cf Overall - 1,929 cf Embedded = 3,496 cf x 40.0% Voids
#4B	10.52'	1,929 cf	**ADS_StormTech SC-740 +Cap** x 42 Inside #3 Effective Size= 44.6"W x 30.0"H => 6.45 sf x 7.12'L = 45.9 cf Overall Size= 51.0"W x 30.0"H x 7.56'L with 0.44' Overlap 6 Rows of 7 Chambers
		5,240 cf	Total Available Storage

Storage Group A created with Chamber Wizard
Storage Group B created with Chamber Wizard

Device	Routing	Invert	Outlet Devices
#1	Primary	13.02'	**7.0' long x 0.5' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 Coef. (English) 2.80 2.92 3.08 3.30 3.32

Primary OutFlow Max=0.00 cfs @ 0.00 hrs HW=10.02' (Free Discharge)
1=Broad-Crested Rectangular Weir (Controls 0.00 cfs)

Pond 3P: C4 Overflow Manhole - Chambers - Chamber Wizard Field A

Chamber Model = ADS_StormTech SC-740 +Cap (ADS StormTech® SC-740 with cap length)
Effective Size= 44.6"W x 30.0"H => 6.45 sf x 7.12'L = 45.9 cf
Overall Size= 51.0"W x 30.0"H x 7.56'L with 0.44' Overlap

51.0" Wide + 6.0" Spacing = 57.0" C-C Row Spacing

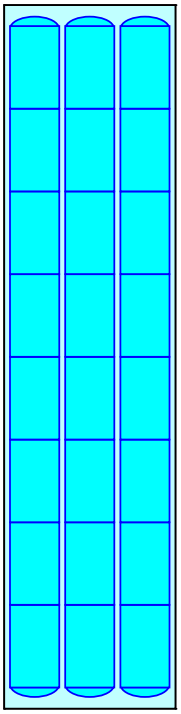
8 Chambers/Row x 7.12' Long +0.81' Cap Length x 2 = 58.58' Row Length +12.0" End Stone x 2 = 60.58' Base Length
3 Rows x 51.0" Wide + 6.0" Spacing x 2 + 6.0" Side Stone x 2 = 14.75' Base Width
6.0" Base + 30.0" Chamber Height + 6.0" Cover = 3.50' Field Height

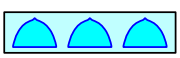
24 Chambers x 45.9 cf = 1,102.6 cf Chamber Storage

3,127.3 cf Field - 1,102.6 cf Chambers = 2,024.7 cf Stone x 40.0% Voids = 809.9 cf Stone Storage

Chamber Storage + Stone Storage = 1,912.4 cf = 0.044 af
Overall Storage Efficiency = 61.2%
Overall System Size = 60.58' x 14.75' x 3.50'

24 Chambers
115.8 cy Field
75.0 cy Stone





Pond 3P: C4 Overflow Manhole - Chambers - Chamber Wizard Field B

Chamber Model = ADS_StormTech SC-740 +Cap (ADS StormTech® SC-740 with cap length)
Effective Size= 44.6"W x 30.0"H => 6.45 sf x 7.12'L = 45.9 cf
Overall Size= 51.0"W x 30.0"H x 7.56'L with 0.44' Overlap

51.0" Wide + 6.0" Spacing = 57.0" C-C Row Spacing

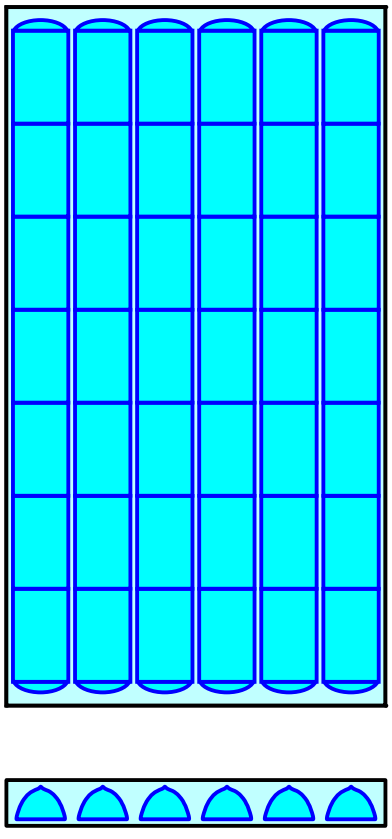
7 Chambers/Row x 7.12' Long +0.81' Cap Length x 2 = 51.46' Row Length +12.0" End Stone x 2 = 53.46' Base Length
6 Rows x 51.0" Wide + 6.0" Spacing x 5 + 6.0" Side Stone x 2 = 29.00' Base Width
6.0" Base + 30.0" Chamber Height + 6.0" Cover = 3.50' Field Height

42 Chambers x 45.9 cf = 1,929.5 cf Chamber Storage

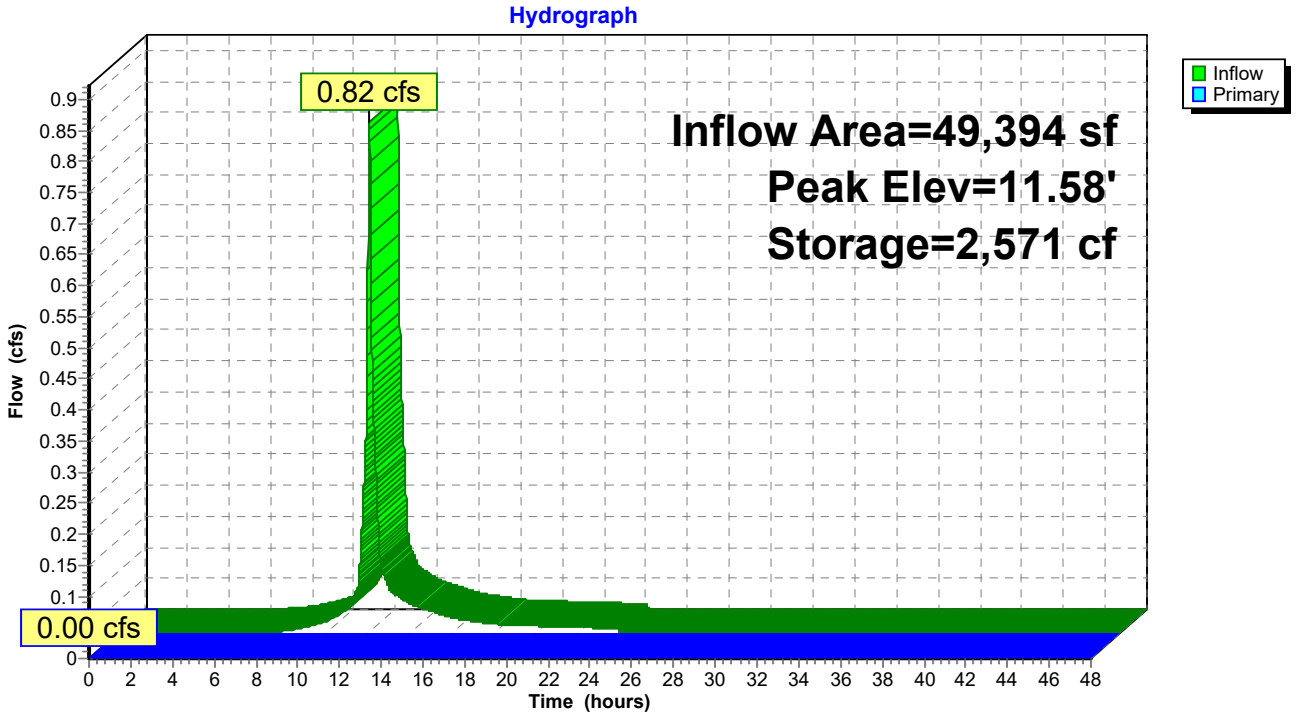
5,425.9 cf Field - 1,929.5 cf Chambers = 3,496.4 cf Stone x 40.0% Voids = 1,398.5 cf Stone Storage

Chamber Storage + Stone Storage = 3,328.0 cf = 0.076 af
Overall Storage Efficiency = 61.3%
Overall System Size = 53.46' x 29.00' x 3.50'

42 Chambers
201.0 cy Field
129.5 cy Stone



Pond 3P: C4 Overflow Manhole - Chambers



Time span=0.00-48.00 hrs, dt=0.01 hrs, 4801 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Dyn-Stor-Ind method - Pond routing by Dyn-Stor-Ind method

Subcatchment east inlet: Zone C East Area Runoff Area=26,486 sf 96.69% Impervious Runoff Depth=2.28"
Tc=6.0 min CN=97 Runoff=1.50 cfs 5,037 cf

Subcatchment west inlet: Zone C West Runoff Area=22,908 sf 91.60% Impervious Runoff Depth=2.18"
Tc=6.0 min CN=96 Runoff=1.27 cfs 4,159 cf

Pond 3P: C4 Overflow Manhole - Chambers Peak Elev=13.18' Storage=4,905 cf Inflow=2.77 cfs 9,197 cf
Outflow=1.22 cfs 4,445 cf

Total Runoff Area = 49,394 sf Runoff Volume = 9,197 cf Average Runoff Depth = 2.23"
5.67% Pervious = 2,800 sf 94.33% Impervious = 46,594 sf

Summary for Subcatchment east inlet: Zone C East Area

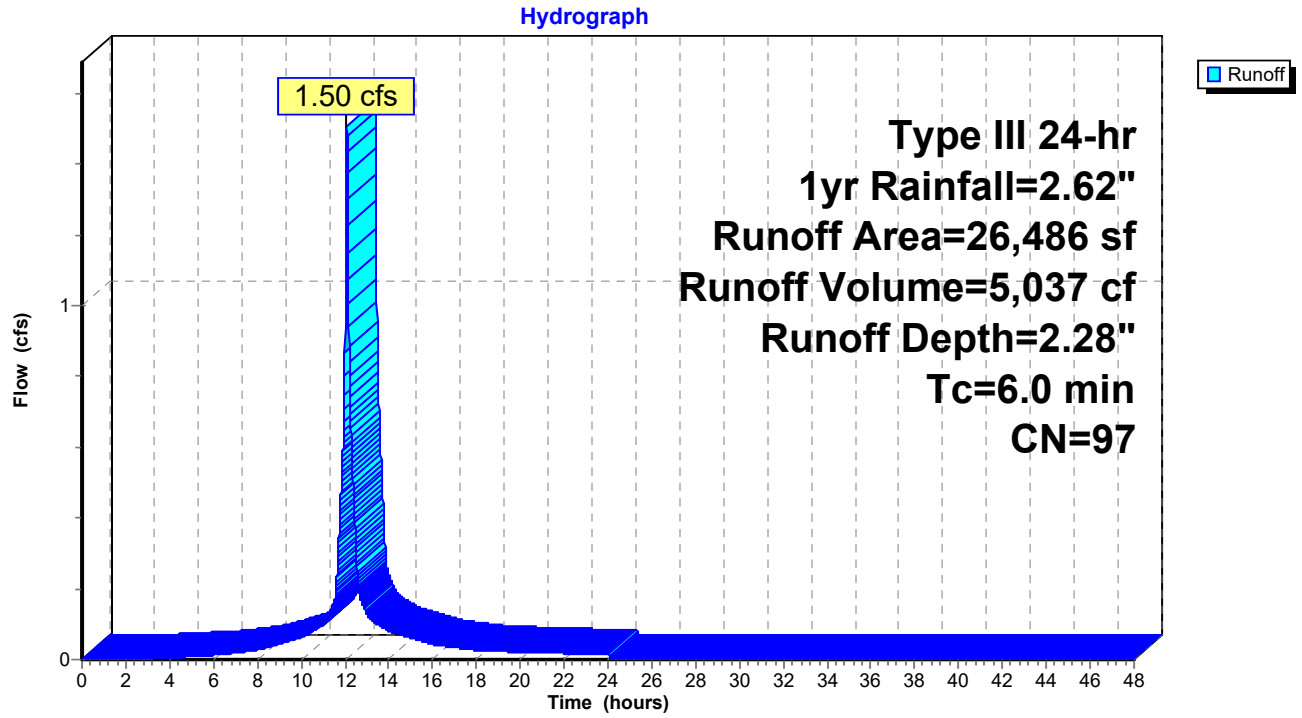
Runoff = 1.50 cfs @ 12.08 hrs, Volume= 5,037 cf, Depth= 2.28"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Type III 24-hr 1yr Rainfall=2.62"

Area (sf)	CN	Description
25,610	98	Paved parking, HSG C
876	74	>75% Grass cover, Good, HSG C
26,486	97	Weighted Average
876		3.31% Pervious Area
25,610		96.69% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					**Direct Entry,**

Subcatchment east inlet: Zone C East Area



Summary for Subcatchment west inlet: Zone C West Area

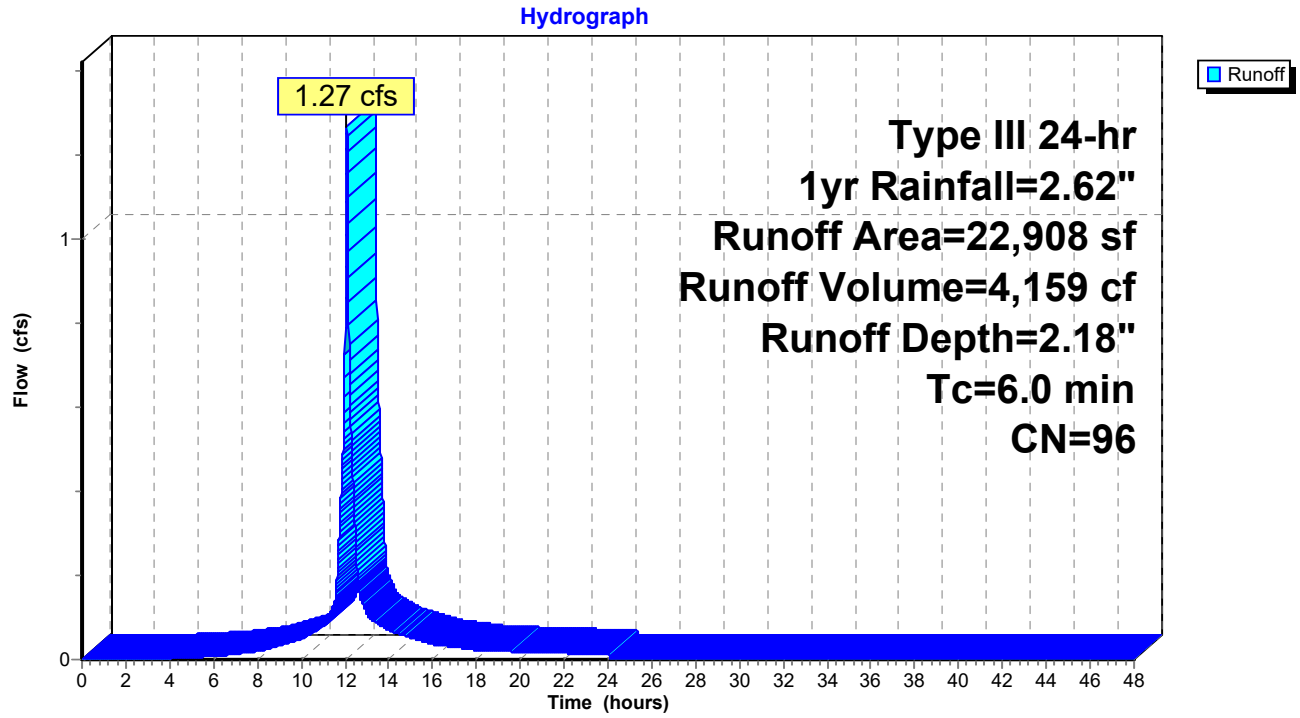
Runoff = 1.27 cfs @ 12.08 hrs, Volume= 4,159 cf, Depth= 2.18"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Type III 24-hr 1yr Rainfall=2.62"

Area (sf)	CN	Description
20,984	98	Paved parking, HSG C
1,924	74	>75% Grass cover, Good, HSG C
22,908	96	Weighted Average
1,924		8.40% Pervious Area
20,984		91.60% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					**Direct Entry,**

Subcatchment west inlet: Zone C West Area



Summary for Pond 3P: C4 Overflow Manhole - Chambers

Inflow Area = 49,394 sf, 94.33% Impervious, Inflow Depth = 2.23" for 1yr event
Inflow = 2.77 cfs @ 12.08 hrs, Volume= 9,197 cf
Outflow = 1.22 cfs @ 12.27 hrs, Volume= 4,445 cf, Atten= 56%, Lag= 10.9 min
Primary = 1.22 cfs @ 12.27 hrs, Volume= 4,445 cf

Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Peak Elev= 13.18' @ 12.27 hrs Surf.Area= 2,444 sf Storage= 4,905 cf

Plug-Flow detention time= 246.3 min calculated for 4,444 cf (48% of inflow)
Center-of-Mass det. time= 126.9 min (902.2 - 775.2)

Volume	Invert	Avail.Storage	Storage Description
#1A	10.02'	810 cf	**14.75'W x 60.58'L x 3.50'H Field A** 3,127 cf Overall - 1,103 cf Embedded = 2,025 cf x 40.0% Voids
#2A	10.52'	1,103 cf	**ADS_StormTech SC-740 +Cap** x 24 Inside #1 Effective Size= 44.6"W x 30.0"H => 6.45 sf x 7.12'L = 45.9 cf Overall Size= 51.0"W x 30.0"H x 7.56'L with 0.44' Overlap 3 Rows of 8 Chambers
#3B	10.02'	1,399 cf	**29.00'W x 53.46'L x 3.50'H Field B** 5,426 cf Overall - 1,929 cf Embedded = 3,496 cf x 40.0% Voids
#4B	10.52'	1,929 cf	**ADS_StormTech SC-740 +Cap** x 42 Inside #3 Effective Size= 44.6"W x 30.0"H => 6.45 sf x 7.12'L = 45.9 cf Overall Size= 51.0"W x 30.0"H x 7.56'L with 0.44' Overlap 6 Rows of 7 Chambers
		5,240 cf	Total Available Storage

Storage Group A created with Chamber Wizard
Storage Group B created with Chamber Wizard

Device	Routing	Invert	Outlet Devices
#1	Primary	13.02'	**7.0' long x 0.5' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 Coef. (English) 2.80 2.92 3.08 3.30 3.32

Primary OutFlow Max=1.22 cfs @ 12.27 hrs HW=13.18' (Free Discharge)
1=Broad-Crested Rectangular Weir (Weir Controls 1.22 cfs @ 1.11 fps)

Pond 3P: C4 Overflow Manhole - Chambers - Chamber Wizard Field A

Chamber Model = ADS_StormTech SC-740 +Cap (ADS StormTech® SC-740 with cap length)
Effective Size= 44.6"W x 30.0"H => 6.45 sf x 7.12'L = 45.9 cf
Overall Size= 51.0"W x 30.0"H x 7.56'L with 0.44' Overlap

51.0" Wide + 6.0" Spacing = 57.0" C-C Row Spacing

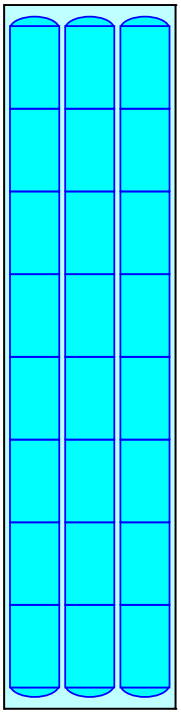
8 Chambers/Row x 7.12' Long +0.81' Cap Length x 2 = 58.58' Row Length +12.0" End Stone x 2 = 60.58' Base Length
3 Rows x 51.0" Wide + 6.0" Spacing x 2 + 6.0" Side Stone x 2 = 14.75' Base Width
6.0" Base + 30.0" Chamber Height + 6.0" Cover = 3.50' Field Height

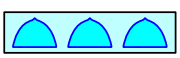
24 Chambers x 45.9 cf = 1,102.6 cf Chamber Storage

3,127.3 cf Field - 1,102.6 cf Chambers = 2,024.7 cf Stone x 40.0% Voids = 809.9 cf Stone Storage

Chamber Storage + Stone Storage = 1,912.4 cf = 0.044 af
Overall Storage Efficiency = 61.2%
Overall System Size = 60.58' x 14.75' x 3.50'

24 Chambers
115.8 cy Field
75.0 cy Stone





Pond 3P: C4 Overflow Manhole - Chambers - Chamber Wizard Field B

Chamber Model = ADS_StormTech SC-740 +Cap (ADS StormTech® SC-740 with cap length)
Effective Size= 44.6"W x 30.0"H => 6.45 sf x 7.12'L = 45.9 cf
Overall Size= 51.0"W x 30.0"H x 7.56'L with 0.44' Overlap

51.0" Wide + 6.0" Spacing = 57.0" C-C Row Spacing

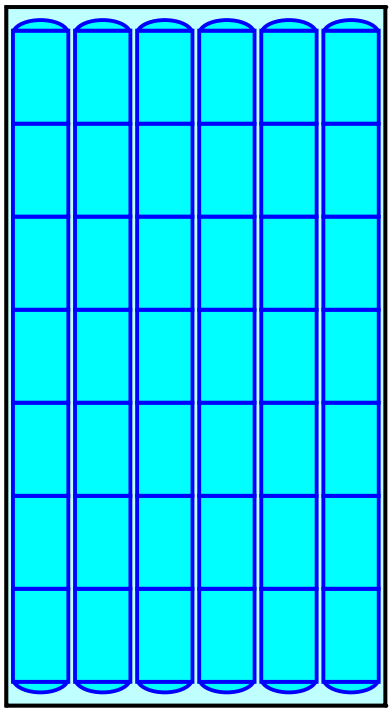
7 Chambers/Row x 7.12' Long +0.81' Cap Length x 2 = 51.46' Row Length +12.0" End Stone x 2 = 53.46' Base Length
6 Rows x 51.0" Wide + 6.0" Spacing x 5 + 6.0" Side Stone x 2 = 29.00' Base Width
6.0" Base + 30.0" Chamber Height + 6.0" Cover = 3.50' Field Height

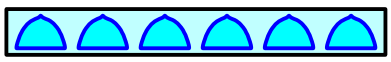
42 Chambers x 45.9 cf = 1,929.5 cf Chamber Storage

5,425.9 cf Field - 1,929.5 cf Chambers = 3,496.4 cf Stone x 40.0% Voids = 1,398.5 cf Stone Storage

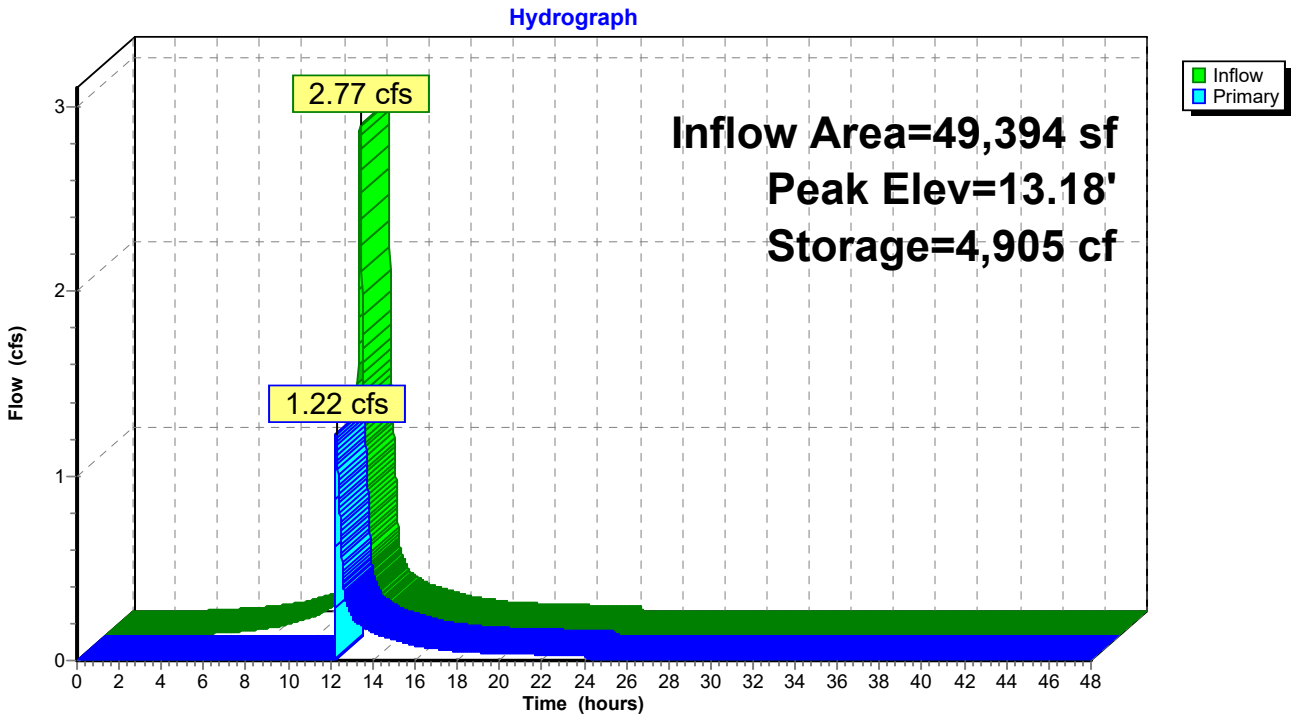
Chamber Storage + Stone Storage = 3,328.0 cf = 0.076 af
Overall Storage Efficiency = 61.3%
Overall System Size = 53.46' x 29.00' x 3.50'

42 Chambers
201.0 cy Field
129.5 cy Stone





Pond 3P: C4 Overflow Manhole - Chambers



APPENDIX D

Summary of Water Quality Treatment Zones C & D(partial)

Summary of Water Quality Treatment - Lot 6 (Hotel)

Zone	Inlet ID	Impervious Area (sf)	Pervious Area (sf)	Total Area (sf)	Total Area (Acres) [1]	Required Water Quality Volume (CF) [2]	Existing Developed Area Mitigation Credits (SF) [9]	Treatment Approach [6]	Filter Size Area Required [6] (SF)	Jellyfish Unit Provided [5]	1 Yr 24-hr Storm Event Peak Flow Rate (cfs) [3]	Required Isolator Row Chambers (Stormtech SC-740 (JF) or Cultec 150 XLHD (Focal Point) [4]	Provided Filter Bed (SF)/Water Quality Volume (CF) [7]	Isolator Row Chambers (Stormtech SC-740 or Cultec 150 XLHD) Provided (EA) [6]
Zone D	D-27	7,596.00	13,279.00	20,875.00	0.48	1075.63	-	FocalPoint Biofiltration System	89	N/A	1.19	6.43	96.00	7
	D - 27 Brick South (Partial South Side)	10,395.00	0.00	10,395.00	0.24	866.25	6237.00	FocalPoint Biofiltration System		N/A				
	Disturbed Perimeter Area	0.00	0.00	0.00	0.00	-	-	None		-	-	-	-	-
Zone D Totals (Lot 6 Portion)	-	**17,991.00**	**13,279.00**	**31,270.00**	**0.72**	**1,941.88**	**6,237.00**	-		-	-	-	-	-
Zone C Developed Area	C-8	6,093.00	2,031.00	8,124.00	0.19	575.45	0.00	Contech Jellyfish Filter	N/A	JF4 2-1	0.40	1.99	4051 CF	17
	C-7	5,101.00	1,838.00	6,939.00	0.16	486.35	0.00				0.34	1.68		
	C-10	2,397.00	0.00	2,397.00	0.06	199.75	0.00				0.15	0.73		
	C-11	1,841.00	0.00	1,841.00	0.04	153.42	0.00				0.11	0.56		
	C-12	1,808.00	0.00	1,808.00	0.04	150.67	0.00				0.11			
	C-13 (non-roof portion)	933.00	0.00	933.00	0.02	77.75	0.00				0.06	0.28		
	C-15A (Roof)	10,055.00	0.00	10,055.00	0.23	837.92	0.00				0.61	3.07		
	C-15B (Roof)	9,660.00	0.00	9,660.00	0.22	805.00	0.00				0.59	2.95		
	C-15C (Future)	*3,734.00*	*0.00*	*3,734.00*	*0.09*	311.17	0.00				0.23	1.14		
	Disturbed Perimeter Area	0.00	0.00	0.00	0.00	0.00	0.00	N/A		-	-	-	-	-
Zone C Developed Area Subtotals		**41,622.00**	**3,869.00**	**45,491.00**	**1.04**	**3,597.47**	**0.00**	-		-	2.59	12.40	N/A	N/A
Zone C Existing Buildings	C-13 BS-South Side (Partial)	2,995.00	0.00	2,995.00	0.00	249.58	1,797.00	Contech Jellyfish Filter	N/A	JF4 2-1 (included in above)	0.18	0.91	Included in Zone C above	Included in Zone C above
Zone C Existing Building Subtotal	-	**2,995.00**	**0.00**	**2,995.00**	**0.00**	**249.58**	**1,797.00**	-		-	**0.18**	**0.91**	**0.00**	-
Zone C Totals	-	**44,617.00**	**3,869.00**	**48,486.00**	**1.04**	**3,847.05**	**1,797.00**	-	**0.00**	**0.00**	**2.77**	**13.32**	**N/A**	**N/A**

****Previously Approved Filterra Box**

Developed Area Breakdown		
A.) Total New Developed Area Treated (SF)	62,632.00	**1.44**
B.) Total New Developed Area untreated (SF)	0.00	**0.00**
C.) Total New Developed Area (SF) = A+B	62,632.00	**1.44**
D.) Existing Developed Area Treated (SF)	13,390.00	**0.31**
E.) Adjusted Existing Developed Area Treated (SF)	8,034.00	**0.18**
F.) Total Net Developed Area Treated (SF) = A+E	70,666.00	**1.62**
Impervious Area Breakdown		
G.) Total New Impervious Area treated (SF)	49,218.00	**1.13**
H.) Total New Impervious Area untreated (SF)	0.00	**0.00**
I.) Total New Impervious Area (SF) = G+H	49,218.00	**1.13**
J.) Existing Impervious Area Treated (SF)	13,390.00	**0.31**
K.) Adjusted Existing Impervious Area Treated (SF)	8,034.00	**0.18**
L.) Total Net Impervious Area Treated (SF) = G+K	57,252.00	**1.31**

Treatment Breakdown	Required	Provided
% of Net Developed Area Treated = F/C	80.00%	112.83%
% of Net Impervious Area Treated = L/I	95.00%	116.32%

NOTES AND ASSUMPTIONS:

1. All areas are based on the Placemaker Partners Permit drawings dated September 2017
2. The required water quality volumes have been computed based on Sections 7.4, 7.5 and 7.6 of the Maine DEP Volume III BMP's Technical Design Manual. The volume is computed to be 1" times the subcatchments impervious area and 0.4" times the subcatchments vegetated area. Exisiting buildings to remain are not required to be treated.
3. The 1 year peak flow rates have been computed using the rational method. The rainfall intensities are derived from the Cumberland County IDF curve.
4. Subsurface storage system sizing is based on a Stormtech SC-740 chamber system. All isolator rows have been computed per a 7/29/2016 letter from State of Maine to Stormtech re: Pretreatment Isolator Row of the Maine DEP Volume III BMP's Technical Manual. One chamber is required for each 0.2 cfs of the computed tributary 1 year peak flow rate.
5. The required number of Jelly Fish treatment units have been computed based on Contech Sizing requirements. The water quality volume for each unit is storage up stream and the amount of treatment cartridges are computed based sediment mass loading.
6. Focal Point system was sized using the 2/2/201 approval letter from the State of Maine to Stormwater Systems ACF. See attached computations and separate focal point checklist for sizing.
7. Provided Water Quality Volume for stormtreat storage system computed using 61.38 CF of storage per chamber based on Storm Tech Chamber Design Manual
8. Vacant
9. According to Chapter 500 Maine DEP stormwater rules Dated 2015; the department allows applicants to take credit for the treatment of existing impervious areas on site. For existing roofs the credit can be calculated by multiplying the total treated area by 0.6. The overall project was approved using this methodology.
10. Vacant

Rational Method Flow Computations										
ZONE	INLET ID	IMPERVIOUS (SF)	PERVIOUS (SF)	TOTAL AREA (SF)	TOTAL AREA (ACRES)	WEIGHTED C	25-YEAR FLOW	10-YEAR FLOW	2-YEAR FLOW	1-Year Flow
Zone D	D-24	8,527.00	600.00	9,127.00	0.21	0.90	1.18	1.04	0.75	0.53
	D-25	19,009.00	2,393.00	21,402.00	0.49	0.87	2.66	2.34	0.00	1.19
	D-26	6,135.00	14,749.00	20,884.00	0.48	0.42	1.26	1.11	0.00	0.56
	D - 26 Brick South (Partial South Side)	10,395.00	0.00	10,395.00	0.24	0.95	1.42	1.25	0.00	0.63
Zone D Sub-totals		**44,066.00**	**17,742.00**	**61,808.00**	**1.42**	**-**	**6.52**	**5.73**	**0.75**	**2.92**
Zone C	C-8	6,093.00	2,031.00	8,124.00	0.19	0.76	0.89	0.78	0.57	0.40
	C-7	5,101.00	1,838.00	6,939.00	0.16	0.75	0.75	0.66	0.48	0.34
	C-10	2,397.00	0.00	2,397.00	0.06	0.95	0.33	0.29	0.21	0.15
	C-11	1,841.00	0.00	1,841.00	0.04	0.95	0.25	0.22	0.16	0.11
	C-12	1,808.00	0.00	1,808.00	0.04	0.95	0.25	0.22	0.16	0.11
	C-13 (non-roof portion)	933.00	0.00	933.00	0.02	0.95	0.13	0.11	0.08	0.06
	C-15A (Roof)	10,055.00	0.00	10,055.00	0.23	0.95	1.37	1.21	0.88	0.61
	C-15B (Roof)	9,660.00	0.00	9,660.00	0.22	0.95	1.32	1.16	0.84	0.59
	C-15C (Future)	*3,734.00*	*0.00*	3,734.00	0.09	0.95	0.51	0.45	0.33	0.23
	BS-South Side (Partial)	2,995.00	0.00	2,995.00	0.07	0.95	0.41	0.36	0.26	0.18
Zone C Sub-totals		**44,617.00**	**3,869.00**	**48,486.00**	**1.11**	**-**	**6.19**	**5.45**	**3.96**	**2.77**

Assumptions		
Pervious C	**0.2**	
Impervious C	**0.95**	
I-1 Year	**2.8**	**in/hr**
I -2 Year Storm	**4**	**in/hr**
I-10 Year Storm	**5.5**	**In/Hr**
I-25 Year Storm	**6.25**	**In/Hr**
Notes:		
1. Rainfall intensity based on Cumberland County IDF curve using a TC of 5 min.		

Zone C Required StormTech Chamber Storage Computation

Weir Wall Height	13.02	EL	
Bottom of Chamber Elevation	10.52	EL	
Total Chamber Height	30	Inches	30 (max chamber height)
Total Storage per chamber	61.38	CF	
Total WQV for Zone C	3,847.00	CF	
Total Chambers Required	62.7	#	
Total Chambers Provided	66	#	
Total Storage Provided	4051.08	CF	

Hotel Project Water Quality Volume (CF) 3,847.05
(includes Future Building Expansion, 3,734 SF building area as duplicate area from Zone D)

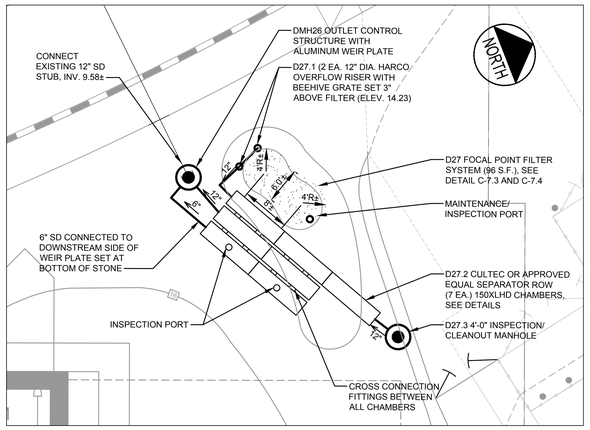
Notes:

1. Height of weirwall based based on WQv. See sheet "rational method flow compuations". Structure C4 in which weir wall is located was modeled using HydroCad. See attached computations.

	Impervious Area	Pervious Area	1 yr Peak Flow (CFS)		Flow Per SC-740 Chamber	Required Isolator Row Chambers	Provided Isolator Row Chambers
Trib. To East Inlet	19,634	0	1.20	2.68	0.2	5.99	8
Trib. To West Inlet	24,983	3,869	1.58	3.52	0.2	7.88	9
			2.77	6.19			

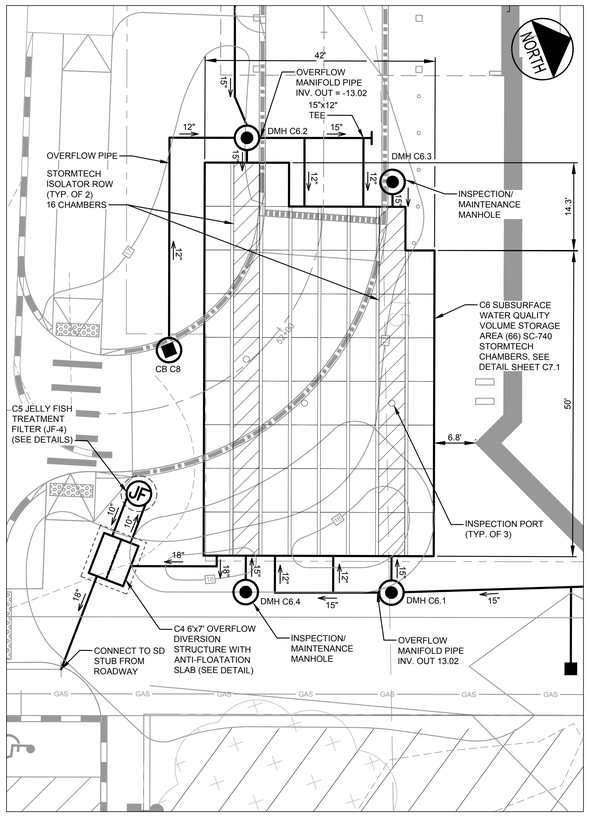
APPENDIX E

Stormwater Management Plan-1 C-5.1

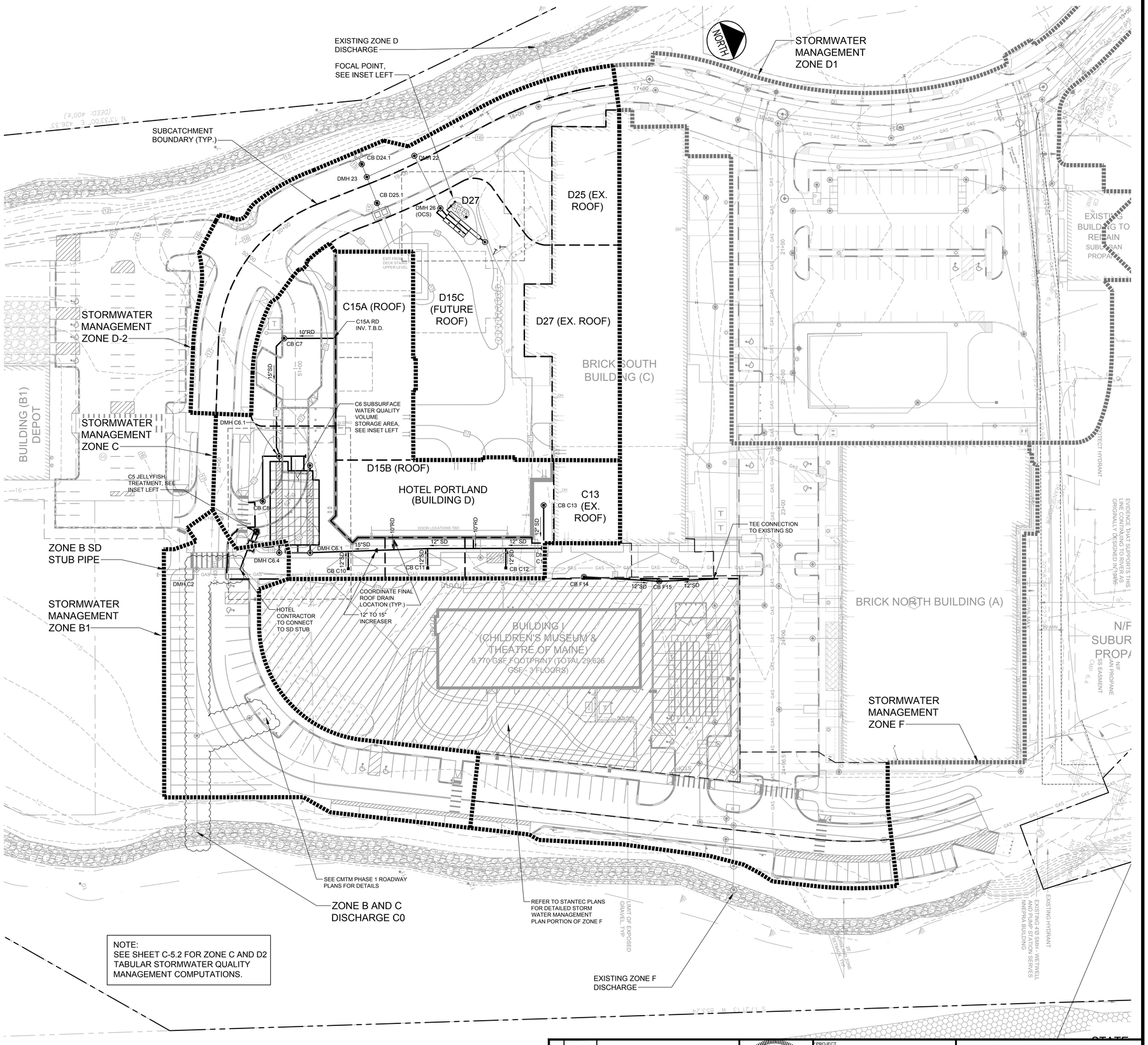


FOCAL POINT AREA
ENLARGED VIEW
SCALE: 1"=10'

NOTE:
OWNER RESERVES RIGHT TO ELIMINATE CHAMBER IS APPROVED BY STATE OF MAINE PRIOR TO CONSTRUCTION.



SUBSRUFACE WATER QUALITY STORAGE AREA
ENLARGED VIEW
SCALE: 1"=10'



NOTE:
SEE SHEET C-5.2 FOR ZONE C AND D2 TABULAR STORMWATER QUALITY MANAGEMENT COMPUTATIONS.

PRELIMINARY – NOT FOR CONSTRUCTION

GRAPHIC SCALE
30 0 15 30 60
(IN FEET)
1 inch = 30 ft.

REV	DATE	DESCRIPTION
2	2/02/2018	RE-SUBMISSION PER CITY STAFF COMMENTS
1	9/25/2017	FINAL SITE PLAN SUBMISSION

REVISIONS

STATE OF MAINE
BO KENNEDY
No. 11994
LICENSED
PROFESSIONAL ENGINEER
12.02.18

P.E. BO KENNEDY
LIC. #11994

PROJECT
THE FOREFRONT AT THOMPSON'S POINT
HOTEL PORTLAND

SHEET TITLE
STORMWATER MANAGEMENT PLAN - 1

CLIENT
FOREFRONT HOTELIERS, LLC

PLACEMAKER PARTNERS, LLC
501 DANFORTH STREET
PORTLAND, ME 04102
bo@placemakerpartners.com

DRAWN: DB	DATE: AUG. 2017
DESIGNED: BEK	SCALE: 1" = 30'
FILE NAME: HOTEL-SMP.dwg	
SHEET	C-5.1

EVIDENCE THAT SUPPORTS THIS INFORMATION IS DISPUTED OR ORIGINALLY DESIGNED INTHIS

ATTACHMENT D

Updated Architectural Graphics –
To be Provided Under Separate Cover

ATTACHMENT E

Updated Site Plans
C-3.0 Site Layout Plan
C-6.0 Erosion Control and Construction Management Plan

SITE LAYOUT NOTES

1. ALL BARRIER FREE PARKING SPACES ARE TO RECEIVE BARRIER FREE SIGNS AND PAVEMENT MARKINGS AS ILLUSTRATED ON THE DETAIL SHEETS.
2. ALL CURBING MATERIALS WILL BE SELECTED BY THE OWNER. THE DIMENSIONS PROVIDED ON THE PLAN ARE TO FACE OF CURB. ALL CURBING TYPES ARE DETAILED IN THE PROJECT DETAIL SHEETS.
3. ALL DIMENSIONING, UNLESS NOTED OTHERWISE, IS TO THE FACE OF CURB, THE EDGE OF PAVEMENT OR THE FACE OF THE BUILDING.
4. EXCEPT WHERE INDICATED OTHERWISE, THE PAVEMENT IS TO BE STANDARD DUTY PAVEMENT.

CURB LEGEND

----------	TYPE 1 VERTICAL GRANITE CURB - FLUSH
————	TYPE 1 VERTICAL GRANITE CURB
TD	TIP DOWN
TS	TRANSITION STONE (VERTICAL GRANITE TO SLIP FORM CONCRETE)

PAVEMENT MARKING LEGEND

4" DYCL	4" WIDTH DOUBLE YELLOW CENTERLINE
4" SYLL	4" WIDTH SOLID YELLOW LANE LINE
4" SWLL	4" WIDTH SOLID WHITE LANE LINE
STOP	12" WIDTH SOLID WHITE STOP LINE

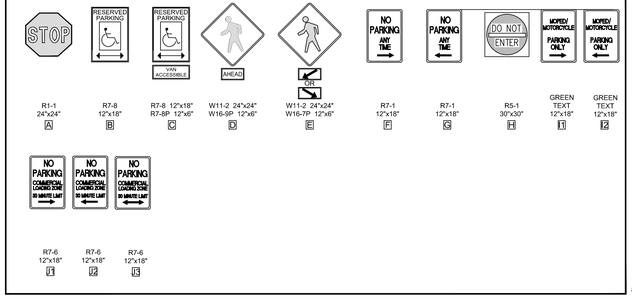
ALL PARKING STALLS TO BE 4" WIDTH SINGLE SOLID WHITE LINE EXCEPT AS SHOWN ON SITE LAYOUT PLAN.

ALL SIGNAGE AND STRIPING SHALL CONFORM TO THE STANDARDS FOR SIZE, HEIGHT, LOCATION, COLOR, INSTALLATION AND REFLECTIVITY SET FORTH IN THE CURRENT VERSION OF THE MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES (MUTCD).

PAVEMENT LEGEND

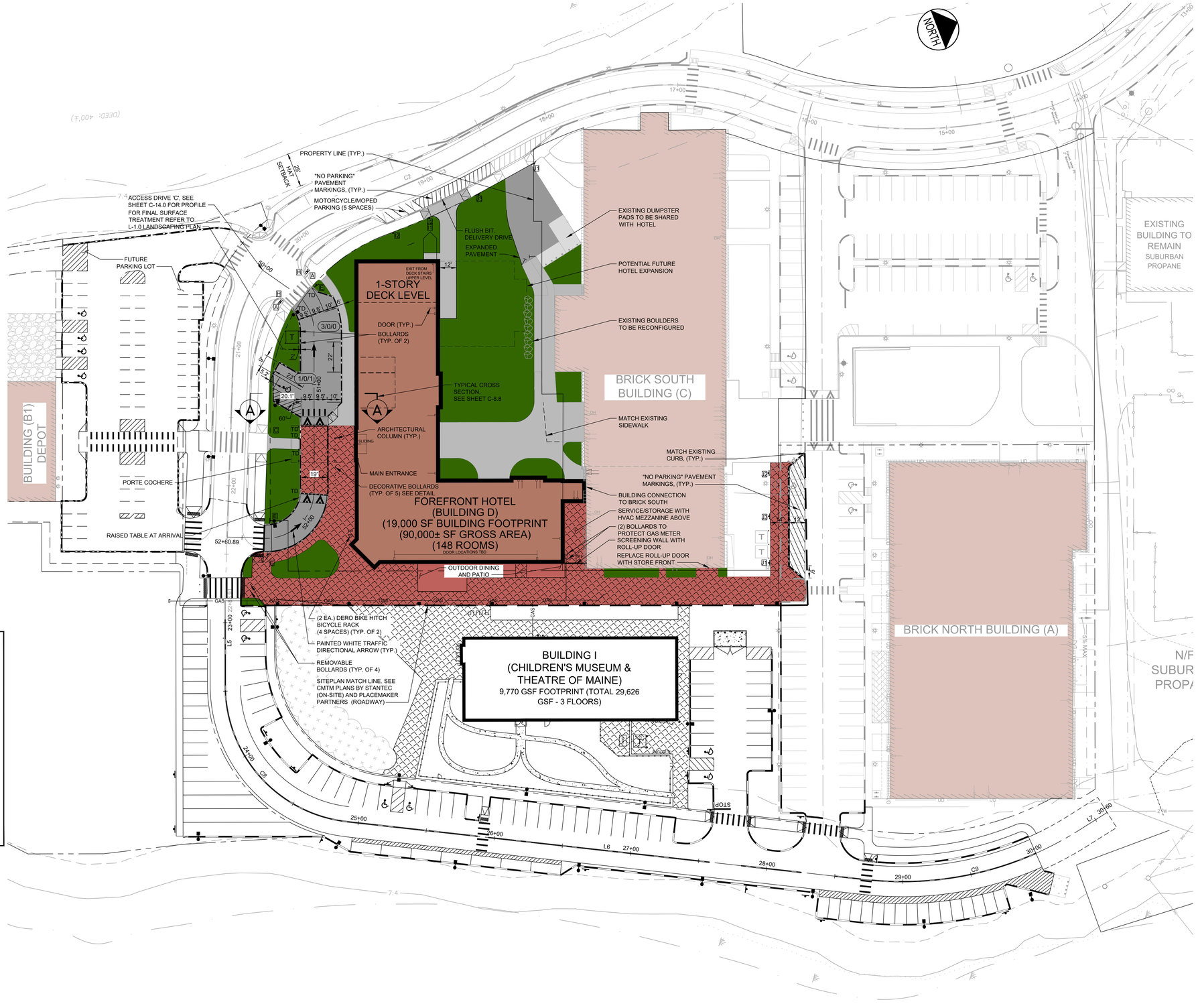
- STANDARD DUTY PAVEMENT
- LIGHT DUTY PAVEMENT
- BITUMINOUS PAVEMENT SIDEWALK
- HARDSCAPE - FINAL SURFACE MATERIAL TBD

SIGN LEGEND



R1-1 24"x24" A	R7-8 12"x18" B	R7-8 12"x18" R7-8P 12"x6" C	W11-2 24"x24" W16-9P 12"x6" D	W11-2 24"x24" W16-7P 12"x6" E	R7-1 12"x18" F	R7-1 12"x18" G	R5-1 30"x30" H	GREEN TEXT 12"x18" I1	GREEN TEXT 12"x18" I2	
R7-6 12"x18" J1	R7-6 12"x18" J2	R7-6 12"x18" J3								

100 / 16 / 8 PARKING SPACE - STANDARD / COMPACT / ACCESSIBLE



BASELINE LINE TABLE		
ID	LENGTH	DIRECTION

BASELINE CURVE TABLE						
ID	RADIUS	ARC LENGTH	DELTA	TANGENT	PC STATION	PT STATION

PRELIMINARY – NOT FOR CONSTRUCTION

REV	DATE	DESCRIPTION
3	6/8/2018	REVISED SITE PLANS PER CITY COMMENTS
2	2/02/18	RE-SUBMISSION PER CITY STAFF COMMENTS
1	9/25/2017	FINAL SITE PLAN SUBMISSION

REVISIONS

STATE OF MAINE — BO KENNEDY No. 11994 — LICENSED PROFESSIONAL ENGINEER — 06-08-18

P.E. BO KENNEDY
LIC. #11994

PROJECT
THE FOREFRONT AT THOMPSON'S POINT
HOTEL PORTLAND

SHEET TITLE
SITE LAYOUT PLAN

CLIENT
FOREFRONT HOTELIERS, LLC

PLACEMAKER PARTNERS, LLC
501 DANFORTH STREET
PORTLAND, ME 04102
bo@placemakerpartners.com

DRAWN: DB	DATE: AUG. 2017
DESIGNED: BEK	SCALE: 1" = 30'
FILE NAME: HOTEL-SITE LAYOUT.dwg	
SHEET C-3.0	

G:\Development Projects\Thompson's Point\Hotel\Plans\Site Plan\CAD\HOTEL-SITE LAYOUT.dwg bo 6/11/2018 3:42 PM

EROSION AND SEDIMENT CONTROL NOTES:

1. ALL RUNOFF FROM DISTURBED AREAS SHALL BE DIRECTED TO A FILTERING DEVICE DESIGNATED TO LIMIT TURBIDITY IN ALL DISCHARGE TO THE FORE RIVER. THE FILTERING DEVICE MAY BE BUT IS NOT LIMITED TO SAND FILTERS, EROSION CONTROL MIX, STRAW WATTLES, FLOCCULATION CHEMICALS, DIRT GLUE AND SILT FENCE
2. ALL CATCH BASINS TO HAVE 4" UNDERDRAIN PER DETAIL 'L' ON SHEET C-8.5
3. ALL SUBSURFACE DETENTION AREAS ARE NOT TO BE PLACED "ON-LINE" UNTIL TRIBUTARY AREA IS STABILIZED WITH PAVEMENT OR 75% VEGETATION COVERAGE.
4. STOCKPILES TO BE TEMPORARILY SEEDED AND MULCHED AS REQUIRED BY THE PROJECT SPECIFICATIONS
5. THE CONTRACTOR SHALL TREAT DISTURBED AREAS AND CONSTRUCTION HAUL PATH WITH DUST CONTROL BMPS TO LIMIT ALL FUGITIVE DUST
6. ALL EXCESS COMMON BORROW SHALL BE PLACE IN DESIGNATED STOCKPILE ON PANHANDLE DETAILS INCLUDED IN SEPARATE PLAN SET BY REFERENCE.
7. FOR WINTER CONSTRUCTION SEE SPECIAL PROVISIONS AND REQUIREMENTS IN "EROSION AND SEDIMENTATION CONTROL REPORT" DATED MARCH 2012 PREPARED BY DELUCA HOFFMAN ASSOCIATES, INC.

Summary of Storm Water Discharges					
Discharge ID	**Approximate Drainage Area (Ac)**	**Full Build Out 25 Yr Peak Flow (CFS)**	**Outlet Pipe Size (In)**	**Description**	***Minimum Required Riprap D50 (IN)**
CO	TBD	TBD	TBD	RCP Flared End W/ Bar Rack, Riprap Slope Apron	12

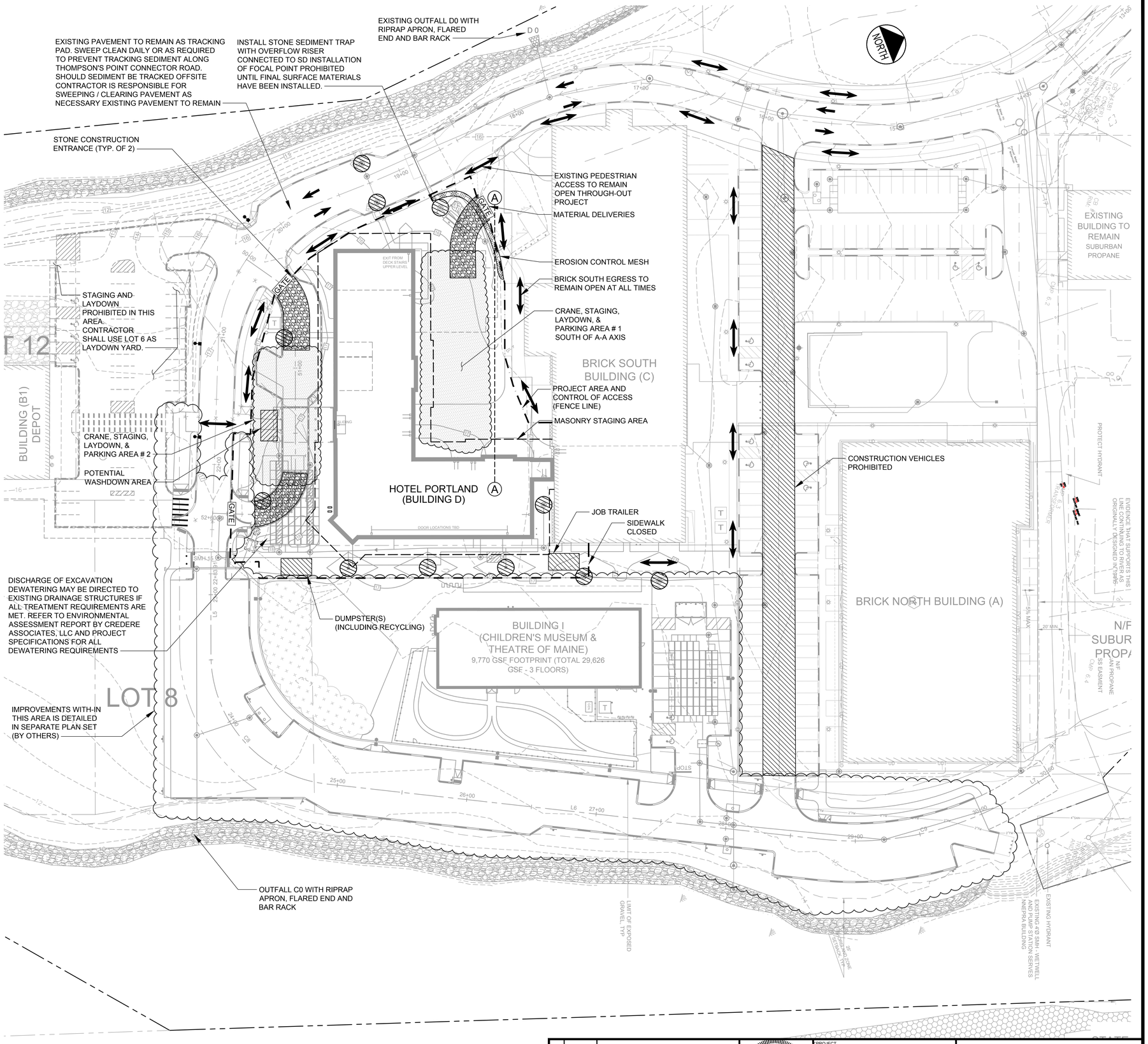
* D50 is a median rock size. Riprap should be a well graded mix of angular rock from about 1.5 to 0.25 times the size of the D50. The contractor shall protect existing riprap slope or replace rock to the meet the minimum required D50 stone size.

LEGEND

- INLET PROTECTION (STONE OR HAY SEDIMENT BARRIER)
- FILTERRA INLET PROTECTION (PER MANUFACTURERS REQUIREMENTS) (NOT REQUIRED IN THIS PHASE)
- RIPRAP OUTLET PROTECTION
- CURLEX BLANKET
- EROSION CONTROL MESH
- PERMISSIBLE CONTRACTOR ACCESS ROUTE AND NORMAL SITE TRAFFIC CIRCULATION (TEMPORARY CLOSURE BY WRITTEN PERMISSION ONLY)
- WASH DOWN AREA
- STONE CONSTRUCTION ENTRANCE
- PEDESTRIAN ACCESS ROUTE

CONTRACTOR CONSTRUCTION MANAGEMENT NOTES:

1. THIS PLAN IS PART OF AN OVERALL CONSTRUCTION MANAGEMENT PLAN APPROVED AS PART OF A CITY OF PORTLAND LEVEL III SITE PLAN APPLICATION. THE CONTRACTOR SHALL FOLLOW THE APPROVED CONSTRUCTION MANAGEMENT PLAN AND MAINTAIN A COPY IN THE JOB TRAILER.
2. CONTRACTOR SHALL POST ALL PERMITS, EMERGENCY CONTACT INFORMATION, AND CONSTRUCTION SIGNAGE PRIOR TO THE PRE-CONSTRUCTION MEETING.
3. THE FOREFRONT AT THOMPSON'S POINT IS AN ACTIVE DEVELOPMENT SITE WITH DAILY VISITORS FROM THE PUBLIC. THE CONTRACTOR SHALL PROVIDE APPROPRIATE PEDESTRIAN AND VEHICULAR SIGNAGE TO PROMOTE THE SAFE PASSAGE OF THE PUBLIC AROUND THE HOTEL DEVELOPMENT SITE.
4. A WRITTEN REQUEST FOR CLOSURES OF ANY KIND SHALL BE PROVIDE TO THE OWNER A MINIMUM OF 72 HOURS IN ADVANCE. THE OWNER MAY AT THEIR DIGRESSION AND AT NO COST TO THE OWNER DELAY THE CLOSURE AS NOT TO DISRUPT OTHER BUSINESSES.



PRELIMINARY – NOT FOR CONSTRUCTION

REV	DATE	DESCRIPTION
2	2/02/2018	RE-SUBMISSION PER CITY STAFF COMMENTS
1	9/25/2017	FINAL SITE PLAN SUBMISSION

REVISIONS

STATE OF MAINE · BO KENNEDY No. 11994 · LICENSED PROFESSIONAL ENGINEER — 02.02.18

P.E. BO KENNEDY
LIC. #11994

PROJECT
THE FOREFRONT AT THOMPSON'S POINT
HOTEL PORTLAND

SHEET TITLE
EROSION CONTROL AND CONSTRUCTION MANAGEMENT PLAN

CLIENT
FOREFRONT HOTELIERS, LLC

PLACEMAKER PARTNERS, LLC
501 DANFORTH STREET
PORTLAND, ME 04102
bo@placemakerpartners.com

DRAWN:	DB	DATE:	AUG. 2017
DESIGNED:	BEK	SCALE:	1" = 30'
FILE NAME:	HOTEL-EROSION.dwg		
SHEET	C-6.0		

PLACEMAKER PARTNERS, LLC
501 Danforth Street
Portland, ME 04102

March 9, 2018

Ms. Shukria Wiar
Planning and Development Department
City of Portland, Maine
389 Congress Street
Portland, Maine 04101-3509

Subject: The Forefront at Thompson's Point – Hotel Portland
Level III – Site Plan Application – Design Review Letter of Response

Dear Shukria:

We have received and reviewed peer review comments and offer our responses to these comments. For ease of reference we have repeated each comment in *italics* with our response following.

DESIGN REVIEW COMMENTS FROM TY LIN – TOM ERRICO DATED 03.09.2018

Comment 1:

How many parking spaces are expected to be required for the Hotel?

Response:

As noted in the Parking Memo dated March 2, 2018, the average parking demand is estimated to conservatively require 63 spaces; however, because the hotel will be staffed with valet employees all the time it is estimated the 63 vehicles will only occupy the area equivalent to that of approximately 50 self-parked parking spaces.

Comment 2:

During non-event time periods, where would those spaces be likely located? I understand that it may change over time.

Response:

The hotel valet parking area is not a fixed location and may vary on any given day depending on the needs of the site. The location may vary regardless of the presence of an event(s) held on that day, but rather, depend on the other businesses daily needs. The site is intended work as a managed shared parking model and does not work efficiently by assigning locations for specific uses. By design, the pool of actively managed 700 + onsite parking spaces is projected to be more than adequate for typical daily use.

Comment 3:

During event time periods would the same area be designated for hotel vehicles? (The Event Management Plan does not speak to on-site parking for businesses)

Response:

Maybe. It will depend on many factors such as:

- parking demand for all uses at the time of event,
- event type being held in Brick South, or
- other factors that affect parking at the site.

The parking location for hotel guest may be the same as a typical day or in a different location which maximizes the ease and efficiencies of parking where it is needed most as well as keeping the safety of people (vehicles or pedestrians) whom are circulating the site. The flexible pool of 700+ onsite shared parking spaces made available for events will shrink or expand depending on demand. Again, the intent is to specifically not designate areas of parking ownership. Based on the project parking model there is enough shared parking to accommodate daily visitors and allow for onsite parking during special events.

We are happy to discuss the EMP but feel strongly that this topic, while important, is unrelated to the review of the hotel development. The Event Management Plan "EMP" is intended for a gathering of 2,500 visitors or more for a specific and intended purpose and does not apply to the daily parking demand of the campus including the Brick South Event Building. The EMP document does not define the amount of onsite parking spaces available intentionally, but rather, provides a platform for which each event can use to facilitate a successful event. Each event can be drastically different and requires active planning to determine how many onsite parking spaces will be available on the day of the event and whether offsite resources are required.

If you have any questions regarding these materials, please contact this office.

Sincerely,

PLACEMAKER PARTNERS, LLC

Bo Kennedy, P.E.
Project Manager/Engineer

Attachments

c: Barbara Barhydt, City of Portland Planning
Chris Thompson, Forefront Partners I, LP
Jed Troubh, Forefront Partners, I, LP

WEST FACADE SIGNAGE

June 19, 2018

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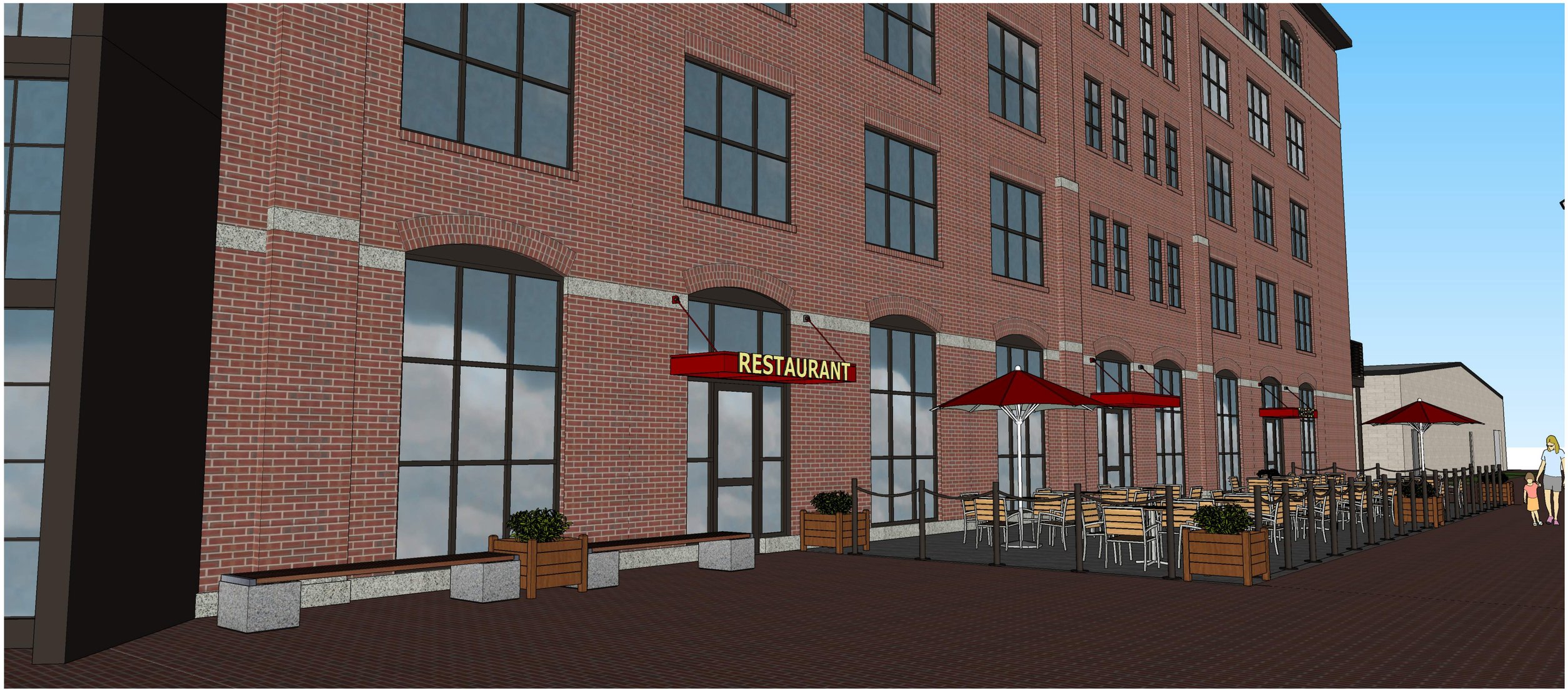
Proposed Hotel Portland at Thompson's Point

Portland, Maine

OPECHEE CONSTRUCTION CORPORATION



EAST FACADE PEDESTRIAN ENTRANCES

June 19, 2018

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Proposed Hotel Portland at Thompson's Point

Portland, Maine

OPECHEE CONSTRUCTION CORPORATION

NIGHT TIME RENDERING

June 19, 2018

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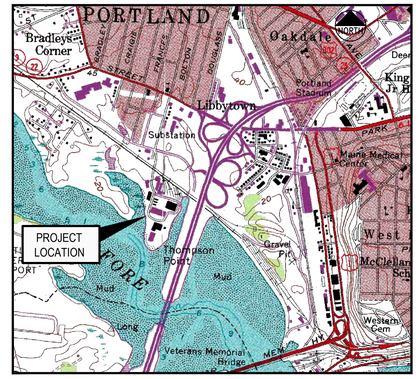
Proposed Hotel Portland at Thompson's Point

Portland, Maine

OPECHEE CONSTRUCTION CORPORATION

SITE DEVELOPMENT PLANS
FOR
HOTEL PORTLAND
AT THE FOREFRONT AT THOMPSON'S POINT
PORTLAND, MAINE
IN SUPPORT OF A LEVEL III SITE PLAN APPLICATION
SEPTEMBER 2017



LOCATION MAP
N.T.S.

PROJECT PARCEL SITE

ZONING: B-5 URBAN COMMERCIAL MIXED USE ZONE

PORTLAND TAX ASSESSOR'S MAP & LOT NUMBERS:

MAP	BLOCK	LOTS
201	A	5, 8, 10
202	A	1, 4

APPLICANT / OWNER:
PLACEMAKER PARTNERS, LLC/FOREFRONT HOTELIERS, LLC
501 DANFORTH STREET
PORTLAND, MAINE 04102
ATTN: BO KENNEDY,P.E./CHRIS THOMPSON, PhD
207.747.5288
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C-2.1 DEMOLITION AND REMOVALS PLAN
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* NOT INCLUDED WITH THIS SUBMISSION - AVAILABLE UPON REQUEST

PLAN REFERENCES:

TITLE	DATE APPROVED BY CITY
1. THE FOREFRONT AT THOMPSON'S POINT LEVEL III SITE PLAN	JUNE 5, 2012
2. THE FOREFRONT AT THOMPSON'S POINT LEVEL III SITE PLAN AMENDMENT	JUNE 19, 2013
3. BRICK NORTH BUILDING AT THE FOREFRONT AT THOMPSON'S POINT LEVEL III SITE PLAN	DECEMBER 17, 2013
4. THE FOREFRONT AT THOMPSON'S POINT MASTER PLAN	MARCH 11, 2014
5. THE DEPOT BUILDING LEVEL II SITE PLAN	JUNE 10, 2014
6. BRICK NORTH BUILDING AT THE FOREFRONT AT THOMPSON'S POINT LEVEL III SITE PLAN AMENDMENT (PHASE 1A)	DECEMBER 4, 2014
7. SUBDIVISION APPLICATION	JANUARY 12, 2016
8. BRICK NORTH AND SOUTH BUILDINGS - LEVEL III SITE PLAN	JANUARY 12, 2016
9. LEVEL II SITE PLAN -SECTIONAL 2 ROADWAY	JUNE 5, 2017
10. LEVEL III - CHILDREN'S MUSEUM & THEATRE OF MAINE	NOVEMBER 14, 2017

UTILITIES

WATER
ATTN: ROBERT BARTELS
PORTLAND WATER DISTRICT
22 DOUGLAS STREET
P.O. BOX 3533
PORTLAND, MAINE 04104
207.761.8310

SEWER
ATTN: KATHI EARLEY
CITY OF PORTLAND
PUBLIC SERVICES ENGINEERING DEPT.
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PORTLAND, MAINE 04102
207.874.8830

POWER
ATTN: JAMIE COUGH
CENTRAL MAINE POWER
162 CANCO ROAD
PORTLAND, MAINE 04103
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TELEPHONE
ATTN: JOHN CAPRIO
FAIRPOINT COMMUNICATIONS
ONE DAVIS FARM ROAD
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207.797.1842

CABLE
ATTN: MARK PELLITIER
SPECTRUM
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PORTLAND, MAINE 04102
877.546.0962

CABLE
ATTN: JAMES HARDER
OXFORD NETWORKS
491 LISBON STREET
LEWISTION, MAINE 04240
207-513-2820

NATURAL GAS
ATTN: SCOTT CARPENTER
UNITIL / FORMERLY NORTHERN UTILITIES
1075 FOREST AVENUE
PORTLAND, MAINE 04103
207.541.2543
email: carpenters@unitil.com

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

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

PERMITS / APPROVALS (APPLICABLE TO FULL DEVELOPMENT)

LOCAL	GOVERNING BODY	STATUS
SITE PLAN, SHORELAND ZONING AND SUBDIVISION REVIEW	CITY OF PORTLAND PLANNING AUTHORITY CITY HALL 389 CONGRESS STREET PORTLAND, MAINE 04101 207.874.8722 CONTACT: CHRISTINE GRIMANDO	REFER TO "PLAN REFERENCES" THIS SHEET
BUILDING AND DEMOLITION PERMITS	CITY OF PORTLAND CODE ENFORCEMENT OFFICE CITY HALL 389 CONGRESS STREET PORTLAND, MAINE 04101 207.874.8703	TO BE FILED PRIOR TO CONSTRUCTION BY CONTRACTOR FOR THIS PROJECT
MASTER DEVELOPMENT PLAN	CITY OF PORTLAND PLANNING AUTHORITY CITY HALL 389 CONGRESS STREET PORTLAND, MAINE 04101 207.874.8722 CONTACT: CHRISTINE GRIMANDO	APPROVED MARCH 2014

STATE	GOVERNING BODY	STATUS
SITE LOCATION OF DEVELOPMENT	CITY OF PORTLAND PLANNING AUTHORITY DELEGATED AUTHORITY CITY HALL, 389 CONGRESS STREET 207.874.8722 CONTACT: CHRISTINE GRIMANDO	APPROVED JUNE 5, 2012 UNDER CITY'S DELEGATED AUTHORITY AMENDED JANUARY 2016
NATURAL RESOURCES PROTECTION ACT (NRPA) / MAINE CONSTRUCTION GENERAL PERMIT	MAINE DEPARTMENT OF ENVIRONMENTAL PROTECTION 312 CANCO ROAD PORTLAND, MAINE 04103 207.822.6300 CONTACT: MARYBETH RICHARDSON	APPROVED JULY 2012 ORDER #L-25672-2G-A-N / L-25672-FS-B-N APPROVED JUNE 2014
MAINE DOT TRAFFIC MOVEMENT PERMIT	MAINE DEPARTMENT OF TRANSPORTATION STATE HOUSE STATION 16 AUGUSTA, MAINE 04333 207.624.3620 CONTACT: STEVE LANDRY	APPROVED JUNE 13, 2012 REG. 01-00155-A-N
MAINE VOLUNTARY RESPONSE ACTION PLAN (VRAP)	MAINE DEPARTMENT OF ENVIRONMENTAL PROTECTION 312 CANCO ROAD PORTLAND, MAINE 04103 207.623.8367 CONTACT: NICK HODGKINS	NO ACTION ASSURANCE LETTER ISSUED MARCH 6, 2013
PUBLIC RAIL CROSSING PETITION	MAINE DEPARTMENT OF TRANSPORTATION STATE HOUSE STATION 16 AUGUSTA, MAINE 04333	DECISION #364 - APRIL 3, 2012

FEDERAL	GOVERNING BODY	STATUS
U.S. ARMY CORPS OF ENGINEERS SECTION 404 PERMIT	U.S. ARMY CORPS OF ENGINEERS RR2 BOX 1855 MANCHESTER, MAINE 04351 207.623.8367 CONTACT: JAY CLEMENT	APPROVED AUGUST 24, 2012 CORP PERMIT #NAE-2012-00992 AMENDED APRIL 16, 2014

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

CONSULTANT LIST

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ATTN: PAT CARROLL

LEGAL COUNSEL:
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www.verrilldana.com

ARCHITECT & CONSTRUCTION MANAGERS:
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BELMONT NH 03220
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www.opechee.com

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www.haleyaldrich.com

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207.828.1272
ATTN: RIP PATTEN
www.crederellc.com

TRAFFIC ENGINEER:
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Sebago Technics, Inc.
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207.856.0277
ATTN: CHARLES MARCHESE
www.sebagotechnics.com

LEED:
Vvs|Architects & Consultants
617.898.8995
www.ava-greenconsultant.com

REV	DATE	DESCRIPTION
2	2/02/2018	RE-SUBMISSION PER CITY STAFF COMMENTS
1	9/25/2017	FINAL SITE PLAN SUBMISSION

REVISIONS

STATE OF MAINE — BO KENNEDY No. 11994 — LICENSED PROFESSIONAL ENGINEER — 02.02.18
P.E. BO KENNEDY
LIC. #11994

PROJECT: THE FOREFRONT AT THOMPSON'S POINT HOTEL PORTLAND
SHEET TITLE: COVER SHEET
CLIENT: FOREFRONT HOTELIERS, LLC

PLACEMAKER PARTNERS, LLC
501 DANFORTH STREET
PORTLAND, ME 04102
bo@placemakerpartners.com

DRAWN: BEK	DATE: AUG. 2017
DESIGNED: BEK	SCALE: N.T.S.
FILE NAME: HOTEL-COV.dwg	
SHEET	C-1.0

GENERAL NOTES

1. IN ADDITION TO THESE PLANS AND NOTES, THE CONTRACTOR SHALL REFER TO AND ADHERE TO CONTRACT DOCUMENTS WHICH INCLUDE BUT ARE NOT LIMITED TO ALL LOCAL, STATE, AND FEDERAL PERMITS APPLICABLE TO THE THOMPSON'S POINT SITE IN ADDITION TO ALL LOT 6 DEVELOPMENT PERMITS, THE MAINE DEP VRAP WORK PLAN, LEED SILVER DOCUMENT RECORDING, AND MAINE DEPARTMENT OF TRANSPORTATION SPECIFICATIONS.

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

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

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

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

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

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

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

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

10. THE CONTRACTOR IS RESPONSIBLE FOR MAINTAINING ACCESS TO THOMPSON'S POINT AND ALL ADJACENT PROPERTIES INCLUDING THE RAILROAD R.O.W. AT ALL TIMES. THE CONTRACTOR SHALL BE RESPONSIBLE FOR ALL TEMPORARY MARKINGS, SIGNAGE AND INCIDENTALS TO MAINTAIN SAFE VEHICLE AND PEDESTRIAN ACCESS THROUGH OUT THE LIFE OF THE PROJECT. THE CONTRACTOR SHALL NOTIFY THE PORTLAND PUBLIC SAFETY DIVISION ROUTINELY REGARDING TEMPORARY IMPACT OR CHANGES TO EMERGENCY SITE ACCESS CONDITIONS.

SITE LAYOUT NOTES

1. ALL HANDICAP PARKING SPACES ARE TO RECEIVE HANDICAP SIGNS AND PAVEMENT MARKINGS AS ILLUSTRATED ON THE DETAIL SHEETS.

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

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

4. EXCEPT WHERE INDICATED OTHERWISE, THE PAVEMENT IS TO BE STANDARD DUTY PAVEMENT. SEE DRAWINGS C-3.5 SURFACE TREATMENT PLAN FOR PAVEMENT TYPE.

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

6. STRIPE PARKING AREAS, DRIVES AND ROADWAY AS SHOWN, INCLUDING PARKING SPACES, STOP BARS, CROSSWALKS, HANDICAP SYMBOLS, PAINTED ISLANDS AND FIRE LANES. (ALL MARKINGS EXCEPT MEDIAN ISLANDS AND CENTERLINES TO BE CONSTRUCTED USING WHITE TRAFFIC PAINT). ALL TRAFFIC PAINT SHALL MEET THE REQUIREMENTS OF AASHTO M248 TYPE "F". MEDIAN ISLANDS AND CENTERLINES TO BE CONSTRUCTED USING YELLOW TRAFFIC PAINT.

7. SEE DETAILS FOR PARKING STALL DIMENSIONS, HANDICAP SYMBOLS, SIGNS AND SIGN POSTS.

8. STOP BARS SHALL BE 12" WIDE.

9. PAINTED ISLANDS SHALL BE 4" WIDE DIAGONAL LINES @ 3'-0" O.C. BORDERED BY 4" WIDE LINES.

GRADING & DRAINAGE NOTES:

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

2. PROVIDE TURF REINFORCEMENT IN AREAS INDICATED ON THE PLANS.

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

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

5. SEE EXISTING CONDITIONS FOR BENCHMARK INFORMATION.

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

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

8. COMPACTION REQUIREMENTS:

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

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

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

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

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

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

LOCAL APPROVALS, WAIVERS AND VARIANCES

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

UTILITY NOTES

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

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

3. ALL SANITARY SEWER WORK SHALL MEET THE STANDARDS OF THE MAINE STATE PLUMBING CODE AND CITY OF PORTLAND PUBLIC SERVICES DIVISION.

4. THE CONTRACTOR SHALL COORDINATE THE INSTALLATION OF ELECTRIC SERVICE WITH CENTRAL MAINE POWER.

5. COORDINATE ALL UTILITY WORK WITH THE APPROPRIATE UTILITY COMPANY. ALL UTILITY WORK SHALL CONFORM TO THE STANDARDS OF THE UTILITY COMPANY AND PROJECT SPECIFICATIONS, WHICHEVER IS MORE STRINGENT.

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

7. UNDERGROUND ELECTRICAL, CONDUIT MATERIAL AND INSTALLATION SHALL CONFORM TO UTILITY COMPANY STANDARDS AND PROJECT SPECIFICATIONS, WHICH EVER IS MORE STRINGENT.

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

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

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

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

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

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

LANDSCAPE NOTES

(SUBJECT TO COORDINATION WITH LANDSCAPE DRAWINGS. IN CASE OF CONFLICT BETWEEN THIS SECTION AND THE LANDSCAPE DRAWINGS, THE LANDSCAPING DRAWINGS SHALL GOVERN)

1. ALL PLANTS SHALL BE NURSERY GROWN AND WORKMANSHIP SHALL CONFORM TO THE AMERICAN ASSOCIATION OF NURSERYMEN, STANDARDS AND SHALL BE SUBJECT TO THE APPROVAL OF THE OWNERS REPRESENTATIVE BEFORE AND AFTER PLANTING.

2. PLANTS SHALL BE GUARANTEED FOR A PERIOD OF ONE (1) YEAR AFTER INSPECTION AND ACCEPTANCE, AND SHALL HAVE AT LEAST 80% HEALTHY GROWTH AT THE END OF THE GUARANTEED PERIOD.

3. ALL DISTURBED AREAS NOT TO BE PAVED OR OTHERWISE TREATED SHALL RECEIVE 6" LOAM AND SEED AND 6" CLEAN COMMON BORROW AS DEFINED IN VRAP WORK PLAN BY CREDERE ASSOCIATES, DATED MARCH 6, 2013.

4. THREE (3) INCH BARK MULCH IS TO BE USED AROUND THE TREE AND SHRUB PLANTING AS SPECIFIED IN THE DETAILS. WHERE BARK MULCH IS USED IN A CURBED ISLAND, THE BARK SHALL MEET THE TIP INSIDE EDGE OF THE CURB. ALL OTHER AREAS SHALL RECEIVE 6" LOAM AND SEED.

5. THE CONTRACTOR SHALL SUPPLY ALL PLANT MATERIALS IN QUANTITIES SUFFICIENT TO COMPLETE THE PLANTING AS SHOWN.

6. PARKING AREA PLANTED ISLANDS TO HAVE A MINIMUM OF 6" TOPSOIL. REMOVE ALL CONSTRUCTION DEBRIS BEFORE TOPSOILING. TOPSOIL SHALL BE PLACED TO TOP OF CURB.

7. ALL PLANT MATERIAL SHALL BE APPROVED BY THE OWNER OR THE OWNERS REPRESENTATIVE PRIOR TO ARRIVAL ON THE SITE.

8. PLANT MATERIAL SHALL BEAR THE SAME RELATIONSHIP TO FINISHED GRADE AS TO THE ORIGINAL PLANTING GRADE PRIOR TO DIGGING.

9. THE CONTRACTOR SHALL LOCATE, VERIFY, AND MARK ALL EXISTING AND NEWLY INSTALLED UNDERGROUND UTILITIES PRIOR TO ANY LAWN WORK OR PLANTING. ANY CONFLICTS WHICH MIGHT OCCUR BETWEEN PLANTINGS AND UTILITIES SHALL BE IMMEDIATELY REPORTED TO THE OWNER SO THAT ALTERNATE PLANTING LOCATIONS CAN BE DETERMINED.

10. NO SUBSTITUTION OF PLANT MATERIALS SHALL BE ALLOWED WITHOUT THE PRIOR WRITTEN APPROVAL OF THE OWNER.

11. THE CONTRACTOR SHALL BE RESPONSIBLE FOR PROTECTING ALL PLANTING AND LAWNS AGAINST DAMAGE FROM ONGOING CONSTRUCTION. THIS PROTECTION SHALL BEGIN AT THE TIME THE PLANT IS INSTALLED AND CONTINUE UNTIL THE FORMAL ACCEPTANCE OF ALL THE PLANTINGS.

12. SEE PLANTING DETAILS FOR WEED BARRIER INFORMATION.

13. ALL PLANTING LOCATED AT THE ENTRANCE TO THE PROJECT OR AT INTERSECTIONS WITHIN THE SITE WILL BE MAINTAINED AND WILL NOT EXCEED 3 FEET IN HEIGHT WITHIN A TRIANGLE FORMED 25' INTO THE DRIVEWAY AND 25' ALONG THE TRAVEL WAY.

EROSION CONTROL NOTES:

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

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

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

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

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

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

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

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

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

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

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

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

13. INSTALL CURLEX EROSION CONTROL MAT OR EQUAL ON ALL SLOPES STEEPER THAN 3:1.

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

PRELIMINARY – NOT FOR CONSTRUCTION

LEGEND

EXISTING	PROPOSED
BOUNDARY LINE/R.O.W.	BARRIER FREE SYMBOL
ABUTTER LINE/R.O.W.	SIGN
DEED LINE/ROW	SIGN LABEL
TIE LINE	GUIDERAIL - METAL
EASEMENT	GUIDERAIL - TIMBER
FLOODPLAIN	FENCE - CHAINLINK
CENTERLINE	FENCE - WOOD
IRON PIPE/ROD	BUILDING / BUILDING ACCESS
BENCHMARK	PROPERTY LINE
BUILDING	RETAINING WALL
WETLANDS	PEDESTRIAN CROSSWALK
EDGE WETLAND	TRAFFIC ARROWS
ROCK OUTCROP	BOLLARD
SIGN	VERTICAL GRANITE CURB
EDGE PAVEMENT	SLOPED GRANITE CURB
GRAVEL ROAD	CATCH BASIN
EDGE WATER	CONTOUR LABEL
CONTOURS (122 — 120)	DRAIN MANHOLE
SPOT GRADE (×30.20)	RIPRAP INLET APRON
CHAIN LINK FENCE	RIPRAP OUTLET APRON
DECIDUOUS TREE	SLOPE DESIGNATION (1 2 2:1)
CONIFEROUS TREE	SPOT GRADE (×8.33)
GUARDRAIL	SPOT GRADE AT CURB (TC 96.50 8.50 BC 8.00)
WATER GATE VALVE	WATER MARK
HYDRANT	UNDERDRAIN (10"UD)
SEWER MH	STORM DRAIN (SD9)
CATCH BASIN	TREE LINE OR LIMIT OF CLEARING
DRAINAGE MH	CURB STOP
UNIDENTIFIED MH	HYDRANT
OVERHEAD UTILITY (OHU)	LIGHT POLE WITH FIXTURE(S)
ELECTRIC METER BOX (EM)	WALL MOUNT LIGHT
LIGHT POLE	SANITARY SEWER MANHOLE
UTILITY POLE	TEST PIT
GUY	TRANSFORMER PAD (T)
RIPRAP	UTILITY POLE
BOULDER	VALVE
SCHEDULE B – SECTION 2 EXCEPTIONS (15)	SANITARY SEWER (SAN9)
	WATER MAIN (6"W)
	GAS MAIN (2"G)
	UNDERGROUND ELECTRIC (UGE)
	OVERHEAD ELECTRIC (OHE)
	PEDESTRIAN FLASHER (P)

REV	DATE	DESCRIPTION
2	2/02/2018	RE-SUBMISSION PER CITY STAFF COMMENTS
1	9/25/2017	FINAL SITE PLAN SUBMISSION

REVISIONS

STATE OF MAINE — BO KENNEDY No. 11994 — LICENSED PROFESSIONAL ENGINEER — 02.02.18

P.E. BO KENNEDY
LIC. #11994

PROJECT: THE FOREFRONT AT THOMPSON'S POINT HOTEL PORTLAND

SHEET TITLE: GENERAL NOTES AND LEGEND

CLIENT: FOREFRONT HOTELIERS, LLC

PLACEMAKER PARTNERS, LLC
501 DANFORTH STREET
PORTLAND, ME 04102
bo@placemakerpartners.com

DRAWN: BEK | DATE: AUGUST 2017
DESIGNED: BEK | SCALE:
FILE NAME: HOTEL-GEN.dwg
SHEET: C-1.2

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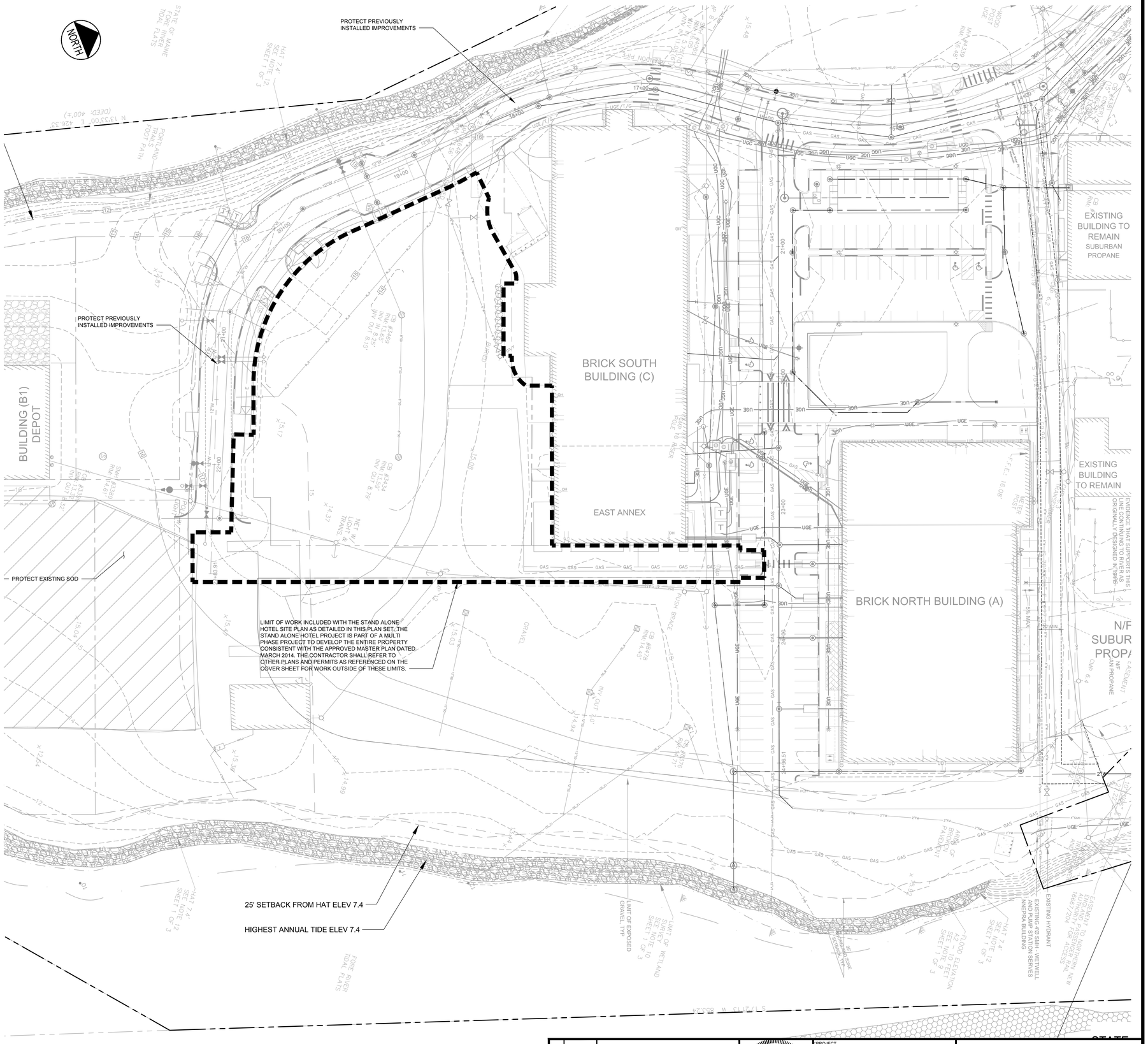

NOTE:

THIS PLAN REPRESENTS EXISTING CONDITIONS PRIOR TO COMPLETION OF SITE PLAN IMPROVEMENTS ATTENDANT WITH ROADWAY EXTENSION SOUTH OF BRICK SOUTH PLANS DEPICT DESIGN ELEMENTS CURRENTLY UNDER CONSTRUCTION. AS-BUILT PLANS WILL BE MADE AVAILABLE FROM THE CONTRACTOR (SHAW BROS.) UPON REQUEST.

PLAN REFERENCES:

1. BOUNDARY AND TOPOGRAPHIC DATA PROVIDED BY SEBAGO TECHNICS AS SHOWN ON A PLAN TITLED ALTA/ACSM LAND TITLE SURVEY OF 1 THOMPSON'S POINT, DATED MAY 27, 2011 AND LAST REVISED ON NOVEMBER 23, 2011. ADDITIONAL SURVEY ON SUBURBAN PROPANE PROVIDED ON MARCH 30, 2014, BY SEBAGO TECHNICS.
2. BORINGS AND TEST PIT LOCATIONS NOT SHOWN. AVAILABLE UPON REQUEST.
3. ADDITIONAL UTILITY DATA TAKEN FROM CITY AND UTILITY COMPANY RECORD DRAWINGS. AS WELL AS OBSERVATIONS BY PLACEMAKER PARTNERS, LLC PERSONNEL DURING SITE VISITS.

PRELIMINARY – NOT FOR CONSTRUCTION

GRAPHIC SCALE

30 0 15 30 60

(IN FEET)

1 inch = 30 ft.

REV	DATE	DESCRIPTION
2	2/02/2018	RE-SUBMISSION PER CITY STAFF COMMENTS
1	9/25/2017	FINAL SITE PLAN SUBMISSION

REVISIONS

STATE OF MAINE BO KENNEDY No. 11994 LICENSED PROFESSIONAL ENGINEER 02.02.18

P.E. BO KENNEDY

LIC. #11994

PROJECT: THE FOREFRONT AT THOMPSON'S POINT HOTEL PORTLAND

SHEET TITLE: EXISTING CONDITIONS PLAN

CLIENT: FOREFRONT HOTELIERS, LLC

PLACEMAKER PARTNERS, LLC
501 DANFORTH STREET
PORTLAND, ME 04102
bo@placemakerpartners.com

DRAWN:	DB	DATE:	AUG. 2017
DESIGNED:	BEK	SCALE:	1" = 30'
FILE NAME:	HOTEL-DEMO.dwg		
SHEET	C-2.0		

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1. INFORMATION ON THIS PLAN WAS OBTAINED FROM A SURVEY NAMED 'ALTA/ACSM LAND TITLE SURVEY OF 1 THOMPSON'S POINT, PORTLAND, MAINE' DATED MAY 27, 2011 BY SEBAGO TECHNICS OF WESTBROOK, MAINE AND FIELD OBSERVATIONS BY CREDERE ASSOCIATES, LLC PERSONNEL ON AUGUST 23, 2011, AUGUST 30, 2011 AND SEPTEMBER 2, 2011.
2. DEMOLITION WORK INCLUDED WITH THIS CONTRACT IS DEFINED IN THE PROJECT SPECIFICATIONS, DRAWINGS AND ENVIRONMENTAL ASSESSMENT REPORT PREPARED BY CREDERE ASSOCIATES, LLC. IT SHALL INCLUDE BUT NOT BE LIMITED TO:
   a. BUILDING DEMOLITION
   b. LEAD PAINT ABATEMENT
   c. UNIVERSAL / HAZARDOUS WASTE REMOVAL
   d. CONCRETE FOUNDATION OFFSITE DISPOSAL
   e. UTILITY DISCONNECTION AT EACH RAZED BUILDING
   f. INSTALLATION OF EROSION AND SEDIMENT CONTROLS
   g. DUST CONTROL
3. THE CONTRACTOR SHALL REMOVE CONCRETE FOUNDATIONS TO A MINIMUM OF 2 FEET BELOW GRADE AND TRANSPORTED OFFSITE FOR DISPOSAL. FOUNDATION HOLES SHALL BE LEFT WITH OSHA COMPLIANT SIDEWALLS WITH A SLOPE NOT MORE THAN 3:1.
4. THE CONTRACTOR SHALL BE RESPONSIBLE TO PROVIDE TEMPORARY FACILITIES INCLUDING AN OFFICE TRAILER AND BATHROOM FACILITIES.
5. THE CONTRACTOR MUST OBTAIN ALL PERMITS REQUIRED BY THE CITY OF PORTLAND TO PERFORM CONTRACTED WORK INCLUDING BUT NOT LIMITED TO A CITY DEMOLITION PERMIT PRIOR TO THE START OF WORK.
6. EROSION, SEDIMENT AND DUST CONTROL IS OF PARAMOUNT IMPORTANCE TO THE OWNER AND A CRITICAL COMPONENT OF THE PERMIT DOCUMENTS. THE CONTRACTOR SHALL BE RESPONSIBLE TO REFER TO THE PROJECT DOCUMENTS FOR ALL REQUIREMENTS AS DETAILED IN THE ENVIRONMENTAL ASSESSMENT REPORT AND ITS APPENDED REPORTS PREPARED BY CREDERE ASSOCIATES, LLC. THE DEMOLITION CONTRACTOR SHALL BE RESPONSIBLE FOR MAINTENANCE OF ALL EROSION AND SEDIMENT MEASURES UNTIL CLOSE OUT OF THE DEMOLITION CONTRACT.
7. THE CONTRACTOR IS REQUIRED TO SUBMIT A WRITTEN LOGISTICS PLAN A MIN. OF 48 HOURS PRIOR TO THE MOBILIZATION OF EQUIPMENT TO THE SITE. THE PLAN SHALL DETAIL LAYDOWN AREAS, ACCESS AREAS, STOCKPILE AREAS, SCHEDULE, ETC. THE OWNER RESERVES THE RIGHT TO MODIFY THE LOGISTICS PLAN TO BE CONSISTENT WITH THE PROJECT DOCUMENTS AT NO ADDITIONAL COST TO THE OWNER.
8. THE CONTRACTOR SHALL HANDLE ALL DISTURBED SOILS IN ACCORDANCE WITH THE SOIL MANAGEMENT PLAN PREPARED BY CREDERE ASSOCIATES, LLC.
9. THE CONTRACTOR IS RESPONSIBLE FOR ALL DOCUMENTATION APPLICABLE TO THE GROUNDWATER AND SOIL REMOVAL AND DISPOSAL ACTIVITIES AS DETAILED IN THE GROUNDWATER MANAGEMENT PLAN AND SOIL MANAGEMENT PLAN BY CREDERE ASSOCIATES, LLC. AT NO EXTRA EXPENSE TO THE OWNER.
10. THE CONTRACTOR SHALL REMOVE, DISPOSE AND DOCUMENT ALL UNIVERSAL AND HAZARDOUS WASTE, LEAD-BASED PAINT AND SUB SLAB SOIL IN ACCORDANCE WITH THE PROJECT SPECIFICATIONS INCLUDING THE PHASE II ENVIRONMENTAL ASSESSMENT REPORT AND MEDEP VRAP PLAN.
11. THE PROJECT SITE INCLUDES ONGOING TENANT ACTIVITIES, INCLUDING BUT NOT LIMITED TO RETAIL, EVENTS, OFFICE, SUBURBAN PROPANE AND NNEPRA, THAT SHALL REMAIN THROUGHOUT THE COURSE OF DEMOLITION AND CONSTRUCTION. CONSTRUCTION WORK SHALL BE CONDUCTED IN A MANNER TO MINIMIZE DISRUPTION TO THESE OPERATIONS.
12. SITE ACCESS TO SUBURBAN PROPANE, NNEPRA, CMP AND THE PORTLAND WATER DISTRICT MUST BE MAINTAINED AT ALL TIMES.
13. SITE ACCESS IS CURRENTLY THROUGH A PUBLIC RAILROAD CROSSING. NO EXTRA PAYMENT WILL BE MADE FOR TEMPORARY SHUTDOWNS RESULTING FROM RAILROAD OPERATIONS.
14. THE CONTRACTOR SHALL MAINTAIN CLEAR FIRE LANES ACCESS THE SITE THROUGHOUT THE DURATION OF WORK.
15. APPROXIMATE LOCATION OF HISTORICAL BUILDING PREVIOUSLY RAZED AS SHOWN ON THE SANBORN MAPS ATTACHED TO THE CREDERE ASSOCIATES ENVIRONMENTAL ASSESSMENT REPORT. THE CONTRACTOR SHOULD BE AWARE THAT REMNANTS OF THESE BUILDINGS MAY STILL BE PRESENT WHEN ENCOUNTERED DURING WORK OF THIS CONTRACT. WORK ASSOCIATED WITH REMOVAL OF BURIED FOUNDATIONS, SLABS OR OLD UTILITIES AND BACK FILL WITH CLEAN GRANULAR BORROW (MDOT 703.19) OF EXISTING VOIDS OR AS A RESULT OF REMOVAL SHALL BE CONSIDERED INCIDENTAL TO THE PROJECT AND COMPLETED AT NO ADDITIONAL COST TO THE OWNER.
16. THE PORTLAND FIRE DEPARTMENT SHOULD BE NOTIFIED PRIOR TO ANY SHUTDOWN OF ONSITE WATER MAINS AND HYDRANTS. IT IS THE OWNER'S INTENT TO MAINTAIN THE HYDRANT SERVICES UPON COMPLETION OF THE DEMOLITION PHASE ACTIVITIES SO THE CONTRACTOR SHALL INCLUDE ALL NECESSARY MEASURES TO SATISFY THIS REQUIREMENT.
17. THE CONTRACTOR SHALL MAINTAIN RECORD DRAWINGS; DOCUMENTING ALL UTILITY STUBS LOCATION, DEPTH, SIZE, TYPE AND CONDITION.
18. THIS PLAN REPRESENTS EXISTING CONDITIONS PRIOR TO CONSTRUCTION OF SITE PLAN IMPROVEMENTS ATTENDANT WITH BRICK SOUTH AS-BUILT PLANS ARE AVAILABLE FROM THE CONTRACTOR (SHAW BROS.) UPON REQUEST.

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BUILDINGS WERE PREVIOUSLY DEMOLISHED SUBSURFACE REMNANTS MAY REMAIN.

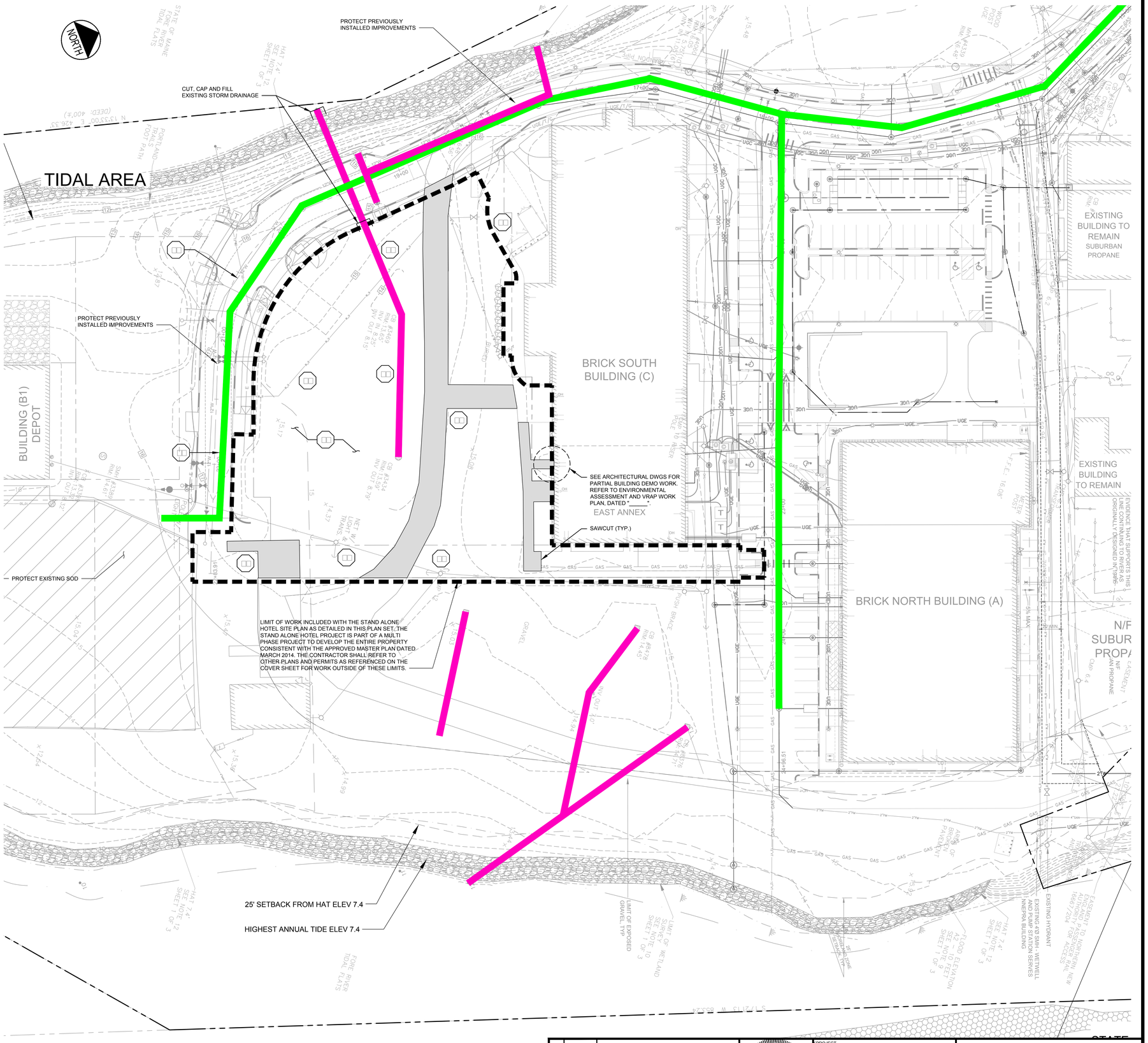
1. REMOVE CHAIN LINK FENCE
2. CENTRAL MAINE POWER TO REMOVE UTILITY POLES AND OVERHEAD OR UNDERGROUND UTILITY WIRES AT A TIME WHEN TEMPORARY OR PERMANENT POWER CAN TAKE IT'S PLACE. ADJACENT PROPERTY OWNERS SUCH AS (BRICK NORTH, BRICK SOUTH, SUBURBAN PROPANE AND NNEPRA) AND ON SITE TENANTS SHALL HAVE ACCESS TO POWER AT ALL TIMES. THE CONTRACTOR IS REQUIRED TO COORDINATE WITH THE UTILITY COMPANIES TO TURN OFF POWER AT A TIME APPROVED BY THE OWNER.
3. EXISTING BITUMINOUS ASPHALT OR CONCRETE SURFACE TO BE REMOVED. THE CONTRACTOR MAY PROCESS AND BLEND WITH GRAVEL FOR USE AS SUBBASE GRAVEL MATERIAL.
4. CONCRETE SLABS AND FOUNDATIONS TO BE DEMOLISHED - SALVAGEABLE MATERIAL INCLUDING BRICK AND CONCRETE BLOCK MAY BE PROCESSED ONSITE BUT MUST BE PROPERLY DISPOSED OF OFFSITE.FOUNDATIONS TO BE REMOVED A MINIMUM OF 2 FEET BELOW EXISTING GRADE. ALL UTILITY SERVICES SHALL BE CUT AND CAPPED 10'-0" FROM THE BUILDING WITH A WITNESS STAKE CLEARLY MARKED. THE CONTRACTOR IS RESPONSIBLE TO IDENTIFY AND DISCONNECT ALL UTILITIES CONNECTED TO THE BUILDING. SOME UTILITY CONNECTIONS MAY NOT BE SHOWN ON THIS PLAN AND SHALL BE DISCONNECTED AT NO ADDITIONAL COST TO THE OWNER. CONTRACTOR SHALL PROVIDE AN ALLOWANCE AND A PER CUBIC YARD PRICE TO REMOVE AND DISPOSE OF MATERIAL IN APPROVED OFF-SITE FACILITY. ALL TRUCKING SLIP VOLUMES SHALL BE TRACKED AND APPROVED BY OWNER OR ITS ASSIGNED REPRESENTATIVE PRIOR TO INVOICING.
5. EXISTING SANITARY SEWER OR STORM DRAINAGE STRUCTURE TO BE PROTECTED OR ALTERED
6. NOT USED
7. EXISTING SANITARY SEWER OR DRAINAGE STRUCTURES AND PIPING TO BE REMOVED. ALL EXISTING SERVICE LEADERS SHALL REMAIN IN SERVICE UNTIL TEMPORARY OR PERMANENT SERVICE IS PROVIDED.
8. EXISTING WATER SUPPLY SYSTEM TO BE REMOVED INCLUDING ALL VALVES, SUPPLY MAINS, SERVICES AND BLOW OFFS TO THE LIMITS SHOWN ON PLANS.
9. PROTECT EXISTING WATER SUPPLY SYSTEM

EXISTING STORM DRAIN SEWER LINE WHICH IS BELIEVED TO DISCHARGE DIRECTLY TO THE FORE RIVER. ALL GROUNDWATER DISCHARGED TO THESE LINES SHALL BE TREATED IN ACCORDANCE WITH "SECTION 4.3 COLLECTION, TREATMENT, AND ON-SITE DISPOSAL" OF THE "GROUNDWATER MANAGEMENT PLAN" PREPARED BY CREDERE ASSOCIATES, LLC

EXISTING SANITARY SEWER LINES WHICH ARE TRIBUTARY TO THE PORTLAND WATER DISTRICT PUMP STATION. ALL GROUNDWATER DISCHARGED TO THESE LINES SHALL BE TREATED IN ACCORDANCE WITH "SECTION 4.2 COLLECTION AND DISPOSAL AT TREATMENT FACILITY OF THE GROUNDWATER MANAGEMENT PLAN PREPARED BY CREDERE ASSOCIATES, LLC. THE WATER DISCHARGED TO THIS SYSTEM WILL BE SUBJECT TO A MONETARY FEE PER VOLUME OF WATER AS SET FORTH BY THE CITY OF PORTLAND FOR ANY WATER DISCHARGED TO THIS SYSTEM DURING A RAIN EVENT WHEN THE COMBINED SYSTEM OVERFLOW LINE HAS BEEN ACTIVATED THE CONTRACTOR SHALL BE RESPONSIBLE TO TREAT THE DISCHARGE IN ACCORDANCE WITH SECTION 4.3 OF THE GROUNDWATER MANAGEMENT PLAN AND DIVERTED TO THE EXISTING STORM DRAIN SYSTEM.

OTE TO CO TRACTOR

1. THE SITE IS AN ACTIVE SITE WITH EXISTING ABUTTERS AND ON SITE TENANTS WITH RIGHTS TO ACCESS AND OPERATE THEIR FACILITIES. THE CONTRACTOR SHALL MAINTAIN REASONABLE VEHICULAR AND PEDESTRIAN ACCESS TO, BUT NOT LIMITED TO THE FOLLOWING: ALL EXISTING BUILDINGS, HYDRANTS / FIRE PROTECTION APPEARANCES, PER NORTH WESTERLY "PANHANDLE" PARKING LOT AND SUBURBAN PROPANE GATED ENTRANCE, DEPOT BUILDING.
2. THIS PLAN REQUIRES THE REMOVAL OF EXISTING UTILITY SERVICES (ELECTRIC, COMMUNICATION, SANITARY SEWER, WATER AND DRAINAGE). ALL EXISTING USERS SHALL BE PROVIDED WITH TEMPORARY OR PERMANENT UTILITY CONNECTIONS PRIOR TO REMOVAL OR DISCONNECTION OF ANY UTILITY LINE WITH NO ADDITIONAL COST TO THE OWNER. THE CONTRACTOR SHALL COORDINATE ALL SHUT DOWNS WITH OWNER AND USER 72 HOURS IN ADVANCE WITH A PLAN TO PROVIDE A REPLACEMENT SERVICE.



PRELIMINARY – NOT FOR CONSTRUCTION

GRAPHIC SCALE
30 0 15 30 60
(IN FEET)
1 inch = 30 ft.

REV	DATE	DESCRIPTION
2	2/02/2018	RE-SUBMISSION PER CITY STAFF COMMENTS
1	9/25/2017	FINAL SITE PLAN SUBMISSION

REVISIONS

STATE OF MAINE — BO KENNEDY No. 11994 — LICENSED PROFESSIONAL ENGINEER — 02.02.18

P.E. BO KENNEDY
LIC. #11994

PROJECT
THE FOREFRONT AT THOMPSON'S POINT HOTEL PORTLAND

SHEET TITLE
DEMOLITION AND REMOVALS PLAN

CLIENT
FOREFRONT HOTELIERS, LLC

PLACEMAKER PARTNERS, LLC
501 DANFORTH STREET
PORTLAND, ME 04102
bo@placemakerpartners.com

DRAWN:	DB	DATE:	AUG. 2017
DESIGNED:	BEK	SCALE:	1" = 30'
FILE NAME:	HOTEL-DEMO.dwg		
SHEET	C-2.1		

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SITE LAYOUT NOTES

1. ALL BARRIER FREE PARKING SPACES ARE TO RECEIVE BARRIER FREE SIGNS AND PAVEMENT MARKINGS AS ILLUSTRATED ON THE DETAIL SHEETS.
2. ALL CURBING MATERIALS WILL BE SELECTED BY THE OWNER. THE DIMENSIONS PROVIDED ON THE PLAN ARE TO FACE OF CURB. ALL CURBING TYPES ARE DETAILED IN THE PROJECT DETAIL SHEETS.
3. ALL DIMENSIONING, UNLESS NOTED OTHERWISE, IS TO THE FACE OF CURB, THE EDGE OF PAVEMENT OR THE FACE OF THE BUILDING.
4. EXCEPT WHERE INDICATED OTHERWISE, THE PAVEMENT IS TO BE STANDARD DUTY PAVEMENT.

CURB LEGEND

----------	TYPE 1 VERTICAL GRANITE CURB - FLUSH
————	TYPE 1 VERTICAL GRANITE CURB
TD	TIP DOWN
TS	TRANSITION STONE (VERTICAL GRANITE TO SLIP FORM CONCRETE)

PAVEMENT MARKING LEGEND

4" DYCL	4" WIDTH DOUBLE YELLOW CENTERLINE
4" SYLL	4" WIDTH SOLID YELLOW LANE LINE
4" SWLL	4" WIDTH SOLID WHITE LANE LINE
STOP	12" WIDTH SOLID WHITE STOP LINE

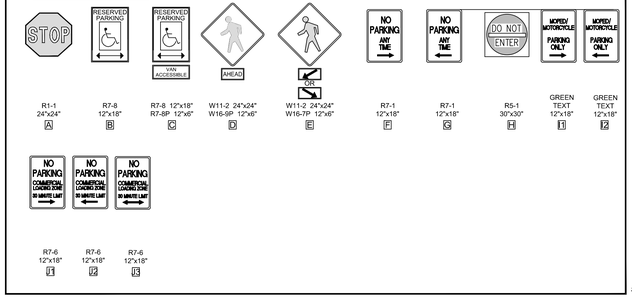
ALL PARKING STALLS TO BE 4" WIDTH SINGLE SOLID WHITE LINE EXCEPT AS SHOWN ON SITE LAYOUT PLAN.

ALL SIGNAGE AND STRIPING SHALL CONFORM TO THE STANDARDS FOR SIZE, HEIGHT, LOCATION, COLOR, INSTALLATION AND REFLECTIVITY SET FORTH IN THE CURRENT VERSION OF THE MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES (MUTCD).

PAVEMENT LEGEND

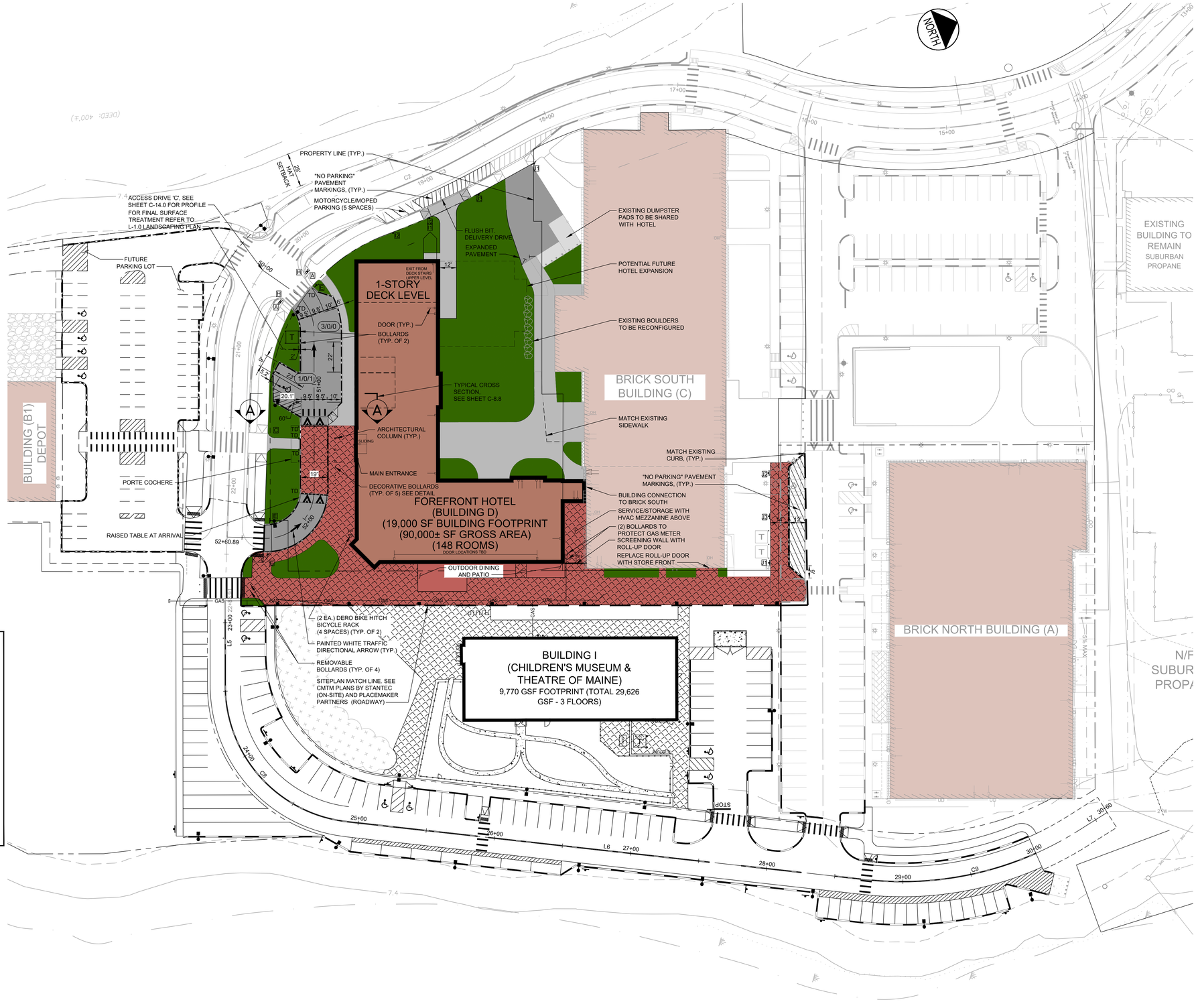
- STANDARD DUTY PAVEMENT
- LIGHT DUTY PAVEMENT
- BITUMINOUS PAVEMENT SIDEWALK
- HARDSCAPE - FINAL SURFACE MATERIAL TBD

SIGN LEGEND



R1-1 24"x24" A	R7-8 12"x18" B	R7-8 12"x18" R7-8P 12"x6" C	W11-2 24"x24" W16-9P 12"x6" D	W11-2 24"x24" W16-7P 12"x6" E	R7-1 12"x18" F	R7-1 12"x18" G	R5-1 30"x30" H	GREEN TEXT 12"x18" I1	GREEN TEXT 12"x18" I2	
R7-6 12"x18" J1	R7-6 12"x18" J2	R7-6 12"x18" J3								

100 / 16 / 8 PARKING SPACE - STANDARD / COMPACT / ACCESSIBLE



BASELINE LINE TABLE		
ID	LENGTH	DIRECTION

BASELINE CURVE TABLE						
ID	RADIUS	ARC LENGTH	DELTA	TANGENT	PC STATION	PT STATION

PRELIMINARY – NOT FOR CONSTRUCTION

REV	DATE	DESCRIPTION
3	6/8/2018	REVISED SITE PLANS PER CITY COMMENTS
2	2/02/18	RE-SUBMISSION PER CITY STAFF COMMENTS
1	9/25/2017	FINAL SITE PLAN SUBMISSION

REVISIONS

STATE OF MAINE — BO KENNEDY No. 11994 — LICENSED PROFESSIONAL ENGINEER — 06-08-18

P.E. BO KENNEDY
LIC. #11994

PROJECT
THE FOREFRONT AT THOMPSON'S POINT
HOTEL PORTLAND

SHEET TITLE
SITE LAYOUT PLAN

CLIENT
FOREFRONT HOTELIERS, LLC

PLACEMAKER PARTNERS, LLC
501 DANFORTH STREET
PORTLAND, ME 04102
bo@placemakerpartners.com

DRAWN: DB	DATE: AUG. 2017
DESIGNED: BEK	SCALE: 1" = 30'
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SHEET C-3.0	

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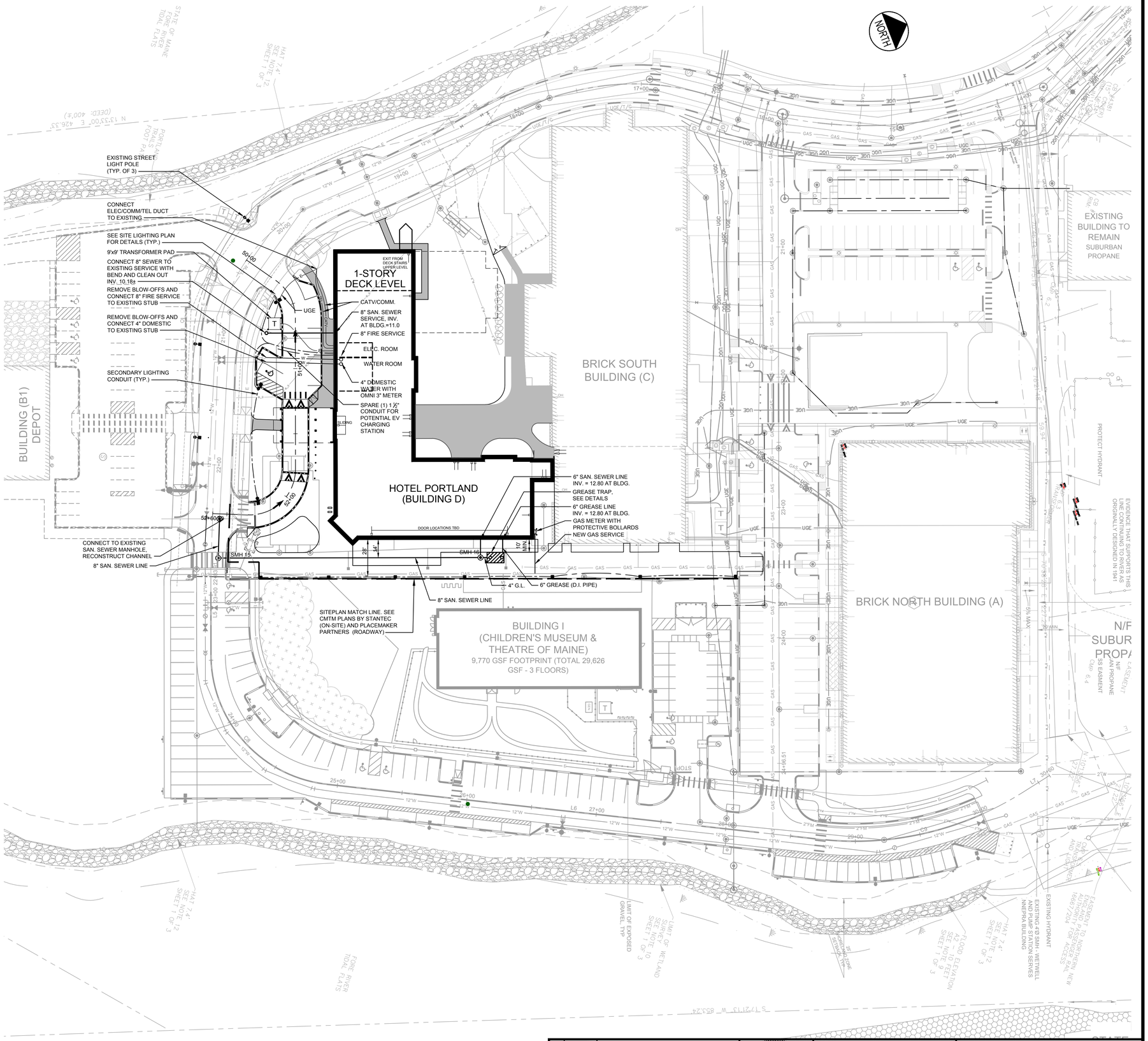

PRELIMINARY – NOT FOR CONSTRUCTION

REV	DATE	DESCRIPTION
2	2/02/2018	RE-SUBMISSION PER CITY STAFF COMMENTS
1	9/25/2017	FINAL SITE PLAN SUBMISSION

REVISIONS

STATE OF MAINE – BO KENNEDY No. 11904 – LICENSED PROFESSIONAL ENGINEER – 02.02.18

P.E. BO KENNEDY
LIC. #11994

PROJECT
THE FOREFRONT AT THOMPSON'S POINT
HOTEL PORTLAND

SHEET TITLE
UTILITY PLAN

CLIENT
FOREFRONT HOTELIERS, LLC

PLACEMAKER PARTNERS, LLC
501 DANFORTH STREET
PORTLAND, ME 04102
bo@placemakerpartners.com

DRAWN:	DB	DATE:	AUG. 2017
DESIGNED:	BEK	SCALE:	1" = 30'
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SHEET	C-4.0		

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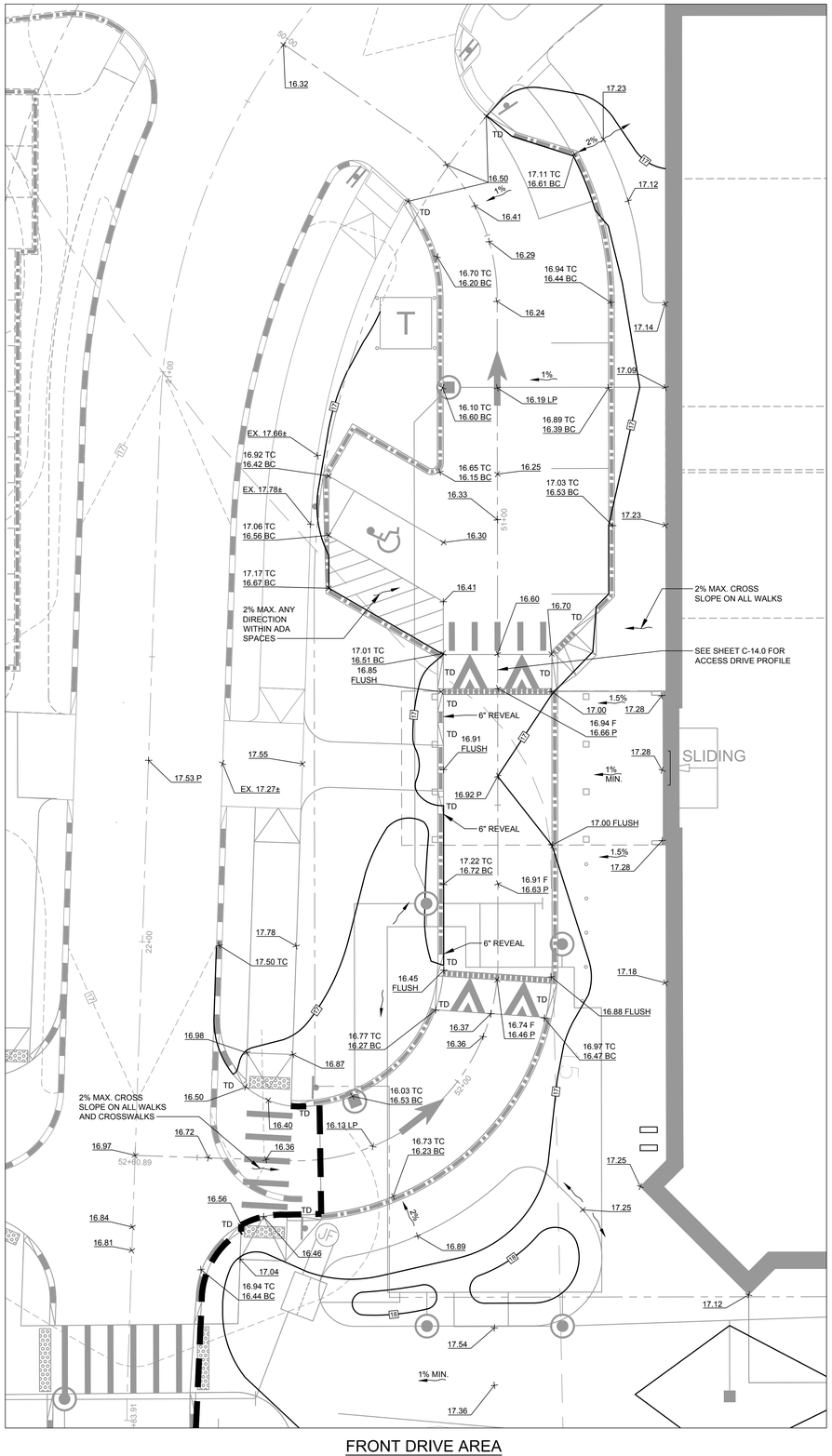
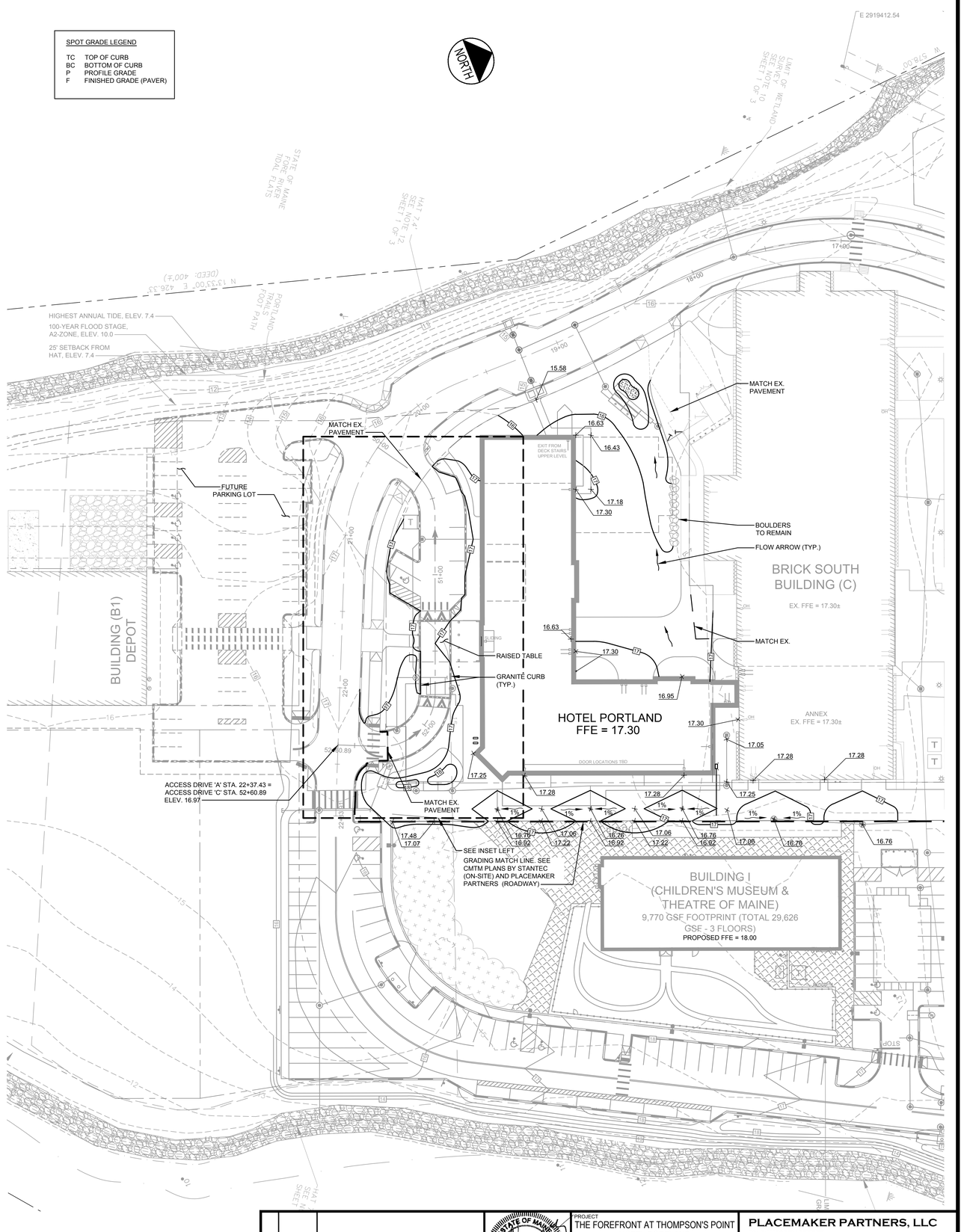


FRONT DRIVE AREA
ENLARGED VIEW
SCALE: 1"=10'

PRELIMINARY – NOT FOR CONSTRUCTION

SPOT GRADE LEGEND

TC	TOP OF CURB
BC	BOTTOM OF CURB
P	PROFILE GRADE
F	FINISHED GRADE (PAVER)



GRAPHIC SCALE
30 0 15 30 60
(IN FEET)
1 inch = 30 ft.

REV	DATE	DESCRIPTION
2	2/02/2018	RE-SUBMISSION PER CITY STAFF COMMENTS
1	9/25/2017	FINAL SITE PLAN SUBMISSION

REVISIONS

STATE OF MAINE BO KENNEDY No. 11994 LICENSED PROFESSIONAL ENGINEER
12.02.18
P.E. BO KENNEDY
LIC. #11994

PROJECT
THE FOREFRONT AT THOMPSON'S POINT
HOTEL PORTLAND

SHEET TITLE
GRADING PLAN

CLIENT
FOREFRONT HOTELIERS, LLC

PLACEMAKER PARTNERS, LLC
501 DANFORTH STREET
PORTLAND, ME 04102
bo@placemakerpartners.com

DRAWN:	DB	DATE:	AUG. 2017
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SHEET	C-5.0		

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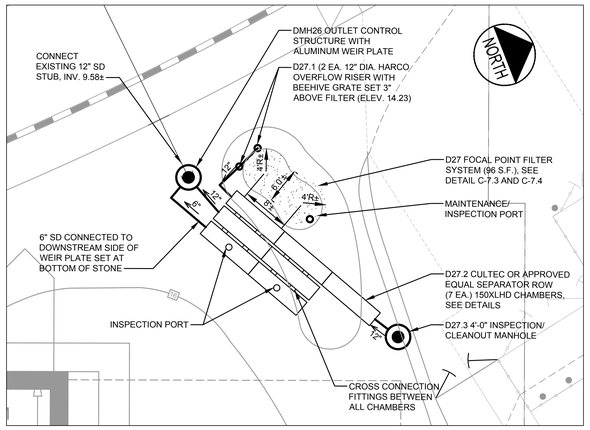
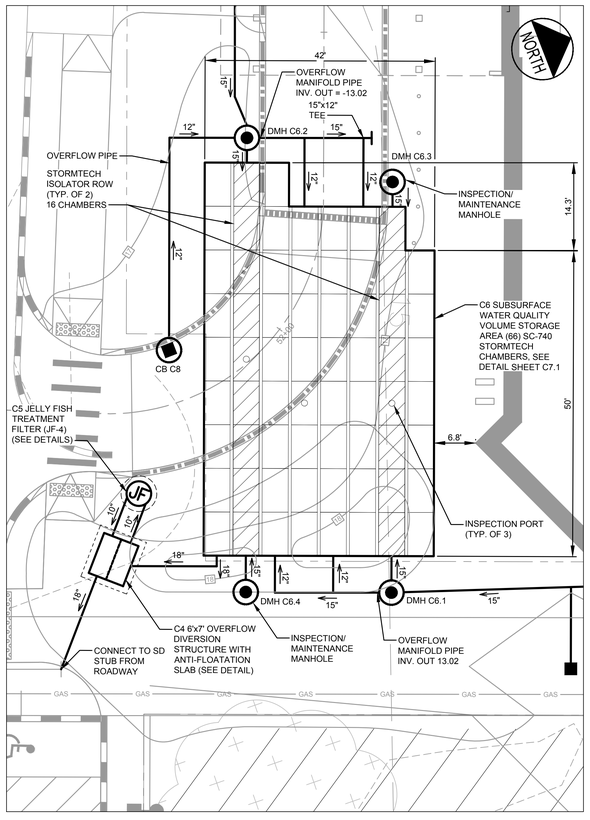
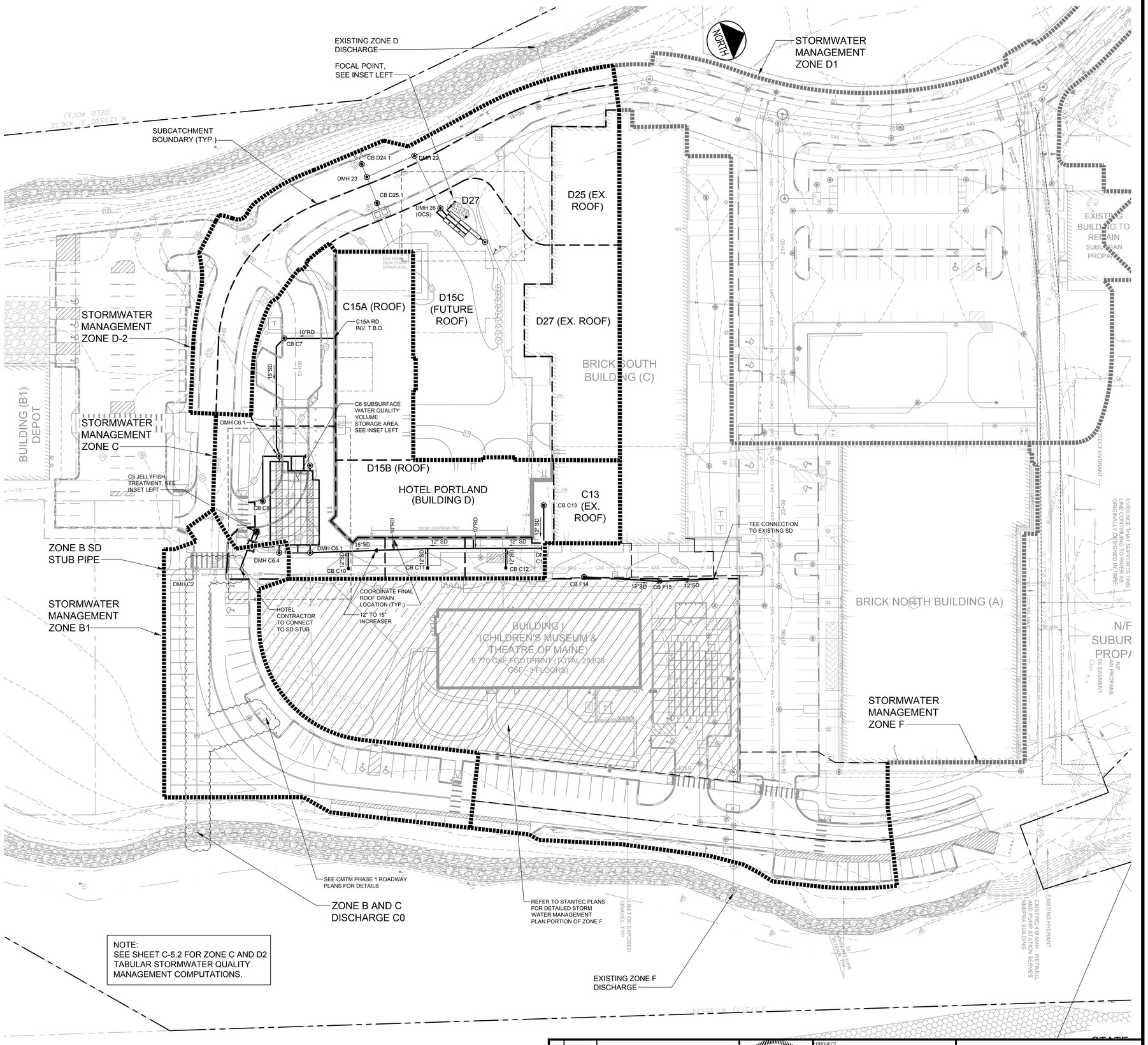


FOCAL POINT AREA
ENLARGED VIEW
SCALE: 1"=10'

NOTE:
OWNER RESERVES RIGHT TO ELIMINATE CHAMBER IS APPROVED BY STATE OF MAINE PRIOR TO CONSTRUCTION.



SUBSRUFACE WATER QUALITY STORAGE AREA
ENLARGED VIEW
SCALE: 1"=10'



NOTE:
SEE SHEET C-5.2 FOR ZONE C AND D2 TABULAR STORMWATER QUALITY MANAGEMENT COMPUTATIONS.

PRELIMINARY – NOT FOR CONSTRUCTION

GRAPHIC SCALE
30 0 15 30 60
(IN FEET)
1 inch = 30 ft.

REV	DATE	DESCRIPTION
2	2/02/2018	RE-SUBMISSION PER CITY STAFF COMMENTS
1	9/25/2017	FINAL SITE PLAN SUBMISSION

REVISIONS

STATE OF MAINE
BO KENNEDY
No. 11994
LICENSED
PROFESSIONAL ENGINEER
12.02.18

P.E. BO KENNEDY
LIC. #11994

PROJECT
THE FOREFRONT AT THOMPSON'S POINT
HOTEL PORTLAND

SHEET TITLE
STORMWATER MANAGEMENT PLAN - 1

CLIENT
FOREFRONT HOTELIERS, LLC

PLACEMAKER PARTNERS, LLC
501 DANFORTH STREET
PORTLAND, ME 04102
bo@placemakerpartners.com

DRAWN: DB	DATE: AUG. 2017
DESIGNED: BEK	SCALE: 1" = 30'
FILE NAME: HOTEL-SMP.dwg	
SHEET	C-5.1

EVIDENCE THAT SUPPORTS THIS INFORMATION IS DISPUTED OR ORIGINALLY DESIGNED INTHIS

Summary of Water Quality Treatment - Lot 6 (Hotel)

Zone	Inlet ID	Impervious Area (sf)	Pervious Area (sf)	Total Area (sf)	Total Area (Acres) [1]	Required Water Quality Volume (CF) [2]	Existing Developed Area Mitigation Credits (SF) [9]	Treatment Approach [6]	Filter Size Area Required[6] (SF)	Jellyfish Unit Provided [5]	1 Yr 24-hr Storm Event Peak Flow Rate (cfs)[3]	Required Isolator Row Chambers (Stormtech SC-740 (JF) or Cultec 150 XLHD (Focal Point)[4]	Provided Filter Bed (SF)/Water Quality Volume (CF) [7]	Isolator Row Chambers (Stormtech SC-740 or Cultec 150 XLHD) Provided (EA)[6]
Zone D	D-27	7,596.00	13,279.00	20,875.00	0.48	1075.63	-	FocalPoint Biofiltration System	89	N/A	1.19	6.43	96.00	7
	D - 27 Brick South (Partial South Side)	10,395.00	0.00	10,395.00	0.24	866.25	6237.00	FocalPoint Biofiltration System		N/A				
	Disturbed Perimeter Area	0.00	0.00	0.00	0.00	-	-	None		-	-	-	-	-
Zone D Totals (Lot 6 Portion)	**-**	**17,991.00**	**13,279.00**	**31,270.00**	**0.72**	**1,941.88**	**6,237.00**	**-**		**-**	**-**	**-**	**-**	-
Zone C Developed Area	C-8	6,093.00	2,031.00	8,124.00	0.19	575.45	0.00	Contech Jellyfish Filter	N/A	JF4 2-1	0.40	1.99	4051 CF	17
	C-7	5,101.00	1,838.00	6,939.00	0.16	486.35	0.00				0.34	1.68		
	C-10	2,397.00	0.00	2,397.00	0.06	199.75	0.00				0.15	0.73		
	C-11	1,841.00	0.00	1,841.00	0.04	153.42	0.00				0.11	0.56		
	C-12	1,808.00	0.00	1,808.00	0.04	150.67	0.00				0.11			
	C-13 (non-roof portion)	933.00	0.00	933.00	0.02	77.75	0.00				0.06	0.28		
	C-15A (Roof)	10,055.00	0.00	10,055.00	0.23	837.92	0.00				0.61	3.07		
	C-15B (Roof)	9,660.00	0.00	9,660.00	0.22	805.00	0.00				0.59	2.95		
	C-15C (Future)	*3,734.00*	*0.00*	*3,734.00*	*0.09*	311.17	0.00				0.23	1.14		
	Disturbed Perimeter Area	0.00	0.00	0.00	0.00	0.00	0.00	N/A		-	-	-	-	-
Zone C Developed Area Subtotals		**41,622.00**	**3,869.00**	**45,491.00**	**1.04**	**3,597.47**	**0.00**	**-**		**-**	2.59	12.40	N/A	N/A
Zone C Existing Buildings	C-13 BS-South Side (Partial)	2,995.00	0.00	2,995.00	0.00	249.58	1,797.00	Contech Jellyfish Filter	N/A	JF4 2-1 (included in above)	0.18	0.91	Included in Zone C above	Included in Zone C above
Zone C Existing Building Subtotal	**-**	**2,995.00**	**0.00**	**2,995.00**	**0.00**	**249.58**	**1,797.00**	**-**		**-**	**0.18**	**0.91**	**0.00**	-
Zone C Totals	**-**	**44,617.00**	**3,869.00**	**48,486.00**	**1.04**	**3,847.05**	**1,797.00**	**-**	**0.00**	**0.00**	**2.77**	**13.32**	**N/A**	**N/A**

****Previously Approved Filterra Box**

Developed Area Breakdown		
A.) Total New Developed Area Treated (SF)	62,632.00	**1.44**
B.) Total New Developed Area untreated (SF)	0.00	**0.00**
C.) Total New Developed Area (SF) = A+B	62,632.00	**1.44**
D.) Existing Developed Area Treated (SF)	13,390.00	**0.31**
E.) Adjusted Existing Developed Area Treated (SF)	8,034.00	**0.18**
F.) Total Net Developed Area Treated (SF) = A+E	70,666.00	**1.62**
Impervious Area Breakdown		
G.) Total New Impervious Area treated (SF)	49,218.00	**1.13**
H.) Total New Impervious Area untreated (SF)	0.00	**0.00**
I.) Total New Impervious Area (SF) = G+H	49,218.00	**1.13**
J.) Existing Impervious Area Treated (SF)	13,390.00	**0.31**
K.) Adjusted Existing Impervious Area Treated (SF)	8,034.00	**0.18**
L.) Total Net Impervious Area Treated (SF) = G+K	57,252.00	**1.31**

Treatment Breakdown	Required	Provided
% of Net Developed Area Treated = F/C	80.00%	112.83%
% of Net Impervious Area Treated = L/I	95.00%	116.32%

NOTES AND ASSUMPTIONS:

1. All areas are based on the Placemaker Partners Permit drawings dated September 2017
2. The required water quality volumes have been computed based on Sections 7.4, 7.5 and 7.6 of the Maine DEP Volume III BMP's Technical Design Manual. The volume is computed to be 1" times the subcatchments impervious area and 0.4" times the subcatchments vegetated area. Exisiting buildings to remain are not required to be treated.
3. The 1 year peak flow rates have been computed using the rational method. The rainfall intensities are derived from the Cumberland County IDF curve.
4. Subsurface storage system sizing is based on a Stormtech SC-740 chamber system. All isolator rows have been computed per a 7/29/2016 letter from State of Maine to Stormtech re: Pretreatment Isolator Row of the Maine DEP Volume III BMP's Technical Manual. One chamber is required for each 0.2 cfs of the computed tributary 1 year peak flow rate.
5. The required number of Jelly Fish treatment units have been computed based on Contech Sizing requirements. The water quality volume for each unit is storage up stream and the amount of treatment cartridges are computed based sediment mass loading.
6. Focal Point system was sized using the 2/2/201 approval letter from the State of Maine to Stormwater Systems ACF. See attached computations and separate focal point checklist for sizing.
7. Provided Water Quality Volume for stormtreat storage system computed using 61.38 CF of storage per chamber based on Storm Tech Chamber Design Manual
8. Vacant
9. According to Chapter 500 Maine DEP stormwater rules Dated 2015; the department allows applicants to take credit for the treatment of existing impervious areas on site. For existing roofs the credit can be calculated by multiplying the total treated area by 0.6. The overall project was approved using this methodology.
10. Vacant

PRELIMINARY – NOT FOR CONSTRUCTION

GRAPHIC SCALE

30 0 15 30 60

(IN FEET)

1 inch = 30 ft.

REV	DATE	DESCRIPTION
2	2/02/2018	RE-SUBMISSION PER CITY STAFF COMMENTS
1	9/25/2017	FINAL SITE PLAN SUBMISSION

REVISIONS

STATE OF MAINE BO KENNEDY No. 11994 LICENSED PROFESSIONAL ENGINEER 02.02.18

P.E. BO KENNEDY

LIC. #11994

PROJECT: THE FOREFRONT AT THOMPSON'S POINT HOTEL PORTLAND

SHEET TITLE: STORMWATER MANAGEMENT PLAN - 2

CLIENT: FOREFRONT HOTELIERS, LLC

PLACEMAKER PARTNERS, LLC
501 DANFORTH STREET
PORTLAND, ME 04102
bo@placemakerpartners.com

DRAWN:	DB	DATE:	AUG. 2017
DESIGNED:	BEK	SCALE:	1" = 30'
FILE NAME:	HOTEL-SMP.dwg		
SHEET	C-5.2		

EROSION AND SEDIMENT CONTROL NOTES:

1. ALL RUNOFF FROM DISTURBED AREAS SHALL BE DIRECTED TO A FILTERING DEVICE DESIGNATED TO LIMIT TURBIDITY IN ALL DISCHARGE TO THE FORE RIVER. THE FILTERING DEVICE MAY BE BUT IS NOT LIMITED TO SAND FILTERS, EROSION CONTROL MIX, STRAW WATTLES, FLOCCULATION CHEMICALS, DIRT GLUE AND SILT FENCE
2. ALL CATCH BASINS TO HAVE 4" UNDERDRAIN PER DETAIL 'L' ON SHEET C-8.5
3. ALL SUBSURFACE DETENTION AREAS ARE NOT TO BE PLACED "ON-LINE" UNTIL TRIBUTARY AREA IS STABILIZED WITH PAVEMENT OR 75% VEGETATION COVERAGE.
4. STOCKPILES TO BE TEMPORARILY SEEDED AND MULCHED AS REQUIRED BY THE PROJECT SPECIFICATIONS
5. THE CONTRACTOR SHALL TREAT DISTURBED AREAS AND CONSTRUCTION HAUL PATH WITH DUST CONTROL BMPS TO LIMIT ALL FUGITIVE DUST
6. ALL EXCESS COMMON BORROW SHALL BE PLACE IN DESIGNATED STOCKPILE ON PANHANDLE DETAILS INCLUDED IN SEPARATE PLAN SET BY REFERENCE.
7. FOR WINTER CONSTRUCTION SEE SPECIAL PROVISIONS AND REQUIREMENTS IN "EROSION AND SEDIMENTATION CONTROL REPORT" DATED MARCH 2012 PREPARED BY DELUCA HOFFMAN ASSOCIATES, INC.

S□□ □ □r□□S□r□ □ □□rD□□□r□□□					
D□□□□r□□ ID	A□□r□□□ □□□ Dr□□□□□ Ar□□ A□□	□□□□□□d O□□ □□□r□□□□ □□□ (C S□)	O□□□□□□□ S□□□□□	D□□r□□□□	M□□□ □□ R□□□r d R□r□□ D□□ I□□
CO	TBD	TBD	TBD	RCP Flared End W/ Bar Rack, Riprap Slope Apron	12

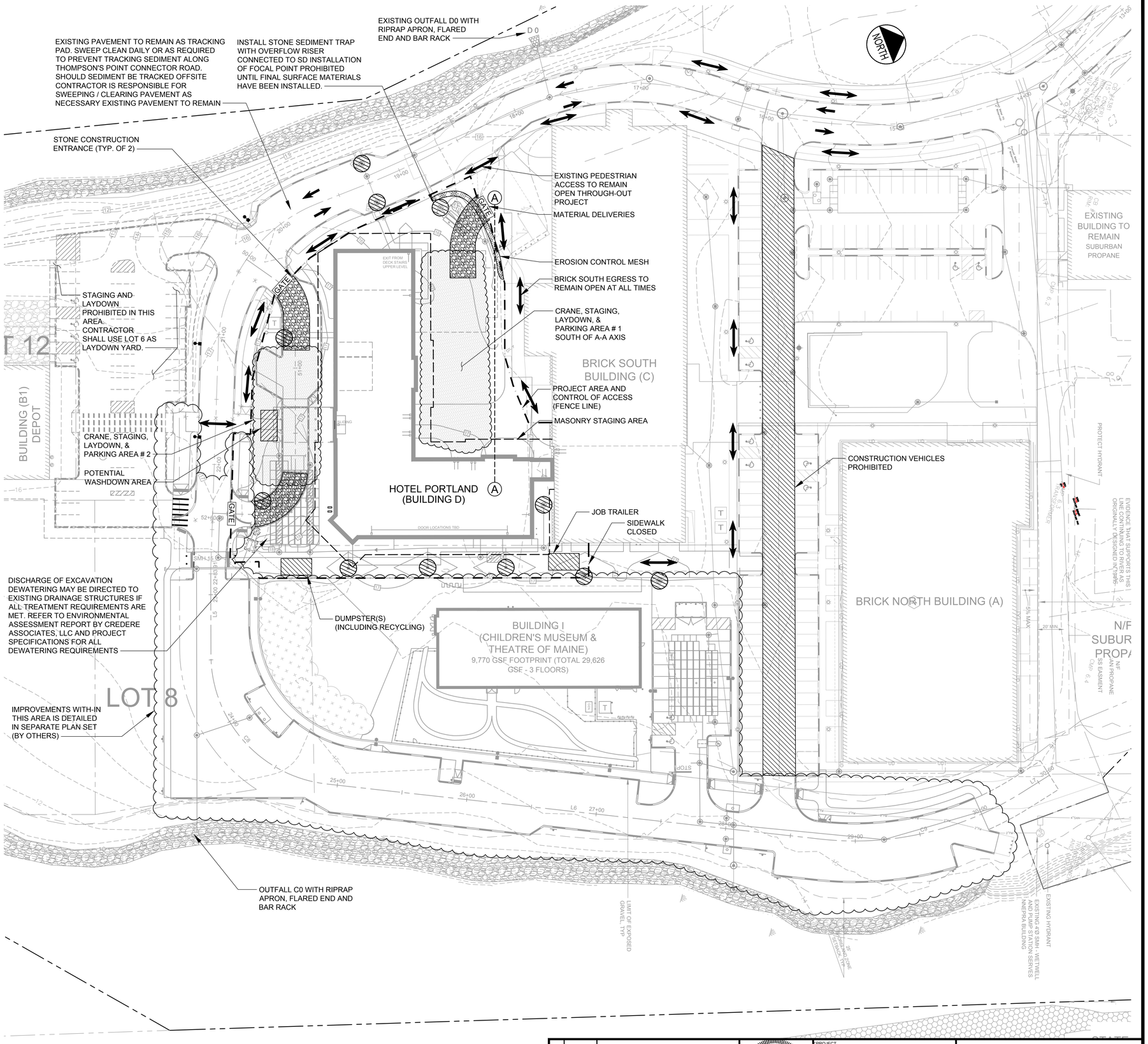
* D50 is a median rock size. Riprap should be a well graded mix of angular rock from about 1.5 to 0.25 times the size of the D50. The contractor shall protect existing riprap slope or replace rock to the meet the minimum required D50 stone size.

LEGEND

- INLET PROTECTION (STONE OR HAY SEDIMENT BARRIER)
- FILTERRA INLET PROTECTION (PER MANUFACTURERS REQUIREMENTS) (NOT REQUIRED IN THIS PHASE)
- RIPRAP OUTLET PROTECTION
- CURLEX BLANKET
- EROSION CONTROL MESH
- PERMISSIBLE CONTRACTOR ACCESS ROUTE AND NORMAL SITE TRAFFIC CIRCULATION (TEMPORARY CLOSURE BY WRITTEN PERMISSION ONLY)
- WASH DOWN AREA
- STONE CONSTRUCTION ENTRANCE
- PEDESTRIAN ACCESS ROUTE

CONTRACTOR CONSTRUCTION MANAGEMENT NOTES:

1. THIS PLAN IS PART OF AN OVERALL CONSTRUCTION MANAGEMENT PLAN APPROVED AS PART OF A CITY OF PORTLAND LEVEL III SITE PLAN APPLICATION. THE CONTRACTOR SHALL FOLLOW THE APPROVED CONSTRUCTION MANAGEMENT PLAN AND MAINTAIN A COPY IN THE JOB TRAILER.
2. CONTRACTOR SHALL POST ALL PERMITS, EMERGENCY CONTACT INFORMATION, AND CONSTRUCTION SIGNAGE PRIOR TO THE PRE-CONSTRUCTION MEETING.
3. THE FOREFRONT AT THOMPSON'S POINT IS AN ACTIVE DEVELOPMENT SITE WITH DAILY VISITORS FROM THE PUBLIC. THE CONTRACTOR SHALL PROVIDE APPROPRIATE PEDESTRIAN AND VEHICULAR SIGNAGE TO PROMOTE THE SAFE PASSAGE OF THE PUBLIC AROUND THE HOTEL DEVELOPMENT SITE.
4. A WRITTEN REQUEST FOR CLOSURES OF ANY KIND SHALL BE PROVIDE TO THE OWNER A MINIMUM OF 72 HOURS IN ADVANCE. THE OWNER MAY AT THEIR DIGRESSION AND AT NO COST TO THE OWNER DELAY THE CLOSURE AS NOT TO DISRUPT OTHER BUSINESSES.



PRELIMINARY – NOT FOR CONSTRUCTION

REV	DATE	DESCRIPTION
2	2/02/2018	RE-SUBMISSION PER CITY STAFF COMMENTS
1	9/25/2017	FINAL SITE PLAN SUBMISSION

REVISIONS

STATE OF MAINE BO KENNEDY No. 11994 LICENSED PROFESSIONAL ENGINEER

02.02.18

P.E. BO KENNEDY

LIC. #11994

PROJECT
THE FOREFRONT AT THOMPSON'S POINT
HOTEL PORTLAND

SHEET TITLE
EROSION CONTROL AND CONSTRUCTION MANAGEMENT PLAN

CLIENT
FOREFRONT HOTELIERS, LLC

PLACEMAKER PARTNERS, LLC
501 DANFORTH STREET
PORTLAND, ME 04102
bo@placemakerpartners.com

DRAWN:	DB	DATE:	AUG. 2017
DESIGNED:	BEK	SCALE:	1" = 30'
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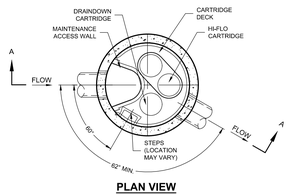
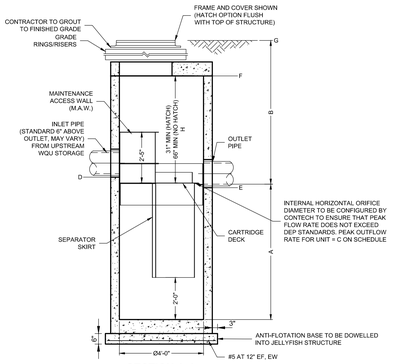


PLAN VIEW



SECTION A-A

FRAME AND COVER
(DIAMETER VARIES)
N.T.S.

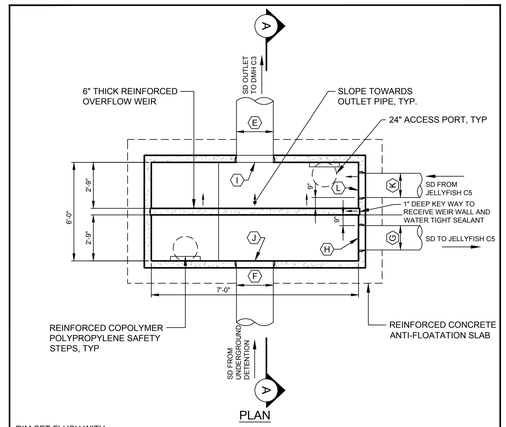
HATCH
(Ø36" CAST INTO SLAB)
N.T.S.

JELLYFISH DESIGN NOTES				
JELLYFISH TREATMENT CAPACITY IS A FUNCTION OF THE CARTRIDGE SELECTION AND THE NUMBER OF CARTRIDGES. THE STANDARD MANHOLE STYLE IS SHOWN. Ø48" MANHOLE JELLYFISH PEAK TREATMENT CAPACITY IS 0.45 CFS. IF THE SITE CONDITIONS EXCEED 0.45 CFS AN UPSTREAM BYPASS STRUCTURE IS REQUIRED.				
CARTRIDGE SELECTION				
CARTRIDGE DEPTH	54"	40"	27"	15"
OUTLET INVERT TO STRUCTURE INVERT (A)	6'-5"	5'-3"	4'-2"	3'-2"
FLOW RATE HIGH-FLO / DRAINDOWN (cfs) (per cart)	0.18 / 0.09	0.13 / 0.065	0.09 / 0.045	0.05 / 0.025
MAX. CARTS HIGH-FLO / DRAINDOWN	2 / 1			

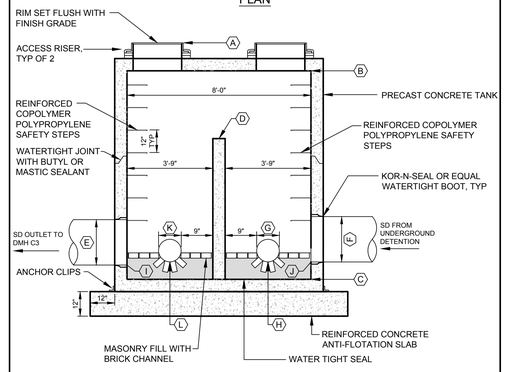
THIS PROJECT

SEE SCHEDULE IN DETAIL `D'

A JELLYFISH JF4 STANDARD DETAIL
N.T.S.



PLAN



SECTION A-A

NOTES:
1. ALL CONCRETE TO HAVE A MINIMUM OF 4,000 PSI COMPRESSIVE STRENGTH AT 28 DAYS
2. DESIGN LOAD FOR H-20 WHEEL LOAD
3. STRUCTURE TO CONFORM TO ASTM-C478 SPECIFICATIONS
4. SET STRUCTURE ON 12" THICK CRUSHED STONE

OVERFLOW DIVERSION STRUCTURE SCHEDULE		
	ITEM DESCRIPTION	ZONE C
A	APPROXIMATE RIM ELEVATION	17.20±
B	TOP OF INSIDE OF TANK	14.75
C	BOTTOM OF INSIDE OF TANK	8.92
D	TOP OF WEIR WALL	13.02
E	DIAMETER OF OVERFLOW OUTLET PIPE	18"
F	DIAMETER OF INLET PIPE	18"
G	DIAMETER OF OUTLET PIPE TO JELLYFISH	10"
H	INV OF OUTLET PIPE TO JELLYFISH	10.52
I	INV OF OVERFLOW OUTLET PIPE	9.92
J	INV OF INLET PIPE	10.52
K	DIAMETER OF OUTLET PIPE FROM JELLYFISH	10"
L	INVERT OF OUTLET PIPE FROM JELLYFISH	10.02

C OVERFLOW DIVERSION STRUCTURE D1
N.T.S.

□O□E C DATA RE□□IREME□TS			
STRUCTURE ID			C4
WATER QUALITY FLOW RATE (cfs)			0.066
PEAK FLOW RATE (cfs)			5.50
RETURN PERIOD OF PEAK FLOW (yrs)			25
# OF CARTRIDGES REQUIRED (HF / DD)			2 / 1
CARTRIDGE SIZE			54"
PIPE DATA:	I.E.	MATERIAL	DIAMETER
INLET PIPE #1	*	HDPE	10"
INLET PIPE #2	*	-	N/A
OUTLET PIPE	*	HDPE	10"
RIM ELEVATION			16.70
ANTI-FLOTATION SOIL		WIDTH	HEIGHT
		1'	13.75

NOTES/SPECIAL REQUIREMENTS:
MAINE DEP REQUIRES UPSTREAM WQU TO DRAIN IN 24-48 HOURS. CONTECH RESPONSIBLE FOR SIZING INTERNAL ORIFICE TO CONTROL PEAK WATER QUALITY OUTFLOW TO REQUIRED RATE
* PER ENGINEER OF RECORD

B JELLYFISH TREATMENT UNIT DATA REQUIREMENTS
N.T.S.

Jellyfish Unit Schedule	
Schedule ID	Zone
Schedule	C
A-Outlet Inv. to Bottom of Structure (ft)	6.42
B-Finished Grade to Outlet Inv.	6.83
C-Required Outflow (cfs)	0.066
D-Inlet Inv. From Water Quality Storage	10.52
E-Outlet Inv.	10.02
F-Underside of Slab	15.60
G-Rim Elevation	16.85±
H-Underside of Slab to Outlet Inv. (ft)	5.5
Hatch Required or 36" Casting?	NO

D JELLYFISH UNIT SCHEDULE
N.T.S.

PRELIMINARY – NOT FOR CONSTRUCTION

REV	DATE	DESCRIPTION
2	2/02/2018	RE-SUBMISSION PER CITY STAFF COMMENTS
1	9/25/2017	FINAL SITE PLAN SUBMISSION

REVISIONS

STATE OF MAINE · BO KENNEDY No. 11994 · LICENSED PROFESSIONAL ENGINEER · 02.02.18

P.E. BO KENNEDY
LIC. #11994

PROJECT
THE FOREFRONT AT THOMPSON'S POINT
HOTEL PORTLAND

SHEET TITLE
STORMWATER DETAILS - JELLYFISH SYSTEMS

CLIENT
FOREFRONT HOTELIERS, LLC

PLACEMAKER PARTNERS, LLC
501 DANFORTH STREET
PORTLAND, ME 04102
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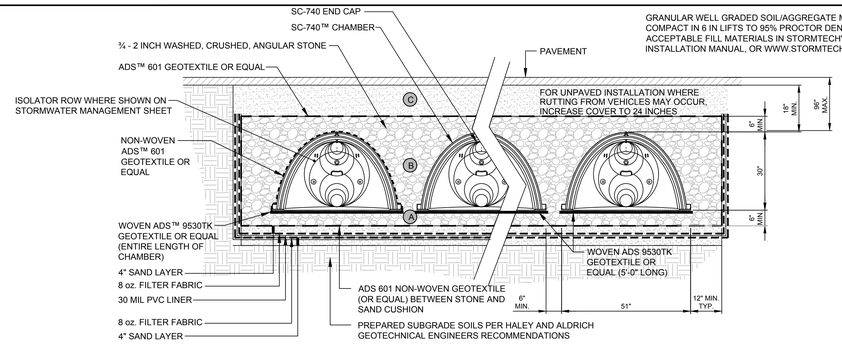


GRANULAR WELL GRADED SOIL/AGGREGATE MIXTURES, <35% FINES. COMPACT IN 6 IN LIFTS TO 95% PROCTOR DENSITY. SEE THE TABLE OF ACCEPTABLE FILL MATERIALS IN STORMTECH'S DESIGN MANUAL, INSTALLATION MANUAL, OR WWW.STORMTECH.COM.

(A) SC-740 TYPICAL DETENTION SYSTEM CROSS SECTION

N.T.S.

*SEE STORMTECH'S DESIGN MANUAL

FOR STORMTECH® INFORMATION CALL 1-888-892-2694

ACCEPTABLE FILL MATERIALS
STORMTECH® SC-740™ CHAMBERS

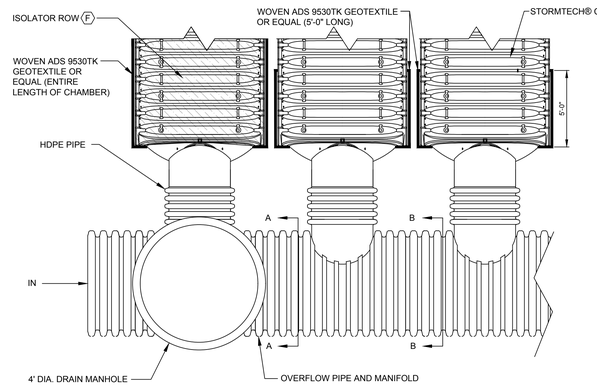
MATERIAL LOCATION	DESCRIPTION	AASHTO M43 DESIGNATION	AASHTO M145 DESIGNATION	COMPACTION/DENSITY REQUIREMENT
FILL MATERIAL FROM 18" TO GRADE ABOVE CHAMBERS	ANY SOIL/ROCK MATERIALS, NATIVE SOILS OR PER ENGINEER'S PLANS. CHECK PLANS FOR PAVEMENT SUBGRADE REQUIREMENTS.	N/A	N/A	PREPARE PER ENGINEER'S PLANS. PAVED INSTALLATIONS MAY HAVE STRINGENT MATERIAL AND PREPARATION REQUIREMENTS.
(C) FILL MATERIAL FOR 6" TO 18" ELEVATION ABOVE CHAMBERS (24" FOR UNPAVED INSTALLATIONS)	GRANULAR WELL-GRADED SOIL/AGGREGATE MIXTURES, <35% FINES.	3, 357, 4, 467, 5, 56, 57, 6, 67, 68, 7, 78, 8, 89, 9, 10	A-1 A-2 A-3	COMPACT IN 6" LIFTS TO A MINIMUM 95% STANDARD PROCTOR DENSITY. ROLLER GROSS VEHICLE WEIGHT NOT TO EXCEED 12,000 LBS. DYNAMIC FORCE NOT TO EXCEED 20,000 LBS.
(B) EMBEDMENT STONE SURROUNDING AND TO A 6" ELEVATION ABOVE CHAMBERS	WASHED ANGULAR STONE WITH THE MAJORITY OF PARTICLES BETWEEN ¾ - 2 INCH	3, 357, 4, 467, 5, 56, 57	N/A	NO COMPACTION REQUIRED
(A) FOUNDATION STONE BELOW CHAMBERS	WASHED ANGULAR STONE WITH THE MAJORITY OF PARTICLES BETWEEN ¾ - 2 INCH	3, 357, 4, 467, 5, 56, 57	N/A	PLATE COMPACT OR ROLL TO ACHIEVE A 95% STANDARD PROCTOR DENSITY

PLEASE NOTE THE LISTED AASHTO DESIGNATIONS ARE FOR GRADATION ONLY. THE STONE MUST ALSO BE WASHED CRUSHED ANGULAR (ROUNDED STONE MAY NOT BE USED). FOR ADDITIONAL STORMTECH MATERIAL INFORMATION CONTACT STORMTECH AT 1-888-892-2694 OR VISIT WWW.STORMTECH.COM TO RECEIVE A COPY OF THE LATEST INSTALLATION MANUAL.

NOTES:
1. THE INSTALLATION OF STORMTECH® CHAMBERS SHALL BE IN ACCORDANCE WITH THE LATEST STORMTECH® INSTALLATION INSTRUCTIONS
2. THE CONTRACTOR IS ADVISED TO REVIEW AND UNDERSTAND THE INSTALLATION INSTRUCTIONS PRIOR TO BEGINNING SYSTEM INSTALLATION. CALL 1-888-892-2694 OR VISIT WWW.STORMTECH.COM TO RECEIVE A COPY OF THE LATEST STORMTECH® INSTALLATION INSTRUCTIONS.

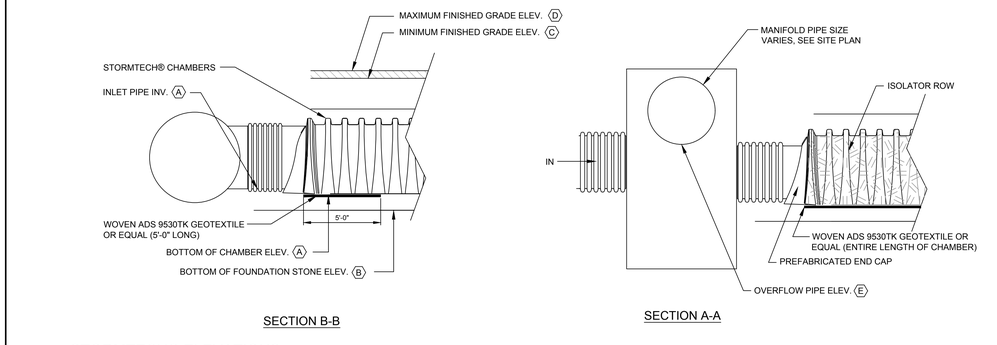
(B) STORMTECH® ACCEPTABLE FILL MATERIALS

N.T.S.



STORMTECH ELEVATIONS SCHEDULE

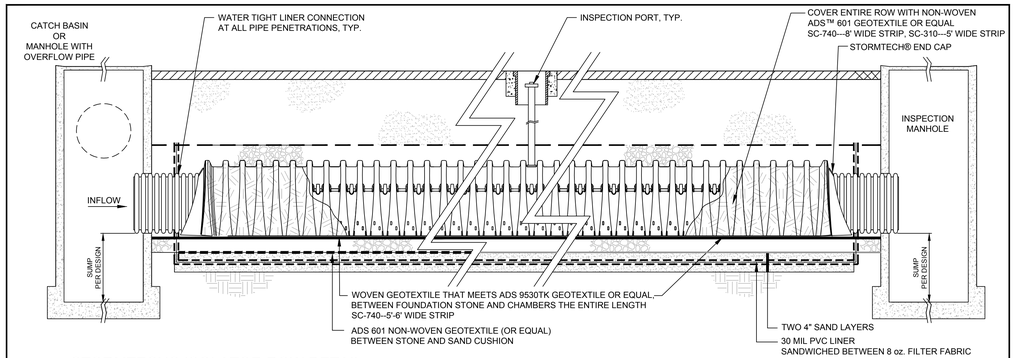
ITEM DESCRIPTION	ZONE D
(A) BOTTOM OF CHAMBERS	10.52
(B) BOTTOM OF FOUNDATION STONE	10.02
(C) APPROX. MIN. FINISHED GRADE ELEV.	15.80
(D) APPROX. MAX. FINISHED GRADE ELEV.	16.80
(E) OVERFLOW PIPE ELEV.	13.02
(F) NUMBER OF ISOLATOR CHAMBERS	16 (2 ROWS)



(F) STORMTECH® ELEVATIONS

N.T.S.

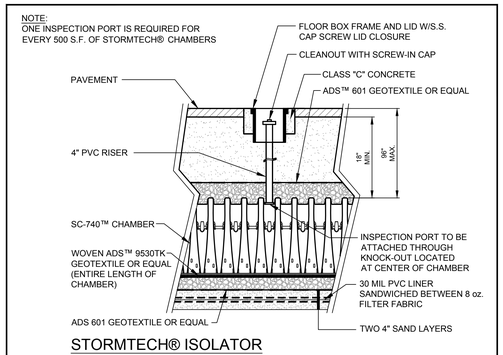
FOR STORMTECH® INFORMATION CALL 1-888-892-2694



(C) STORMTECH® ISOLATOR ROW DETAIL

N.T.S.

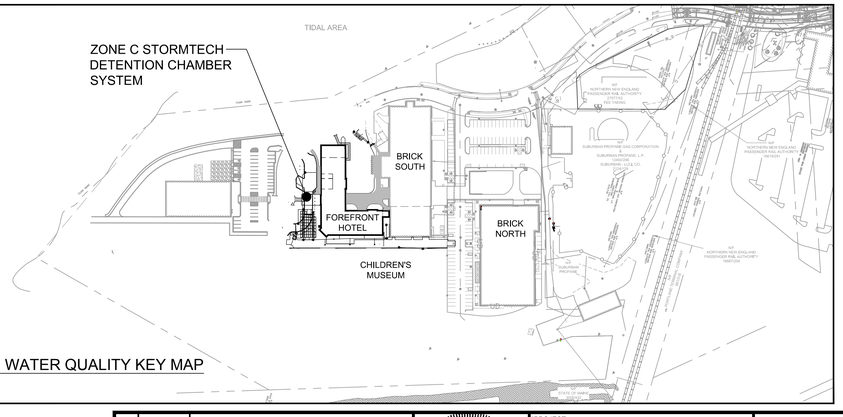
FOR STORMTECH® INFORMATION CALL 1-888-892-2694



(D) STORMTECH® ISOLATOR INSPECTION PORT DETAIL

N.T.S.

FOR STORMTECH® INFORMATION CALL 1-888-892-2694



(G) SUBSURFACE WATER QUALITY KEY MAP

N.T.S.

PRELIMINARY – NOT FOR CONSTRUCTION

REV	DATE	DESCRIPTION
2	2/02/2018	RE-SUBMISSION PER CITY STAFF COMMENTS
1	9/25/2017	FINAL SITE PLAN SUBMISSION

REVISIONS

STATE OF MAINE — BO KENNEDY No. 11994 — LICENSED PROFESSIONAL ENGINEER — 02.02.18

P.E. BO KENNEDY
LIC. #11994

PROJECT: THE FOREFRONT AT THOMPSON'S POINT HOTEL PORTLAND

SHEET TITLE: STORMWATER DETAILS - SUBSURFACE WATER QUALITY VOLUME STORAGE DETAILS

CLIENT: FOREFRONT HOTELIERS, LLC

PLACEMAKER PARTNERS, LLC
501 DANFORTH STREET
PORTLAND, ME 04102
bo@placemakerpartners.com

DRAWN:	DB	DATE:	AUG. 2017
DESIGNED:	BEK	SCALE:	N.T.S.
FILE NAME:	HOTEL-DET JF.dwg		
SHEET	C-7.1		

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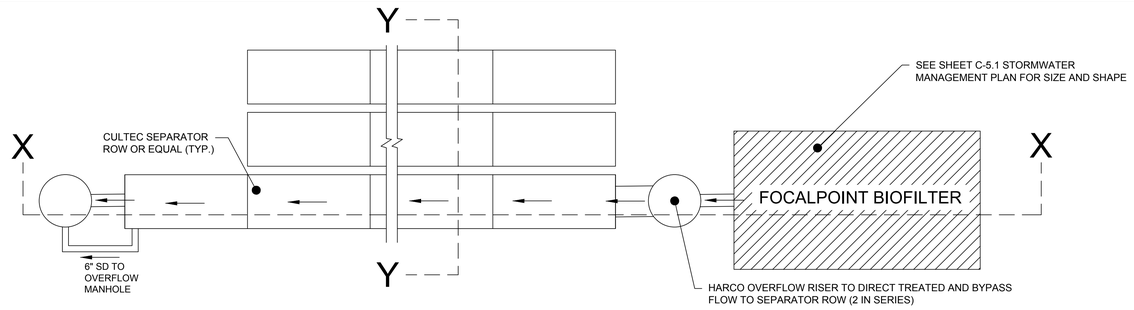
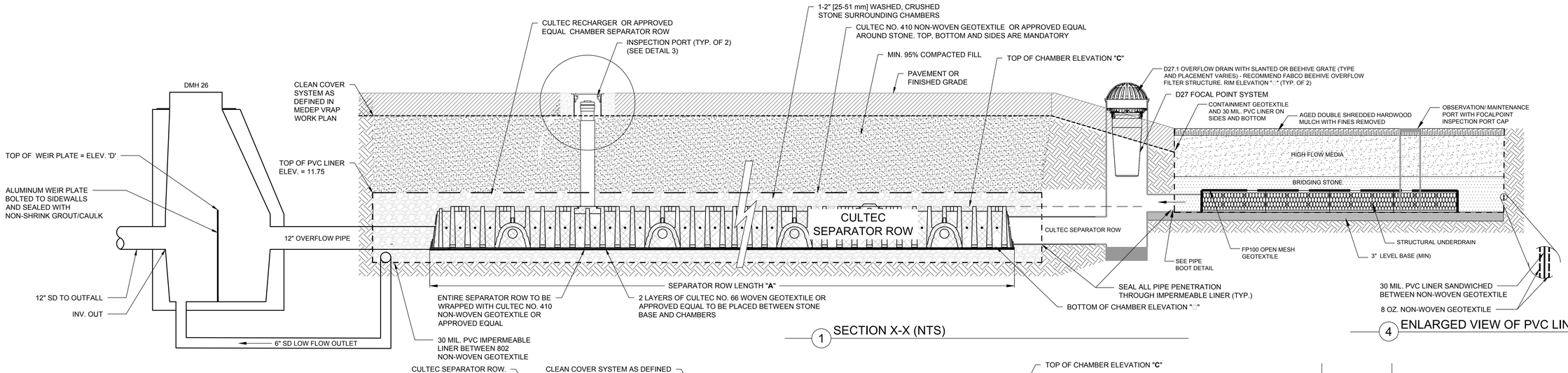
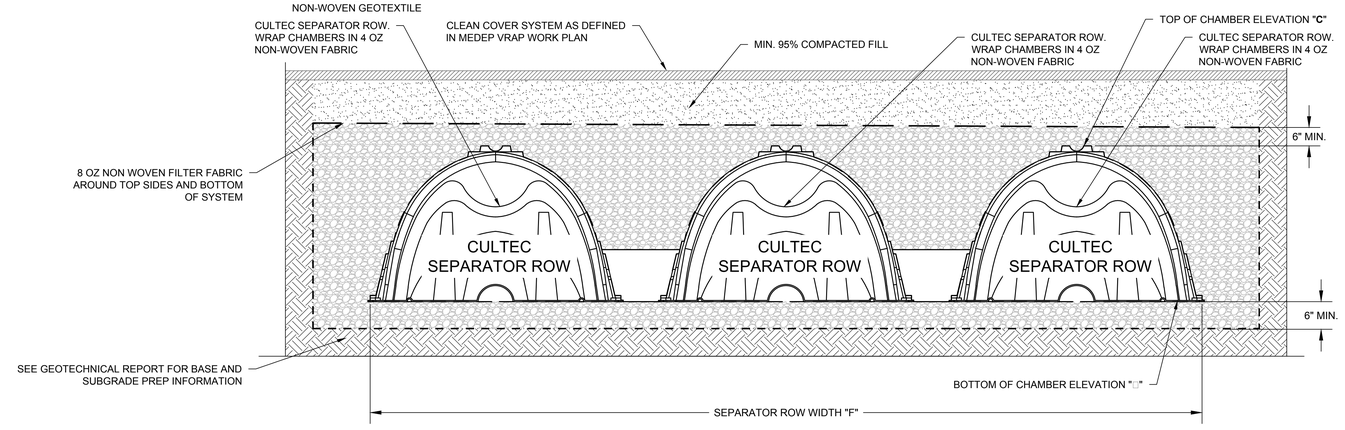
SEPARATOR ROW DIMENSIONAL DATA		
FOCALPOINT I.D.		FP-1 (D27)
	CULTEC CHAMBER OR APPROVED EQUAL	150XLHD
	# CULTEC CHAMBERS	7 EA.
A	SEPARATOR ROW LENGTH	VARIES, SEE SITE PLAN
B	BOTTOM OF CHAMBER ELEV	9.88
C	TOP OF CHAMBER ELEV	11.42
D	TOP OF WEIR PLATE	11.42
E	BEEHIVE OVERFLOW RIM	14.25
F	SEPARATOR ROW WIDTH	



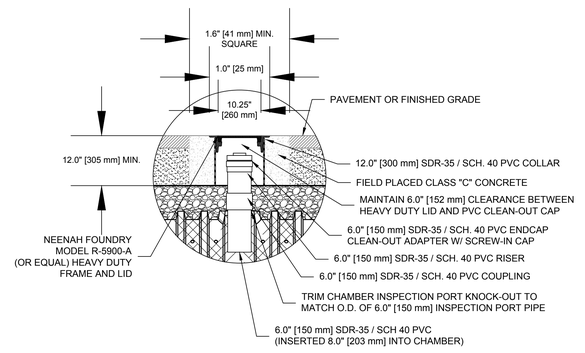
FLOW/COMPONENT SCHEMATIC



1 SECTION X-X (NTS)



2 SECTION Y-Y (NTS)



3 SEPARATOR ROW INSPECTION PORT DETAIL

4 ENLARGED VIEW OF PVC LINER

REV	DATE	DESCRIPTION
2	2/02/2018	RE-SUBMISSION PER CITY STAFF COMMENTS
1	9/25/2017	FINAL SITE PLAN SUBMISSION

REVISIONS

STATE OF MAINE — BO KENNEDY No. 11994 — LICENSED PROFESSIONAL ENGINEER — 12.02.18

P.E. BO KENNEDY
LIC. #11994

PROJECT: THE FOREFRONT AT THOMPSON'S POINT HOTEL PORTLAND

SHEET TITLE: STORMWATER DETAILS - FOCALPOINT™ SEPARATOR ROW

CLIENT: FOREFRONT HOTELIERS, LLC

PLACEMAKER PARTNERS, LLC
501 DANFORTH STREET
PORTLAND, ME 04102
bo@placemakerpartners.com

DRAWN:	DATE: AUG. 2017
DESIGNED: BEK	SCALE:
FILE NAME: HOTEL-DET FOCALPOINT.dwg	
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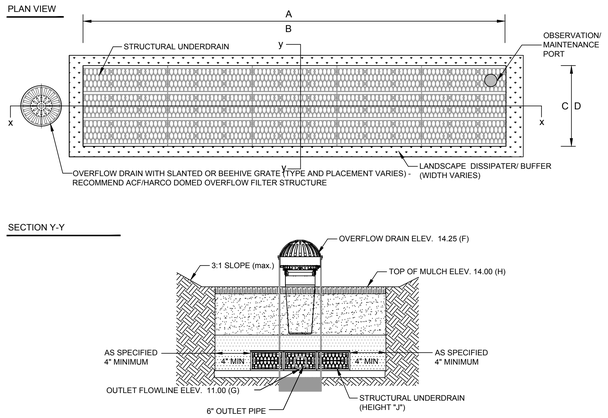
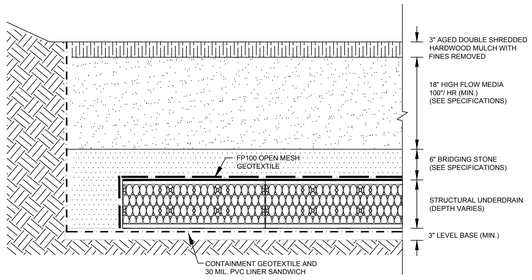
□OCAL□OI□T □E□ DIME□SIO□AL DATA		
FOCALPOINT I.D.		FP-1
A	FOCALPOINT LENGTH	15 FT ±
B	# UNDERDRAIN LONG	VARIES-BEST FIT-SEE SITE PLAN
C	FOCALPOINT WIDTH	VARIES-SEE SITE PLAN
D	# UNDERDRAIN WIDE	BEST FIT-SEE SITE PLAN
E	WATER QUALITY VOLUME	1,869 C.F.
F	OVERFLOW ELEVATION	14.25
G	OUTLET FLOWLINE	11.00
H	TOP OF MULCH	14.00
J	UNDERDRAIN HEIGHT	MINI (9")
K	FOCALPOINT FOOTPRINT	96 S.F.



1 FOCALPOINT CONSTRUCTION GUIDE



FOCALPOINT HP PERFORMANCE SPECIFICATION:

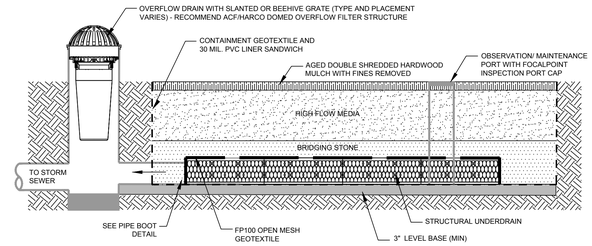
HIGH PERFORMANCE MEDIA

HIGH PERFORMANCE MEDIA MUST MEET A MINIMUM OF 100" PER HOUR INFILTRATION RATE.

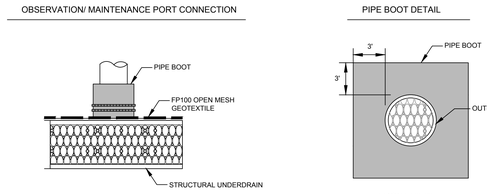
HIGH PERFORMANCE STRUCTURAL UNDERDRAIN

MUST HAVE A MINIMUM OF 19 SQUARE INCHES OF ORIFICE OPENING PER SQUARE FOOT.
MUST MEET H20 LOADING REQUIREMENTS.
MUST BE MODULAR IN NATURE AND ASSEMBLED ON SITE.
MUST HAVE MINIMUM 90% INTERIOR VOID SPACE.

2 FOCALPOINT DETAILED CROSS SECTION



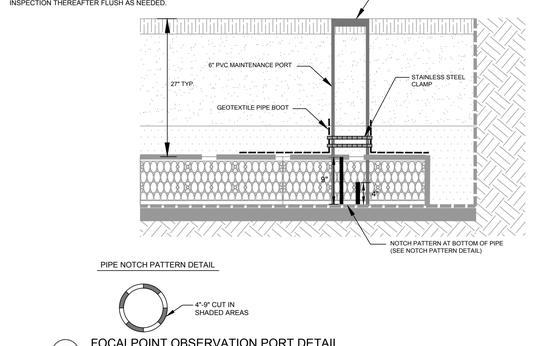
3 FOCALPOINT SECTION X-X



4 FOCALPOINT PIPE CONNECTION DETAIL

O□SER□ATIO□□MAI□TE□A□CE□ORT

PORT USED FOR INSPECTION PURPOSES AND FOR SYSTEM MAINTENANCE AS REQUIRED. WATER SHALL BE PUMPED INTO THE SYSTEM AND RESUSPEND ACCUMULATED SEDIMENT. MINIMUM REQUIRED MAINTENANCE INCLUDES A QUARTERLY INSPECTION FOR THE FIRST YEAR OF OPERATION AND A YEARLY INSPECTION THEREAFTER FLUSH AS NEEDED.

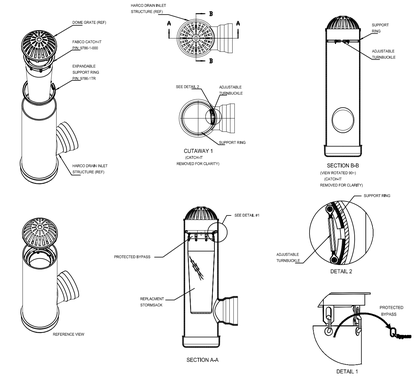


5 FOCALPOINT OBSERVATION PORT DETAIL

NOTES:
1. STORMSACK WEIGHT (EMPTY): 12 LB MAX
2. MATERIAL:
   A) SHROUD: HIGH DENSITY POLYETHYLENE (TYPICAL WALL THICKNESS: .125")
   B) SUPPORT HUB: CRS, POWDER COATED
   C) STORMSACK: WOVEN POLYPROPYLENE GEOTEXTILE (GEOTEX 117F)
   D) HARDWARE: ALUMINUM FOR RIVETS
3. RECOMMENDED MINIMUM VAULT DEPTH: 24IN BELOW CARTRIDGE
4. TYPICAL INSTALLATION: RAISE STORM GRATE, PUSH CATCH-IT SHROUD DOWN ON FRAME SUPPORT LEDGE UNTIL LOCKING CLIPS CLICK IN PLACE, LOWER STORM GRATE.
5. USE ONLY WITH FABCO REPLACEABLE STORMSACK.

STRUCTURE DIAMETER (INCHES)	DEBRIS CAPACITY (CF)	FILTERED FLOWRATE (CFS)	BYPASS FLOWRATE (CFS)	TOTAL SYSTEM FLOWRATE (CFS)
12*	0.77	2.2	1.2	3.4
18	1.65	2.5	1.0	3.5
24	3.60	4.9	2.4	7.3
30	6.20	4.9	2.4	7.3

*THIS PROJECT (TYP. OF 2)



6 ACF/HARCO DOMED OVERFLOW FILTER RISER

PRELIMINARY – NOT FOR CONSTRUCTION

REV	DATE	DESCRIPTION
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1	9/25/2017	FINAL SITE PLAN SUBMISSION

REVISIONS

STATE OF MAINE BO KENNEDY No. 11994 LICENSED PROFESSIONAL ENGINEER 02.02.18

P.E. BO KENNEDY
LIC. #11994

PROJECT
THE FOREFRONT AT THOMPSON'S POINT
HOTEL PORTLAND

SHEET TITLE
STORMWATER DETAILS - FOCALPOINT™ SYSTEM DETAILS

CLIENT
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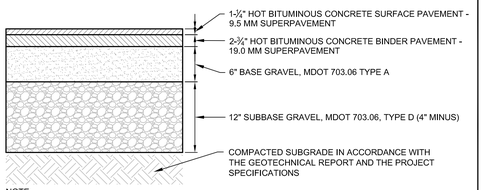
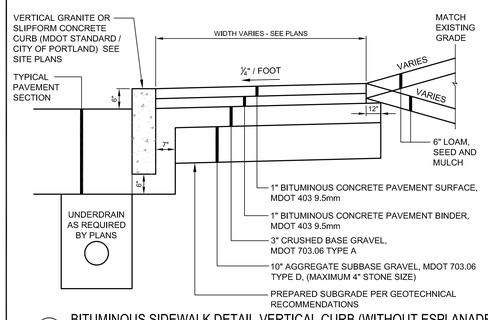
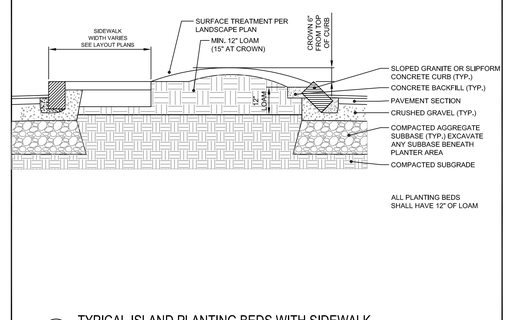


NOTE:
CONTRACTOR SHALL BE REQUIRED TO PROTECT ALL BEARING SOILS FROM EXCESSIVE DISTURBANCE. SHOULD SUBGRADE BECOME YIELDING OR DIFFICULT TO WORK, DISTURBED AREAS SHOULD BE EXCAVATED AND COMPACTED WITH SELECT GRANULAR FILL OR CRUSHED STONE AT NO EXTRA EXPENSE TO THE OWNER. WOVEN GEOTEXTILE TENSILE FABRIC (MIRAFI 600X OR EQUAL) SHALL BE PLACED OVER UNSUITABLE SUBGRADE AS DIRECTED PRIOR TO OR DURING CONSTRUCTION BY THE OWNER'S REPRESENTATIVE, AT NO EXTRA EXPENSE TO THE OWNER.

A LIGHT DUTY BITUMINOUS CONCRETE PAVEMENT SECTION
N.T.S.



E BITUMINOUS SIDEWALK DETAIL-VERTICAL CURB (WITHOUT ESPLANADE)
N.T.S.

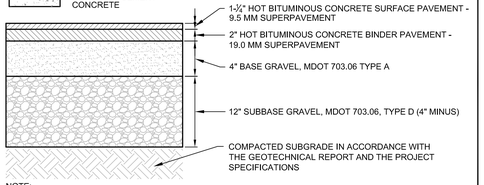


I TYPICAL ISLAND PLANTING BEDS WITH SIDEWALK
N.T.S.

PAVEMENT TYPE IS DEPICTED ON DRAWING C3.5 SURFACE TREATMENT

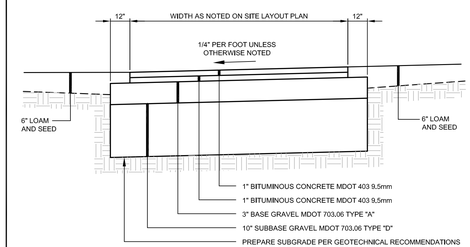
- STANDARD DUTY BITUMINOUS CONCRETE
- HEAVY DUTY BITUMINOUS CONCRETE
- PORTLAND CEMENT CONCRETE

NOTES:
1. APPLY TACK COAT BETWEEN BINDER AND SURFACE COURSES.
2. ALL MATERIALS SHALL CONFORM TO MDOT SPECIFICATIONS, LATEST REVISION COMPACTION OF ALL MATERIALS TO BE IN ACCORDANCE WITH THE SPECIFICATIONS AND GEOTECHNICAL REPORT'S PREPARED BY THE GEOTECHNICAL ENGINEER WHICHEVER IS MORE STRINGENT



NOTE:
CONTRACTOR SHALL BE REQUIRED TO PROTECT ALL BEARING SOILS FROM EXCESSIVE DISTURBANCE. SHOULD SUBGRADE BECOME YIELDING OR DIFFICULT TO WORK, DISTURBED AREAS SHOULD BE EXCAVATED AND COMPACTED WITH SELECT GRANULAR FILL OR CRUSHED STONE AT NO EXTRA EXPENSE TO THE OWNER. WOVEN GEOTEXTILE TENSILE FABRIC (MIRAFI 600X OR EQUAL) SHALL BE PLACED OVER UNSUITABLE SUBGRADE AS DIRECTED BY THE OWNER'S REPRESENTATIVE, AT NO EXTRA EXPENSE TO THE OWNER.

B STANDARD DUTY BITUMINOUS CONCRETE PAVEMENT SECTION
N.T.S.



F NON-CURBED AREAS BITUMINOUS SIDEWALK/WALKWAY DETAIL
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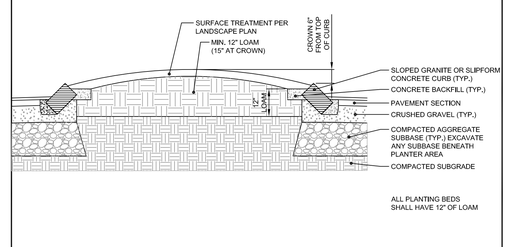
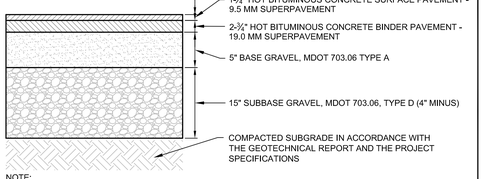
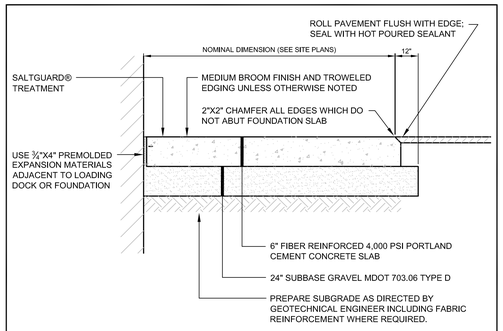


J TYPICAL ISLAND PLANTING BEDS WITHOUT SIDEWALK
N.T.S.

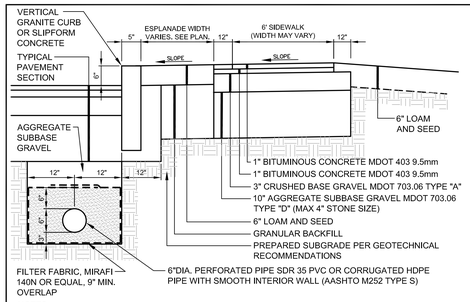


NOTE:
CONTRACTOR SHALL BE REQUIRED TO PROTECT ALL BEARING SOILS FROM EXCESSIVE DISTURBANCE. SHOULD SUBGRADE BECOME YIELDING OR DIFFICULT TO WORK, DISTURBED AREAS SHOULD BE EXCAVATED AND COMPACTED WITH SELECT GRANULAR FILL OR CRUSHED STONE AT NO EXTRA EXPENSE TO THE OWNER. WOVEN GEOTEXTILE TENSILE FABRIC (MIRAFI 600X OR EQUAL) SHALL BE PLACED OVER UNSUITABLE SUBGRADE AS DIRECTED PRIOR TO OR DURING CONSTRUCTION BY THE OWNER'S REPRESENTATIVE, AT NO EXTRA EXPENSE TO THE OWNER.

C HEAVY DUTY BITUMINOUS CONCRETE PAVEMENT SECTION
N.T.S.

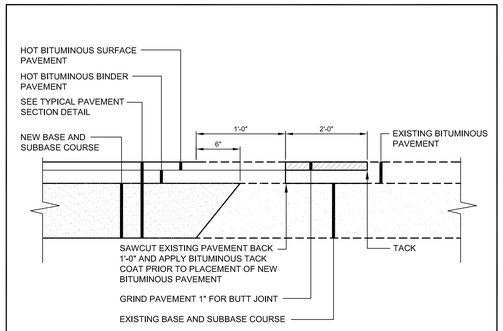


G CONCRETE SLAB DETAIL
N.T.S.



NOTES:
1. UNDERDRAIN REQUIRED WHERE CALLED FOR ON PLANS OR AS RECOMMENDED BY THE GEOTECHNICAL ENGINEER
2. UNDERDRAIN PIPE ELEVATIONS SHALL BE AT LEAST 42" BELOW GUTTER GRADE
3. PERFORATIONS IN UNDERDRAIN SHALL BE ORIENTATED DOWN

D BITUMINOUS SIDEWALK DETAIL-CURBED AREAS (WITH ESPLANADE)
N.T.S.



H PAVEMENT SAWCUT DETAIL
N.T.S.

REV	DATE	DESCRIPTION
2	08.17.16	FINAL PLAN SUBMISSION TO CITY
1	09.01.15	FINAL BRICK SOUTH LEVEL III SITE PLAN APPLICATION

REVISIONS

BO KENNEDY No. 11994 08.17.16 LICENSED PROFESSIONAL ENGINEER STATE OF MAINE

P.E. BO KENNEDY
LIC. #11994

PROJECT
BRICK NORTH AND SOUTH BUILDINGS AT THE FOREFRONT AT THOMPSON'S POINT

SHEET TITLE
PAVEMENT SECTIONS AND SIDEWALK DETAILS

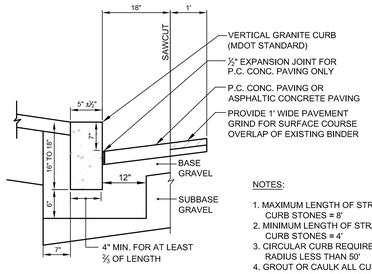
CLIENT
FOREFRONT PARTNERS I , LP

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

DRAWN:	DED	DATE:	APRIL 2015
DESIGNED:	BEK	SCALE:	AS NOTED
CHECKED:	SRB	JOB NO.	195350044
FILE NAME:	2982.05-BS DET		

SHEET C-8.0

V:\1953\active\195350044\2982.05\Cadd\Permit Set\dwg\BRICK SOUTH\2982.05-BS DET.dwg dedavis 8/16/2016 8:34 AM

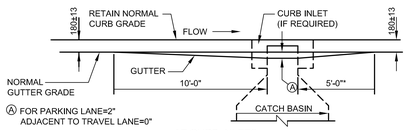


NOTES:

1. MAXIMUM LENGTH OF STRAIGHT CURB STONES = 8'
2. MINIMUM LENGTH OF STRAIGHT CURB STONES = 4'
3. CIRCULAR CURB REQUIRED FOR RADIUS LESS THAN 50'
4. GROUT OR CAULK ALL CURB JOINTS OVER ½" IN WIDTH. INSTALL STRIP OF FILTER FABRIC BEHIND EACH CURB JOINT.

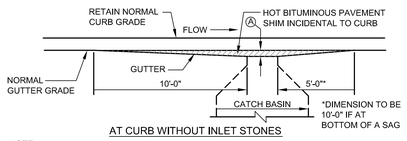
(A) VERTICAL GRANITE CURB DETAIL

N.T.S.



Ⓐ FOR PARKING LANE=2" ADJACENT TO TRAVEL LANE=0"

AT CURB INLETS

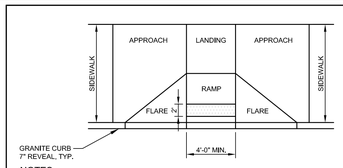


AT CURB WITHOUT INLET STONES

NOTE:
GRATES SHALL BE INSTALLED ON GRADIENT OF THE GUTTER AND BE DEPRESSED 50mm BELOW THE NORMAL GUTTER GRADE UNLESS THIS DEPRESSION INTERFERES WITH TRAFFIC.

(D) GUTTER GRADE TRANSITION AT CATCH BASIN

N.T.S.

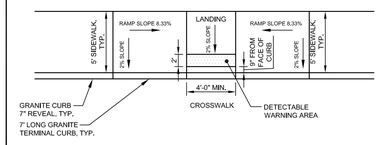


NOTES:

1. ALL RAMPS SHALL COMPLY WITH ADA STANDARDS.
2. GRANITE CURB ADJACENT TO RAMP SHALL BE FLUSH WITH STREET.

DESIGN ELEMENT	SLOPE IN DIRECTION OF TRAVEL	CROSS SLOPE
APPROACH	8.33% MAXIMUM	2%
LANDING	2%	2%
RAMP	8.33% MAXIMUM	MATCH STREET GRADE
FLARE	10% MAX. AT CURB FACE	-
SIDEWALK	MATCH STREET GRADE	2%

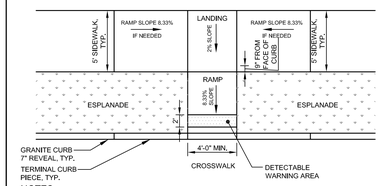
PERPENDICULAR ADA RAMP LAYOUT FOR WIDE SIDEWALK WITH NO ESPLANDE



NOTES:

1. ALL RAMPS SHALL COMPLY WITH ADA STANDARDS.
2. GRANITE CURB ADJACENT TO RAMP SHALL BE FLUSH WITH STREET.
3. SIDEWALK MATERIAL PER CITY SIDEWALK MATERIAL POLICY.

PARALLEL SIDEWALK RAMP LAYOUT FOR NARROW SIDEWALK WITH NO ESPLANDE



NOTES:

1. ALL RAMPS SHALL COMPLY WITH ADA STANDARDS.
2. GRANITE CURB ADJACENT TO RAMP SHALL BE FLUSH WITH STREET.
3. SIDEWALK MATERIAL PER CITY SIDEWALK MATERIAL POLICY.

PERPENDICULAR ADA RAMP LAYOUT FOR NARROW SIDEWALK WITH ESPLANDE

(F) BARRIER FREE RAMP DETAILS

N.T.S.

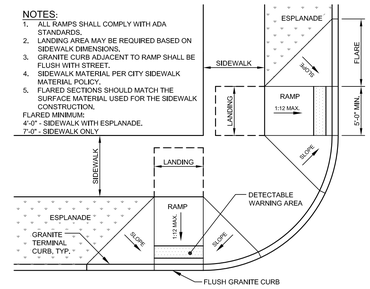
NOTES:

1. ALL RAMPS SHALL BE CONSTRUCTED IN ACCORDANCE WITH AMERICANS WITH DISABILITIES ACT (ADA).
2. ALL RAMPS WITHIN THE CITY OF PORTLAND RIGHT-OF-WAY (SEWALL STREET AND THOMPSON POINT CONNECTOR ROAD) SHALL HAVE DETECTABLE WARNINGS THE FULL DEPTH AND WIDTH OF THE RAMP PER SECTION 4.29 OF THE ADA. DETECTABLE WARNINGS SHALL CONSIST OF RAISED TRUNCATED DOMES A DIAMETER OF 0.90 INCHES, A HEIGHT OF NOMINAL 0.20 INCHES AND A SPACING OF 2.35 INCHES CENTER TO CENTER. THESE SHALL CONTRAST VISUALLY WITH ADJOINING SURFACES.
3. A TACTILE WARNING STRIP IS REQUIRED WHERE RAMP ABUTS AREA USED BY MOTORIZED VEHICLES.
4. ALL TACTILE WARNING STRIPS SHALL BE SET PERPENDICULAR TO DIRECTION OF CROSS WALK.

NOTES:

1. ALL RAMPS SHALL COMPLY WITH ADA STANDARDS.
2. LANDING AREA MAY BE REQUIRED BASED ON SIDEWALK DIMENSIONS.
3. GRANITE CURB ADJACENT TO RAMP SHALL BE FLUSH WITH STREET.
4. SIDEWALK MATERIAL PER CITY SIDEWALK MATERIAL POLICY.
5. FLARED SECTIONS SHOULD MATCH THE SURFACE MATERIAL USED FOR THE SIDEWALK CONSTRUCTION.

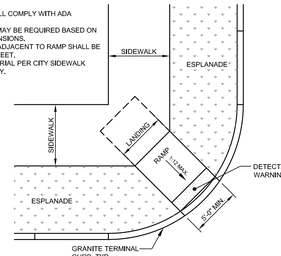
FLARED MINIMUM:
4'-0" - SIDEWALK WITH ESPLANADE.
7'-0" - SIDEWALK ONLY



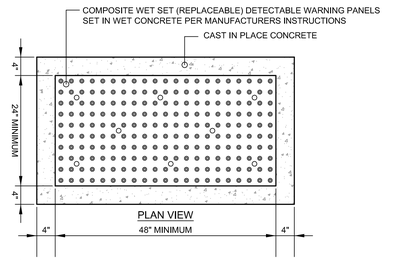
PREFERRED SIDEWALK RAMP AT INTERSECTION

NOTES:

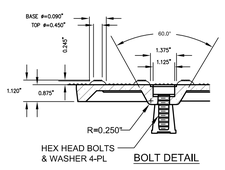
1. ALL RAMPS SHALL COMPLY WITH ADA STANDARDS.
2. LANDING AREA MAY BE REQUIRED BASED ON SIDEWALK DIMENSIONS.
3. GRANITE CURB ADJACENT TO RAMP SHALL BE FLUSH WITH STREET.
4. SIDEWALK MATERIAL PER CITY SIDEWALK MATERIAL POLICY.



DIAGONAL SIDEWALK RAMP LAYOUT AT INTERSECTION FOR SIDEWALK WITH ESPLANADE (REQUIRES WAIVER)



SECTION VIEW



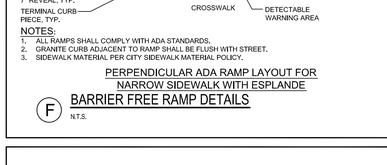
BOLT DETAIL

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. THE EXPOSED CONCRETE BORDER SHALL RECEIVE A GROOVED EDGE BETWEEN THE PANEL AND CONCRETE, ALONG WITH A UNIFORM BROOM FINISH PERPENDICULAR TO THE FLOW OF PEDESTRIAN TRAFFIC.
3. TRUNCATED DOMES SHALL BE ALIGNED IN ROWS, PARALLEL AND PERPENDICULAR TO THE PREDOMINANT DIRECTION OF TRAVEL. TRUNCATED DOME BRICKS AND GRANITE PAVERS ARE NOT ALLOWED.
4. FOR ALL DETECTABLE WARNING PANELS (EXCEPT AS SPECIFIED IN FIGURE I-7A AND TECHNICAL MANUAL SECTION 1.8.4.) FEDERAL YELLOW COLORED (#33538) PANELS SHALL BE USED. FOLLOW MANUFACTURER'S INSTRUCTIONS FOR INSTALLATION.
5. SIZE: THE DETECTABLE WARNING PANEL(S) SHALL EXTEND 24 INCHES MINIMUM IN THE DIRECTION OF TRAVEL AND THE FULL WIDTH OF THE CURB RAMP, LANDING, OR BLENDED TRANSITION TO THE STREET.
6. ORIENTATION: THE DETECTABLE WARNING PANEL SHALL BE LOCATED SO THAT THE EDGE NEAREST 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.

(B) DETECTABLE WARNING PAVER DETAIL

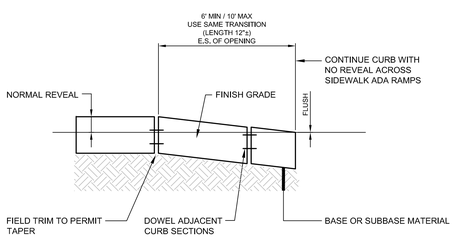
N.T.S.



NOTE:
USE NEAR VERTICAL MOLD WHEN ADJACENT TO SIDEWALK

(E) SLIPFORM CONCRETE CURB DETAIL - SLOPED MOLD

N.T.S.



(C) SLOPE OF GRANITE CURB AT ADA RAMPS AND DRIVEWAYS

N.T.S.

REV	DATE	DESCRIPTION
2	08.17.16	FINAL PLAN SUBMISSION TO CITY
1	09.01.15	FINAL BRICK SOUTH LEVEL III SITE PLAN APPLICATION

REVISIONS

STATE OF MAINE — BO KENNEDY No. 11994 08.17.16 LICENSED PROFESSIONAL ENGINEER

P.E. BO KENNEDY
LIC. #11994

PROJECT
BRICK NORTH AND SOUTH BUILDINGS AT THE FOREFRONT AT THOMPSON'S POINT

SHEET TITLE
CURBING AND SIDEWALK DETAILS

CLIENT
FOREFRONT PARTNERS I , LP

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

DRAWN:	DED	DATE:	APRIL 2015
DESIGNED:	BEK	SCALE:	AS NOTED
CHECKED:	SRB	JOB NO.	195350044
FILE NAME:	2982.05-BS DET		

SHEET C-8.1

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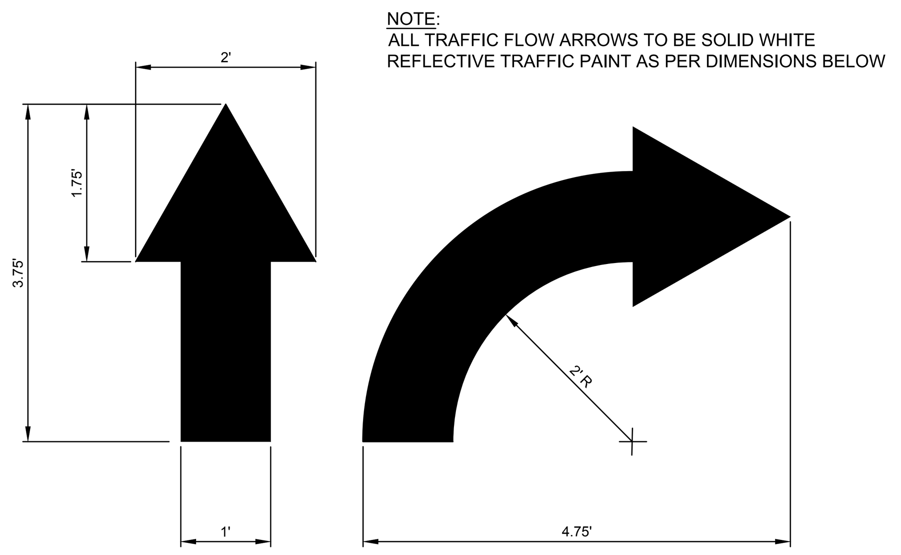
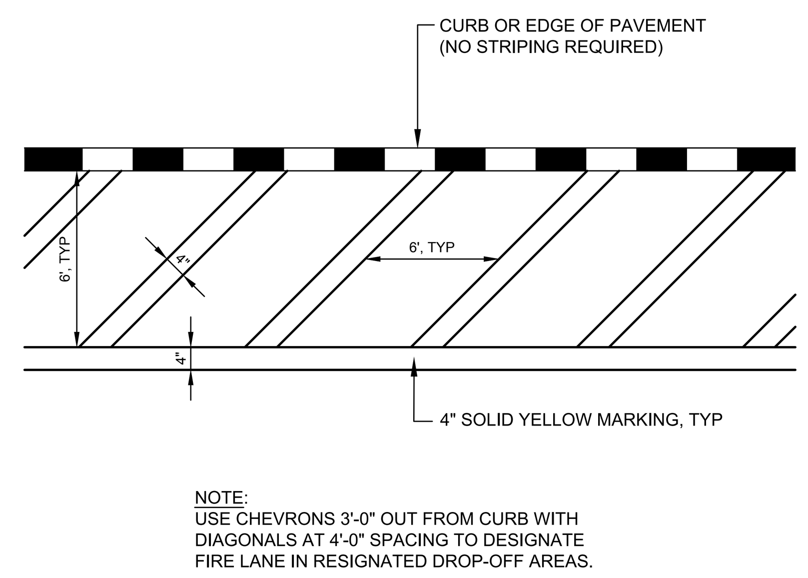
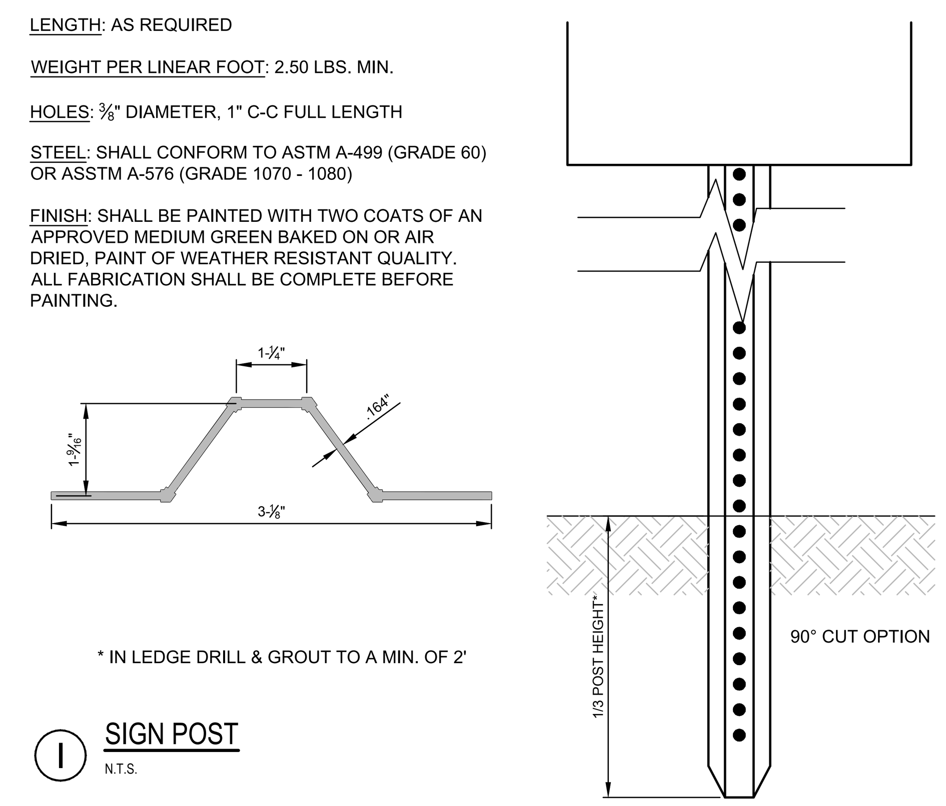


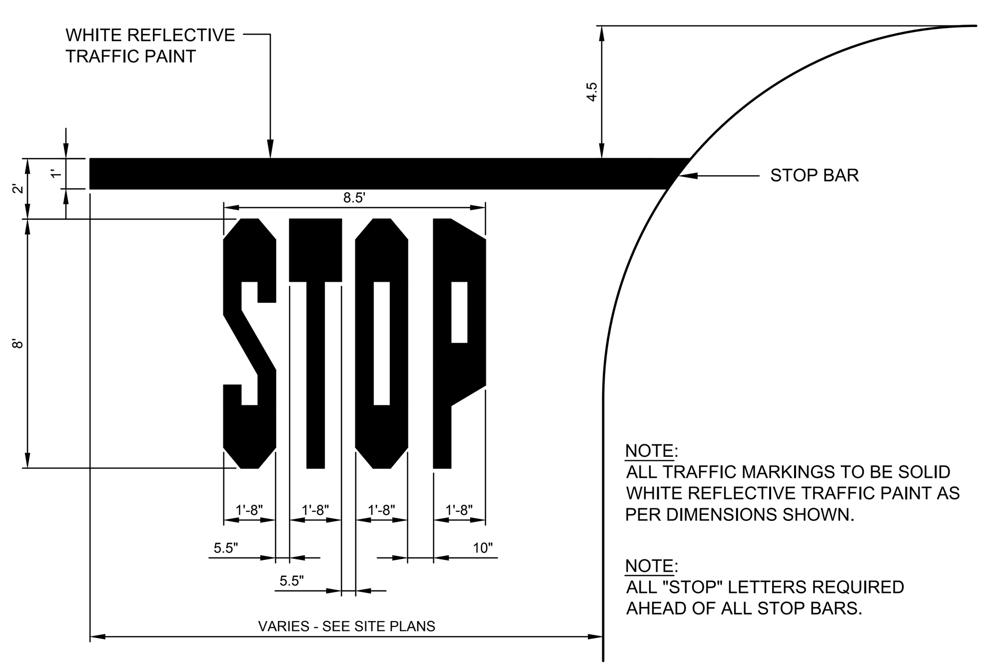
A TRAFFIC FLOW ARROW DETAIL
N.T.S.



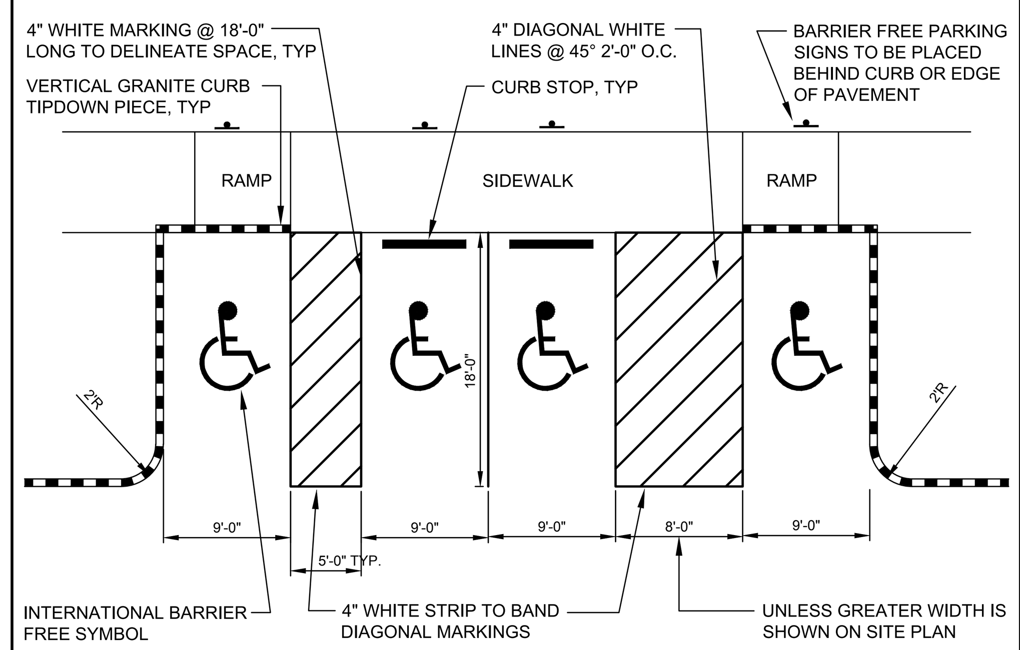
E CHEVRON STRIPING DETAIL
N.T.S.



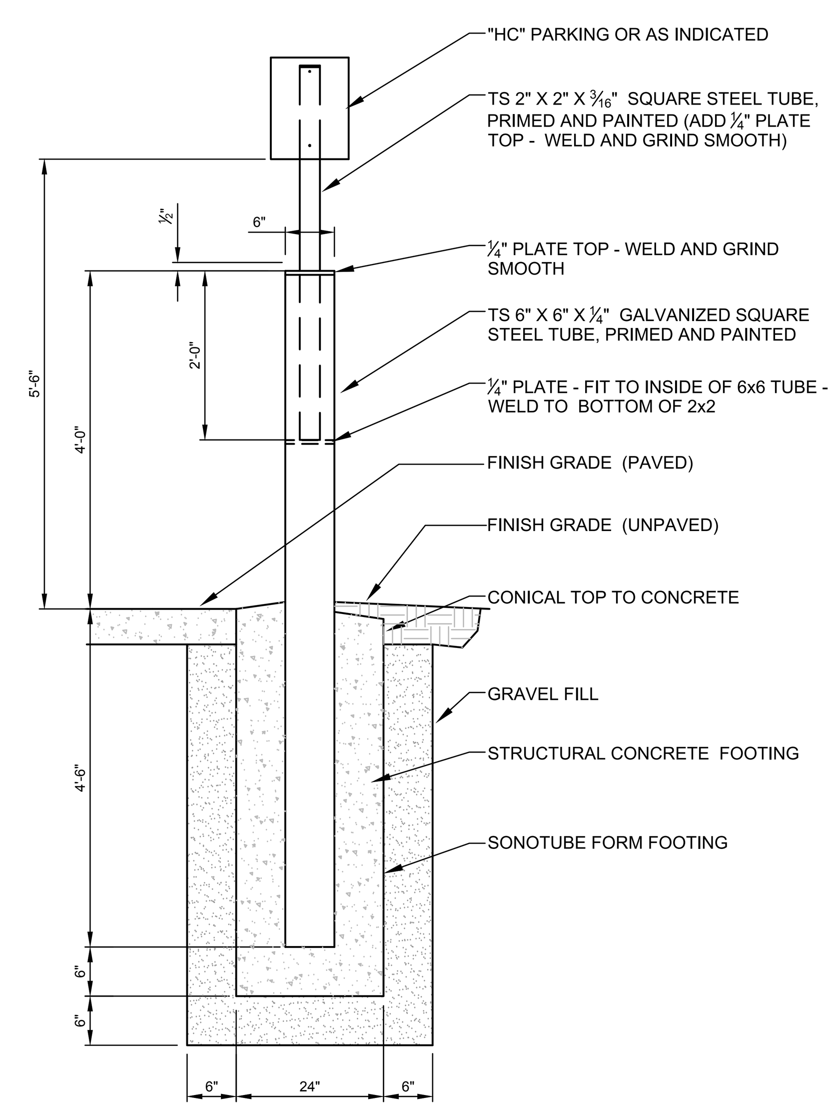
I SIGN POST
N.T.S.

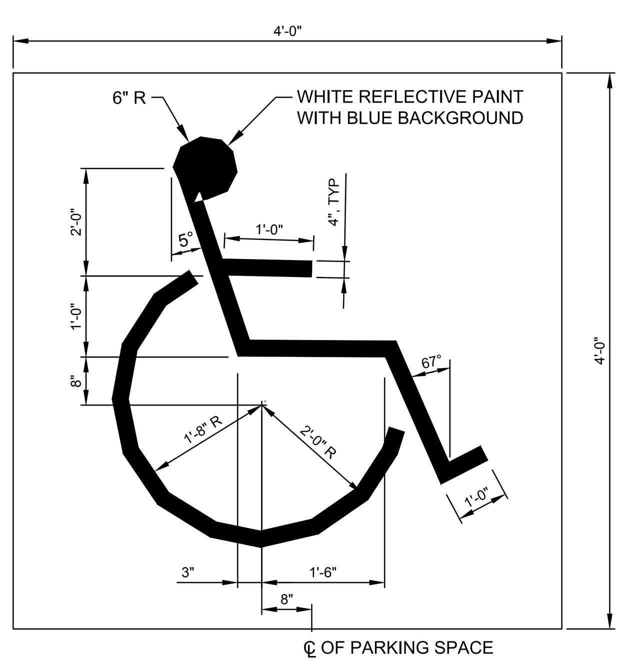


B TYPICAL PAVEMENT MARKINGS
N.T.S.

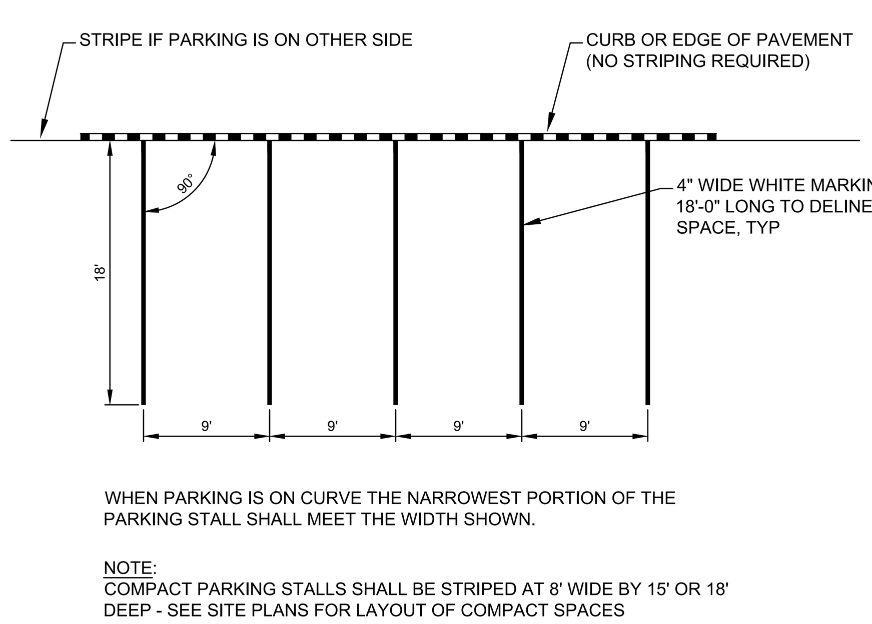


F ADA PARKING LOT STRIPING
N.T.S.



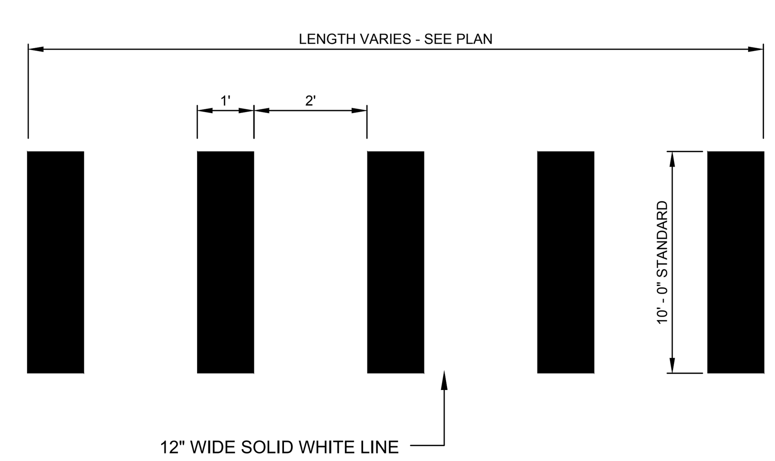


C INTERNATIONAL BARRIER FREE SYMBOL
N.T.S.

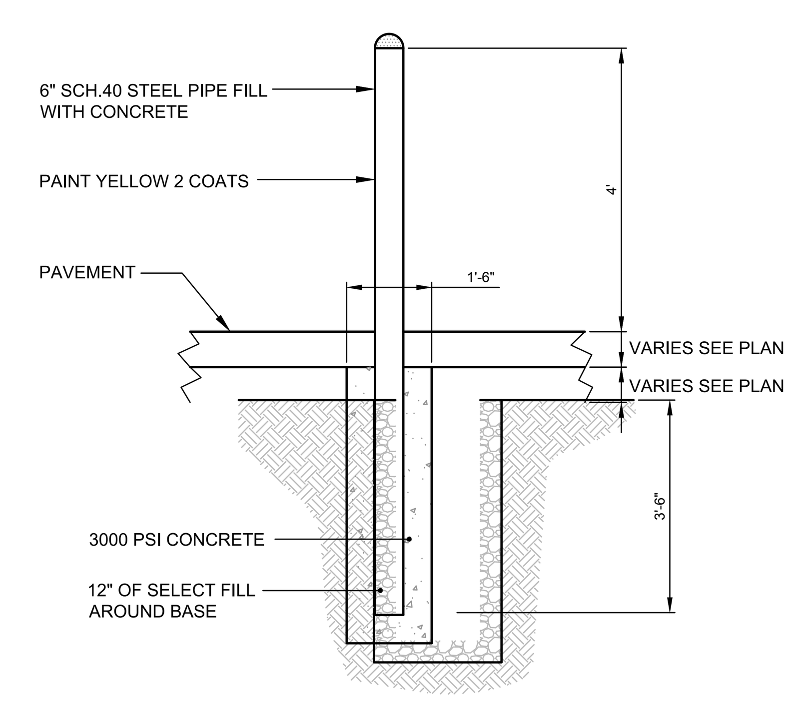


G STANDARD PARKING STALL STRIPING
N.T.S.

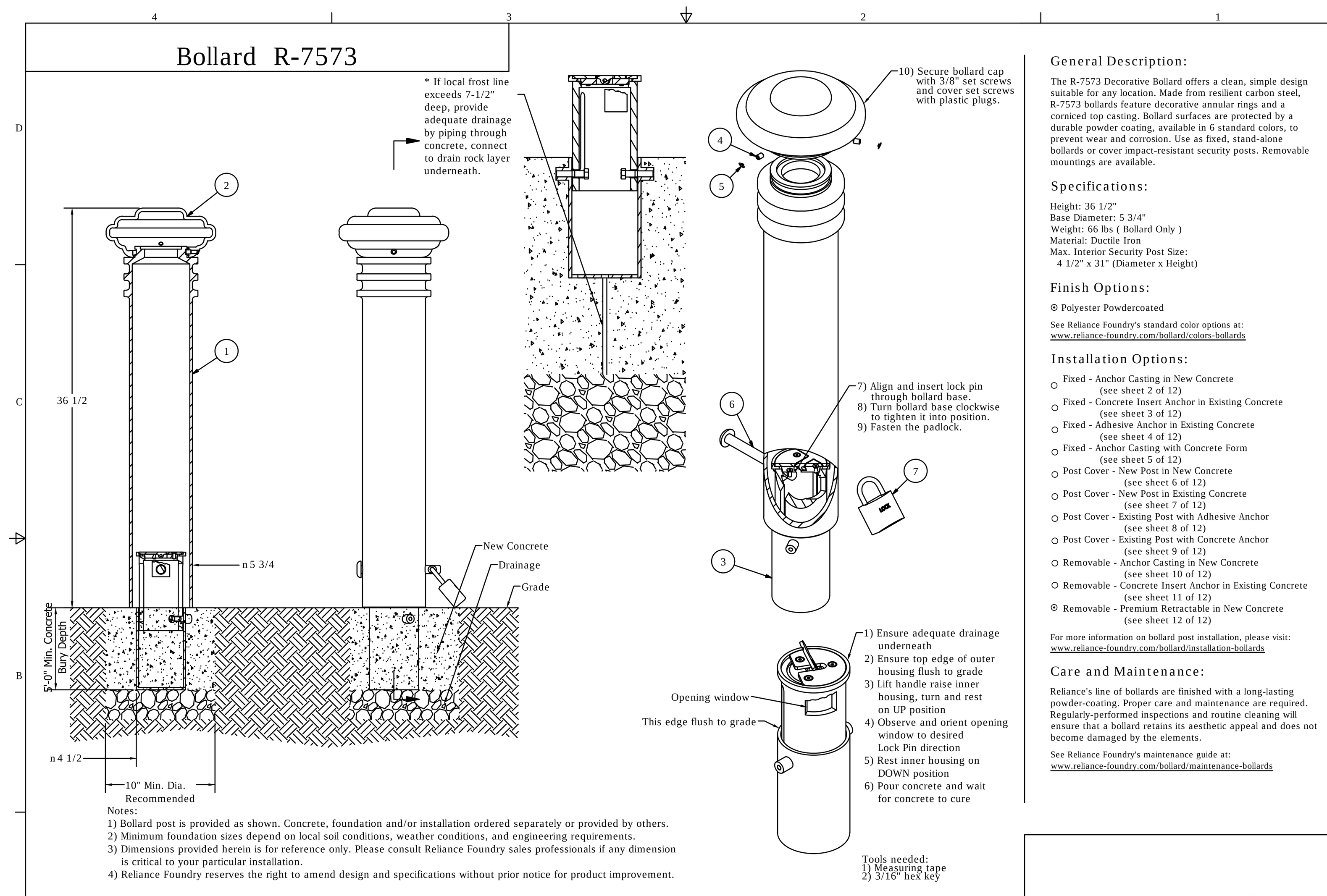
J BARRIER FREE PARKING SIGN
N.T.S.



D CROSSWALK STRIPING DETAIL
N.T.S.



H GUARD POST/BOLLARD DETAIL
N.T.S.



Notes:
1) Bollard post is provided as shown. Concrete, foundation and/or installation ordered separately or provided by others.
2) Minimum foundation sizes depend on local soil conditions, weather conditions, and engineering requirements.
3) Dimensions provided herein is for reference only. Please consult Reliance Foundry sales professionals if any dimension is critical to your particular installation.
4) Reliance Foundry reserves the right to amend design and specifications without prior notice for product improvement.

Tools needed:
1) Measuring tape
2) 3/16" hex key

PARTS LIST

ITEM	QTY	PART NUMBER	DESCRIPTION	MATERIAL	WEIGHT
1	1	R7573B	R7573 Base	Ductile Iron Powder Coated	47 lbs
2	1	R7573C	R7573 Cap	Ductile Iron Powder Coated	19 lbs
3	1	R7000	R7000 Retractable Removable Mount w/ Spacer S	Steel Hot Dip Galvanized	15 5/8 lbs
4	3	Hexagon Socket Set Screw 3/8" x 1/2"	Hexagon Socket Set Screw 3/8" x 1/2" - requires 3/16" hex key	Stainless Steel	
5	3	Polyethylene Plug 3/8"	Polyethylene Plug 3/8"	LDPE Black	
6	1	R7500 Lock Pin 3/4" x 7"	R7500 Lock Pin 3/4" x 7"	Steel Powder Coated	1 1/8 lbs
7	1	Padlock (Optional)	Optional Padlock (Brass or Stainless Steel)	Choice of Brass or Stainless Steel	5/8 lbs

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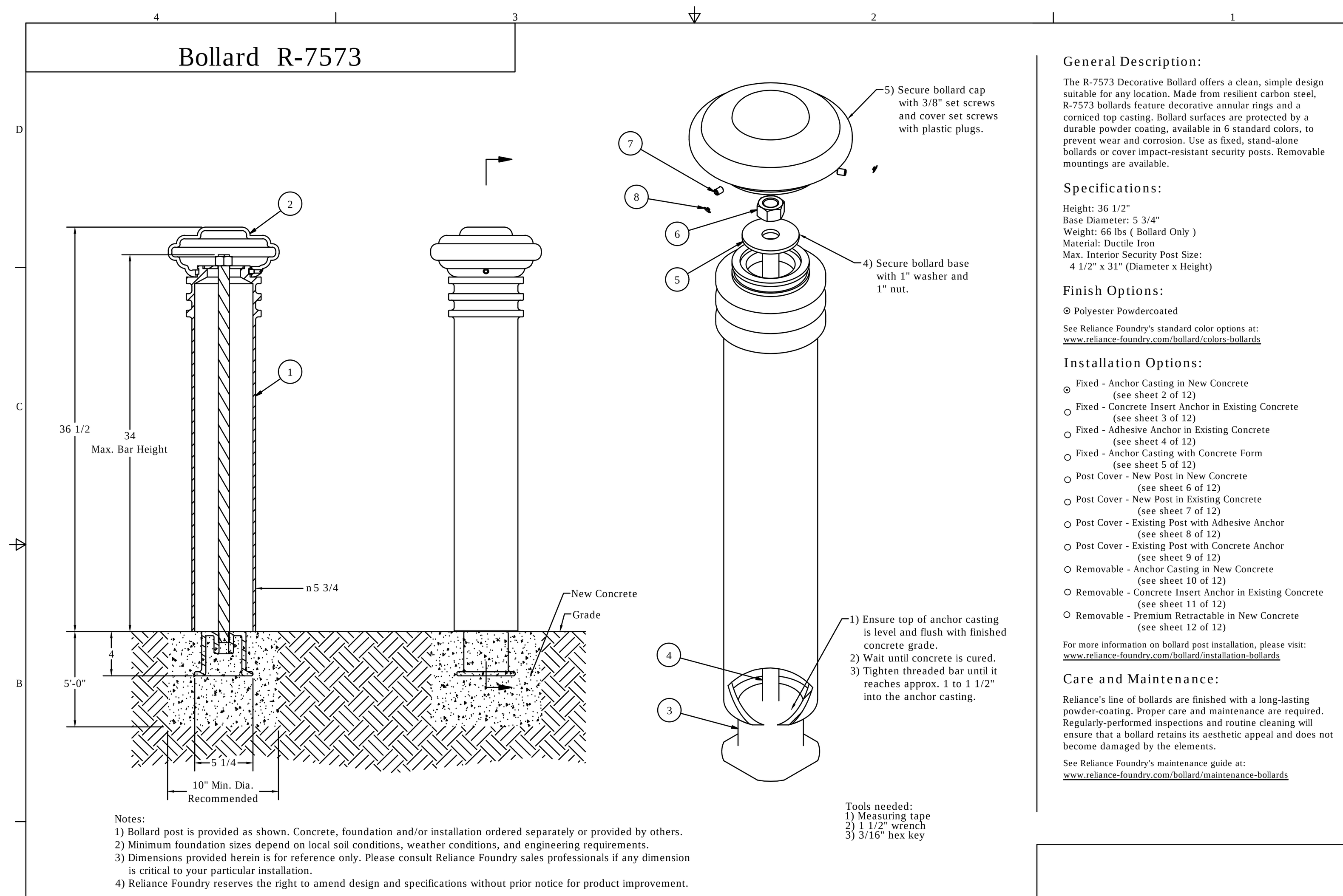
1-877-789-3245 info@reliance-foundry.com
www.reliance-foundry.com

TITLE: Bollard R-7573
SIZE: C | DWG NO: R7573 | REV: C4
NOT TO SCALE | SHEET 2 OF 12



Notes:
1) Bollard post is provided as shown. Concrete, foundation and/or installation ordered separately or provided by others.
2) Minimum foundation sizes depend on local soil conditions, weather conditions, and engineering requirements.
3) Dimensions provided herein is for reference only. Please consult Reliance Foundry sales professionals if any dimension is critical to your particular installation.
4) Reliance Foundry reserves the right to amend design and specifications without prior notice for product improvement.

Tools needed:
1) Measuring tape
2) 1 1/2" wrench
3) 3/16" hex key

PARTS LIST

ITEM	QTY	PART NUMBER	DESCRIPTION	MATERIAL	WEIGHT
1	1	R7573B	R7573 Base	Ductile Iron Powder Coated	47 lbs
2	1	R7573C	R7573 Cap	Ductile Iron Powder Coated	19 lbs
3	1	R7500AN 1"	R7500 Anchor Casting 1"	Ductile Iron Hot Dip Galvanized	8 3/8 lbs
4	1	R7500BAR 1"	R7500 Threaded Bar 1" x 35"	Steel Plated	6 1/2 lbs
5	1	Washer 1" OD 3 1/2"	Washer 1" OD 3 1/2" Thick 1/4"	Steel Plated	5/8 lbs
6	1	Hex Nut 1"	Hex Nut 1" - requires 1 1/2" wrench	Steel Plated	1/4 lbs
7	3	Hexagon Socket Set Screw 3/8" x 1/2"	Hexagon Socket Set Screw 3/8" x 1/2" - requires 3/16" hex key	Stainless Steel	
8	3	Polyethylene Plug 3/8"	Polyethylene Plug 3/8"	LDPE Black	

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Unit 207, 6450 - 148 Street, Surrey, BC V3S 7G7, Canada
1-877-789-3245 info@reliance-foundry.com
www.reliance-foundry.com

TITLE: Bollard R-7573
SIZE: C | DWG NO: R7573 | REV: C4
NOT TO SCALE | SHEET 2 OF 12

PRELIMINARY – NOT FOR CONSTRUCTION

REV	DATE	DESCRIPTION
2	08.17.16	FINAL PLAN SUBMISSION TO CITY
2	2/02/2018	RE-SUBMISSION PER CITY STAFF COMMENTS
1	9/25/2017	FINAL SITE PLAN SUBMISSION

REVISIONS

STATE OF MAINE BO KENNEDY No. 11994 LICENSED PROFESSIONAL ENGINEER 02.02.18
P.E. BO KENNEDY
LIC. #11994

PROJECT
THE FOREFRONT AT THOMPSON'S POINT HOTEL PORTLAND

SHEET TITLE
PARKING AND TRAFFIC CONTROL DETAILS

CLIENT
FOREFRONT HOTELIERS, LLC

PLACEMAKER PARTNERS, LLC
501 DANFORTH STREET
PORTLAND, ME 04102
bo@placemakerpartners.com

DRAWN:	DED DB	DATE:	AUG. 2017
DESIGNED:	BEK	SCALE:	
FILE NAME:	HOTEL-DET JF.dwg		
SHEET	C-8.2		

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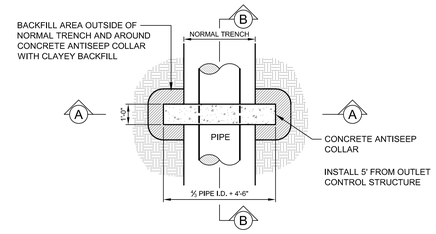
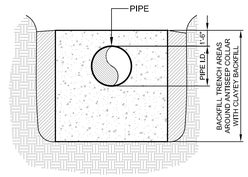
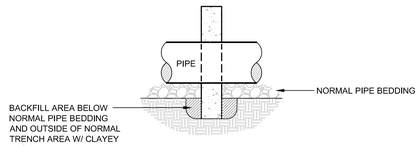


PLAN

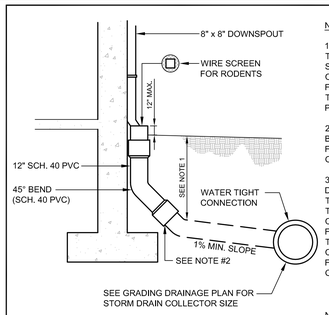


SECTION A-A



SECTION B-B

Ⓐ ANTISEEP COLLAR
N.T.S.



NOTES:

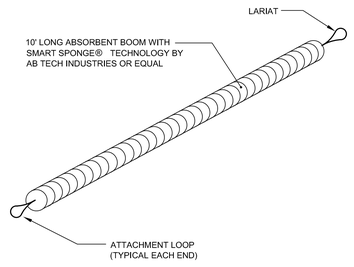
1. FOR ALL DEPTHS OF COVER LESS THAN TWO (2) FEET, PIPE MUST BE SCHEDULE 40 PVC. FOR DEPTHS OF COVER GREATER THAN TWO (2) FEET, FLEXIBLE PIPE MAY BE USED. REFER TO SPECIFICATIONS FOR ALLOWABLE PIPE TYPES.

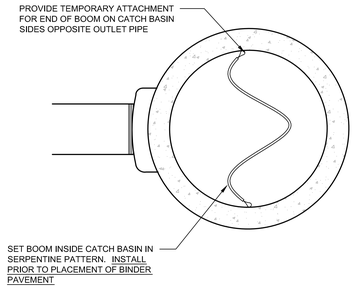
2. A WATERTIGHT CONNECTION SHALL BE MAINTAINED WITH ANY TRANSITION FROM SCHEDULE 40 PVC PIPE TO ANY OTHER PIPE TYPE.

3. THE DOWNSPOUT COLLECTOR DRAIN SHALL BE INSTALLED BEFORE THE DOWNSPOUTS ARE INSTALLED ON THE BUILDING. SITE WORK CONTRACTOR SHALL BE RESPONSIBLE FOR ALL WORK TO AND INCLUDING THE RODENT SCREEN. BUILDING CONTRACTOR SHALL BE RESPONSIBLE FOR THE CONNECTION AT THE POINT OF THE RODENT SCREEN.

NOTE:
ARCHITECT MAY ELECT TO USE INTERNAL ROOF DRAINS - REFER TO ARCHITECTURAL PLANS

Ⓒ ROOF DRAIN DETAIL
N.T.S.





PLAN VIEW LOOKING INTO CATCH BASIN

NOTES:
1. REQUIRED FOR ALL CATCH BASINS WHICH RECEIVE RUNOFF FROM PAVED AREAS.
2. REFER TO EROSION CONTROL REPORT FOR ADDITIONAL INFORMATION.
3. CONTRACTOR MAY SELECT OTHER TYPE OF EQUIVALENT OIL ABSORBENT PRODUCTS.
4. SUBMITTALS ARE REQUIRED FOR THESE ITEMS.

Ⓑ TEMPORARY WATER QUALITY MEASURE INSIDE OF CATCH BASINS
N.T.S.

REV	DATE	DESCRIPTION
2	08.17.16	FINAL PLAN SUBMISSION TO CITY
1	09.01.15	FINAL BRICK SOUTH LEVEL III SITE PLAN APPLICATION

REVISIONS

STATE OF MAINE — BO KENNEDY No. 11994 08.17.16 LICENSED PROFESSIONAL ENGINEER

P.E. BO KENNEDY
LIC. #11994

PROJECT
BRICK NORTH AND SOUTH BUILDINGS AT THE FOREFRONT AT THOMPSON'S POINT

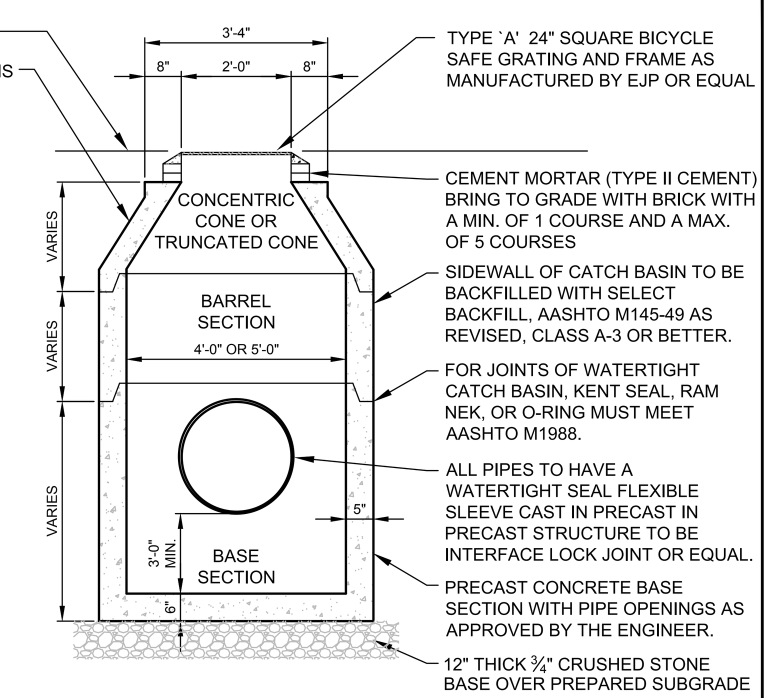
SHEET TITLE
STORMWATER DETAILS

CLIENT
FOREFRONT PARTNERS I , LP

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

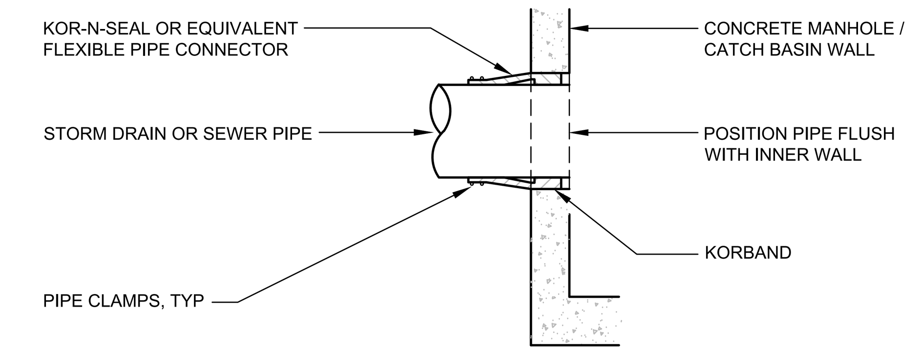
DRAWN:	DED	DATE:	APRIL 2015
DESIGNED:	BEK	SCALE:	N.T.S.
CHECKED:	SRB	JOB NO.	195350044
FILE NAME:	2982.05-BS DET		

SHEET C-8.3



DESIGN NOTES:
1. ALL CONCRETE TO HAVE A MIN. OF 4,000 PSI COMPRESSIVE STRENGTH AT 28 DAYS OR AS MAY BE REQUIRED BY UTILITY COMPANY.
2. DESIGN LOAD FOR H-20 WHEEL LOAD.
3. CATCH BASIN TO CONFORM TO ASTM-C478 SPECIFICATIONS.
4. REINFORCE TO 0.12 IN SQ./L.F.

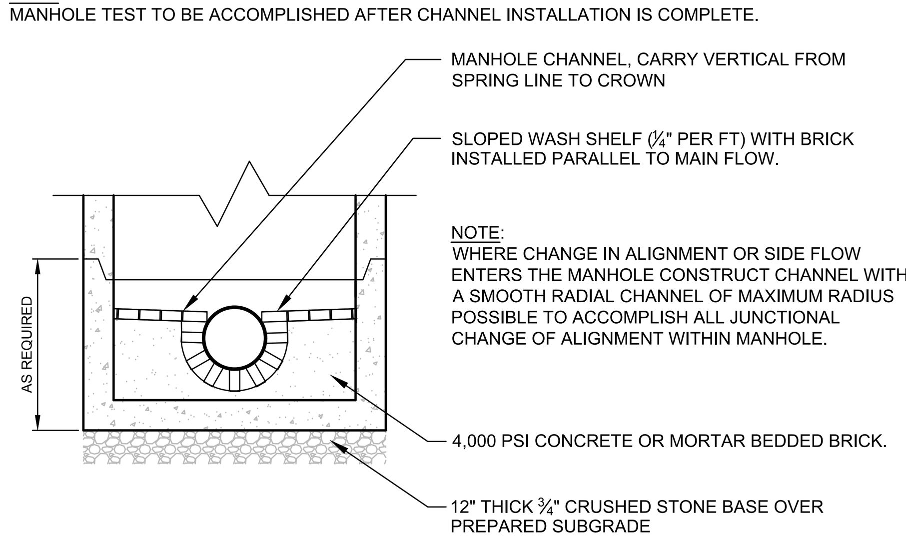
(A) 4'-0" OR 5'-0" PRECAST CATCH BASIN
N.T.S.



NOTES:
1. A FLEXIBLE PIPE TO MANHOLE CONNECTOR SHALL BE EMPLOYED IN THE CONNECTION OF ALL PIPE TO MANHOLE JUNCTIONS.
2. THE CONNECTOR SHALL BE KOR-N-SEAL AS MANUFACTURED BY NPC SYSTEMS, INC., OF MILFORD, NH OR EQUAL.
3. THE CONNECTOR SHALL BE THE SOLE ELEMENT RELIED ON TO ASSURE A FLEXIBLE WATERTIGHT SEAL OF THE PIPE TO MANHOLE. NO ADHESIVES OR LUBRICANTS SHALL BE EMPLOYED IN THE INSTALLATION OF THE CONNECTOR TO THE MANHOLE. THE RUBBER FOR THE CONNECTOR SHALL COMPLY TO ASTM C443 AND ASTM C923 AND CONSIST OF EPDM AND ELASTOMERS KNOWN TO BE RESISTANT TO OZONE, WEATHER ELEMENTS, CHEMICALS, INCLUDING ACIDS, ALKALIS, ANIMAL AND VEGETABLE FATS, OILS AND PETROLEUM PRODUCTS FROM SPILLS.
4. ALL STAINLESS STEEL ELEMENTS OF THE CONNECTOR SHALL BE TOTALLY NON-MAGNETIC SERIES 304 STAINLESS, EXCLUDING THE WORM SCREW USED FOR TIGHTENING THE STEEL BAND AROUND THE PIPE WHICH SHALL BE SERIES 305 STAINLESS. THE WORM SCREW USED FOR TIGHTENING THE STEEL BAND SHALL BE TORQUED BY A BREAK-AWAY TORQUE WRENCH AVAILABLE FROM THE PRECAST MANHOLE SUPPLIER, AND SET AT 60/70 in/lbs..
5. THE CONNECTOR SHALL BE INSTALLED IN THE MANHOLE WALL BY ACTIVATING THE EXPANDING MECHANISM IN STRICT ACCORDANCE WITH THE RECOMMENDATION OF THE CONNECTOR MANUFACTURER.
6. THE CONNECTOR SHALL BE OF A SIZE SPECIFICALLY DESIGNED FOR THE PIPE MATERIAL AND SIZE BEING UTILIZED ON THE PROJECT.
7. ALL CONNECTORS WHICH ARE CAPPED AWAITING PIPE INSTALLATION AT A LATER DATE MUST BE RESTRAINED.

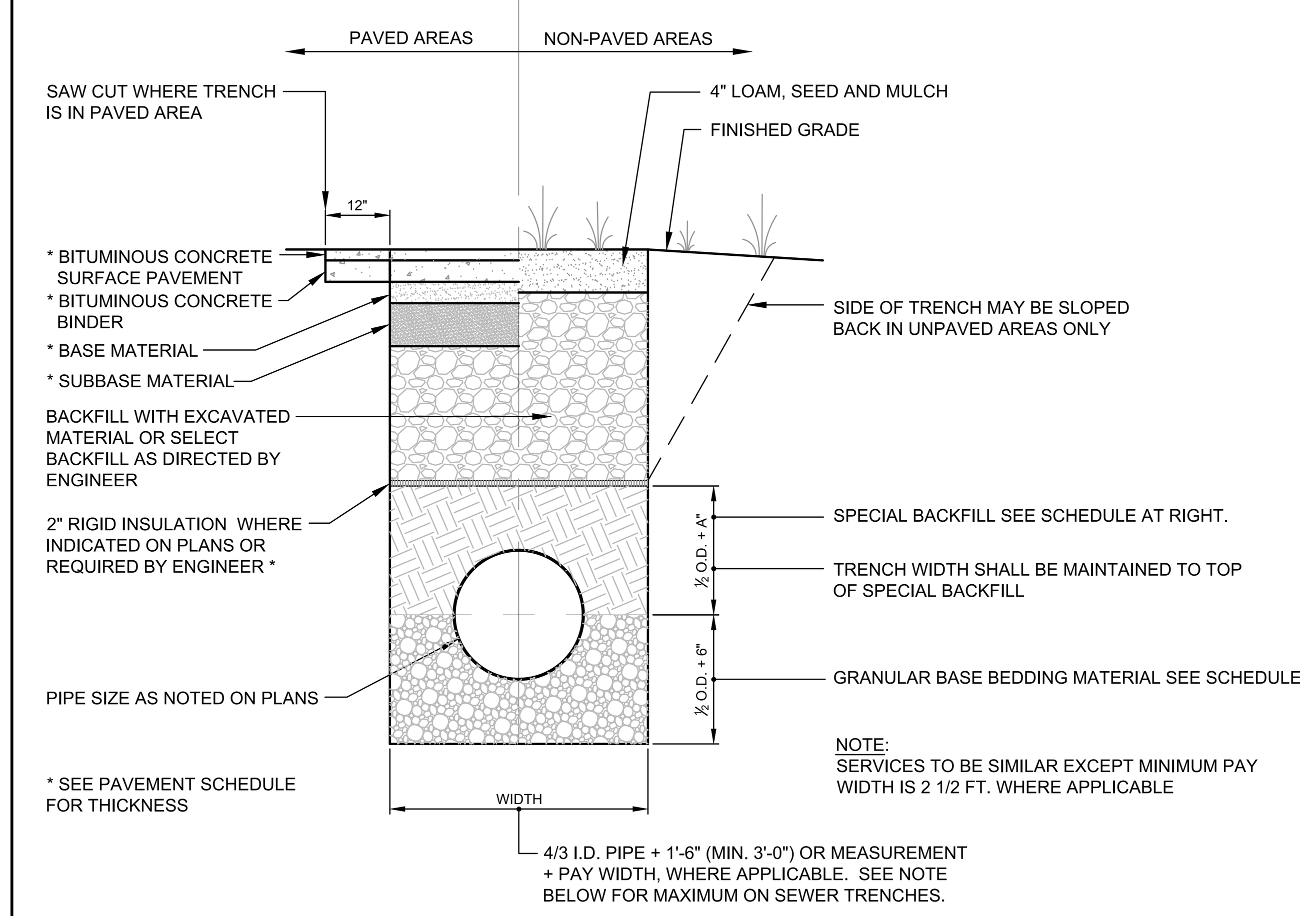
(E) PIPE CONNECTION TO PRECAST CONCRETE SANITARY SEWER AND STORM DRAINAGE STRUCTURE
N.T.S.

NOTE:
MANHOLE TEST TO BE ACCOMPLISHED AFTER CHANNEL INSTALLATION IS COMPLETE.



NOTES:
1. BRICK CHANNEL TO BE AASHTO M-91-42 AS SEWER BRICK OR, IF APPROVED BY ENGINEER, A PREFABRICATED FIBERLINER 2000 CHANNEL, AS MANUFACTURED BY GDT, INC. ESSEX, CT OR EQUAL MAY BE USED.
2. SLOPE CHANNEL DOWN FROM INLET TO OUTLET.
3. TOOL ALL JOINTS IN CHANNEL AND ON TABLE.

(F) STORM AND SANITARY MANHOLE CHANNEL DETAIL
N.T.S.



NOTE:
SERVICES TO BE SIMILAR EXCEPT MINIMUM PAY WIDTH IS 2 1/2 FT. WHERE APPLICABLE

SCHEDULE OF BASE BACKFILL FOR NON-SANITARY INSTALLATIONS

TYPE OF PIPE	BEDDING MATERIAL	SPECIAL BACKFILL	SPECIAL BACKFILL COVER "A" (IN)	SELECT BACKFILL
CONCRETE	3/4" CRUSHED STONE	GRANULAR AASHTO M145-49 A-3 OR BETTER	12	GRANULAR AASHTO M145-49 A-3 OR BETTER
PVC OR CORRUGATED POLYETHYLENE	3/4" CRUSHED STONE	GRANULAR AASHTO M145-49 A-3 OR BETTER	6	GRANULAR AASHTO M145-49 A-3 OR BETTER
CMP	3/4" CRUSHED STONE	GRANULAR AASHTO M145-49 A-3 OR BETTER	6	GRANULAR AASHTO M145-49 A-3 OR BETTER
DUCTILE IRON	GRANULAR AASHTO M145-49 A-3 OR BETTER	GRANULAR AASHTO M145-49 A-3 OR BETTER	6	GRANULAR AASHTO M145-49 A-3 OR BETTER

SCHEDULE OF BASE BACKFILL FOR SANITARY INSTALLATIONS

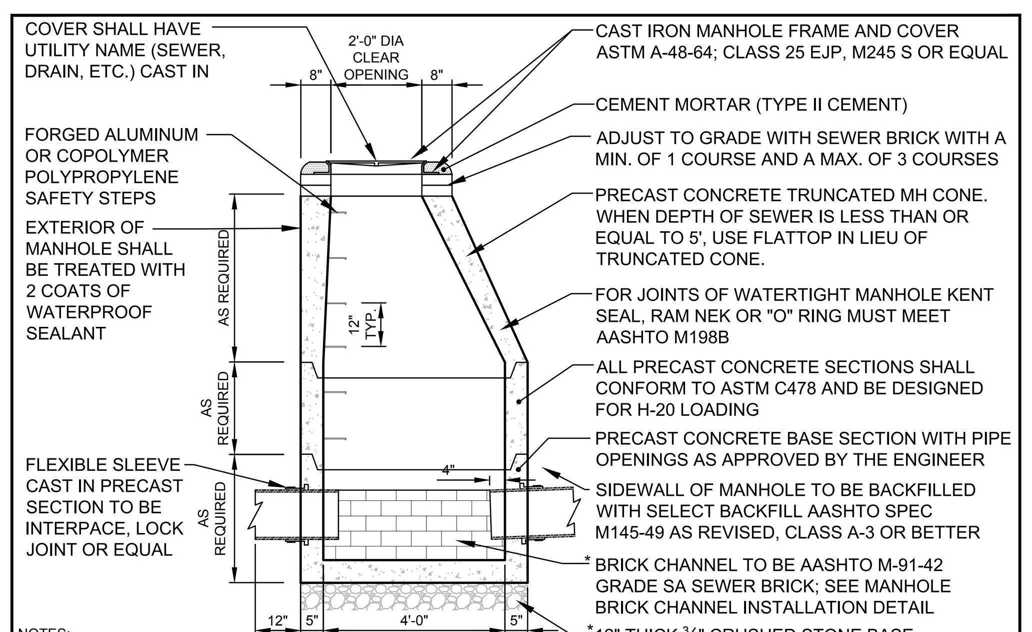
TYPE OF PIPE	BEDDING MATERIAL	SPECIAL BACKFILL	SPECIAL BACKFILL COVER "A" (IN)	SELECT BACKFILL
PVC PRESSURE	3/4" CRUSHED STONE	3/4" CRUSHED STONE	6	GRANULAR AASHTO M145-49 A-3 OR BETTER
PVC GRAVITY	3/4" CRUSHED STONE	GRANULAR AASHTO M145-49 A-3 OR BETTER	6	GRANULAR AASHTO M145-49 A-3 OR BETTER
DUCTILE IRON	3/4" CRUSHED STONE	3/4" CRUSHED STONE	6	GRANULAR AASHTO M145-49 A-3 OR BETTER

MAXIMUM ALLOWABLE TRENCH WIDTHS FOR SEWERS

PIPE SIZE	MAXIMUM WIDTH
10" OR LESS	
12 TO 15	4'-0"
18	4'-6"
24	5'-6"
30	6'-0"
36	6'-9"
42	7'-3"
48	8'-0"

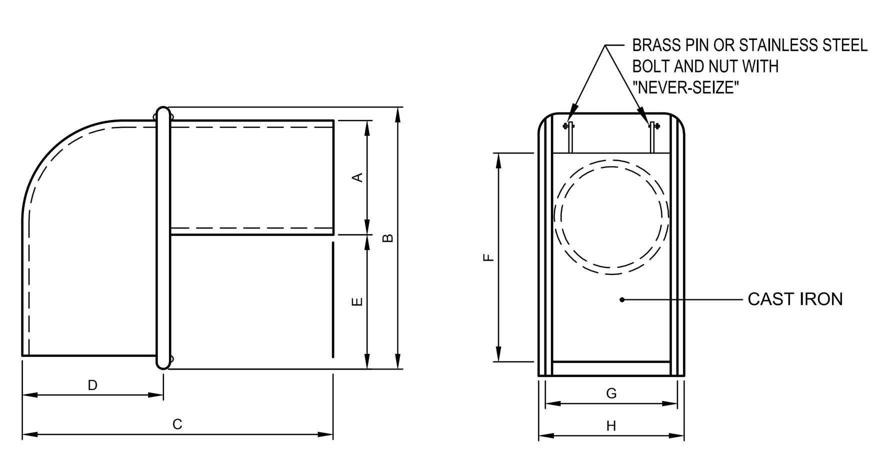
SHEETING, IF REQUIRED, SHALL BE CUT OFF 2'-0" BELOW FINISH GRADE.

(H) TYPICAL SEWER, WATER MAIN, AND STORM DRAIN TRENCH SECTION
N.T.S.



NOTES:
WHEN THIS MANHOLE DETAIL IS USED FOR SANITARY SEWER INSTALLATIONS MAKE THE FOLLOWING CHANGES:
1. THE HEIGHT OF THE TRUNCATED CONE SHALL BE 2'-0"
2. A POLYFROST BARRIER CONSISTING OF A MIN. OF 4 LAYERS, (EACH 6 MIL) SHALL BE PLACED AROUND THE STRUCTURE FROM THE SURFACE TO 5'-) MIN. BELOW GRADE.
3. THE BACKFILL AROUND THE MANHOLE SHALL BE COMPACTED GRAVEL, A MIN. OF 24" OUTSIDE THE STRUCTURE.
4. THE CASTING SHALL BE GASKETED.

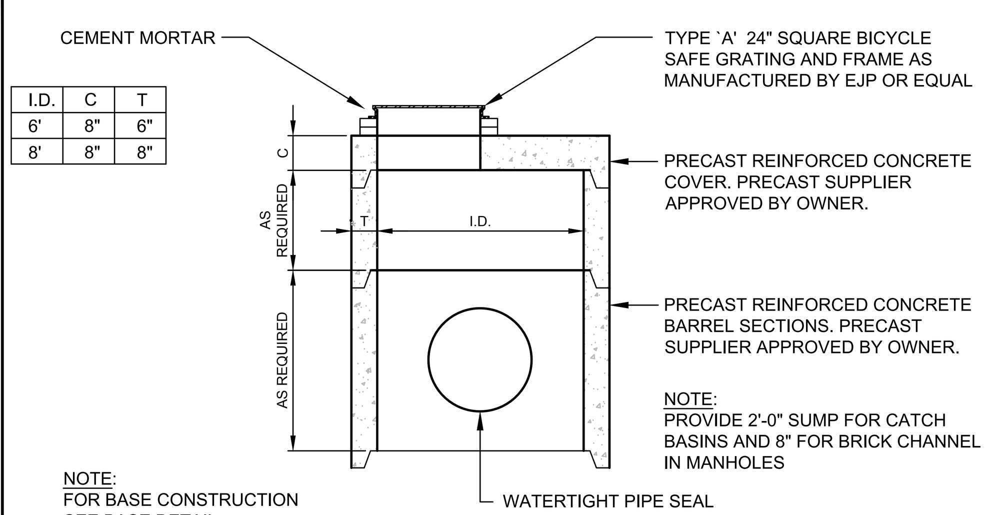
(C) 4'-0" PRECAST SANITARY SEWER AND STORM DRAIN MANHOLE
N.T.S.



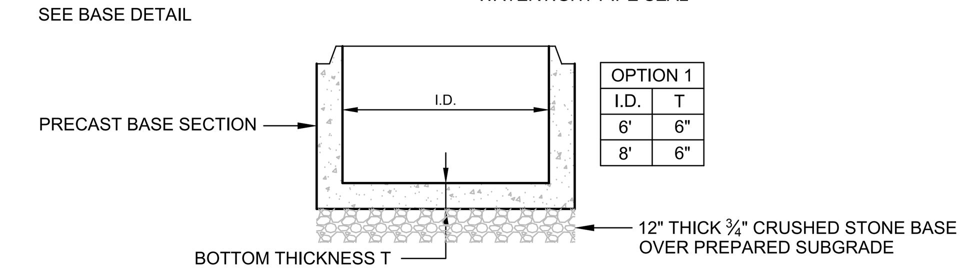
NOTES:
1. BOLT AND NUT REQUIRED WHERE HOOD WILL NOT OPEN COMPLETELY
2. CASCO TRAP REQUIRED FOR ALL CATCH BASIN OUTLETS
3. CONTRACTOR MAY USE ALTERNATE HOODED OUTLET PRODUCT SUCH AS SNOUT™

(D) CASCO TRAP DETAIL
N.T.S.

I.D.	C	T
6'	8"	6"
8'	8"	8"



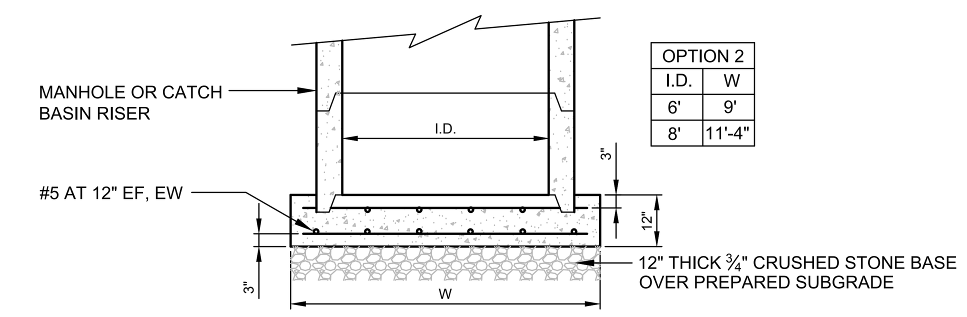
NOTE:
FOR BASE CONSTRUCTION SEE BASE DETAIL



OPTION 1	
I.D.	T
6'	6"
8'	6"

BASE DETAIL OPTION 1

NOTE:
THE CONTRACTOR SHALL USE BASE OPTION 2 UNLESS ANTIFLOATATION COMPUTATIONS ARE PROVIDED BY THE CONTRACTOR DEMONSTRATING OPTION 1 CAN BE USED AT THIS SITE. APPROVAL IS SUBJECT TO APPROVAL OF THE ENGINEER.

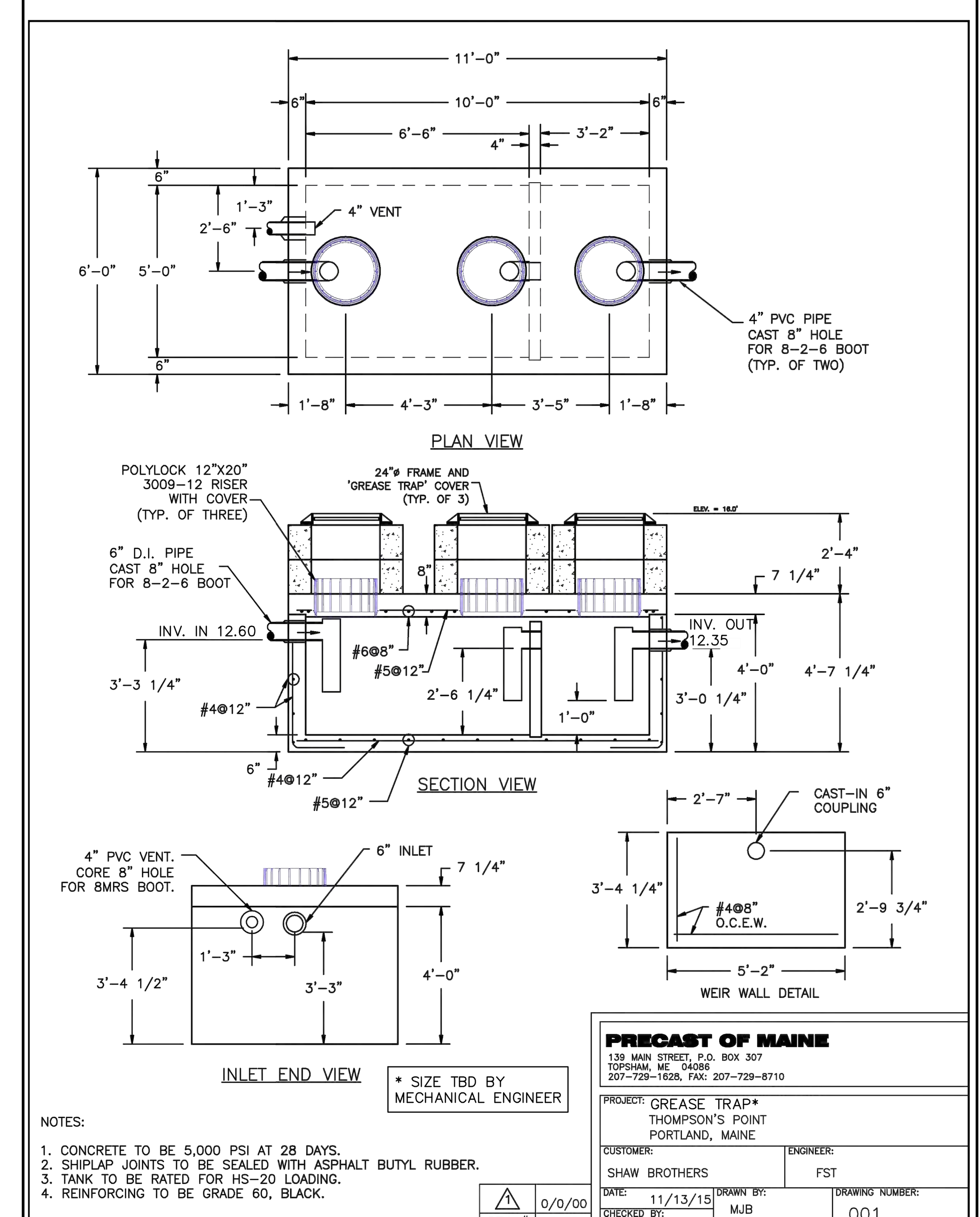


OPTION 2	
I.D.	W
6'	9'
8'	11'-4"

BASE DETAIL OPTION 2

DESIGN NOTES
1. ALL CONCRETE TO HAVE A MIN. 4,000 PSI COMPRESSIVE STRENGTH AT 28 DAYS
2. DESIGN FOR H-20 WHEEL LOADING
3. CATCH BASIN TO CONFORM TO ASTM-C478 SPECIFICATIONS
4. REINFORCE TO .12 IN. SQ./L.F.

(G) LARGE DIAMETER STORM DRAIN MANHOLE & CATCH BASIN WITH FLAT TOP
N.T.S.



(I) GREASE TRAP DETAIL
N.T.S.

PRELIMINARY – NOT FOR CONSTRUCTION

REV	DATE	DESCRIPTION
2	08.17.16	FINAL PLAN SUBMISSION TO CITY
2	2/02/2018	RE-SUBMISSION PER CITY STAFF COMMENTS
1	9/25/2017	FINAL SITE PLAN SUBMISSION

REVISIONS

STATE OF MAINE BO KENNEDY No. 11994 LICENSED PROFESSIONAL ENGINEER 02.02.18
P.E. BO KENNEDY
LIC. #11994

PROJECT
THE FOREFRONT AT THOMPSON'S POINT HOTEL PORTLAND

SHEET TITLE
STORMWATER AND SANITARY SEWER DETAILS

CLIENT
FOREFRONT HOTELIERS, LLC

PLACEMAKER PARTNERS, LLC
501 DANFORTH STREET
PORTLAND, ME 04102
bo@placemakerpartners.com

DRAWN:	DED DB	DATE:	AUG. 2017
DESIGNED:	BEK	SCALE:	
FILE NAME:	HOTEL-DET JF.dwg		
SHEET	C-8.4		

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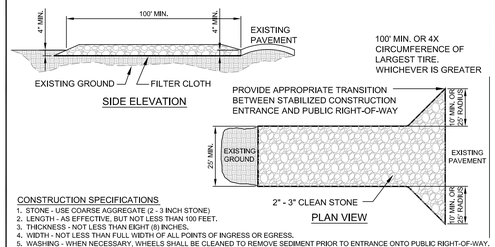
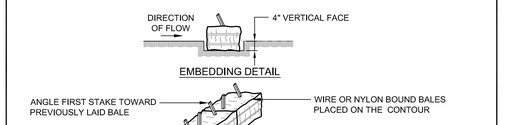


CONSTRUCTION SPECIFICATIONS

1. STONE - USE COARSE AGGREGATE (2 - 3 INCH STONE)
2. LENGTH - AS EFFECTIVE, BUT NOT LESS THAN 100 FEET.
3. THICKNESS - NOT LESS THAN EIGHT (8) INCHES.
4. WIDTH - NOT LESS THAN FULL WIDTH OF ALL POINTS OF INGRESS OR EGRESS.
5. WASHING - WHEN NECESSARY, WHEELS SHALL BE CLEANED TO REMOVE SEDIMENT PRIOR TO ENTRANCE ONTO PUBLIC RIGHT-OF-WAY. WHEN WASHING IS REQUIRED, IT SHALL BE DONE ON AN AREA STABILIZED WITH CRUSHED STONE WHICH DRAINS INTO AN APPROVED SEDIMENT TRAP OR SEDIMENT BASIN. ALL SEDIMENT SHALL BE PREVENTED FROM ENTERING ANY STORM DRAIN, DITCH, OR WATERCOURSE THROUGH USE OF SAND BAGS, GRAVEL, BOARDS OR OTHER APPROVED METHODS.
6. MAINTENANCE - THE ENTRANCES 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 RIGHTS-OF-WAY MUST BE REMOVED IMMEDIATELY.
7. 12' X 24' METAL GRATE MAY BE USED. GRATE SHALL BE 25' AWAY FROM PAVEMENT AND APPROPRIATE SEDIMENT CONTROL TRAPPING DEVICE SHALL BE USED AT GRATE OUTLET POINT.

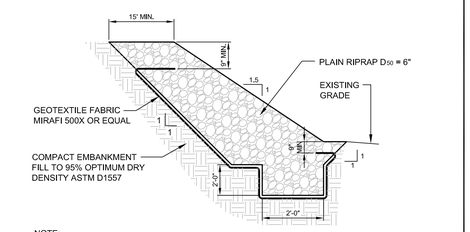
A STABILIZED CONSTRUCTION ENTRANCE
N.T.S.



CONSTRUCTION SPECIFICATIONS

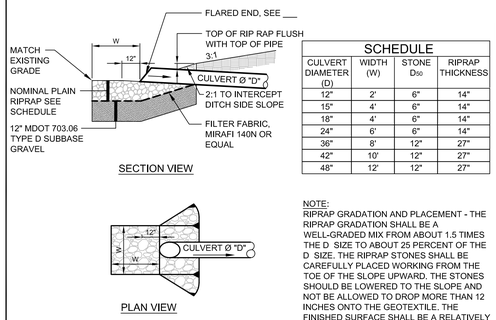
1. BALES SHALL BE PLACED IN A ROW WITH ENDS TIGHTLY ABUTTING THE ADJACENT BALES.
2. EACH BALE SHALL BE EMBEDDED IN THE SOIL A MINIMUM OF 4".
3. BALES SHALL BE SECURELY ANCHORED IN PLACE BY STAKES OR RE-BARS DRIVEN THROUGH THE BALES. THE FIRST STAKE IN EACH BALE SHALL BE ANGLED TOWARD PREVIOUSLY LAID BALE TO FORCE BALES TOGETHER.
4. INSPECTION SHALL BE FREQUENT AND REPAIR OR REPLACEMENT SHALL BE MADE PROMPTLY AS NEEDED.
5. BALES SHALL BE REMOVED WHEN THEY HAVE SERVED THEIR USEFULNESS SO AS NOT TO BLOCK OR IMPEDE STORM FLOW OR DRAINAGE.

E STRAW OR HAY BALE BARRIER
N.T.S.



NOTE:
INSTALL RIPRAP SLOPE PROTECTION AS DIRECTED BY THE OWNER'S REPRESENTATIVE OR GEOTECHNICAL ENGINEER IF REQUIRED, DUE TO DISCOVERED FIELD CONDITIONS, AT NO EXTRA EXPENSE TO THE OWNER.

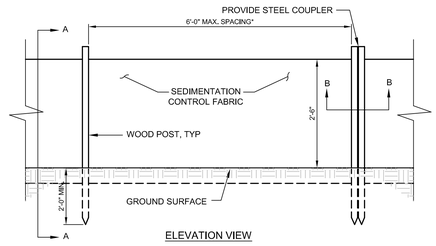
H RIPRAP SLOPE PROTECTION DETAIL
N.T.S.



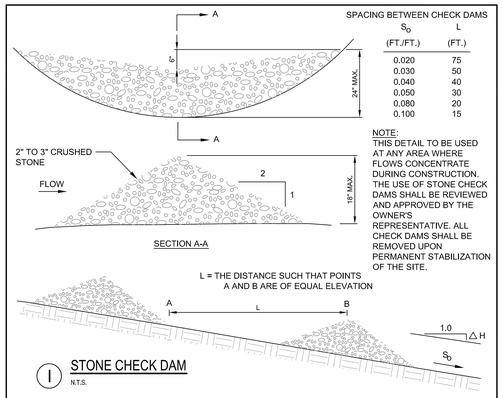
SCHEDULE			
CULVERT DIAMETER (D)	WIDTH (W)	STONE D_{50}	RIPRAP THICKNESS
12"	2'	6"	14"
15"	4'	6"	14"
18"	4'	6"	14"
24"	6'	6"	14"
36"	8'	12"	27"
42"	10'	12"	27"
48"	12'	12"	27"

NOTE:
RIPRAP GRADATION AND PLACEMENT - THE RIPRAP GRADATION SHALL BE A WELL-GRADED MIX FROM ABOUT 1.5 TIMES THE D SIZE TO ABOUT 25 PERCENT OF THE D SIZE. THE RIPRAP STONES SHALL BE CAREFULLY PLACED WORKING FROM THE TOE OF THE SLOPE UPWARD. THE STONES SHOULD BE LOWERED TO THE SLOPE AND NOT BE ALLOWED TO DROP MORE THAN 12 INCHES ONTO THE GEOTEXTILE. THE FINISHED SURFACE SHALL BE A RELATIVELY SMOOTH UNIFORMLY SLOPED SURFACE.

B PIPE/CULVERT INLET APRON
N.T.S.

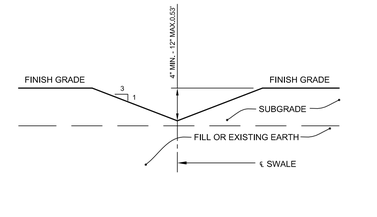


*NOTE:
THE SILT FENCE SHOULD HAVE A MAXIMUM STAKING DISTANCE OF 6' UNLESS THE FENCE IS SUPPORTED BY WIRE FENCE REINFORCEMENT A MAXIMUM 14 GAUGE AND WITH A MINIMUM MESH SPACING OF 6".

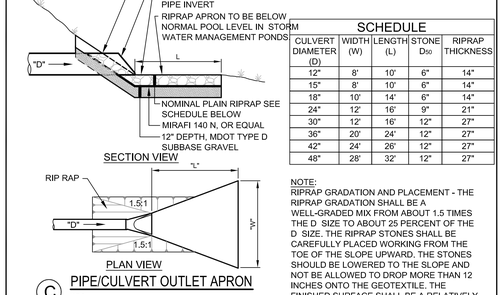


NOTE:
THIS DETAIL TO BE USED AT ANY AREA WHERE FLOWS CONCENTRATE DURING CONSTRUCTION. THE USE OF STONE CHECK DAMS SHALL BE REVIEWED AND APPROVED BY THE OWNERS REPRESENTATIVE. ALL CHECK DAMS SHALL BE REMOVED UPON PERMANENT STABILIZATION OF THE SITE.

I STONE CHECK DAM
N.T.S.



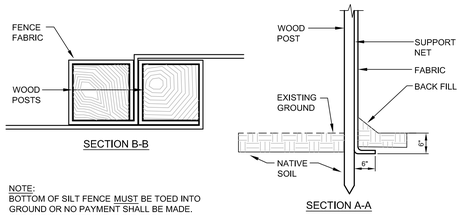
M TYPICAL TEMPORARY DRAINAGE SWALE DETAIL
N.T.S.



SCHEDULE				
CULVERT DIAMETER (D)	WIDTH (W)	LENGTH (L)	STONE D_{50}	RIPRAP THICKNESS
12"	8'	10'	6"	14"
15"	8'	10'	6"	14"
18"	10'	14'	6"	14"
24"	12'	16'	9"	21"
30"	12'	16'	12"	27"
36"	20'	24'	12"	27"
42"	24'	26'	12"	27"
48"	28'	32'	12"	27"

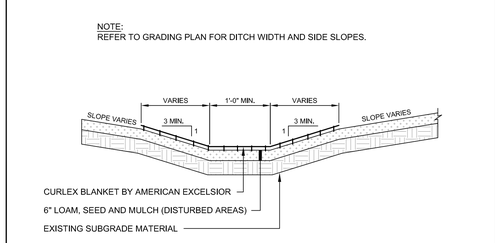
NOTE:
RIPRAP GRADATION AND PLACEMENT - THE RIPRAP GRADATION SHALL BE A WELL-GRADED MIX FROM ABOUT 1.5 TIMES THE D SIZE TO ABOUT 25 PERCENT OF THE D SIZE. THE RIPRAP STONES SHALL BE CAREFULLY PLACED WORKING FROM THE TOE OF THE SLOPE UPWARD. THE STONES SHOULD BE LOWERED TO THE SLOPE AND NOT BE ALLOWED TO DROP MORE THAN 12 INCHES ONTO THE GEOTEXTILE. THE FINISHED SURFACE SHALL BE A RELATIVELY SMOOTH UNIFORMLY SLOPED SURFACE.

C PIPE/CULVERT OUTLET APRON
N.T.S.



NOTE:
BOTTOM OF SILT FENCE MUST BE TOED INTO GROUND OR NO PAYMENT SHALL BE MADE. SEE EROSION / SEDIMENT CONTROL PLAN DRAWINGS FOR SILT FENCE INSTALLATION SCHEDULE.

F SILTATION FENCE DETAIL
N.T.S.



NOTE:
REFER TO GRADING PLAN FOR DITCH WIDTH AND SIDE SLOPES.

J VEGETATED DRAINAGE SWALE
N.T.S.

SILTSACK®
SPECIFICATIONS

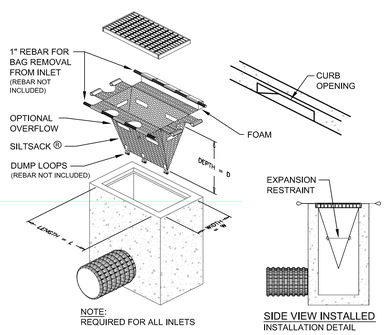
NOTE:
THE SILTSACK® WILL BE MANUFACTURED FROM A WOVEN POLYPROPYLENE FABRIC THAT MEETS OR EXCEEDS THE FOLLOWING SPECIFICATIONS.

REGULAR FLOW SILTSACK®
(FOR SIDE SLOPE USE)
(FOR AREAS OF LOW TO MODERATE PRECIPITATION AND RUN-OFF)

PROPERTIES	TEST METHOD	UNITS
GRAB TENSILE STRENGTH	ASTM D-4632	300 LBS
GRAB TENSILE ELONGATION	ASTM D-4632	20%
PUNCTURE	ASTM D-4833	120 LBS
MULLEN BURST	ASTM D-3786	800 PSI
TRAPEZOID TEAR	ASTM D-4533	120 LBS
UV RESISTANCE	ASTM D-4355	80%
APPARENT OPENING SIZE	ASTM D-4751	40 US SIEVE
FLOW RATE	ASTM D-4491	40 GAL/MIN/SQ FT
PERMITTIVITY	ASTM D-4491	0.55 SEC -1

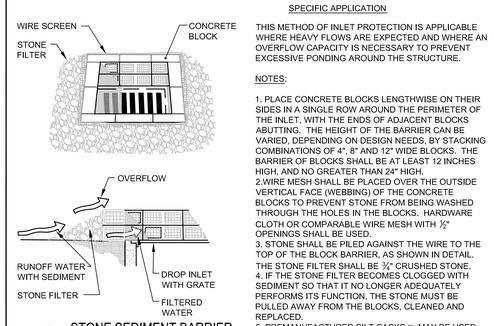
HI-FLOW SILTSACK®
(FOR USE IN LOW POINTS/SAGS)
(FOR AREAS OF MODERATE TO HEAVY PRECIPITATION AND RUN-OFF)

PROPERTIES	TEST METHOD	UNITS
GRAB TENSILE STRENGTH	ASTM D-4632	265 LBS
GRAB TENSILE ELONGATION	ASTM D-4632	20%
PUNCTURE	ASTM D-4833	135 LBS
MULLEN BURST	ASTM D-3786	420 PSI
TRAPEZOID TEAR	ASTM D-4533	45 LBS
UV RESISTANCE	ASTM D-4355	90%
APPARENT OPENING SIZE	ASTM D-4751	20 US SIEVE
FLOW RATE	ASTM D-4491	200 GAL/MIN/SQ FT
PERMITTIVITY	ASTM D-4491	1.5 SEC -1



NOTE:
REQUIRED FOR ALL INLETS

N SILTSACK® DETAIL AND SPECIFICATIONS
N.T.S.



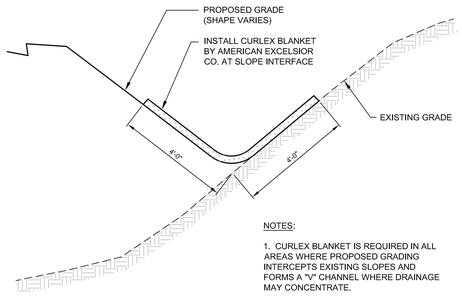
SPECIFIC APPLICATION

THIS METHOD OF INLET PROTECTION IS APPLICABLE WHERE HEAVY FLOWS ARE EXPECTED AND WHERE AN OVERFLOW CAPACITY IS NECESSARY TO PREVENT EXCESSIVE PONDING AROUND THE STRUCTURE.

NOTES:

1. PLACE CONCRETE BLOCKS LENGTHWISE ON THEIR SIDES IN A SINGLE ROW AROUND THE PERIMETER OF THE INLET, WITH THE ENDS OF ADJACENT BLOCKS ABUTTING. THE HEIGHT OF THE BARRIER CAN BE VARIED, DEPENDING ON DESIGN NEEDS, BY STACKING COMBINATIONS OF 4", 8" AND 12" WIDE BLOCKS. THE BARRIER OF BLOCKS SHALL BE AT LEAST 12 INCHES HIGH, AND NO GREATER THAN 24" HIGH.
2. WIRE MESH SHALL BE PLACED OVER THE OUTSIDE VERTICAL FACE (WEBBING) OF THE CONCRETE BLOCKS TO PREVENT STONE FROM BEING WASHED THROUGH THE HOLES IN THE BLOCKS. HARDWARE CLOTH OR COMPARABLE WIRE MESH WITH ½" OPENINGS SHALL BE USED.
3. STONE SHALL BE PILED AGAINST THE WIRE TO THE TOP OF THE BLOCK BARRIER, AS SHOWN IN DETAIL. THE STONE FILTER SHALL BE ¾" CRUSHED STONE.
4. IF THE STONE FILTER BECOMES CLOGGED WITH SEDIMENT SO THAT IT NO LONGER ADEQUATELY PERFORMS ITS FUNCTION, THE STONE MUST BE PULLED AWAY FROM THE BLOCKS, CLEANED AND REPLACED.
5. PREMANUFACTURED SILT-SACKS ™ MAY BE USED AS AN EQUIVALENT TO STONE SEDIMENT BARRIERS.

D STONE SEDIMENT BARRIER
N.T.S.

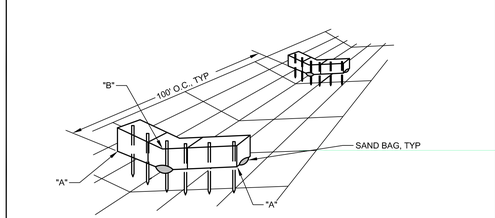


NOTES:

1. CURLEX BLANKET IS REQUIRED IN ALL AREAS WHERE PROPOSED GRADING INTERCEPTS EXISTING SLOPES AND FORMS A "V" CHANNEL WHERE DRAINAGE MAY CONCENTRATE.

2. STAPLE SIZE AND DISTRIBUTION PER MANUFACTURERS SPECIFICATION.

G CURLEX BLANKET DETAIL
N.T.S.



NOTE:
EROSION CHECKDAM TO BE OF BALES OF HAY SECURED TO THE GROUND WITH 2'-3' LONG GRADE STAKES FOR EACH BALE. SAND BAG AS REQUIRED. PLACE SUFFICIENT BALES TO ESTABLISH ELEVATIONS AT "A" AT LEAST 6" ABOVE OVERFLOW AT "B".

K HAYBALE CHECKDAM DETAIL
N.T.S.

REV	DATE	DESCRIPTION
2	08.17.16	FINAL PLAN SUBMISSION TO CITY
1	09.01.15	FINAL BRICK SOUTH LEVEL III SITE PLAN APPLICATION

REVISIONS

STATE OF MAINE — BO KENNEDY No. 11994 — 08.17.16 — LICENSED PROFESSIONAL ENGINEER

P.E. BO KENNEDY
LIC. #11994

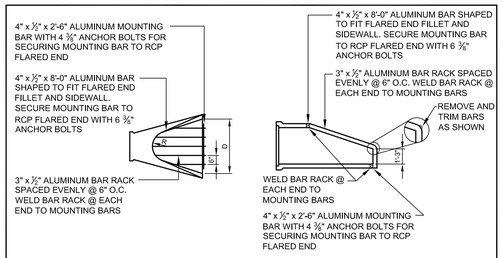
PROJECT
BRICK NORTH AND SOUTH BUILDINGS AT THE FOREFRONT AT THOMPSON'S POINT

SHEET TITLE
EROSION AND SEDIMENT CONTROL DETAILS

CLIENT
FOREFRONT PARTNERS I, LP

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

DRAWN:	DED	DATE:	APRIL 2015
DESIGNED:	BEK	SCALE:	N.T.S.
CHECKED:	SRB	JOB NO.	195350044
FILE NAME:	2982.05-BS DET		
SHEET	C-8.5		



DIA.	A	B	C	D	E	R
18"	9"	2'-3"	3'-10"	3'-0"	2½"	11"
24"	9½"	3'-7½"	2'-6"	4'-0"	3"	14"
30"	12"	4'-6"	1'-7¾"	5'-0"	3½"	15"
36"	15"	5'-3"	2'-10¾"	6'-0"	4"	1'-8"
42"	21"	5'-3"	2'-11"	6'-6"	4½"	22"
48"	24"	6'-0"	2'-2"	7'-0"	5"	22"
54"	27"	5'-5"	2'-11"	7'-6"	5½"	24"
60"	30"	5'-0"	3'-3"	8'-0"	6"	24"

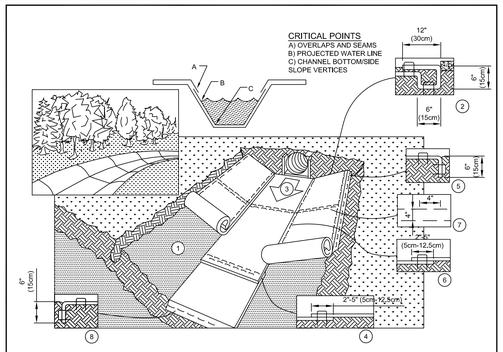
NOTE:
JOINTS MAY BE FURNISHED WITH EITHER BELL AND SPIGOT OR TONGUE AND GROOVE ENDS.

* BAR RACKS ARE ONLY REQUIRED ON PIPES 18" AND OVER IN SIZE.

* USE FIELD MITER FOR CULVERTS WITH A DIAMETER OF LESS THAN 18"

REQUIRED FOR ALL INLETS/OUTLETS FOR PIPE OVER 18" DIAMETER.

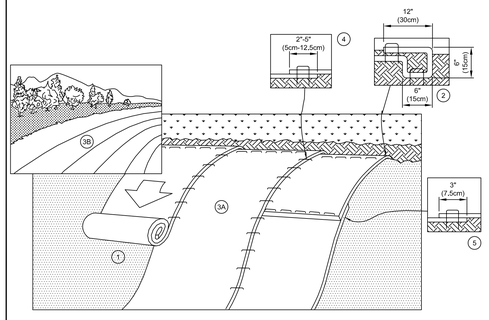
A RCP FLARED END WITH BAR RACK DETAIL
N.T.S.



1. PREPARE SOIL BEFORE INSTALLING BLANKETS, INCLUDING ANY NECESSARY APPLICATION OF LIME, FERTILIZER, AND SEED.
2. BEGIN AT THE TOP OF THE CHANNEL BY ANCHORING THE BLANKET IN A 6" (15CM) DEEP X 6" (15CM) WIDE TRENCH WITH APPROXIMATELY 12" (30CM) OF BLANKET EXTENDED BEYOND THE UP-SLOPE PORTION OF THE TRENCH. ANCHOR THE BLANKET WITH A ROW OF STAPLES/STAKES APPROXIMATELY 12" (30CM) APART IN THE BOTTOM OF THE TRENCH. BACKFILL AND COMPACT THE TRENCH AFTER STAPLING. APPLY SEED TO COMPACTED SOIL AND FOLD REMAINING 12" (30CM) PORTION OF BLANKET BACK OVER SEED AND COMPACTED SOIL. SECURE BLANKET OVER COMPACTED SOIL WITH A ROW OF STAPLES/STAKES SPACED APPROXIMATELY 12" (30CM) ACROSS THE WIDTH OF THE BLANKET.
3. ROLL CENTER BLANKET IN DIRECTION OF WATER FLOW IN BOTTOM OF CHANNEL. BLANKETS WILL UNROLL WITH APPROPRIATE SIDE AGAINST THE SOIL SURFACE. ALL BLANKETS MUST BE SECURELY FASTENED TO SOIL SURFACE BY PLACING STAPLES/STAKES IN APPROPRIATE LOCATIONS 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. PLACE CONSECUTIVE BLANKETS END OVER END (SHINGLE STYLE) WITH A 4"-6" (10CM-15CM) OVERLAP. USE A DOUBLE ROW OF STAPLES STAGGERED 4" (10CM) APART AND 4" (10CM) ON CENTER TO SECURE BLANKETS.
5. FULL LENGTH EDGE OF BLANKETS AT TOP OF SIDE SLOPES MUST BE ANCHORED WITH A ROW OF STAPLES/STAKES APPROXIMATELY 12" (30CM) APART IN A 6" (15CM) DEEP X 6" (15CM) WIDE TRENCH. BACKFILL AND COMPACT THE TRENCH AFTER STAPLING.
6. ADJACENT BLANKETS MUST BE OVERLAPPED APPROXIMATELY 2"-5" (5CM-12.5CM)DEPENDING ON BLANKET SIZE) AND STAPLED.
7. IN HIGH FLOW CHANNEL APPLICATIONS, A STAPLE CHECK SLOT IS RECOMMENDED AT 30' TO 40' (9M-12M) INTERVALS. USE A DOUBLE ROW OF STAPLES STAGGERED 4" (10CM) APART AND 4" (10CM) ON CENTER OVER ENTIRE WIDTH OF THE CHANNEL.
8. THE TERMINAL END OF BLANKETS MUST BE ANCHORED WITH A ROW OF STAPLES/STAKES APPROXIMATELY 12" (30CM) APART IN A 6" (15CM) DEEP X 6" (15CM) WIDE TRENCH. BACKFILL AND COMPACT THE TRENCH AFTER STAPLING.

NOTE:
* HORIZONTAL STAPLE SPACING SHOULD BE ALTERED IF NECESSARY TO ALLOW STAPLES TO SECURE THE CRITICAL POINTS ALONG THE CHANNEL SURFACE.
** IN LOOSE SOIL CONDITIONS, THE USE OF STAPLE OR STAKE LENGTHS GREATER THAN 6" (15cm) MAY BE NECESSARY TO PROPERLY ANCHOR THE BLANKETS.

EROSION CONTROL BLANKET DETAIL FOR CHANNEL INSTALLATION

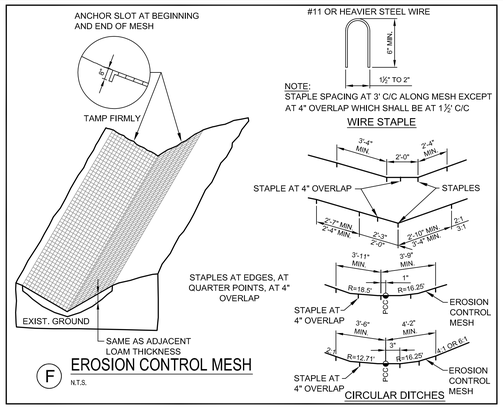


1. PREPARE SOIL BEFORE INSTALLING BLANKETS, INCLUDING ANY NECESSARY APPLICATION OF LIME, FERTILIZER, AND SEED. NOTE: WHEN USING CELL-O-SEED DO NOT SEED PREPARED AREA. CELL-O-SEED MUST BE INSTALLED WITH PAPER SIDE DOWN.
2. BEGIN AT THE TOP OF THE SLOPE BY ANCHORING THE BLANKET IN A 6" (15cm) WIDE TRENCH WITH APPROXIMATELY 12" (30cm) OF BLANKET EXTENDED BEYOND THE UP-SLOPE PORTION OF THE TRENCH. ANCHOR THE BLANKET WITH A ROW OF STAPLES/STAKES APPROXIMATELY 12" (30cm) APART IN THE BOTTOM OF THE TRENCH. BACKFILL AND COMPACT THE TRENCH AFTER STAPLING. APPLY SEED TO COMPACTED SOIL AND FOLD REMAINING 12" (30cm) PORTION OF THE BLANKET BACK OVER SEED AND COMPACTED SOIL. SECURE BLANKET OVER COMPACTED SOIL WITH A ROW OF STAPLES/STAKES SPACED APPROXIMATELY 12" (30cm) APART ACROSS THE WIDTH OF THE BLANKET.
3. ROLL THE BLANKETS (A.) DOWN OR (B.) HORIZONTALLY ACROSS THE SLOPE. BLANKETS WILL UNROLL WITH THE APPROPRIATE SIDE AGAINST THE SOIL SURFACE. ALL BLANKETS MUST BE SECURELY FASTENED TO SOIL SURFACE BY PLACING STAPLES/STAKES IN APPROPRIATE LOCATIONS AS SHOWN IN THE STAPLE PATTERN GUIDE. WHEN USING OPTIONAL DOT SYSTEM, STAPLES/STAKES SHOULD BE PLACED THROUGH EACH OF THE COLORED DOTS CORRESPONDING TO THE APPROPRIATE STAPLE PATTERN.
4. THE EDGES OF PARALLEL BLANKETS MUST BE STAPLED WITH APPROXIMATELY 2'-5" (5cm-12.5cm) OVERLAP DEPENDING ON BLANKET TYPE. TO ENSURE PROPER SEAM ALIGNMENT, PLACE THE EDGE OF THE OVERLAPPING BLANKET (BLANKET BEING INSTALLED ON TOP) EVEN WITH THE COLORED SEAM STITCH ON THE PREVIOUSLY INSTALLED BLANKET.
5. CONSECUTIVE BLANKETS SPLICED DOWN THE SLOPE MUST BE PLACED END OVER END (SHINGLE STYLE) WITH AN APPROXIMATE 3" (7.5cm) OVERLAP. STAPLE THROUGH OVERLAPPED AREA, APPROXIMATELY 12" (30cm) APART ACROSS ENTIRE BLANKET WIDTH.

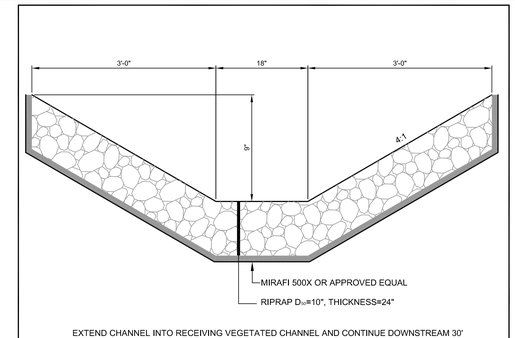
EROSIONAL CONTROL BLANKET DETAIL FOR SLOPE INSTALLATION

D EROSION CONTROL BLANKET
N.T.S.

NOTE: IN LOOSE SOIL CONDITIONS, THE USE OF STAPLE OR STAKE LENGTHS GREATER THAN 6" (15cm) MAY BE NECESSARY TO PROPERLY ANCHOR THE BLANKETS.



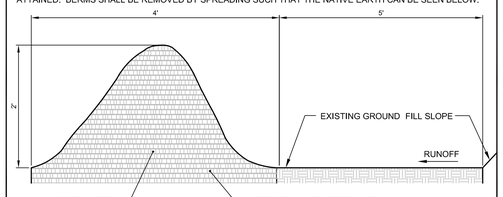
F EROSION CONTROL MESH
N.T.S.



EXTEND CHANNEL INTO RECEIVING VEGETATED CHANNEL AND CONTINUE DOWNSTREAM 30'

J RIPRAP CHANNEL DETAIL
N.T.S.

NOTES:
1. THE WOOD WASTE COMPOST/BARK MIX SHALL CONFORM TO THE FOLLOWING STANDARDS:
   A. MOISTURE CONTENT - 30-60%
   B. pH - 5.0-8.0
   C. SCREEN SIZE - 100% LESS THAN 3", MAX. 70% LESS THAN 1"
   D. NO LESS THAN 40% ORGANIC MATERIAL (DRY WEIGHT) BY LOSS OF IGNITION
   F. NO STONES LARGER THAN 2" IN DIAMETER
2. THE COMPOST BERM SHALL BE PLACED, UNCOMPACTED, ALONG A RELATIVELY LEVEL CONTOUR.
3. THE WOOD WASTE COMPOST/BARK FILTER BERM MAY BE USED IN LIEU OF SILTATION FENCE, AT THE TOE OF SHALLOW SLOPES, ON FROZEN GROUND, LEDGE OUT CROPS, VERY ROOTED FORESTED AREA OR AT THE EDGE OF GRAVEL PARKING AREAS.
4. BERMS SHALL REMAIN IN PLACE UNTIL UPSTREAM AREA IS COMPLETED OR 70% CATCH OF VEGETATION IS ATTAINED. BERMS SHALL BE REMOVED BY SPREADING SUCH THAT THE NATIVE EARTH CAN BE SEEN BELOW.



G WOOD WASTE COMPOST/BARK FILTER BERM DETAIL
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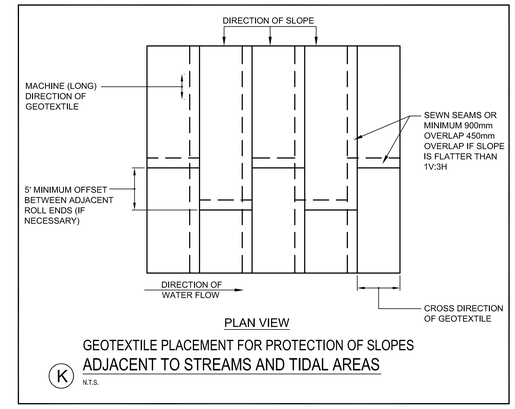
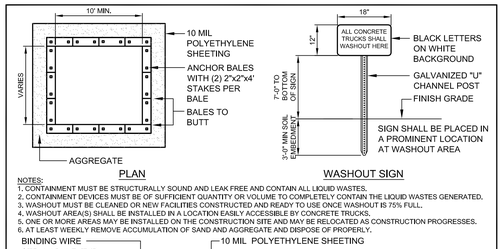


PLAN VIEW

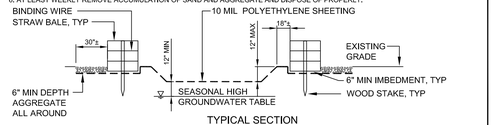
GEOTEXTILE PLACEMENT FOR PROTECTION OF SLOPES ADJACENT TO STREAMS AND TIDAL AREAS

K
N.T.S.



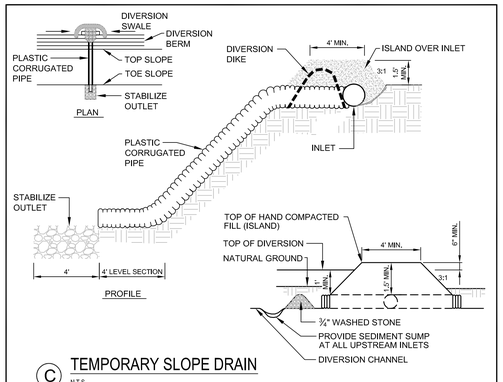
PLAN — WASHOUT SIGN

NOTES:
1. CONTAINMENT MUST BE STRUCTURALLY SOUND AND LEAK FREE AND CONTAIN ALL LIQUID WASTES.
2. CONTAINMENT DEVICES MUST BE OF SUFFICIENT QUANTITY OR VOLUME TO COMPLETELY CONTAIN THE LIQUID WASTES GENERATED.
3. WASHOUT MUST BE CLEANED OR NEW FACILITIES CONSTRUCTED AND READY TO USE ONCE WASHOUT IS 75% FULL.
4. WASHOUT AREA(S) SHALL BE INSTALLED IN A LOCATION EASILY ACCESSIBLE BY CONCRETE TRUCKS.
5. ONE OR MORE AREAS MAY BE INSTALLED ON THE CONSTRUCTION SITE AND MAY BE RELOCATED AS CONSTRUCTION PROGRESSES.
6. AT LEAST WEEKLY REMOVE ACCUMULATION OF SAND AND AGGREGATE AND DISPOSE OF PROPERLY.

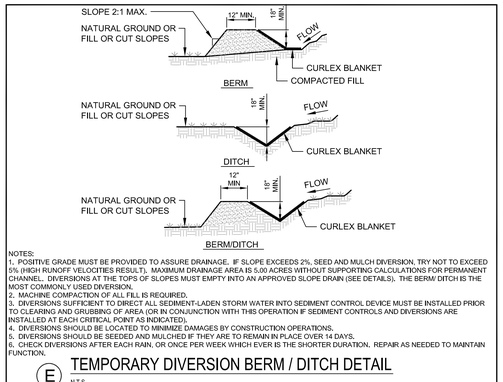


TYPICAL SECTION

B CONCRETE WASHOUT AREA
N.T.S.

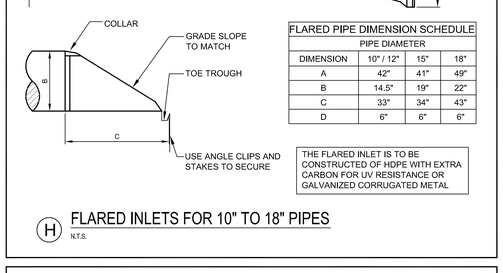


C TEMPORARY SLOPE DRAIN
N.T.S.



NOTES:
1. POSITIVE GRADE MUST BE PROVIDED TO ASSURE DRAINAGE. IF SLOPE EXCEEDS 2%, SEED AND MULCH DIVERSION, TRY NOT TO EXCEED 5% (HIGH RUNOFF VELOCITIES RESULT). MAXIMUM DRAINAGE AREA IS 5.00 ACRES WITHOUT SUPPORTING CALCULATIONS FOR PERMANENT CHANNEL. DIVERSIONS AT THE TOPS OF SLOPES MUST EMPTY INTO AN APPROVED SLOPE DRAIN (SEE DETAILS). THE BERM/ DITCH IS THE MOST COMMONLY USED DIVERSION.
2. MACHINE COMPACTION OF ALL FILL IS REQUIRED.
3. DIVERSIONS SUFFICIENT TO DIRECT ALL SEDIMENT-LADEN STORM WATER INTO SEDIMENT CONTROL DEVICE MUST BE INSTALLED PRIOR TO CLEARING AND GRUBBING OF AREA (OR IN CONJUNCTION WITH THIS OPERATION IF SEDIMENT CONTROLS AND DIVERSIONS ARE INSTALLED AT EACH CRITICAL POINT AS INDICATED).
4. DIVERSIONS SHOULD BE LOCATED TO MINIMIZE DAMAGES BY CONSTRUCTION OPERATIONS.
5. DIVERSIONS SHOULD BE SEEDED AND MULCHED IF THEY ARE TO REMAIN IN PLACE OVER 14 DAYS.
6. CHECK DIVERSIONS AFTER EACH RAIN. OR ONCE PER WEEK WHICH EVER IS THE SHORTER DURATION. REPAIR AS NEEDED TO MAINTAIN FUNCTION.

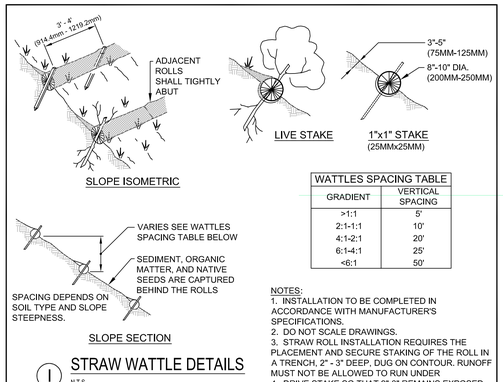
E TEMPORARY DIVERSION BERM / DITCH DETAIL
N.T.S.



FLARED PIPE DIMENSION SCHEDULE			
PIPE DIAMETER			
DIMENSION	10" / 12"	15"	18"
A	42"	41"	49"
B	14.5"	19"	22"
C	33"	34"	43"
D	6"	6"	6"

THE FLARED INLET IS TO BE CONSTRUCTED OF HDPE WITH EXTRA CARBON FOR UV RESISTANCE OR GALVANIZED CORRUGATED METAL

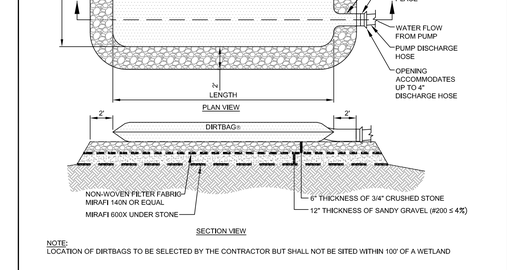
H FLARED INLETS FOR 10" TO 18" PIPES
N.T.S.



WATTLES SPACING TABLE	
GRADIENT	VERTICAL SPACING
>1:1	5'
2:1-1:1	10'
4:1-2:1	20'
6:1-4:1	25'
<6:1	50'

NOTES:
1. INSTALLATION TO BE COMPLETED IN ACCORDANCE WITH MANUFACTURER'S SPECIFICATIONS.
2. DO NOT SCALE DRAWINGS.
3. STRAW ROLL INSTALLATION REQUIRES THE PLACEMENT AND SECURE STAKING OF THE ROLL IN A TRENCH, 2" - 3" DEEP, DUG ON CONTOUR. RUNOFF MUST NOT BE ALLOWED TO RUN UNDER
4. DRIVE STAKE SO THAT 2"-3" REMAINS EXPOSED

I STRAW WATTLE DETAILS
N.T.S.



SECTION VIEW

NOTE:
LOCATION OF DIRTBAGS TO BE SELECTED BY THE CONTRACTOR BUT SHALL NOT BE SITED WITHIN 100' OF A WETLAND

SPECIFICATIONS AND REQUIREMENTS FOR DEWATERING
THIS PROJECT WILL REQUIRE THE DISCHARGE OF CONSTRUCTION DEWATERING AND TURBID LADEN RUNOFF FROM THE SITE.

OVERVIEW:
1. TRADITIONALLY, MEDEP PERMITS HAVE HAD A STANDARD CONDITION WHICH STATES:
"THE APPLICANT SHALL TAKE ALL NECESSARY ACTIONS TO ENSURE THAT ITS ACTIVITIES OR THOSE OF ITS AGENTS DO NOT RESULT IN NOTICEABLE EROSION OF SOILS OR FUGITIVE DUST EMISSIONS ON THE SITE DURING THE CONSTRUCTION AND OPERATION OF THE PROJECT COVERED BY THIS APPROVAL."

2. THE CONTRACT SPECIFICATIONS HAVE BEEN DEVELOPED FOR THE PURPOSE OF ADDRESSING CONSTRUCTION-DEWATERING ACTIVITIES WITH THE CONTINGENCY THAT UNPREDICTABLE WEATHER CAN CREATE.

ACCEPTABLE METHODS OF DISCHARGING CONSTRUCTION SITE RUNOFF: DEWATERING OF THE CONSTRUCTION SITE SHALL BE ACCOMPLISHED USING ONE OF THE FOLLOWING MEASURES:
- THE DIRECTION OF THE RUNOFF TO TEMPORARY SEDIMENTATION SUMPS BY GRAVITY FLOW.
- THE PUMPING OF DIRTBAGS WITH A DISCHARGE TO A STABILIZED OUTLET.
- THE PUMPING OF CONSTRUCTION SITE WATER AND COLLECTED RUNOFF TO A DIRTBAG (PATENTED PRODUCT BY ACF ENVIRONMENTAL PRODUCTS) WITH RELEASE THROUGH A VEGETATED BUFFER AT LEAST 50 FEET UPGRADIENT OF A WETLAND.

REQUIREMENTS FOR DIRTBAGS:
THE DIRTBAGS SHALL BE FIELD LOCATED BY THE CONTRACTOR BUT ARE NOT TO BE INSTALLED IN ANY "CRITICAL" AREA. (THE SITE CRITICAL AREAS ARE SHOWN ON THE EROSION-SEDIMENT CONTROL PLAN.) THE DIRTBAG SHALL BE INSTALLED ON A PREPARED SUBGRADE. THIS SUBGRADE SHALL CONSIST OF THE INSTALLATION OF A LAYER OF MIRAFI 600X, AND 18 INCHES OF ½ INCH CRUSHED STONE. THE PLAN DIMENSION OF THE CRUSHED STONE PAD SHALL EXCEED THE PLAN AREA OF THE DIRTBAG BY AT LEAST TWO FEET IN ALL DIRECTIONS. THE DIRTBAG SHALL NOT BE INSTALLED ON AN UNDERLYING SLOPE OF GREATER THAN 15 PERCENT.

CONSTRUCTION DEWATERING OPERATIONS:
ALL CONSTRUCTION-DEWATERING OPERATIONS ARE THE RESPONSIBILITY OF THE SITE CONTRACTOR. IT SHALL BE THE SITE CONTRACTOR WHO IS RESPONSIBLE FOR SELECTING THE SITE FOR THE DIRTBAG, THE SELECTION OF THE USE OF THE DIRTBAG OR THE SEDIMENTATION BASIN FOR DIRECTING DEWATERING, EXCEPT THAT THE OWNER OR OWNER'S ENGINEER MAY DIRECT THE SITE CONTRACTOR TO ALTER THE SELECTED OPERATION IF TURBID DISCHARGE TO A WETLAND OR TO THE EXISTING SITE CULVERTS AT NO ADDITIONAL COST TO OWNER.

WINTER OPERATIONS:
IN THE EVENT THAT WINTER OPERATIONS ARE REQUIRED, THE CONTRACTOR SHALL "POLY", ENCLOSE, AND PROVIDE TEMPORARY HEAT TO PREVENT THE DIRTBAG FROM SUBSTANTIAL FREEZING.

RECORD KEEPING:
THE WEEKLY EROSION-SEDIMENT CONTROL REPORTS PREPARED IN ACCORDANCE WITH THE NPDES PERMIT SHALL MAINTAIN A LOG OF THE LOCATION, USE, AND REMOVAL OF DIRTBAGS. IN THE EVENT THAT THE STONE UNDER THE DIRTBAG BECOMES HIGHLY CONTAMINATED WITH FINES, THE NEXT DIRTBAG SHALL BE INSTALLED IN A DIFFERENT LOCATION.

L DIRTBAG AND SPECIFICATIONS FOR DEWATERING DETAIL
N.T.S.

REV	DATE	DESCRIPTION
2	08.17.16	FINAL PLAN SUBMISSION TO CITY
1	09.01.15	FINAL BRICK SOUTH LEVEL III SITE PLAN APPLICATION

REVISIONS

STATE OF MAINE — BO KENNEDY No. 11994 08.17.16 — PROFESSIONAL ENGINEER

P.E. BO KENNEDY
LIC. #11994

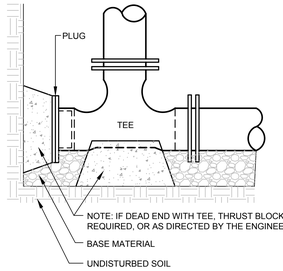
PROJECT
BRICK NORTH AND SOUTH BUILDINGS AT THE FOREFRONT AT THOMPSON'S POINT

SHEET TITLE
EROSION AND SEDIMENT CONTROL DETAILS

CLIENT
FOREFRONT PARTNERS I , LP

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

DRAWN:	DED	DATE:	APRIL 2015
DESIGNED:	BEK	SCALE:	N.T.S.
CHECKED:	SRB	JOB NO.	195350044
FILE NAME:	2982.05-BS DET		
SHEET	C-8.6		

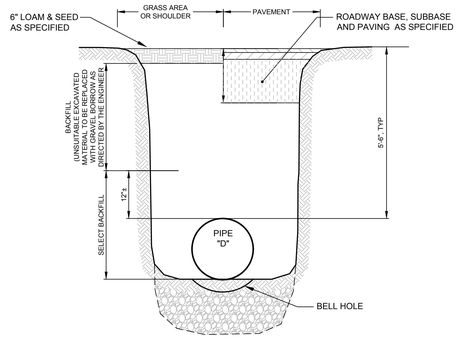


USE GRIPRINGS™ AT ALL RESTRAINED JOINTS

SEE NOTE 3 IN THRUST BLOCK NOTES DETAIL (B)

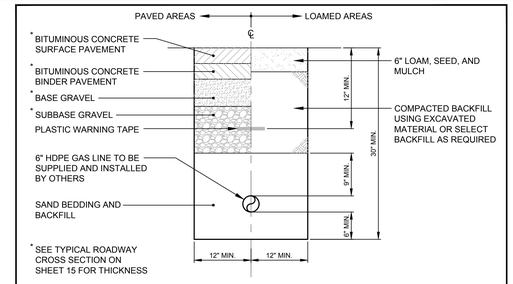
(D) STANDARD TEE BLOCKING DETAIL

N.T.S.



(G) STANDARD WATER MAIN BY PWD SECTION THRU EARTH TRENCH

N.T.S.



NOTE:
THE CONTRACTOR IS RESPONSIBLE FOR EXCAVATION AND BACKFILL OF UNDERGROUND GAS LINE TRENCH. IN ADDITION, THE CONTRACTOR IS RESPONSIBLE FOR THE COORDINATION WITH GAS SUPPLIER FOR THE INSTALLATION OF THE GAS LINE. CONTRACTOR SHALL BE RESPONSIBLE FOR INITIAL REVIEW AND CONSTRUCTION COSTS FOR GAS LINE INSTALLATION; UPON FINAL DETERMINATION OF COSTS BY THE UTILITY COMPANY, CONTRACTOR SHALL BILL OWNER FOR ACTUAL COST.

(J) UNDERGROUND GAS LINE TRENCH DETAIL

N.T.S.

1. INSTALL POLY BARRIER BETWEEN PIPE AND ALL THRUST BLOCKS.

2. ANY MODIFICATION TO THRUST BLOCK SIZING OR PIPE RESTRAINT REVISIONS SHALL BE APPROVED IN WRITING BY THE ENGINEER PRIOR TO IMPLEMENTATION IN THE FIELD.

3. ANY WORK RELATING TO WATER PIPING OR DETAILS SHALL BE IN ACCORDANCE WITH THE PORTLAND WATER DISTRICT SPECIFICATIONS.

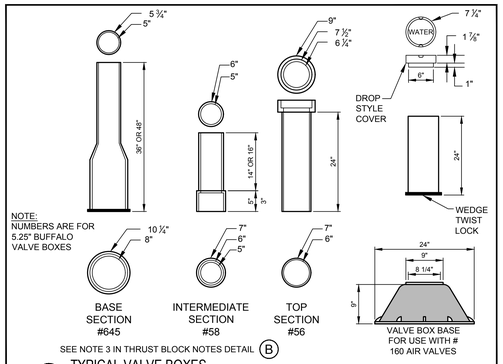
4. ALL RESTRAINED JOINTS MUST HAVE GRIPRING™

BEARING SURFACE REQUIRED IN SQUARE FEET

PIPE SIZE	1/32 BEND	1/16 BEND	1/8 BEND	1/4 BEND	TEES/CAPS
6"/8"	5.0	5.0	5.0	6.5	5.0
12"	11.5	11.5	11.5	20.0	22.0

(B) THRUST BLOCK NOTES

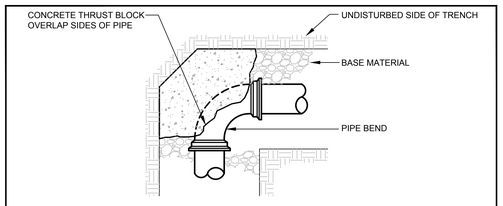
N.T.S.



SEE NOTE 3 IN THRUST BLOCK NOTES DETAIL (B)

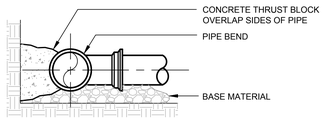
(E) TYPICAL VALVE BOXES

N.T.S.



NOTE:
KEEP CONCRETE CLEAR OF PIPE JOINT, NUTS AND BOLTS

PLAN



SECTION

THRUST/RETAINER GLAND SCHEDULE		
¼ BEND	(90°)	USE POURED-IN-PLACE THRUST BLOCK WITH GRIPRING™ MECHANICAL JOINT RESTRAINT
⅛ BEND	(45°)	THRUST BLOCK w/ GRIPRING™
1/16 BEND	(22 ½°)	THRUST BLOCK w/ GRIPRING™
1/32 BEND	(11 ¼°)	THRUST BLOCK w/ GRIPRING™

THE ABOVE SCHEDULE IS SUBJECT TO THE APPROVAL OF THE ON-SITE INSPECTOR DUE TO SOILS AND WORKING PRESSURES IN THE AREA.

NOTES:

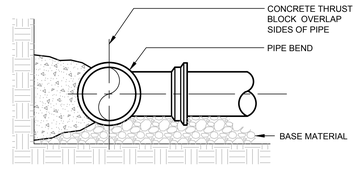
1. THE PORTLAND WATER DISTRICT MAY HAVE INSPECTION FEES AND REQUIRE OBSERVATION OF ALL PIPING INSTALLATION BEFORE BURIAL. REFER TO SPECIFICATIONS.
2. FOR WATER MAIN LAYOUT SEE DRAWINGS C-4.0
3. FOR WATER MAIN PROFILE SEE CONSTRUCTION DRAWINGS C-11.0
4. FOR WATER MAIN TRENCH SEE DETAILS ON THIS SHEET
5. REFER TO PORTLAND WATER DISTRICT SPECIFICATIONS FOR TESTING AND CHLORINATION REQUIREMENTS.
6. ALL HYDRANTS AND VALVES TO BE EPOXY COATED, NUTS AND BOLTS TO BE STAINLESS STEEL.
7. SERVICE RODS FOR DOMESTIC SERVICE OR AIR VALVES TO BE STAINLESS STEEL.

(C) TYPICAL THRUST BLOCK PLACEMENT BENDS

N.T.S.

PLAN

NOTE:
KEEP CONCRETE CLEAR OF PIPE JOINT, NUTS AND BOLTS



SECTION

(F) TYPICAL THRUST BLOCK PLACEMENT ON TEES

N.T.S.

PRELIMINARY – NOT FOR CONSTRUCTION

REV	DATE	DESCRIPTION
2	08.17.16	FINAL PLAN SUBMISSION TO CITY
2	2/02/2018	RE-SUBMISSION PER CITY STAFF COMMENTS
1	9/25/2017	FINAL SITE PLAN SUBMISSION

REVISIONS

STATE OF MAINE — BO KENNEDY No. 11994 — LICENSED PROFESSIONAL ENGINEER — 02.02.18

P.E. BO KENNEDY
LIC. #11994

PROJECT
THE FOREFRONT AT THOMPSON'S POINT
HOTEL PORTLAND

SHEET TITLE
WATER AND GAS SERVICE DETAILS

CLIENT
FOREFRONT HOTELIERS, LLC

PLACEMAKER PARTNERS, LLC
501 DANFORTH STREET
PORTLAND, ME 04102
bo@placemakerpartners.com

DED
DRAWN: DB DATE: NOV 2017
DESIGNED: BEK SCALE:
FILE NAME: 1927DC-DET.dwg
SHEET C-8.7

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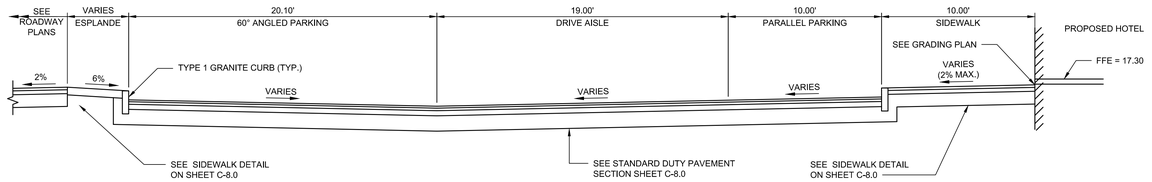


TYPICAL DRIVEWAY SECTION A-A

NOT TO SCALE

PRELIMINARY – NOT FOR CONSTRUCTION

REV	DATE	DESCRIPTION
2	2/02/2018	RE-SUBMISSION PER CITY STAFF COMMENTS
1	9/25/2017	FINAL SITE PLAN SUBMISSION

REVISIONS

STATE OF MAINE BO KENNEDY No. 11904 LICENSED PROFESSIONAL ENGINEER 02.02.18

P.E. BO KENNEDY

LIC. #11994

PROJECT
THE FOREFRONT AT THOMPSON'S POINT
HOTEL PORTLAND

SHEET TITLE
TYPICAL SECTIONS

CLIENT
FOREFRONT HOTELIERS, LLC

PLACEMAKER PARTNERS, LLC
501 DANFORTH STREET
PORTLAND, ME 04102
bo@placemakerpartners.com

DRAWN:	DB	DATE:	AUG.2017
DESIGNED:	BEK	SCALE:	
FILE NAME:	HOTEL-TYPSECT.dwg		
SHEET	C-8.8		

3. CODE SUMMARY PER NFPA 1 AND FIRE DEPT. STANDARDS FOR PROPOSED HOTEL

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 (4) MUNICIPAL FIRE HYDRANTS LOCATED WITHIN 500 FEET RADIUS OF THE BUILDING. PLEASE SEE THE ATTACHED FIRE SAFETY COMPLIANCE PLAN C-9.0.

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 THOMPSON'S POINT ACCESS ROAD FOR 2 SIDES OF THE BUILDING.

-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:

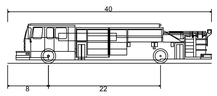
-NOT APPLICABLE

TECHNICAL STANDARD 3.6 - SUBDIVISION STANDARDS:

-NOT APPLICABLE

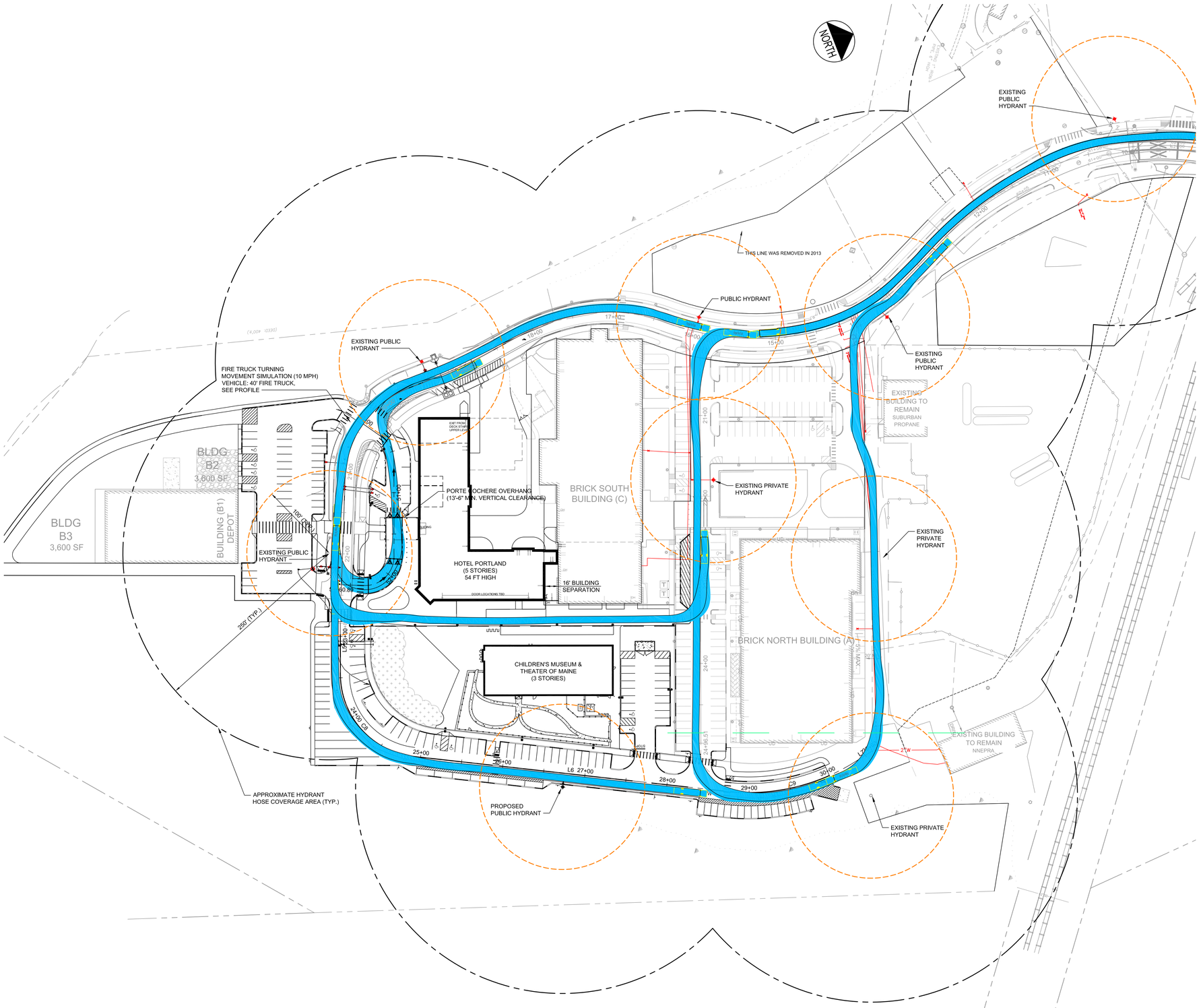
TECHNICAL STANDARDS 3.7 THROUGH 3.11 - STANDARDS FOR BLASTING AND REGULATION OF EXPLOSIVES:

-GEOTECHNICAL EXPLORATIONS WERE PERFORMED AND THE SUBSURFACE CONDITION DOES NOT CONTAIN BEDROCK. BASED ON THE FINDINGS, LARGE BLAST OPERATIONS ARE NOT ANTICIPATED.



Pumper Fire Truck	
Overall Length	40.000ft
Overall Width	8.167ft
Overall Body Height	7.745ft
Min Body Ground Clearance	0.656ft
Track Width	8.167ft
Lock-to-lock time	5.00s
Max Wheel Angle	45.00°

FIRE TRUCK VEHICLE PROFILE
N.T.S



PRELIMINARY – NOT FOR CONSTRUCTION

REV	DATE	DESCRIPTION
3	6/8/2018	REVISED SITE PLANS PER CITY COMMENTS
2	2/02/18	RE-SUBMISSION PER CITY STAFF COMMENTS
1	9/25/2017	FINAL SITE PLAN SUBMISSION

REVISIONS

STATE OF MAINE — BO KENNEDY No. 11994 — LICENSED PROFESSIONAL ENGINEER — 06-08-18

P.E. BO KENNEDY
LIC. #11994

PROJECT
THE FOREFRONT AT THOMPSON'S POINT
HOTEL PORTLAND

SHEET TITLE
FIRE SAFETY COMPLIANCE PLAN

CLIENT
FOREFRONT HOTELIERS, LLC

PLACEMAKER PARTNERS, LLC
501 DANFORTH STREET
PORTLAND, ME 04102
bo@placemakerpartners.com

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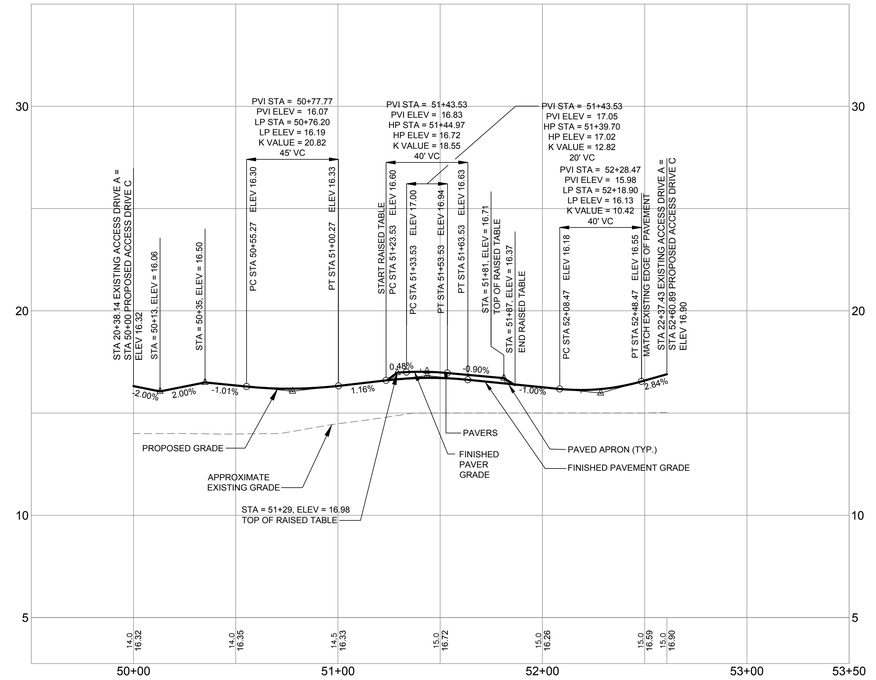

ACCESS ROAD □RO□ILE □C□

SCALE: H 1" = 30'
V 1" = 3'

PRELIMINARY – NOT FOR CONSTRUCTION

REV	DATE	DESCRIPTION
2	2/02/2018	RE-SUBMISSION PER CITY STAFF COMMENTS
1	9/25/2017	FINAL SITE PLAN SUBMISSION

REVISIONS

STATE OF MAINE
BO KENNEDY
No. 11994
LICENSED
PROFESSIONAL ENGINEER
02.02.18

P.E. BO KENNEDY
LIC. #11994

PROJECT
THE FOREFRONT AT THOMPSON'S POINT
HOTEL PORTLAND

SHEET TITLE
ACCESS DRIVE PROFILES

CLIENT
FOREFRONT HOTELIERS, LLC

PLACEMAKER PARTNERS, LLC
501 DANFORTH STREET
PORTLAND, ME 04102
bo@placemakerpartners.com

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Stat Zone #2
Building front and parking, excluding the canopy

Stat Zone #3
Drive-under canopy

Statistics

Description	Symbol	Avg	Max	Min	Max/Min	Avg/Min
Calc Zone #1	+	1.2 fc	20.7 fc	0.0 fc	N/A	N/A
Stat Zone # 2	X	1.6 fc	5.0 fc	0.3 fc	16.7:1	5.3:1
Stat Zone # 3	X	11.3 fc	20.7 fc	4.5 fc	4.6:1	2.5:1

30 0 15 30 60
(IN FEET)
1 inch = 30 ft.

(1) Label "A"
Pole mounted roadway light
25' high - type III throw
(Existing)

(1) Label "A"
Pole mounted roadway light
25' high - type III throw
(Existing)

(1) Label "A"
Pole mounted roadway light
25' high - type III throw
(Existing)

Label "A"
Pole mounted roadway light
25' high - type III throw
(Existing)

(1) Label "B"
Pole mounted light
24' high - type IV throw

(1) Label "A"
Pole mounted roadway light
25' high - type III throw
(Existing)

(1) Label "B"
Pole mounted light
24' high - type IV throw

(8) Label "E"
Canopy mounted lights
+/-14' high - type VI throw

(1) Label "A"
Pole mounted roadway light
25' high - type III throw
(Existing)

Label "B"
Pole mounted light
24' high - type IV throw

Label "A"
Pole mounted roadway light
25' high - type III throw
(Existing)

(1) Label "E"
Stair canopy
mounted light
22' high

(1) Label "G"
Wall mounted light
10' high

(4) Label "H"
Wall mounted
down lights
45' high

(43) Label "D"
Recessed canopy lights
12.5' high

(2) Label "G"
Wall mounted light
10' high

(3) Label "G"
Wall mounted light
10' high

(4) Label "H"
Wall mounted down lights
45' high

(4) Label "G"
Wall mounted light
10' high

(3) Label "J"
Pole mounted light
10' high

(4) Label "G"
Wall mounted light
10' high

(3) Label "I"
Building mounted light
11 ' high - 45 degree tilt down
(Existing)

(1) Label "I"
Building mounted light
11 ' high - 45 degree tilt down
(Existing)

(2) Label "I"
Building mounted light
11 ' high - 45 degree tilt down
(Existing)

(4) Label "J"
Pole mounted light
10' high

(4) Label "F"
Wall mounted light
10' high
(By others - Children's museum project)

EXIT FROM DECK STAIRS / UPPER LEVEL

SLIDING

DOOR LOCATIONS TBD

BRICK SOUTH BUILDING (C)

17+00

18+00

LABEL "J"

INDF/INDC Indirect™

STEEL/ARA

- Integral driver assembly for easy installation
- Lightweight aluminum composite upper reflector minimizes pole stress
- Stainless steel vertical struts
- Round or square upper reflectors available
- Reflector tilts and locks at 0, 15 or 30 degrees
- IP66 construction
- Powder coat finish in 14 standard colors with a polymer primer sealer

INDF INDC

INDF/INDC - _____ - _____ - _____ - _____ - _____ - _____

MODEL
- INDF Fixed head. Slips over a 5" O.D. pole.
- INDC Square straight, fixed head. Post top mount, slips over a 2 ¼" O.D. tenon (or 3" round pole) or 4" square pole.

REFLECTOR UPPER
- RD 20" Round upper reflector
- SQ 20" Square upper reflector

LAMP/BALLAST
- INDA/INDF (30 light emitting diode array, 33 watts. 120 thru 277 VAC)
  - 30LED-WW Warm white (3000K)
  - 30LED-NW Neutral white (4000K)
  - 30LED-BW Bright white (5000K)
- INDC (30 light emitting diode array, 33 watts. 120 thru 277 VAC)
  - 30LED-WW Warm white (3000K)
  - 30LED-NW Neutral white (4000K)
  - 30LED-BW Bright white (5000K)

MOUNTING
- WMA Wall mounted arm, 10 lbs. EPA: 0.68
- PMAT Pole mounted arm, slips over a 4" O.D. pole or tenon, 14 lbs. EPA: 0.83

FIXTURE FINISH

Standard Colors
- WH Arctic White
- BL Black
- BLT Matte Black
- DGN Dark Green
- DB Dark Bronze
- TT Titanium
- WDB Weathered Bronze
- NDB Metallic Bronze
- VBU Verde Blue
- CRT Corten
- MAL Matte Aluminum
- RG Medium Grey
- AGN Antique Green
- LG Light Grey

Premium Colors
- SNK Shamrock
- SPP Salt and Pepper
- SFM Seafoam
- WCP Weathered Copper
- RAL Provide a RAL 4 digit color number
- CUSTOM Please provide sample for color matching
- COLOR

OPTIONS

INDA/INDF
- CFR Color filter holder attached to the fixture. Factory installed. **INDA only.**
- SR Two aluminum rings attached to the fixture. Factory installed. **INDA only.**
- CDC Center deflector cone for round reflector. Provides a wider light distribution.
- ADS Cast aluminum adapter for the PMAT arm to slip over a 5" O.D. pole.

INDC
- CDC Center deflector cone for round reflector. Provides a wider light distribution.
- SR Two aluminum rings attached to the fixture. Factory installed.
- CFR Color filter holder attached to the fixture. Includes solid rings. Factory installed.
- SCP (Sensor Control Programmable) pole accessory is available to provide occupancy detection for outdoor applications meeting California Title 24. For complete spec sheet and ordering information, visit www.ad.net/products/sensor_control_programmable/

DIMENSIONS

INDC WT: 45.9 lbs EPA: INDC-SQ Sail: 0° = 1.70 15° = 1.27 30° = 5.01
INDC-RD Sail: 0° = 1.44 15° = 1.08 30° = 4.28
INDF WT: 51.5 lbs EPA: INDF-SQ Sail: 0° = 0.93 15° = 2.50 30° = 4.24
INDF-RD Sail: 0° = .89 15° = 2.12 30° = 3.51

Dark Sky Friendly

While indirect luminaires typically throw 40 to 60 percent of their light output upwards into the ceiling, they are extremely efficient in terms of light pollution. The Indirect's specially designed lower reflector precisely focuses the light energy onto the upper reflector with virtually no stray upright. The Indirect and Cubic Indirect emits zero percent upward, earning an IES "cutoff luminaire" classification from an independent photometric testing lab.

AAL Indirect

AAL Indirect	Others
• 4.1% uplight	• 40 to 60% uplight
• IES cutoff luminaire	• IES non-cutoff luminaire

architectural area lighting 323

LABEL "G"

SLIM12N RAB LIGHTING

12, 18 and 26 Watt SLIM wallpacks are ultra efficient and deliver impressive light distribution with a compact low-profile design that's super easy to install as a downlight or uplight.

Color: Bronze Weight: 4.5 lbs

Project: Type:
Prepared By: Date:

Driver Info

Type:	Constant Current
120V:	0.12A
208V:	0.08A
240V:	0.07A
277V:	0.06A
Input Watts:	16W
Efficiency:	76%

LED Info

Watts:	12W
Color Temp:	4000K
Color Accuracy:	72 CRI
L70 Lifespan:	100000
Lumens:	1992
Efficacy:	125 LPW

Technical Specifications

Listings
UL Listing: Suitable for wet locations. Suitable for mounting within 1.2m (4ft) of the ground.
DLC Listed: This product is listed by Design Lights Consortium (DLC) as an ultra efficient premium product that qualifies for the highest tier of rebates from DLC participating utilities. DLC Product Code: PLSB03AQ
ADA Compliant: SLIM™ is ADA Compliant.
Dark Sky Approved: The International Dark-Sky Association has approved this product as a full cutoff, fully shielded luminaire.
IESNA LM-79 & LM-80 Testing: RAB LED luminaires have been tested by an independent laboratory in accordance with IESNA LM-79 and LM-80, and have received the Department of Energy "Lighting Facts" label.
Construction
IP Rating: Ingress Protection rating of IP66 for dust and water
Cold Weather Starting: Minimum starting temperature is -40°C (-40°F)
Maximum Ambient Temperature: Suitable/For use in 40°C (104°F) ambient temperatures
Housing: Precision die-cast aluminum housing
Mounting: Heavy-duty mounting bracket with hinged housing for easy installation.
Recommended Mounting Height: Up to 8 ft.
Lens: Tempered glass lens.
Reflector: Specular thermoplastic.
Gaskets: High-temperature silicone
Finish: Formulated for high-durability and long lasting color.
Green Technology: Mercury and UV free. RoHS compliant components. Polyester powder coat finish formulated without the use of VOC or toxic heavy metals.
LED Characteristics
LED: Multi-chip, long-life LED.
Lifespan: 100,000-hour LED lifespan based on IES LM-80 results and TM-21 calculations.
Color Consistency: 3-step MacAdam Ellipse binning to achieve consistent color-to-fixture.
Color Stability: LED color temperature is warrantied to shift no more than 200K in CCT over a 5 year period.
Color Uniformity: RAB's range of CCT (Correlated Color Temperature) follows the guidelines for the American National Standard for Specifications for the Chromaticity of Solid State Lighting (SSL) Products, ANSI C78.377-2015.
Self Replacement Range: Replaces 70W Metal Halide.
Electrical
Driver: Constant Current, Class 2, 100-277V, 50/60 Hz., 4KV surge protection, 300mA, 100-240VAC 0.3-0.15 Amps, 277VAC 0.15Amps, Power Factor 99%.
Other
California Title 24: SLIM12 complies with 2013 California Title 24 building and electrical codes as a residential outdoor fixture. See SLIM12IPC for a model that complies as a commercial outdoor non-pole-mounted fixture.__0__ Watts.
Patents: The design of the SLIM™ is protected by patents in U.S. Pat D681,864, and pending patents in Canada, China, Taiwan and Mexico.
Buy American Act Compliance: RAB values USA manufacturing! Upon request, RAB may be able to manufacture this product to be compliant with the Buy American Act (BAA). Please contact customer service to request a quote for the product to be made BAA compliant.

Need help? Tech help line: (888) RAB-1900 Email: sales@rabweb.com Website: www.rabweb.com
Copyright © 2014 RAB Lighting Inc. All Rights Reserved Note: Specifications are subject to change at any time without notice

Page 1 of 2

LABEL "E"

Gen3™ MiniWasher™

i2Systems

MODEL V3285 | LED LINEAR LUMINAIRE | WET LOCATION

Gen3 is an architectural-grade, wet location LED luminaire engineered for the illumination & lighting of walls & surfaces.

US PATENT | US PENDING Additional Patents Pending

PROJECT NAME

LIGHTS_LINK 196 LUMENS/WATT 60,000 HOURS

cULus LISTED DLC PREMIUM IP66 IK08 LM-79 LM-80 TESTED

FIXTURE BUILDER

V3285 | A | - | 4 | 6 | CBA | OPTIONS (Select all that apply)

FIXTURE TYPE	OUTPUT	LENGTH	BEAM ANGLE	LED COLOR	LOCATION
Gen3 MiniWasher	A 8W / 7ft	1 12"	S 30°	AAH Cool White - 6500°K	Outdoor
*Factory default		2 18"	E 60°	AAE Cool White - 5700°K	Indoor
		3 30"	B 80°	AAD Neutral White - 4500°K	
		4 48"		BBE Neutral White - 4000°K	FINISH
				BBD Neutral White - 4000°K - 90+ CRI	Black Anodized
				CBC Warm White - 3500°K	Clear Anodize
				CBB Warm White - 3000°K	
				CBBH Warm White - 3000°K - 90+ CRI	
				CBAH Warm White - 2700°K - 90+ CRI	
				CBAB Warm White - 2700°K	
				DC Green	
				EC Blue	
				HC Red	

ACCESSORIES

DIMMING CONTROL
- LUTRON
  - LU-3DV-10V 0-10V Bridge 8 Driver
- DIMMING CABLE
  - MR-ERW-WE Retrev. WIR. Pwr/+
  - MR-ERW-SE Retrev. WIR. Pwr/+

POWER BOXES
- INDOOR RATED
  - 20PP 75W 120-277V AC 10/8
- OUTDOOR RATED
  - 20OPW 75W 120-277V AC 10/8

BRACKETS & BAFFLES
- BRACKETS
  - VLA1-A Rotational Adjustable
  - VLA1-S Hinge Adjustable
  - VLA1-SQ Flush
- EXTENDED BRACKETS
  - VLA12-A 6" Adjustable
  - VLA12-12 12" Adjustable
- BAFFLES (INDOOR ONLY)
  - BA12 8W/12W/18W/26W
  - White BSI-0856-WT
  - Future length

QUICK SPECS

Input Voltage	20-30V DC, 24V nom.
Power / Ft	8 Watts
Lumens / Ft	400 lms typ. @ 3000°K
Efficiency	51 lms / W typ. @ 3000°K
Operating Temp	-20°C to 40°C
Max. Case Temp.	50°C
Humidity	0 to 95% Non-Condensing
CRI	80 typ. 90+ Optional
Max. Wire Distance	50 feet from Last Light to Power Box using 16 AWG
Housing	PA Space Aluminum Architectural
Lens	UV Resistant Acrylic

Footprint graphic shown. Scaled 1" in Revit 2018+ for detailed footprint.
For complete technical information refer to the Gen3 Installation Guide available at www.i2Systems.com

PHOTOMETRICS Additional Angles at i2Systems.com

IES TESTED PHOTOMETRY IN CERRA (AS/NZS) 3675:2013

Mounting Height	X-Y Center Beam	Diameter of Lighted Plane
4.0 ft	3.5 ft	6.7ft
6.0 ft	212 ft	7.8 ft
8.0 ft	5.3 ft	8.0 ft
10.0 ft	6.76 ft	12.0 ft
12.0 ft	6.76 ft	14.4 ft
14.0 ft	6.86 ft	16.7 ft
16.0 ft	7.82 ft	19.1 ft

*At 4x multiply by 0.01

Multiplier Table	3000°K	4000°K	5700°K
Standard CRI	x1.00	x1.01	x1.02
90+ CRI	x0.90	x0.91	x0.92

Multiplier available for 90+ CRI. Approximate Multiplier for Warm and Cool Photometric Testing & Data Sets Coming.

i2Systems 205 Bantam Lake Rd. Morris, CT 06763 USA www.i2Systems.com

tel +1-860.567.0708 fax +1-860.567.2924 sales@i2Systems.com

i2 Innovative Systems is an industry leader in Linear Source Systems for Platform, Cove, Wall Washer and Spoke-of-the-wheel luminaires. Our Gen3 product family is the ideal solution for a wide variety of general wash and accent lighting applications. Please contact us with any questions or sales for more information.

PD-0708

Please perform a "before" and "after" photometric test to see the difference between your old and new lighting. Lumen Count is a valuable & dealing asset. When installing a set of new luminaires, it is advisable to perform a photometric test of the area to be illuminated before the old luminaires are removed. This will provide a baseline for comparison purposes, after, or after the new install. Proper layout and design of luminaires is critical to the success of any lighting project. Using luminaires that are designed to produce the average footcandle level, uniformity ratio and glare control required will increase the visual comfort, safety and productivity of the occupants within the space. Using luminaires that are not designed to produce the proper footcandle level, uniformity ratio and glare control required will result in decreased visual comfort, safety and productivity of the occupants within the space.

LABEL "B" & "C"

BRICK NORTH AND SOUTH BUILDINGS AT THE FOREFRONT AT THOMPSON'S POINT
LIGHTING FIXTURE **TYPES S2, S3, S4, S5 & S6**

Prefix	Controls	Arm	Mounting	Optics*	LED Watts	Color Temp	Voltage	Finish	Options
P21	— Standard luminaire	A1* Standard 9" Arm	1 Standard	Standard Optic Position	350mA 55LA 55LX	CW Cool White 5,700K	120 120V	BRP Bronze Paint	TL Tool-Less entry and driver removal hardware
P21-2at Platform 2F fixture	DIM 0-10V Dimming	A2* Short 3" Arm	2 2@90 2@180 2@90	2 Type 2 3 Type 3 4W Type 4 Short	530mA 70LA 70LX	NW Neutral White 4,000K	208 208V	BLP Black Paint	TB Terminal Block
	APD* Automatic Profile Dimming	A3* Long 5" Arm	3 3@90 3@120 3@90	SM Type 5 Medium BM Type 5 Wide BLC Backlight Ctrl 2BL Type 5 with backlight (less shield)	700mA 70LA 70LX	WW Warm White 3,000K	240 240V	WP White Paint	F* Fusing
	APD-MW* APD with Motion Response Override pole mounted sensor	MA Mast Arm Fitter (specify mast arm)	4 4@90 4@120 4@90	LCCF* LEED Cone Cutoff Optics	1050mA 105LA 105LX	277 277V	347 347V	NP Natural Paint	PCR** Photocell Receptacle
	MR* Motion Response at 10% low luminaire mounted sensor	W Wall Mount	Wall mount options require surface mounted conduit entry permitted	Optics Rotated Left (RX)*	1400mA 140LA 140LX	480 480V	480 480V		PCR120** Photocell Receptacle only with 2 dimming and 2 auxiliary connections
	MRM* Motion Response at 10% low pole mounted sensor			2-90 Type 2 3-90 Type 3 4-90 Type 4 2BL-90 Type 2 with backlight (less shield)	700mA 70LA 70LX	UNV 120-277V 50Hz/60Hz	UNV 347-480V 50Hz/60Hz		EM45 External Incandescent Shield
	Linear Light Wireless Controls			Optic Rotated Right (2RX)*	1050mA 105LA 105LX				PTF2 Pole Top Fitter for 2½" -3" Tenon
	LLC2** 2 ft wireless for 1-2 mounted heights			2-2RX Type 2 3-2RX Type 3 4-2RX Type 4 BLC-2RX Backlight Ctrl 2BL-2RX Type 2 with backlight (less shield)	1400mA 140LA 140LX				PTF3 Pole Top Fitter for 3" -3½" Tenon
	LLC4** 4 ft wireless for 25-40' mounted heights				2000LA*				PTF4 Pole Top Fitter for 3½" -4" Tenon
									SPA1-2 Square Pole Adapter for use with 8' or 42 Arms
									SPA3* Square Pole Adapter for use with 42 Arms
									DL* Diffusing Lens
									CLR* Clear Glass Lens
									POL* Polycarbonate Lens (3 year warranty)
									BD Downlight Style Kit – consist of 2" injection molded plastic bird deterrent spikes (field installed only)

TYPE S2: #P21-DIM-A1-1-2-55LA-NW-UNV-BLP-PC

TYPE S3: #P21-DIM-A1-1-4-105LA-NW-UNV-BLP-PC

TYPE S4: #P21-DIM-A1-1-4-BLC-105LA-NW-UNV-BLP-PC

TYPE S5: #P21-DIM-A1-1-5M-105LA-NW-UNV-BLP-PC

TYPE S6: #P21-DIM-A1-1-2-55LA-NW-UNV-BLP-PC

LABEL "D"

HR-LED231R WAC LIGHTING Responsible Lighting®

1" LEDme® Miniature Recessed Spot

Fixture Type:
Catalog Number:
Project:
Location:

PRODUCT DESCRIPTION

Round recessed trims with interior open reflector for use with a remote driver. Perfect for use under cabinets or in wall niches.

FEATURES
- 1" aperture
- Cutout 2¼"
- Less than ¼" thick, super low profile trim
- Narrow flood beam spread
- 25° visual cut off angle
- 150° horizontal adjustment
- 80,000 hour rated life
- 5 year WAC Lighting product warranty

FIXTURE PERFORMANCE

Model #	Color Temp	Watt	Lumens	CBCP	Beam	CRI
HR-LED231R-27	2700K	4W*	255	539	35°	85
HR-LED231R-30	3000K	4W*	260	550	35°	85
HR-LED231R-35	3500K	4W*	275	584	35°	85
HR-LED231R-40	4000K	4W*	295	619	35°	85

*Power consumption may vary depending on efficiency of the system being used.

ORDER NUMBER

Model #	Color Temp	Finish
HR-LED231R	27 2700K	BN Brushed Nickel
	30 3000K	GM Gun Metal
	35 3500K	WT White
	40 4000K	

HR-LED231R - 27 - GM
Example: **HR-LED231R-40-WT**

LEDme® REMOTE DRIVERS

Model #	Description	Type	Dimming	# Fixture	Dimensions
LD-700MA03-EDIM-IS	Electronic low voltage	Hardwire	Yes	1	L:3¼" W:1⅛" H:1⅛"
LD-700MA09-EDIM-IS	Electronic low voltage	Hardwire	Yes	3	L:7⅛" W:3⅛" H:1⅛"

See individual driver spec sheets for complete information.

SPECIFICATIONS

Construction: Die-cast aluminum trim, aluminum heat sink and 20 gauge steel housing painted black.

Wiring: Socket and insulated wires are pre-installed within housing, wires lead out through the side of the housing for connection to remote driver.

Driver: Remote LEDme® electronic low voltage driver required (see below). Dimming and non-dimming drivers available. Use a multiple-terminal block to wire up to 3 fixtures for dimmable drivers.

Light Source: Includes one 3W AlInGa compliant Warm/Neutral LED for the finest color consistency possible. Replacement modules available.

Dimming: May be dimmed to 10% with electronic low voltage (ELV) dimmer.

Mounting: Two heavy gauge inner retention clips push out onto mounting surface to firmly hold fixture in place. Accommodates surface up to ¾" thick, 2¼" cutout hole. Approved for use in ceilings with a Class 2 driver.

Finish: Available in White (WT) powder coat paint and electroplated Brushed Nickel (BN) and Gun Metal (GM).

Rating: Non-IC insulation must be kept at least 3" away from the housing.

Standards: UL & cUL Damp Location Listed

FINISHES

BN GM WT

REPLACEMENT MODULES

Model #	Color Temp
RM1X3-27-T-DL	2700K
RM1X3-30-T-DL	3000K
RM1X3-35-T-DL	3500K
RM1X3-40-T-DL	4000K

WAC Lighting
www.waclighting.com
Phone (800) 526.2588 • Fax (800) 526.2585

Headquarters/Eastern Distribution Center
44 Harbor Park Drive • Port Washington, NY 11050
Phone (516) 515.5000 • Fax (516) 515.5050

Western Distribution Center
1750 Archibald Avenue • Ontario, CA 91760
Phone (800) 526.2588 • Fax (800) 526.2585

WAC Lighting retains the right to modify the design of our products at any time as part of the company's continuous improvement programs. SEP 2017

LABEL "H"

TUBE ARCHITECTURAL DS-WS05-U WAC LIGHTING Responsible Lighting®

Ultra Narrow Beam LED Wall Mounts

Fixture Type:
Catalog Number:
Project:
Location:

PRODUCT DESCRIPTION

Precise engineering using the latest energy efficient LED technology with a built-in ultra narrow beam precision optics. An appealing cylindrical profile perfect for accent lighting.

FEATURES
- High performance facade LED wall mount light
- Can be mounted upwards or downwards
- Solid aluminum construction
- 80,000 hour rated life
- 5 year warranty

SPECIFICATIONS

Input: 120V - 277VAC 50/60Hz
Dimming: 0 - 10V Dimming: 100% - 20%
ELV 100% - 10% (120V only)
Standards: IP65 rated, ETL & cETL wet location listed
Operating Temp: -40°C to 40°C

PHOTOMETRY

Reads 0.2 footcandle at 15 feet distance

ORDERING NUMBER

Distribution	Diameter	Watt	Beam	Color Temp	CRI	Lumens	CBCP	Light Direction	Finish
Single DS-WS	05 5"	11W	U 4"	27 2700K	85	525	1182	Towards the wall	BK Black
				30 3000K	85	550	1299		WT White
				35 3500K	85	550	1299		BZ Bronze
				40 4000K	85	550	1462		GH Graphite

DS-WS05-U____-B-___

Example: **DS-WS05-U30B-WT**

waclighting.com
Phone (800) 526.2588
Fax (800) 526.2585

Headquarters/Eastern Distribution Center
44 Harbor Park Drive
Port Washington, NY 11050

Central Distribution Center
1600 Distribution Ct.
Lithia Springs, GA 30122

Western Distribution Center
1750 Archibald Avenue
Ontario, CA 91760

WAC Lighting retains the right to modify the design of our products at any time as part of the company's continuous improvement programs. JUL 2016

LABEL "F"

BRICK NORTH AND SOUTH BUILDINGS AT THE FOREFRONT AT THOMPSON'S POINT
LIGHTING FIXTURE **TYPE S7**

PHILIPS

GARDCO 120 LINE LED

121 LED Performance Sconce - Generation 2

The Philips Gardco 121 LED Performance Sconce provides an energy efficient, architecturally pleasing solution for wall mount applications. The sloped surface ribs of the die cast aluminum housing create a distinctly unique aesthetic element, and perform important functions in the Philips Gardco thermal management system. 121 Generation 2 luminaires feature high performance Class 1 LED systems. The high performance LED optical systems produce full cutoff performance, minimizing glare and light trespass. Philips Gardco's LED technology provides maximized light output and maximum energy savings.

PREFIX	OPTICAL SYSTEM	LED WATTAGE	LED SELECTION	VOLTAGE	FINISH	OPTIONS
121	3	26LA	NW	UNIV	BLP	PCB

Enter the order code letters as appropriate. Ex: above. Visa Philips Gardco reserves the right to refuse a configuration. Not all combinations and configurations are valid. Refer to notes below for exclusions and limitations. For questions or concerns, please consult the Factory.

PREFIX

121 121 LED Performance Sconce – Constant Wattage / Full Light Output
121-MR 121 LED Performance Sconce – Mission Response
121-DIM 121 LED Performance Sconce – 0 - 10V Dimming
121-AFD 121 LED Performance Sconce – Automatic Profile Dimming

121-DCC 121 LED Performance Sconce – Dual Circuit Control

OPTICAL SYSTEM

2	Type 2
3	Type 3
4	Type 4
MT	Medium Throw

All optical systems are supplied with a clear glass two-standard 4.5mm/4.5mm CEC rating system is available, See OPTIONS on Page 2.

LED WATTAGE AND LUMEN VALUES

Single LED Array Wattages, Available in 121, 121-MR, 121-DIM and 121-AFD Only

Ordering Code	Average System Watts*	LED Current (mA)	LED Quantity – Single LED Array	LED Selection	Luminaire Initial Absolute Lumens†			
					TYPE 2	TYPE 3	TYPE 4	MT
18LA	18	350	14	NW	1,473	1,707	1,609	2,022
34LA	34	530	14	NW	2,442	2,485	2,345	2,927
18LA-HO	34	700	14	NW	3,193	3,972	3,747	3,630
10LA-350	35	350	32	NW	3,664	3,736	3,523	4,415
55LA	52	530	32	NW	5,587	5,685	5,363	6,697
71LA	72	700	32	NW	6,199	6,338	6,296	7,289

11.6" 29.624 cm

4.5" 11.97cm

9.25" 23.495cm

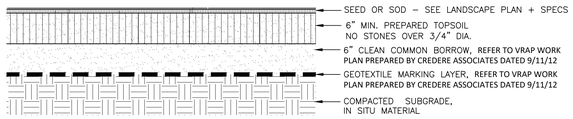
CLIENT: PLACEMAKER PARTNERS, LLC
501 DANFORTH STREET
Portland, ME 04102
bo@placemakerpartners.com

PROJECT: THE FOREFRONT AT THOMPSON'S POINT
FOREFRONT HOTEL

PLAN TITLE: LIGHTING & PHOTOMETRIC PLAN

Designer DLS
Date 01/30/2018
Scale 1 inch = 30 feet
Drawing No. E 0.0
Summary

1 of 1



1 SEEDED OR SODDED LAWN
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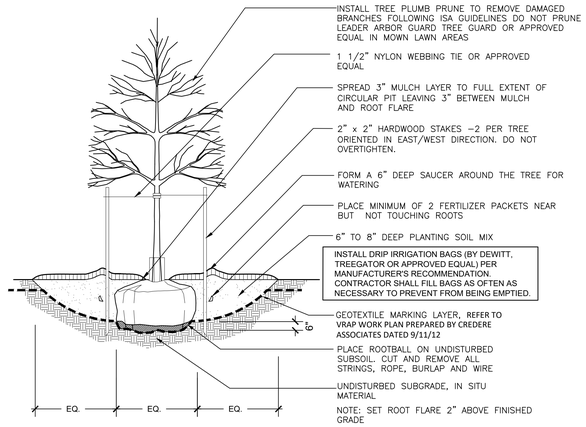
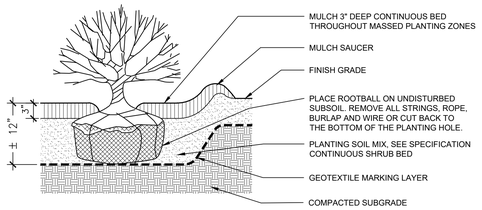
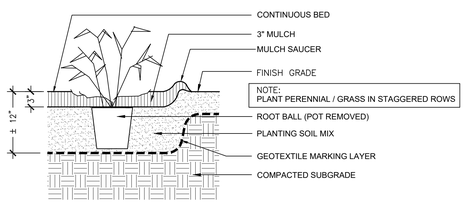


2 TREE IN LAWN OR ESPLANADE
SCALE:1"=1'-0"



3 SHRUB PLANTING
SCALE: 3/4"=1'-0"



4 ORNAMENTAL GRASS / PERENNIAL PLANTING
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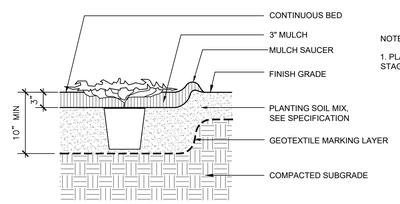
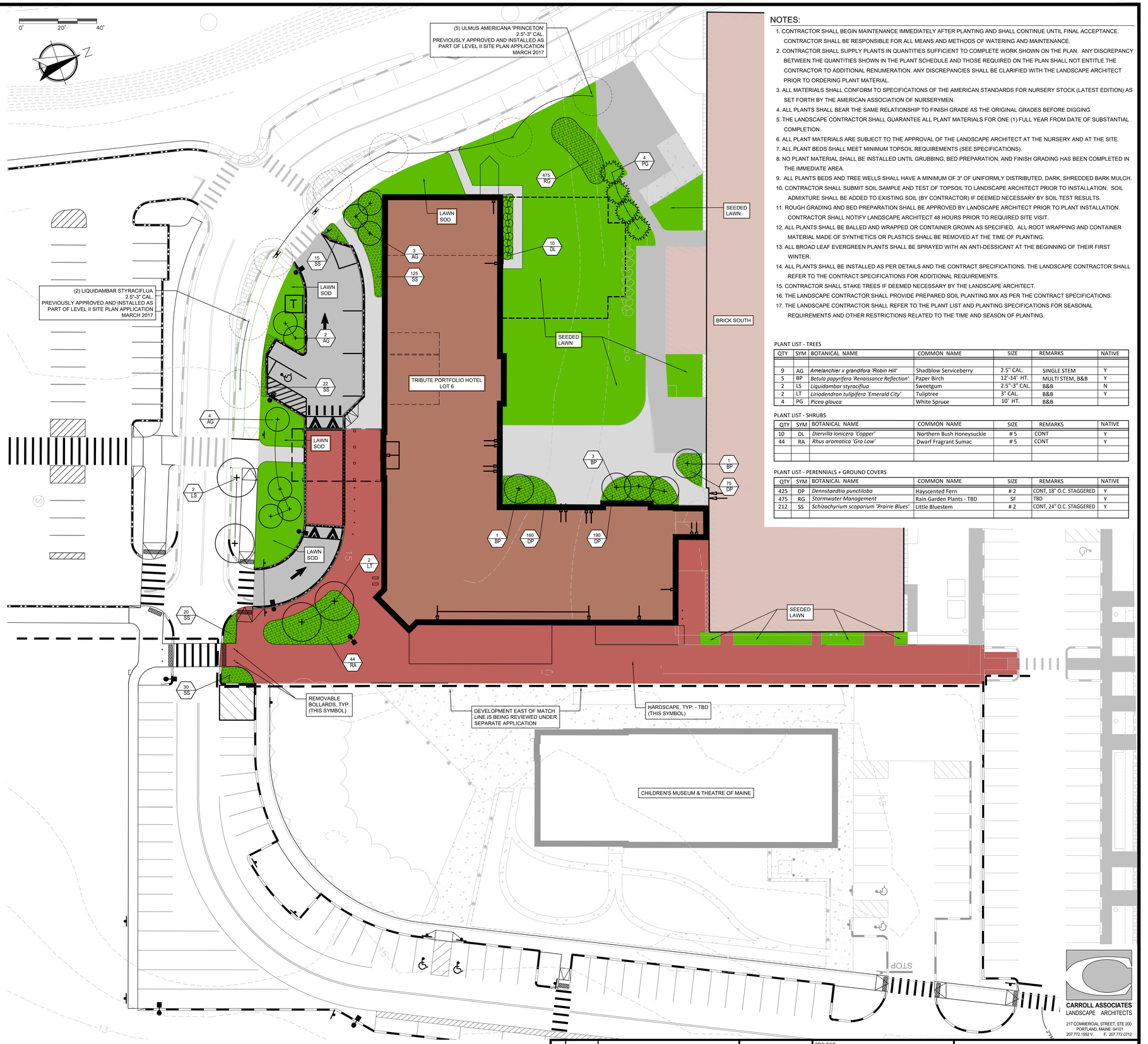


5 GROUND COVER PLANTING
SCALE:1"=1'-0"



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. CONTRACTOR SHALL SUPPLY PLANTS IN QUANTITIES SUFFICIENT TO COMPLETE WORK SHOWN ON THE PLAN. ANY DISCREPANCY BETWEEN THE QUANTITIES SHOWN IN THE PLANT SCHEDULE AND THOSE REQUIRED ON THE PLAN SHALL NOT ENTITLE THE CONTRACTOR TO ADDITIONAL RENUMERATION. ANY DISCREPANCIES SHALL BE CLARIFIED WITH THE LANDSCAPE ARCHITECT PRIOR TO ORDERING PLANT MATERIAL.
3. ALL MATERIALS SHALL CONFORM TO SPECIFICATIONS OF THE AMERICAN STANDARDS FOR NURSERY STOCK (LATEST EDITION) AS SET FORTH 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 PLANT BEDS SHALL MEET MINIMUM TOPSOIL REQUIREMENTS (SEE SPECIFICATIONS).
8. NO PLANT MATERIAL SHALL BE INSTALLED UNTIL GRUBBING, BED PREPARATION, AND FINISH GRADING HAS BEEN COMPLETED IN THE IMMEDIATE AREA.
9. ALL PLANTS BEDS AND TREE WELLS SHALL HAVE A MINIMUM OF 3" OF UNIFORMLY DISTRIBUTED, DARK, SHREDDED BARK MULCH.
10. CONTRACTOR SHALL SUBMIT SOIL SAMPLE AND TEST OF TOPSOIL TO LANDSCAPE ARCHITECT PRIOR TO INSTALLATION. SOIL ADMIXTURE SHALL BE ADDED TO EXISTING SOIL (BY CONTRACTOR) IF DEEMED NECESSARY BY SOIL TEST RESULTS.
11. ROUGH GRADING AND BED PREPARATION SHALL BE APPROVED BY LANDSCAPE ARCHITECT PRIOR TO PLANT INSTALLATION. CONTRACTOR SHALL NOTIFY LANDSCAPE ARCHITECT 48 HOURS PRIOR TO REQUIRED SITE VISIT.
12. ALL PLANTS SHALL BE BALLED AND WRAPPED OR CONTAINER GROWN AS SPECIFIED. ALL ROOT WRAPPING AND CONTAINER MATERIAL MADE OF SYNTHETICS OR PLASTICS SHALL BE REMOVED AT THE TIME OF PLANTING.
13. ALL BROAD LEAF EVERGREEN PLANTS SHALL BE SPRAYED WITH AN ANTI-DESSICANT AT THE BEGINNING OF THEIR FIRST WINTER.
14. ALL PLANTS SHALL BE INSTALLED AS PER DETAILS AND THE CONTRACT SPECIFICATIONS. THE LANDSCAPE CONTRACTOR SHALL REFER TO THE CONTRACT SPECIFICATIONS FOR ADDITIONAL REQUIREMENTS.
15. CONTRACTOR SHALL STAKE TREES IF DEEMED NECESSARY BY THE LANDSCAPE ARCHITECT.
16. THE LANDSCAPE CONTRACTOR SHALL PROVIDE PREPARED SOIL PLANTING MIX AS PER THE CONTRACT SPECIFICATIONS.
17. THE LANDSCAPE CONTRACTOR SHALL REFER TO THE PLANT LIST AND PLANTING SPECIFICATIONS FOR SEASONAL REQUIREMENTS AND OTHER RESTRICTIONS RELATED TO THE TIME AND SEASON OF PLANTING.

PLANT LIST - TREES

QTY	SYM	BOTANICAL NAME	COMMON NAME	SIZE	REMARKS	NATIVE
9	AG	*Amelanchier x grandifora 'Robin Hill'*	Shadblow Serviceberry	2.5" CAL.	SINGLE STEM	Y
5	BP	*Betula papyrifera 'Renaissance Reflection'*	Paper Birch	12'-14' HT.	MULTI STEM, B&B	Y
2	LS	*Liquidambar styraciflua*	Sweetgum	2.5"-3" CAL.	B&B	N
2	LT	*Liriodendron tulipifera 'Emerald City'*	Tulliptree	3" CAL.	B&B	Y
4	PG	*Picea glauca*	White Spruce	10' HT.	B&B	

PLANT LIST - SHRUBS

QTY	SYM	BOTANICAL NAME	COMMON NAME	SIZE	REMARKS	NATIVE
10	DL	*Dierville lonicera 'Copper'*	Northern Bush Honeysuckle	# 5	CONT	Y
44	RA	*Rhus aromatica 'Gro Low'*	Dwarf Fragrant Sumac	# 5	CONT	Y

PLANT LIST - PERENNIALS + GROUND COVERS

QTY	SYM	BOTANICAL NAME	COMMON NAME	SIZE	REMARKS	NATIVE
425	DP	*Dennstaedtia punctiloba*	Hayscented Fern	# 2	CONT, 18" O.C. STAGGERED	Y
475	RG	*Stormwater Management*	Rain Garden Plants - TBD	SF	TBD	Y
212	SS	*Schizachyrium scoparium 'Prairie Blues'*	Little Bluestem	# 2	CONT, 24" O.C. STAGGERED	Y

CARROLL ASSOCIATES
LANDSCAPE ARCHITECTS
217 COMMERCIAL STREET, STE 200
PORTLAND, MAINE 04101
207.772.1552 V. F. 207.772.0712

PRELIMINARY - NOT FOR CONSTRUCTION

REV	DATE	DESCRIPTION
1	1.16.2018	CITY SUBMISSION

REVISIONS

L.A. PATRICK J. CARROLL
LIC. #127

PROJECT
THE FOREFRONT AT THOMPSON'S POINT
FOREFRONT HOTEL

SHEET TITLE
PHASE 1
LANDSCAPE PLAN

CLIENT
FOREFRONT HOTELIERS, LLC

PLACEMAKER PARTNERS, LLC
501 DANFORTH STREET
PORTLAND, ME 04102

DRAWN:	MAP	DATE:	SEPT 2017
DESIGNED:	PC	SCALE:	1" = 20'
FILE NAME:			
SHEET:	L-1.0		

Construction Management Plan
Forefront Hoteliers, LLC – Hotel at Thompson's Point

A. Construction Management Principles

The following narrative provides an overview of the construction management principles that the Forefront Hoteliers, LLC and Opechee Construction has identified to minimize impacts from the construction, such as noise, vibrations, ground movement, truck traffic, and other construction related factors to the surrounding building and communities.

B. Development Review of Construction Management Plan

Forefront Hoteliers, LLC and Opechee Construction submits this construction management plan that provides a comprehensive logistics and safety program for the construction project, which will be reviewed and approved as part of the site plan review process. Minimizing impacts to areas surrounding the building/construction site will be primary considerations in the process.

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

Prior to scheduling a preconstruction meeting and the issuance of any city required permits, Placemaker Partners and Opechee Construction will meet all of the requirements contained in Section 14-530, Development Review Fees and post approval requirements and 14-532, General requirements and enforcement of Portland's Land Use Code.

Other permits, as applicable, include

1. **Street Opening and Street Occupancy Permits:** These permits will not be required due to the location of the project.
2. **Blasting:** Blasting will not be required.
3. **Building Code:** Employ the best practices, as applicable, of Chapter 33 Safeguards During Construction, from the 2009 International Building Code.

D. Construction Administration and Communication

Opechee Construction will work diligently to implement a communication strategy as outlined below. The communication strategy is intended to ensure that all construction operations are performed in accordance with all agreements, ordinances and special permits applicable to this project. The Construction Manager will work closely with adjacent abutters, businesses and all parties informed, as far in advance as possible, of scheduled work, particularly work anticipated to cause significant noise, vibrations, or dust. The final construction management plan shall provide for the following:

1. Contact Person for Forefront Hoteliers, LLC is the designated construction owner's representative. Owner's Representative is Dale Akeley (Ph. 207-831-1180) eprojec1@maine.rr.com. Contact Person for Opechee Construction is TBD
2. Construction Signage will be posted on the site with Contact Information for Opechee Construction.
3. Opechee Construction's full time site project manager will be in constant contact via email or phone with the Owner's Representative. The Owner's Rep will provide weekly and additional as need construction updates to neighboring business to inform them of any work that could possibly impact their day to day operations.

4. All construction site signage is temporary and will be removed at project completion.

E. Construction Schedule

1. The project will break ground approximately mid-March 2018 and be completed mid-June 2019. This project will not be phased. See the preliminary construction schedule in Attachment 1.
2. Hours of Construction. Construction will occur during the daytime hours as defined in Section 17-18. Construction Activities for Building permit (Attachment 2) and Section 25-129, Noise, dust and debris (Attachment 3).
3. Extended Hours or Night Work: Pursuant to Section 17-18, this section not apply to emergency utility work or "Situations where the public works authority or the office of building inspections determines that the construction activity is of a unique character which cannot reasonably be completed or performed during the permitted hours and which is not of a recurring nature, provided that prior to engaging in such activity the contractor or his representatives gives notice of the time and scope of such proposed activity, the notice to be given in a manner approved by the public works authority."
4. Material Deliveries: Deliveries will take place between 7:00 a.m. and 5:00 p.m. Deliveries will be received in the designated laydown areas as shown on the Construction Management Plan.

F. Security & Public Safety

1. The Construction Management Plan (Attachment 4) depicts proposed construction fencing and access gates. Gates will have Knox locking devices. Fencing separates the construction site from all other surrounding uses.
2. The adjacent Brick South Building connection will require minor construction, alteration, or demolition operations. These activities will comply with NFPA 1 Chapter 16.
3. Fire Safety Program.
    - Good Housekeeping: All subcontractors are required per contract to clean up after their work on a daily basis.
    - On-site security: Chain link fence system with locked gates will be installed around the perimeter of the construction site.
    - Installation of new fire protection systems as construction progresses: Fire extinguishers will be located on each floor per OSHA standards and IBC 2009. A standpipe system per IBC Section 3311.1 will be provided concurrent with building construction.
    - Preservation of existing systems during demolition: There are no existing systems.
    - Consideration of special hazards resulting from previous occupancies: There are no special hazards from previous occupancies.
    - Protection of existing structures will be accomplished with a fire wall.
4. Blasting will not be required
5. Temporary on-site security lighting will be provided upon the request of the owner.

G. Construction Permitting and Traffic Control Plans

1. Construction Activity in Public Streets: There will be no construction in Public Streets for this project.
2. Sewer and Stormwater: Sewer connections are controlled by Chapters 24 of the City Code of Ordinance. There will be no new connections to the City of Portland Sanitary System. Required permits for new connections to the existing private line have been obtained through the City Site Plan review process. Stormwater connections will be made to a private stormwater line and discharged to the Fore River pursuant to city and state permits previously approved. The Stormwater system has been designed to meet Chapter 32 of the City Code of Ordinance.
3. Traffic Control Plans: Construction activity will not impact public streets due to the location on the project being completely surrounded by land owned by ownership.

H. Site Management and Controls

The final Construction Management Plan will address maintaining the site in a safe condition and will include the following:

1. Trash and debris removal management will be provided by separating recyclable and non-recyclable wastes into multiple construction dumpsters. Trash will be separated, disposed of in a proper waste facility, and documented pursuant to LEED Standards.
2. Street cleaning and damage controls: This project will have construction entrances at the entrances to the site. Due to the remote proximity there should be no dirt tracked or damage caused to city streets. All sediment tracked off the project site and onto private drives will be swept daily and disposed of onsite in accordance with the approved erosion and sediment control plan. A truck washdown station may be required at the discretion of the owner or its assigned personnel.
3. Dust controls: The construction will comply with Portland's requirements under Section 25-129 on Noise, dust and debris (Attachment 3).
4. Noise: The construction will comply with Portland's requirements under Section 17-18 of the City Code (Attachment 2) and Section 25-129 on Noise, dust and debris Attachment 3).
5. Rodent Control will not be needed as this is new construction.
6. Snow Removal: Pursuant to Section 25-173 Contractors to ensure a safe means of travel within the work zone.
    1) Snow/ice removal or commence automatically from (1" of snow and up) or Ice
    2) Remove snow as needed within the work zone, including parking spaces & not to block any driveways or sight lines with the piles of snow.
    3) Clear all walks & ramps with the work zone
    4) Sand or Salt as needed
    5) Clear all basin or drainage to help snow melt
    6) This would include Monday-Friday Sat/Sunday/Holidays

I. Erosion Control and Preservation of Trees

1. Opechee Construction will install all erosion and sedimentation controls as depicted on the approved erosion and sedimentation control plan prior to the pre-construction meeting for inspection by the City. Opechee Construction will regularly inspect the control measures, no less than weekly and after significant storm events, and maintain any installed temporary or permanent stormwater management systems in working

order. Opechee Construction will document all inspection activities and corrective actions and be prepared to provide these documents for inspection by the City, Maine Department of Environmental Protection or the U.S. Environmental Protection Agency upon request.
2. There currently are no trees or landscaping within the limits of construction.
3. Storage areas are indicated on the Construction Management Plan (Attachment 4).

J. Construction Staging Area

1. The Construction Management Plan depicts location of the material staging areas, the location on onsite temporary construction trailers, the location on onsite truck delivery holding areas, the location onsite truck washing stations, masonry mixing stations, the general location of the construction security fence and the general location of temporary construction dumpsters. An open storage areas is shown on the plan.
2. Delivery Truck Holding Areas On-Site: The delivery holding area is shown on the plan and will not be blocked during construction. On days when the construction activities require multiple truck deliveries, these deliveries will be carefully scheduled so that there is always adequate on-site area for the holding of the trucks until they can be unloaded. Once at Thompson's Point all vehicles will be brought within the fence line. There will be no queueing on public streets or common area (privately owned) roadways without prior notice and coordination with the owner. Construction truck traffic will not alter normal traffic patterns or emergency vehicle access to or around the Thompson's Point Campus.
3. Delivery Truck Holding Areas Off-Site: An offsite holding area may be designated by the owner with prior approval from the owner. Offsite holding areas shall be minimized to short term parking only and will not prevent the normal operations of the site.

K. Parking During Construction

1. Construction Parking: Adequate parking for construction workers will be provided on site. The parking areas have been indicated on the Construction Management Plan.
2. Parking: There are no existing parking spaces available to the public within the construction limits that will remain operational during construction.
3. Truck Routes and Volumes: The Construction Management Plan indicates the designated truck routes. Truck volume is expected to be 3-4 trucks per week.

L. Special Measures as Necessary

Construction will take approximately 15 months. Construction will involve pilings. Construction is not located near sensitive uses (e.g. medical care facilities, schools).

ATTACHMENT 1

Preliminary Construction Schedule (Subject to Change)

OPECHEE CONSTRUCTION CORPORATION

Schedule

TP Hotel - Portland, ME

ITEM DESCRIPTION	18-Mar	1-Apr	15-Apr	29-Apr	13-May	27-May	10-Jun	24-Jun	8-Jul	22-Jul	5-Aug	19-Aug	2-Sep	16-Sep	30-Sep	14-Oct	28-Oct	11-Nov	25-Nov	9-Dec	23-Dec	6-Jan	20-Jan	3-Feb	17-Feb	3-Mar	17-Mar	31-Mar	14-Apr	28-Apr	12-May	26-May	9-Jun	23-Jun	7-Jul
					2018										2019																					
Paving/Landscaping					Base						Landscaping, Finish, Pavers																								
Sitework and Utilities																																		
Rammed Aggregate Piers																																		
Foundations Building																																		
Erect Steel Building		BUILDING PERMIT																																
Building Enclosure/Windows															Windows																			
Roofing														CURBS																				
Masonry and Exterior Façade																																		
Floor Slabs																																		
Interior Wall and Ceiling Framing																																		
Rough Mechanical & Electrical													UGP&E							GEN	RTU													
Elevator																																		
Wall and Ceiling GWB																																		
Interior Painting and Finishes																																		
Flooring																																		
Millwork																																		
Fixtures and Trim																																		
Closeout and Cleaning																																		

ATTACHMENT 2

Sec. 17-18. Construction activities.

(a) Within the R-zones, from September 1st to May 31st, no person shall engage in construction activities generating noise exceeding fifty (50) decibels, between the hours of 7:00 p.m. and 7:00 a.m., of the following day within five hundred (500) feet of any building used for residential, hospital or nursing home purposes. From June 1st to August 31st construction activity may continue until 8:00 p.m. Any other language notwithstanding, no construction activity shall begin before 8:00 a.m. on a Saturday, Sunday or legal holiday.

(b) Construction activities shall include, but not be limited to, the following:

(1) The use or operation of power or heavy equipment in connection with road, street, or bridge construction, reconstruction or repair;
(2) The use or operation of power or heavy equipment in connection with the installation or repair of utility lines, pipes, wires or cables;
(3) The use or operation of power or heavy equipment in connection with the construction of buildings, including specifically excavation for foundations or landscaping work of any kind;
(4) The renovation, repair, remodeling or demolition of the exterior or foundation of any building or structure

(c) This section shall not apply in the following situations:

(1) Emergency repair work on any utility line, pipe, wire or cable required to restore normal utility service;

(2) Situations where the public works authority or the office of building inspections determines that the construction activity is of a unique character which cannot reasonably be completed or performed during the permitted hours and which is not of a recurring nature, provided that prior to engaging in such activity the contractor or his representatives gives notice of the time and scope of such proposed activity, the notice to be given in a manner approved by the public works authority.

ATTACHMENT 3

Sec. 25-129. Noise, dust and debris. Each permittee shall conduct and carry out excavation work in such manner as to avoid unnecessary inconvenience and annoyance to the general public and occupants of neighboring property. To the fullest extent practicable, the permittee shall take appropriate measures to reduce noise, dust and unsightly debris in the performance of the excavation work. Excavation work, including the use of any tool, appliance, or equipment, shall be performed between the hours of 7:00 a.m. and 10;00 p.m. only, exclusive of emergency work. Time waiver requests may be submitted to the public works authority for work outside of this time period and will be subject to neighborhood concerns. Excavation work shall not occur on Sundays, holidays or on major holiday weekends, unless expressly authorized by the public works authority or as a result of emergency need.

ATTACHMENT 4
Plan Sheet C-6.0 Erosion Control and Construction Management Plan

EROSION AND SEDIMENT CONTROL NOTES:

1. ALL RUNOFF FROM DISTURBED AREAS SHALL BE DIRECTED TO A FILTERING DEVICE DESIGNATED TO LIMIT TURBIDITY IN ALL DISCHARGE TO THE FORE RIVER. THE FILTERING DEVICE MAY BE BUT IS NOT LIMITED TO SAND FILTERS, EROSION CONTROL MIX, STRAW WATTLES, FLOCCULATION CHEMICALS, DIRT GLUE AND SILT FENCE.
2. ALL CATCH BASINS TO HAVE 4" UNDERDRAIN PER DETAIL 'L' ON SHEET C-8.5
3. ALL SUBSURFACE DETENTION AREAS ARE NOT TO BE PLACED "ON-LINE" UNTIL TRIBUTARY AREA IS STABILIZED WITH PAVEMENT OR 75% VEGETATION COVERAGE
4. STOCKPILES TO BE TEMPORARILY SEEDED AND MULCHED AS REQUIRED BY THE PROJECT SPECIFICATIONS
5. THE CONTRACTOR SHALL TREAT DISTURBED AREAS AND CONSTRUCTION HAUL PATH WITH DUST CONTROL BMPS TO LIMIT ALL FUGITIVE DUST
6. ALL EXCESS COMMON BORROW SHALL BE PLACE IN DESIGNATED STOCKPILE ON PANHANDLE DETAILS INCLUDED IN SEPARATE PLAN SET BY REFERENCE.

Summary of Storm Water Discharges					
Discharge ID	**Approximate Drainage Area (Ac)**	**Full Build Out 25 Yr Peak Flow (CFS)**	**Outlet Pipe Size (In)**	**Description**	***Minimum Required Riprap D50 (IN)**
CO	TBD	TBD	TBD	RCP Flared End W/ Bar Rack, Riprap Slope Apron	12
* D50 is a median rock size. Riprap should be a well graded mix of angular rock from about 1.5 to 0.25 times the size of the D50. The contractor shall protect existing riprap slope or replace rock to the meet the minimum required D50 stone size.					

LEGEND

- INLET PROTECTION (STONE OR HAY SEDIMENT BARRIER)
- FILTERRA INLET PROTECTION (PER MANUFACTURERS REQUIREMENTS) (NOT REQUIRED IN THIS PHASE)
- RIPRAP OUTLET PROTECTION
- CURLEX BLANKET
- EROSION CONTROL MESH
- 30' WIDE ACCESS ROUTE
- WASH DOWN AREA
- STONE CONSTRUCTION ENTRANCE

CONTRACTOR CONSTRUCTION MANAGEMENT NOTES:

1. THIS PLAN IS PART OF AN OVERALL CONSTRUCTION MANAGEMENT PLAN APPROVED AS PART OF A CITY OF PORTLAND LEVEL III SITE PLAN APPLICATION. THE CONTRACTOR SHALL FOLLOW THE APPROVED CONSTRUCTION MANAGEMENT PLAN AND MAINTAIN A COPY IN THE JOB TRAILER.
2. CONTRACTOR SHALL POST ALL PERMITS, EMERGENCY CONTACT INFORMATION, AND CONSTRUCTION SIGNAGE PRIOR TO THE PRE-CONSTRUCTION MEETING.
3. THE FOREFRONT AT THOMPSON'S POINT IS AN ACTIVE DEVELOPMENT SITE WITH DAILY VISITORS FROM THE PUBLIC. THE CONTRACTOR SHALL PROVIDE APPROPRIATE PEDESTRIAN AND VEHICULAR SIGNAGE TO PROMOTE THE SAFE PASSAGE OF THE PUBLIC AROUND THE HOTEL DEVELOPMENT SITE.
4. A WRITTEN REQUEST FOR CLOSURES OF ANY KIND SHALL BE PROVIDE TO THE OWNER A MINIMUM OF 72 HOURS IN ADVANCE. THE OWNER MAY AT THEIR DIGRESSION AND AT NO COST TO THE OWNER DELAY THE CLOSURE AS NOT TO DISRUPT OTHER BUSINESSES.

EXISTING OUTFALL D0 WITH RIPRAP APRON, FLARED END AND BAR RACK

EXISTING PAVEMENT TO REMAIN AS TRACKING PAD. SWEEP CLEAN DAILY OR AS REQUIRED TO PREVENT TRACKING SEDIMENT ALONG THOMPSON'S POINT CONNECTOR ROAD. SHOULD SEDIMENT BE TRACKED OFFSITE CONTRACTOR IS RESPONSIBLE FOR SWEEPING / CLEARING PAVEMENT AS NECESSARY EXISTING PAVEMENT TO REMAIN

INSTALL STONE SEDIMENT TRAP WITH OVERFLOW RISER CONNECTED TO SD INSTALLATION OF FOCAL POINT PROHIBITED UNTIL FINAL SURFACE MATERIALS HAVE BEEN INSTALLED.

STONE CONSTRUCTION ENTRANCE (TYP. OF 2)

EXISTING PEDESTRIAN ACCESS TO REMAIN OPEN THROUGH-OUT PROJECT

MATERIAL DELIVERIES

EROSION CONTROL MESH

BRICK SOUTH EGRESS TO REMAIN OPEN AT ALL TIMES

CRANE, STAGING, LAYDOWN, & PARKING AREA # 1 SOUTH OF A-A AXIS

BRICK SOUTH BUILDING (C)

PROJECT AREA AND CONTROL OF ACCESS (FENCE LINE)

MASONRY STAGING AREA

STAGING AND LAYDOWN PROHIBITED IN THIS AREA. CONTRACTOR SHALL USE LOT 6 AS LAYDOWN YARD.

BUILDING (B1) DEPOT

CRANE, STAGING, LAYDOWN, & PARKING AREA # 2

POTENTIAL WASHDOWN AREA

CONSTRUCTION VEHICLES PROHIBITED

JOB TRAILER

SIDEWALK CLOSED

DUMPSTER(S) (INCLUDING RECYCLING)

EXISTING BUILDING TO REMAIN SUBURBAN PROPANE

EXISTING BUILDING TO REMAIN

BRICK NORTH BUILDING (A)

N/F SUBURBAN PROPANE

DISCHARGE OF EXCAVATION DEWATERING MAY BE DIRECTED TO EXISTING DRAINAGE STRUCTURES IF ALL TREATMENT REQUIREMENTS ARE MET. REFER TO ENVIRONMENTAL ASSESSMENT REPORT BY CREDERE ASSOCIATES, LLC AND PROJECT SPECIFICATIONS FOR ALL DEWATERING REQUIREMENTS

IMPROVEMENTS WITH-IN THIS AREA IS DETAILED IN SEPARATE PLAN SET (BY OTHERS)

OUTFALL C0 WITH RIPRAP APRON, FLARED END AND BAR RACK

PRELIMINARY – NOT FOR CONSTRUCTION

REV	DATE	DESCRIPTION
1	11.09.15	SUBMITTED TO CITY FOR REVIEW
REVISIONS		

STATE OF MAINE — BO KENNEDY No. 11994 — LICENSED PROFESSIONAL ENGINEER — 09.25.17

P.E. BO KENNEDY
LIC. #11994

PROJECT
THE FOREFRONT AT THOMPSON'S POINT
FOREFRONT HOTEL

SHEET TITLE
EROSION CONTROL AND CONSTRUCTION MANAGEMENT PLAN

CLIENT
FOREFRONT HOTELIERS, LLC

PLACEMAKER PARTNERS, LLC
501 DANFORTH STREET
PORTLAND, ME 04102
bo@placemakerpartners.com

DRAWN: DB	DATE: AUG. 2017
DESIGNED: BEK	SCALE: 1" = 30'
FILE NAME: HOTEL-EROSION.dwg	
SHEET	C-6.0

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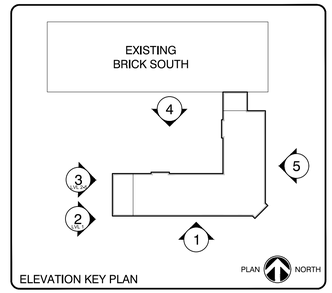
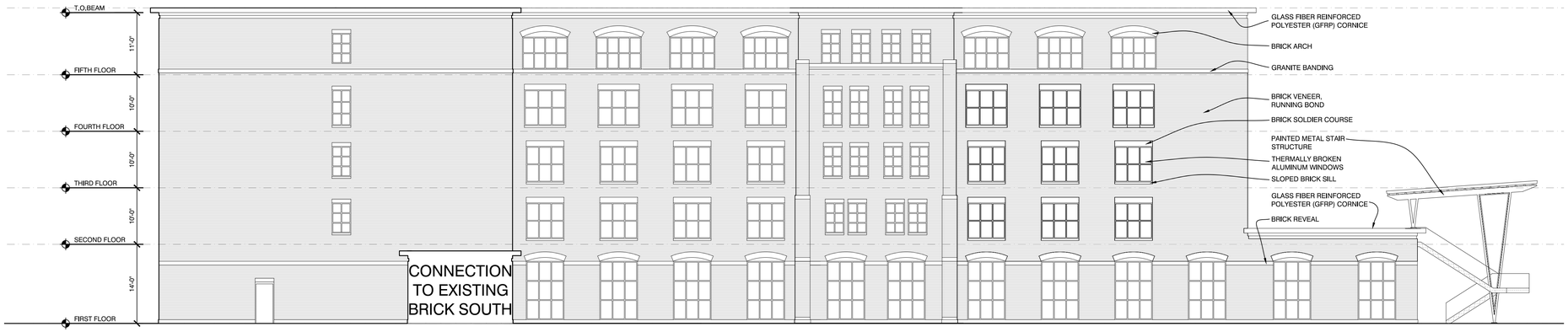


ELEVATION KEY PLAN

5 EAST EXTERIOR ELEVATION
3/32" = 1'-0"



4 NORTH EXTERIOR ELEVATION
3/32" = 1'-0"

OPECHEE
CONSTRUCTION CORPORATION
11 CORPORATE DRIVE BELMONT NH 03220
PHONE (603) 527-3000 WWW.OPECHEE.COM

HOTEL PORTLAND

Thompson's Point
Portland, Maine

REVISION: . . . .

ISSUED: 06-29-18 . . .

project architect: KAK
drawn by: DLS

EXTERIOR BUILDING ELEVATIONS

sheet number:
A3.02

Friday, June 29, 2018 1:58:56 PM

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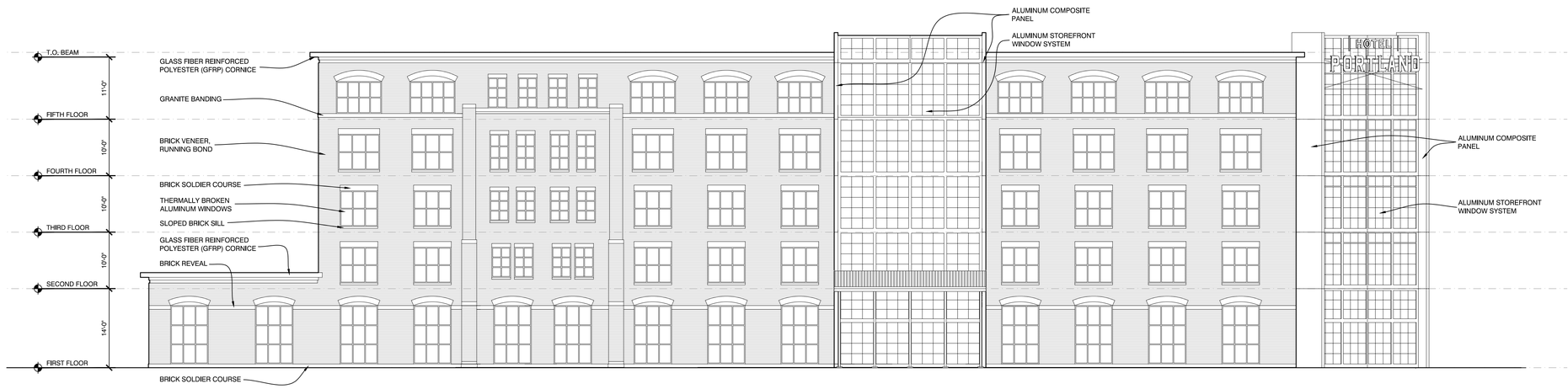
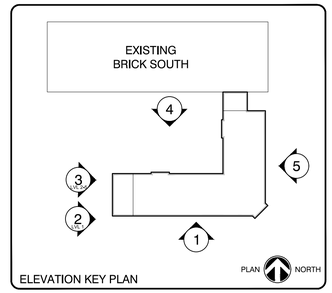
3 WEST EXTERIOR ELEVATION
3/32" = 1'-0"

2 WEST LEVEL 1 EXTERIOR ELEVATION
3/32" = 1'-0"



1 SOUTH EXTERIOR ELEVATION
3/32" = 1'-0"



ELEVATION KEY PLAN

OPECHEE
CONSTRUCTION CORPORATION
11 CORPORATE DRIVE BELMONT NH 03220
PHONE (603) 527-3090 WWW.OPECHEE.COM

HOTEL PORTLAND

Thompson's Point
Portland, Maine

REVISION: . . . .

ISSUED: 06-29-18 . . .

project architect: KAK
drawn by: DLS

EXTERIOR BUILDING ELEVATIONS

sheet number:
A3.01

Friday, June 29, 2018 1:56:02 PM

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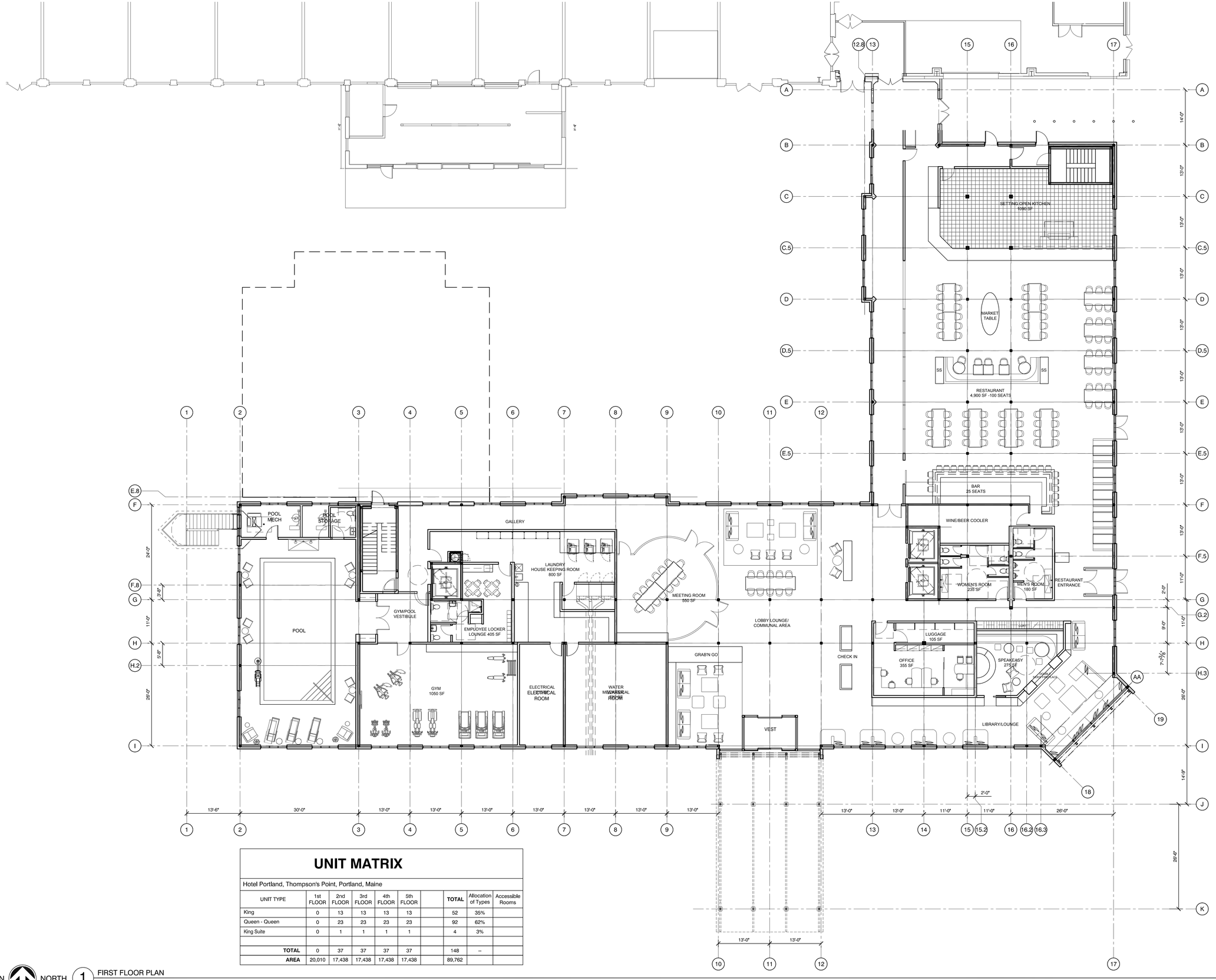

UNIT MATRIX

Hotel Portland, Thompson's Point, Portland, Maine

UNIT TYPE	1st FLOOR	2nd FLOOR	3rd FLOOR	4th FLOOR	5th FLOOR		TOTAL	Allocation of Types	Accessible Rooms
King	0	13	13	13	13		52	35%	
Queen - Queen	0	23	23	23	23		92	62%	
King Suite	0	1	1	1	1		4	3%	
TOTAL	0	37	37	37	37		148	--	
AREA	20,010	17,438	17,438	17,438	17,438		89,762		

PLAN NORTH 1 FIRST FLOOR PLAN
3/32" = 1'-0"

OPECHEE CONSTRUCTION CORPORATION
1 CORPORATE DRIVE ■ BELMONT ■ NH 03220
PH (603) 524-3932 ■ WWW.OPECHEE.COM

HOTEL PORTLAND

Thompson's Point
Portland, Maine

REVISION: . . . .

ISSUED: 02-05-18 . . .

project architect: KAK
drawn by: DLS

FIRST FLOOR PLAN

sheet number:
A1.01

Thursday, January 11, 2018 2:40:47 PM

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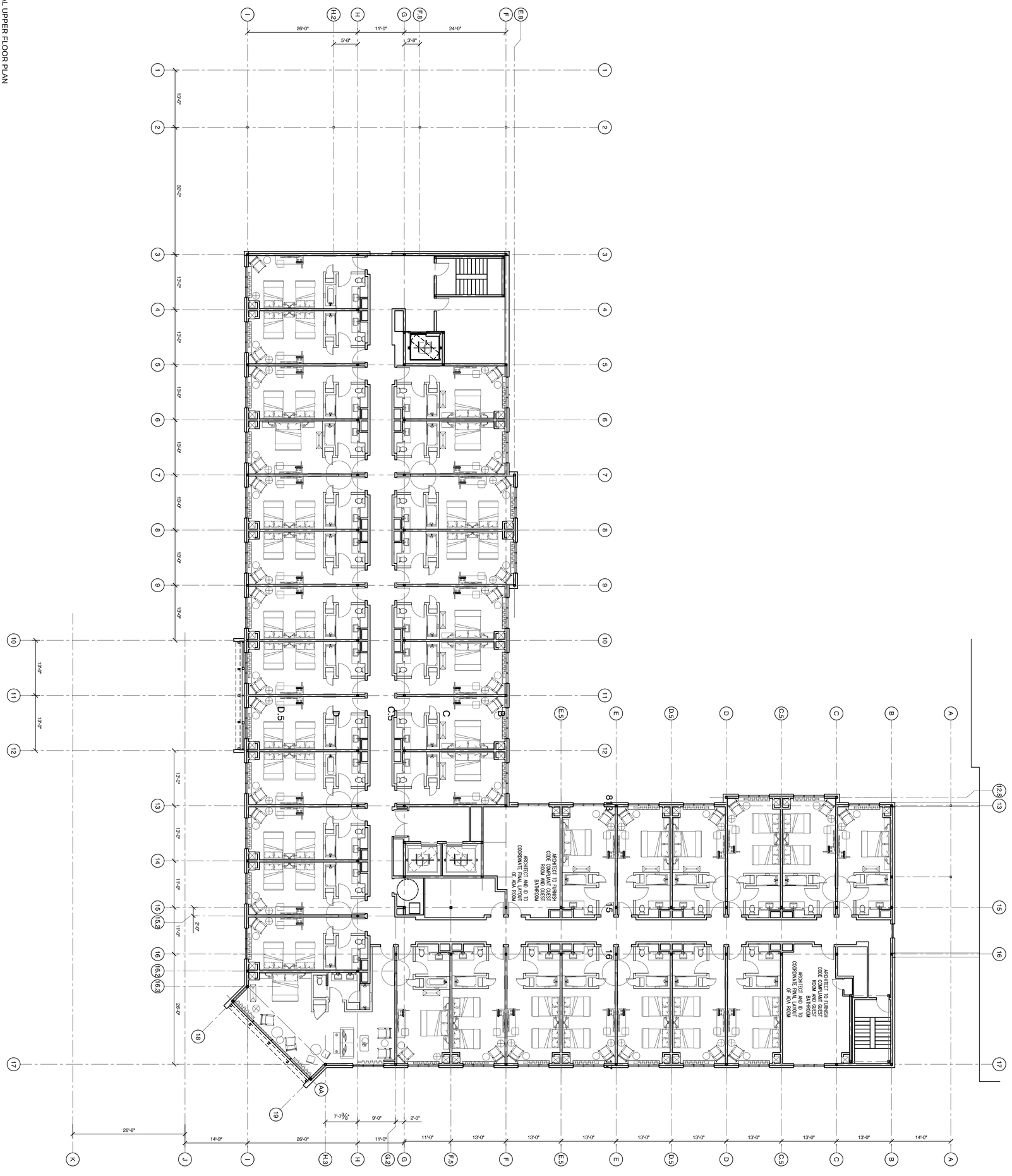
PLAN NORTH

1 TYPICAL UPPER FLOOR PLAN
3/32" = 1'-0"



project architect: KAK drawn by: DLS	ISSUED: 02-05-18	REVISION:	HOTEL PORTLAND Thompson's Point Portland, Maine	OPECHEE CONSTRUCTION CORPORATION 11 CORPORATE DRIVE • BELMONT • NH 03220 PHONE (603) 527-9090 • WWW.OPECHEE.COM

TYPICAL UPPER FLOOR PLAN

sheet number: A1.03

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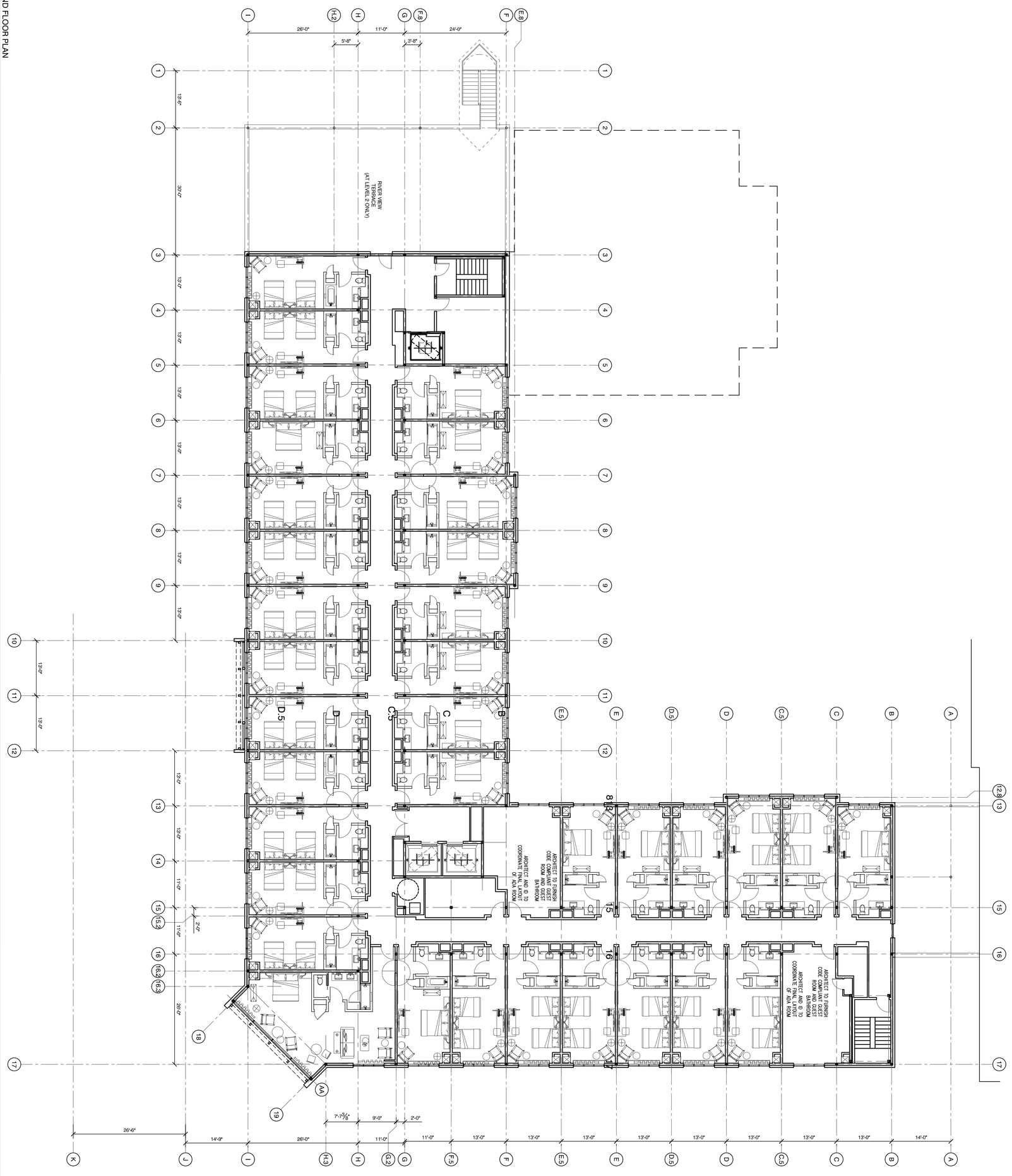
PLAN NORTH

1 SECOND FLOOR PLAN
3/32" = 1'-0"



sheet number: A1.02	SECOND FLOOR PLAN	project architect: KAK drawn by: DLS	ISSUED: 02-05-18	REVISION:	HOTEL PORTLAND Thompson's Point Portland, Maine

OPECHEE CONSTRUCTION CORPORATION
11 CORPORATE DRIVE • BELMONT • NH 03220
PHONE (603) 527-9090 • WWW.OPECHEE.COM

PLANNING BOARD REPORT
PORTLAND, MAINE
765 Congress Street
Building Conversion
Level III Site Plan and Subdivision Plan
PL-000064-2018
Applicant: 765 Congress Street, LLC

Submitted to Portland Planning Board Public Hearing Date: July 17, 2018	Prepared by: Christian Roadman Date: July 13, 2018

765 Congress Street (image provided by applicant team)

I. Project Summary

765 Congress Street, LLC seeks to renovate an existing 6,350 sf. building into four apartments. The building as it exists today includes two commercial spaces and two apartments, though it appears the building is only permitted for commercial space. As part of the conversion project, the applicant intends to install a sprinkler system.

The proposed project is located on Peninsula, on a 4,544 sf. lot. The building sits on the north side of Congress Street between MacMillan Road and Neal Street. Residential and commercial uses are both present nearby on Congress Street. Abutting the site to the northeast and northwest are two separate parking lots. A lease agreement for four parking spaces in the lot to the northeast (757 Congress Street) is included in the application and intended to satisfy the proposed projects' parking requirements. Staff requested, and is waiting for, an updated document which specifies these spaces will be available for a minimum of five years.

The application also notes that the building owner hopes to locate the four required spaces on the property in the future. Space for potential parking exists on the property to the rear of the building, and the applicant expressed interest in obtaining an access easement to allow for its future use as parking.

The building at 765 Cumberland sits within the Congress Street Historic District, but the proposed work is primarily internal to the building. Exterior work called out on the site plan includes installation of a railing along existing concrete stairs, and replacement of an existing asphalt driveway apron with brick to match the surrounding sidewalk. Historic Preservation staff are amendable to the driveway apron replacement and specified that the handrail should be a dark pipe rail. Historic Preservation staff also specified that if the existing commercial signage on the façade of the building is removed, all related conduit / wiring must be removed as well.

The Planning Department sent 221 notices of this agenda item to property owners within 500 feet of the site. Notice of this item also appeared in legal advertisements on July 6 and July 9, 2018.

Applicant: 765 Congress Street, LLC (Sam Reiche)
Consultants: Terradyn Consultants (Michael Tadema-Wielandt, PE), Archetype Architects (David Lloyd), Boundary Points Professional Land Surveying (David Bouffard)

II. REQUIRED REVIEWS

Review	Relevant Code
Site Plan	*Section 14-526*
Subdivision	*Section 14-497*

III. PROJECT DATA

Existing Zoning	B-2b Community Business Zone
Existing Use	Commercial & Residential (residential is not currently the legal use)
Proposed Use	Multifamily Residential
Proposed Development Program	4 Apartments
Bedroom Mix	Three 2-bedroom, One 3-bedroom
Parcel Size	4,544 sf.

	Existing	*Proposed*	*Net Change*
Building Footprint (sq. ft.)	1,540	1,540	0
Building Floor Area (sq. ft.)	5,724	5,724	0
Impervious Surface Area (sq. ft.)	4,333	4,333	0
Parking Spaces	0 (no access)	4 (off-site)	0 (off-site spaces already exist)
Bicycle Parking Spaces	0	2	2
Estimated Cost of Project	$400,000		

IV. PUBLIC COMMENT / NEIGHBORHOOD MEETING

The applicant held a voluntary neighborhood meeting (one was not required) on June 29, 2018. According to the applicant's report, two people attended and no concerns were raised about the project.

By the deadline for inclusion in this report, the Planning Department received a comment over the phone from Richard Julio, who expressed concern about the proposed project's parking impacts. He expressed that four parking spaces, whether leased or not, is likely insufficient to mitigate the parking demand the project will introduce. He noted that the proposed 9 bedrooms indicate additional cars may be associated with potential building tenants, and also that the existing parking situation in the area is strained. At the suggestion of staff, Mr. Julio also submitted an e-mail comment (attachment PC-1) identifying and expanding on these concerns.

VII. RIGHT, TITLE, INTEREST AND FINANCIAL / TECHNICAL CAPACITY

The applicant submitted a warranty deed evidencing ownership of the property in question.

A document included in the applicant's submittal cites the expertise of the consultant team and experience of the applicant to evidence technical capacity for project completion. The application also included a letter from Beth C. Ahmida, Vice President of Gorham Savings Bank, expressing the opinion that the applicant has sufficient experience and financial capacity to finance and complete the proposed property improvements.

VIII. ZONING ANALYSIS

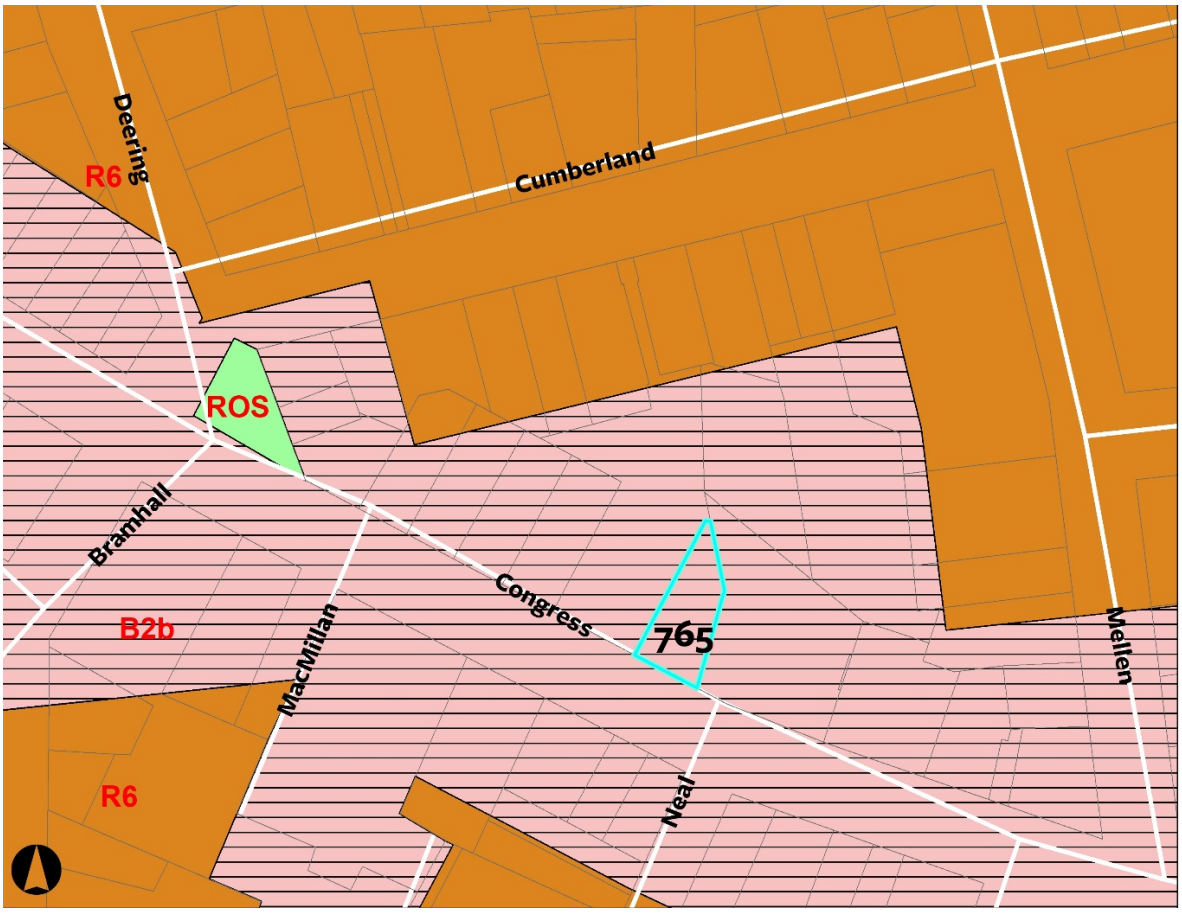
Multifamily housing is a use permitted under the B2-b zone in which the project is located. According to the Off-Street Parking section, Division 20, of the Land Use Code, one parking space is required per dwelling unit in this zone.

At present, the applicant does not have a legal easement allowing vehicular access to the four parking spaces at the rear of the building. Therefore, these spaces cannot be counted towards the parking requirement. The applicant

submitted a lease agreement for four parking spaces in the lot at 757 Congress Street. Staff requested a new lease agreement specifying that these spaces be available for lease for the next five years.

Per City standards, two bike parking spaces are proposed as part of this project.

Review and acceptance of an easement allowing parking to the rear of 765 Congress Street, a satisfactory parking lease agreement, or other satisfactory evidence of sufficient parking for the property per the Land Use Code is suggested as a ***condition of approval.***



Zoning context of proposed 765 Congress Street Project. The project parcel is outlined in light blue.

IX. DEVELOPMENT REVIEW

A. SUBDIVISION (Section 14-497)

The proposed development prompts review for conformance with relevant standards of Portland's subdivision ordinance and applicable regulations.

1. Will Not Result in Undue Water and Air Pollution, and Will Not Result in Undue Soil Erosion; Will Provide for Adequate Sanitary Sewer and Stormwater Disposal, and Will Not Cause an Unreasonable Burden on Municipal Solid Waste and Sewage

The Department of Public Works confirmed wastewater capacity for the project (attachment 1). The City's civil engineering consultant, Lauren Swett, reviewed the applicant's submission for compliance with applicable codes, standards, and practices (Attachment 2). Her comments were addressed with subsequent edits and submissions.

2. Sufficient Water Available

The Portland Water District provided a capacity to serve letter for the project (attachment J).

3. Will Not Cause Unreasonable Traffic Congestion

Staff find the proposed project in conformance with this standard. The applicant cited the ITE Trip Generation Manual to estimate approximately 2 vehicle trips during the PM peak hour and approximately 23 over a weekday. They added that "the building proximity to places of work and entertainment is expected to encourage walking and alternative modes of transportation, and therefore the number of trips per day will likely be less than estimated."

4. Comprehensive Plan

Staff find the proposed project compatible with the Comprehensive Plan, which includes the following applicable goal: "encourage additional contextually appropriate housing density in and proximate to neighborhood centers, concentrations of services, and transit nodes and corridors as a means of supporting complete neighborhoods."

B. SITE PLAN (Section 14-526)

The proposed development prompts review for conformance with relevant standards of Portland's site plan ordinance and applicable regulations.

1. Transportation Standards

Impact on Surrounding Street Systems, Access, and Circulation; Sidewalks; Parking; Construction Management Plan; Public Transit Access

Please see the Zoning Analysis and Subdivision Standards sections above regarding anticipated traffic impact on surrounding street systems and circulation. *Staff anticipates additional documentation that the project meets parking requirements. Such documentation is suggested as a* ***condition of approval****.*

The applicant proposes to replace the property's existing asphalt driveway apron with a brick driveway apron. This replacement, as well as the proposed installation of a fire suppression water service, will require work in the City right-of-way. Bruce Hyman reviewed the applicant's Construction Management Plan (see attachment 3). The applicant team made Mr. Hyman's requested corrections, which are reflected in the current submittal (see Plans P4 and P6).

The site is served by public transit on Congress Street, and no transit-related provisions are required of the applicant.

2. Environmental Quality Standards

a) Preservation of Significant Natural Features

The proposed project is not anticipated to significantly impact natural features or water quality. As it is located on a fully developed site, the project was not subject to additional stormwater controls.

b) Landscaping and Landscape Preservation

The project site includes two planting beds at the front of the existing building, and the applicant indicated that the existing plantings within them will remain. *Staff notes these beds offer an opportunity for improved landscaping, and encourage the applicant to consider such improvements. A landscape plan may be submitted for review and approval by the City's Arborist and Planning Authority if the applicant wishes to pursue this.*

The proposed project calls for retention of the one existing street tree on site. Because site space is limited, the applicant plans to pay into the City's street tree fund to meet the required four street tree minimum (one per dwelling unit). *Payment of $1,200 into the City's street tree fund is suggested as a* ***condition of approval****.*

c) Water Quality, Stormwater Management and Erosion Control

Consulting civil engineer Lauren Swett's comments regarding these topics are addressed above, and her original corrections attached (attachment 2).

3. Public Infrastructure and Community Safety Standards

a) Public Safety and Fire Prevention

Division Chief Mike Thompson noted in submitted comments (attachment 2) that building access is excellent for Fire Department operations and that there are adequate fire hydrants in the area. He also confirmed that the entire building will need to be installed with a sprinkler system.

b) Availability and Adequate Capacity of Public Utilities

As noted above, adequate water capacity and wastewater capacity exists for this project.

4. Site Design Standards

a) Snow and Ice Loading

The applicant's submittal notes that snow will be provided on a paved area adjacent to the future parking spaces on site. *This should be noted on the site plan.*

b) Historic Resources

As mentioned above, proposed work is primarily internal to the building. Exterior work called out on the site plan includes installation of a railing along existing concrete stairs, and replacement of an existing asphalt driveway apron with brick to match the surrounding sidewalk. *Historic Preservation staff are amendable to the driveway apron replacement and specified that the handrail should be a dark pipe rail. Historic Preservation staff also specified that if the existing commercial signage on the façade of the building is removed, all related conduit / wiring must be removed as well.*

c) Exterior Lighting

No changes to the lighting are proposed as part of this project. *Staff suggests confirmation that the existing building-mounted lighting fixtures are full-cutoff, and addressing this issue if they are not.*

d) Noise and Vibration

According to the applicant, neither central air conditioning nor an emergency generator are proposed as part of this project. Mechanicals are internal to the building.

e) Materials & Waste

It is staff's understanding that curbside trash and recycling will serve this project. *The site plan should be updated to reflect the location and/or screening of recycling bins.*

f) Zoning Related Design Standards

The proposed project involves internal changes to an existing building, and did not prompt design review.

XII. PROPOSED MOTIONS

A. 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 July 17, 2018 for application PL-000064-2018 (765 Congress 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.

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 July 17, 2018 for application PL-000064-2018 (765 Congress 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, subject to the following conditions of approval:

A. Condition to be met prior to issuance of a building permit:
   1. The applicant shall pay $1,200 into the City's street tree fund

B. Conditions to be met prior to issuance of a certificate of occupancy:
   1. The applicant shall submit appropriate documentation, for review and approval by the Planning Authority, that the proposed project provides sufficient parking.
   2. Work in the right-of-way for the driveway apron and utility connection shall require applicable permits from the Department of Public Works.

PLANNING BOARD REPORT ATTACHMENTS

1. WASTEWATER CAPACITY AUTHORIZATION
2. 765 CONGRESS STREET CORRECTIONS REPORT 6-28-18
3. BRUCE HYMAN, CITY TRANSPORTATION PROGRAM MANAGER COMMENTS 7-12-18 & 7-13-18

PUBLIC COMMENT

PC1. RICHARD JULIO 7-13-18

APPLICANT'S SUBMITTALS

A. DEVELOPMENT DESCRIPTION
B. RIGHT, TITLE AND INTEREST
C. STATE AND FEDERAL PERMITS
D. LAND ORDINANCE REVIEW
E. EASEMENTS OR OTHER BURDENS
F. TECHNICAL AND FINANCIAL CAPACITY
G. NATURAL FEATURES
H. STORMWATER MANAGEMENT
I. CONSISTENCY WITH CITY MASTER PLANS
J. UTILITIES
K. SOLID WASTE
L. FIRE SAFETY
M. CONFORMITY WITH APPLICABLE DESIGN STANDARDS
N. LEVEL III CHECKLIST
O. LEVEL III PRELIMINARY SITE PLAN APPLICATION
P. ZONING ANALYSIS TABLE
Q. NEIGHBORHOOD MEETING DOCUMENTS
R. SEWER - ABILITY TO SERVE APPLICATION
S. COMMENT RESPONSE LETTER 2018-7-10

PLANS

P1. 765 CONGRESS STREET SURVEY SIGNED
P2. SITE PLAN
P3. RECORDING PLAT
P4. CONSTRUCTION MANAGEMENT PLAN
P5. CONSTRUCTION MANAGEMENT PLAN NARRATIVE
P6. DETAILS & NOTES
P7. FLOOR PLANS – EXISTING & NEW

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

Christopher C. Branch, P.E.
Director of Public Works

Date: July 12, 2018

Re: Wastewater Capacity Authorization

Address: 765 Congress Street
Applicant: 765 Congress Street, LLC – Sam Reiche

Planner: Christian Roadman

Anticipated Wastewater Flow:

Estimate of Anticipated Design Flows				
Development	Unit Size	Number of Units	Gallons per Day per Unit	Total Gallons per Day
Proposed flow				
Multiple Family Dwelling Units	2-Bedroom	3	180	540
Multiple Family Dwelling Units	3-Bedroom	1	270	270
			Net Change	**+ 810**
*Values based on STATE OF MAINE: SUBSURFACE WASTEWATER DISPOSAL RULES, most recent edition				

Comments:
The Department of Public Works, which includes the Water Resource Division, have reviewed and determined that the downstream sewers from the project address have the capacity to convey the estimated dry weather wastewater flows which will be generated from this development.

You are reminded that the sewers you are proposing to connect into convey both sanitary and stormwater (Combined Sewer) and therefore a backflow preventer is suggested.

If the City can be of further assistance, please contact me at all 874-8840 or brad@portlandmaine.gov

Sincerely,
CITY OF PORTLAND

Bradley A. Roland, P.E.
Senior Project Engineer

CC:
Jeffrey Levine, Director, Department of Planning and Urban Development, City of Portland
Stuart O'Brien, Planning Director, Department of Planning and Urban Development, City of Portland

Barbara Barhydt, Development Review Services Mgr., Dep't. of Planning and Urban Development, City of Portland

Keith Gray, City Engineer/Engineering Manager, Portland Department of Public Works

Nancy Gallinaro, Water Resources Manager, Portland Department of Public Works
Ben Pearson, Compliance Coordinator, Portland Department of Public Works
John Emerson, Wastewater Coordinator, Portland Department of Public Works

Lauren Swett, Woodard & Curran, DPW Development Review
Scott Firmin, Director of Wastewater, Portland Water District
Charlene Poulin, Wastewater Chief Operator – Systems

PLAN CORRECTIONS REPORT PL-000064-2018
FOR CITY OF PORTLAND

PLAN ADDRESS: 765 Congress St
Portland, Maine 04101

PARCEL: 047 A018001

APPLICATION DATE: 04/19/2018

SQUARE FEET: 0.00

DESCRIPTION: Renovation of an existing building at 765 Congress Street to convert mixed uses to four residential apartments

EXPIRATION DATE:

VALUATION: $0.00

CONTACTS	Name	Company	Address
Agent/Representative	Michael Tadema-Wielandt, PE	Terradyn Consultants, LLC.	565 Congress Street, Suite 310 Portland, ME 04101

Corrections Required

City Arborist — Jeff Tarling

Civil Engineering - Third Party Reviewer — Lauren Swett

v.1.00 - Not Resolved

Correction: General
The boundary survey is required to be stamped by a professional land surveyor.
Corrective Action: Provide a final stamped boundary survey.

Correction: General
Applicant has noted that they have requested ability to serve verification from utilities.
Corrective Action: Provide final ability to serve letters when available.

Correction: General
The plans do not show the location of the existing sewer service.
Corrective Action: Update plans to show the sewer service.

Fire — Pool Fire

v.1.00 - Not Resolved

Correction: General
Building access is excellent for Fire Department operations.
Corrective Action: N/A

Correction: General
The entire building will be required to be sprinklered.
Corrective Action: N/A

Correction: General
There are adequate fire hydrants in the area.
Corrective Action: N/A

Planning — Christian Roadman

v.1.00 - Not Resolved

Correction: General
Proposed parking should have a longer time frame accounted for.
Corrective Action: Provide updated parking lease agreement specifiying the parking space leases are available for five years. Alternatively, finalize vehicle access easement for on-site parking.

Correction: General
Application materials do not include subdivision plat.
Corrective Action: Provide subdivision plat.

Correction: General
Application materials do not include a plan-form Construction Management Plan (though a document-form CMP is uploaded). Such a plan should particularly address the proposed work in the right of way (utility work and driveway apron) and specify anticipated length/periods of the work.
Corrective Action: Provide plan-form Construction Management Plan.

Correction: Street Trees
Based upon specifications listed under Section 4.6 of the City's Technical Manual, street trees are required at a rate of one street tree per residential unit for a total requirement of four trees. It is not clear that three of the four trees shown on the site plan and survey should be counted towards the street tree requirement.

Corrective Action: Additional trees shall be provided, and/or a contribution to the City's street tree fund.

Traffic - Third Party Reviewer	Tom Errico
Transportation/Planning	Bruce Hyman
Zoning	Pool Zoning

Conditions Required

Portland Maine Yes. Google's good here.

Christian Roadman <croadman@portlandmaine.gov>

765 Congress St: CMP & Driveway Site Plan and Detail

Bruce Hyman <bhyman@portlandmaine.gov> Thu, Jul 12, 2018 at 11:03 AM
To: Christian Roadman <croadman@portlandmaine.gov>
Cc: Jeremiah Bartlett <jbartlett@portlandmaine.gov>, Keith Gray <kgray@portlandmaine.gov>, Caitlyn C Abbott <cabbott@portlandmaine.gov>, Tom Errico <thomas.errico@tylin.com>

Good morning, Christian,

Based on the site plan and CMP submitted, the following two pages capture my comments:

- the driveway design and driveway detail need to reflect a minimum 5' wide pedestrian access route with a maximum 2% cross-slope across the driveway and connection to the abutting sidewalk
- the CMP is to be modified to show a minimum of 5' of usable pedestrian detour route adjacent to the curb using a jersey barrier or similar protection - the adjoining driveway looks in fairly rough condition via Google Streetview - it should be checked to ensure it is traversable by wheelchair users as a temporary ADA-accessible route.

Bruce

--
Bruce Hyman
Transportation Program Manager
Transportation Division

Department of Planning & Urban Development
389 Congress Street
Portland, Maine 04101
(207) 874-8717 phone

bhyman@portlandmaine.gov
http://www.portlandmaine.gov/1363/Transportation-Division
Yes! Transportation's Good Here ....

765Congress_CMP-SitePlan-Details_Jul12-2018.pdf
1439K

Ck condition for ADA accessible!!

765 CONGRESS ST

min. 5' in width

BUILDING MATERIALS
TO BE STORED WITHIN
THE BUILDING

ACCESS EASEMENT
BK 33471 PG 214

POB
HELD FOUND
10" STONE POST
48" ABOVE GRADE
GOOD CONDITION

E 150

72.67' (72.62')

55.00'

N 63°33'26" W

4' WIDE TEMPORARY
PEDESTRIAN WALKWAY

P.A.R.

≤2% max

Pedestrian Access Route (P.A.R.)

BRICK SIDEWALK

HELD FOUND
1/2" MAGNETIC NAIL
ABOVE GRADE
GOOD CONDITION

BRICK SIDEWALK

PAVED ACCESS

BRICK SIDEWALK

POLE 98

PEDESTRIAN WALKWAY
ENTRANCE SIGNAGE

TEMPORARILY REMOVE ONE
1 HOUR PARKING SPACE

APPROVED CHANNELIZING DEVICE
TO BE PLACED DURING DRIVEWAY
APRON AND UTILITY CONSTRUCTION

PEDESTRIAN WALKWAY
ENTRANCE SIGNAGE

APPROXIMATE LOCATION
AND ORIENTATION OF
EXISTING SEWER SERVICE
PER CITY'S 5/13/97
SEWER CARD

UTILITY TRENCH, COORDINATE
LANE CLOSURES WITH THE
DEPARTMENT OF PUBLIC WORKS
FOR UTILITY CONNECTIONS

COORDINATE TRAVEL
LANE AND SIDEWALK
CLOSURES WITH THE
CITY OF PORTLAND

CONGRESS STREET

66.00' WIDE PUBLIC STREET

Minimum 5' useable width; jersey barriers

IC SCALE

20 40

FEET)
=10 ft.

DRIVEWAY CROSS-SLOPE

→ MAX 2% cross-slope for a minimum of 5' pedestrian access route across driveway

→ Two options: 1) ramp down sidewalk to driveway (may require more site work)
2) introduce grade break in the driveway
a) back of driveway to 5' min, 2% max cross-slope
b) steeper slope to meet street grade

✓ NOT FOR CONSTRUCTION

BAH/PtUD
7/12/18

DETAIL SHEET

765 CONGRESS ST

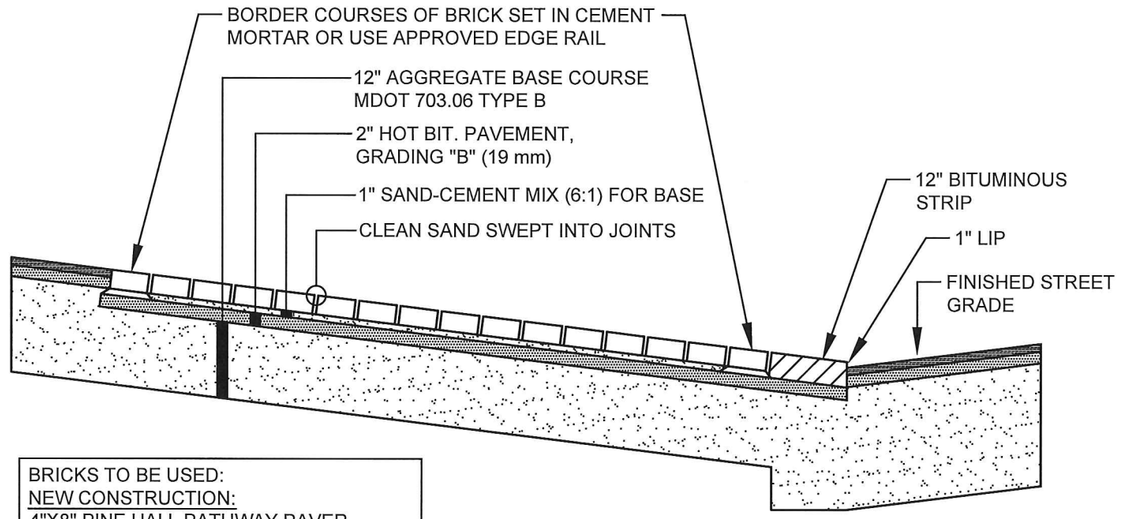
AL TRENCH DETAIL

CALE

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 VIEW OF MINOR EXCAVATION PAVEMENT REPAIR

NOT TO SCALE

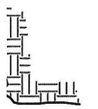


BRICKS TO BE USED:
NEW CONSTRUCTION:
4"X8" PINE HALL PATHWAY PAVER
BRICK MFG. BY PINE HALL BRICK CO.,
MADISON, NC, LACHANCE ITEM # 193623

REPAIR/MAINTENANCE TO EXISTING:
VERMONT BACKER BRICK, SUPPLIED BY
GAGNE & SONS, ITEM # VBBB

BRICK DRIVEWAY APRON

NOT TO SCALE



5' min. 2% max. cross-slope

VARIES Slope varies

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CONTRACTORS SI

BAH/PHD
7/12/18

Portland Maine | Yes. Google's good here.

Christian Roadman <croadman@portlandmaine.gov>

765 Congress St: CMP & Driveway Site Plan and Detail

Bruce Hyman <bhyman@portlandmaine.gov> Fri, Jul 13, 2018 at 9:18 AM
To: Christian Roadman <croadman@portlandmaine.gov>
Cc: Adrienne Fine <adrienne@terradynconsultants.com>, Michael Tadema-Wielandt <mtw@terradynconsultants.com>, Sam Reiche <reiche.sam@gmail.com>

Good morning, Christian,

The revisions meet my requests. I don't know if anyone else weighed in.

Thanks, Adrienne!

Bruce
[Quoted text hidden]

1 DEVELOPMENT DESCRIPTION

1.1 OVERVIEW

765 Congress Street, LLC intends to renovate an existing 4-story building on a 4,544 square foot parcel located at 765 Congress Street in Portland, Maine. The site is identified as Lot 18, Block A, on the City of Portland Assessors' Map 47. The site is currently developed with a 4-story brick mixed use building, with an approximately 1,540 square foot building footprint. The existing building houses two residential units and two commercial units. The renovation of the building will convert the interior spaces into four residential apartments including three 2-bedroom units and one 3-bedroom unit.

1.2 PROJECT PURPOSE AND NEED

The proposed project includes redevelopment of an existing building that has the necessary infrastructure in place and will provide residential units that are compatible with the existing neighborhood. The residential lobby will be accessed from Congress Street.

Parking for the development will be satisfied by a lease agreement with the abutting property at 757 Congress Street. Four parking spaces located in the parking lot north of the 757 Congress Street building adjacent to the site will be leased. In the future the applicant intends to provide the four required parking spaces on site behind the building. The applicant is discussing an easement with the owner of 757 Congress street to allow access to an existing paved area north of the 765 Congress Street building. Both the leased and the future proposed parking will be accessed from an existing driveway location off Congress Street.

1.3 EXISTING CONDITIONS

The existing site is located on the north side of Congress Street, approximately across from Neal Street, in Portland's West End neighborhood and is developed with an existing 4-story brick building and paved parking area. Nearly the entire site is covered with impervious surface. The site is currently serviced by underground and overhead utilities from Congress Street.

A brick sidewalk with granite curb exists along the site's Congress Street frontage. The driveway is paved with an asphalt driveway apron. There is on-street parking on Congress Street in front of the site. Cobra-head style street lights are located on utility poles along Congress Street.

Paved parking lots abut the site to the north, residential uses abut the site to the east, Congress Street abuts the site to the south, and commercial and residential uses abut the site to the west. The site is currently accessed from Congress Street. Congress Street is an approximately 42' wide paved way with two-way traffic and parallel parking on both sides of the street within a 66' wide public ROW. Brick sidewalks exist on both sides of Congress Street.

Photographs of the existing site are provided in Attachment 1-A.

1.4 PROPOSED DEVELOPMENT

The development program includes the following components:

1.4.1 ON-SITE

The proposed project is the renovation of an existing 4-story building into four residential apartments. The building footprint will remain the same at approximately 1,540 square feet. The first floor will feature one 2-bedroom unit and the mechanical room for the building, the second floor (ground floor) will feature one 2-bedroom unit and the building lobby, the third floor will feature one 2-bedroom unit, and the fourth floor will feature one 3-bedroom unit with a mezzanine level. The total number of residential units in the building is 4. The total building floor area is 6,350 square feet. The proposed building is within the B2-b zone. The exterior of the building will not be modified as part of this project.

The residential units will be accessed from Congress Street, and the paved parking lot will be accessed from a driveway east of the building off Congress Street. A bicycle hitch, containing 2 bicycle parking spaces will be provided within the sidewalk in front of the site. The mail slots for the four units will be located in the lobby on the second floor.

1.4.2 OFF-SITE IMPROVEMENTS

The applicant is proposing improvements to the existing asphalt driveway apron within the Congress Street right-of-way. The existing driveway will be updated to a brick driveway apron to match the existing surrounding sidewalks as specified in the City's Technical Manual.

1.5 TRAFFIC

The existing uses of the building include two commercial spaces and two residential apartments. Traffic is not expected to increase with proposed conversion of the building to 4 residential apartments. Based on the ITE Trip Generation Manual the four residential apartments are expected to generate approximately 2 vehicle trips during the PM peak hour and approximately 23 vehicle trips on a weekday. The building proximity to places of work and entertainment is expected to encourage walking and alternative modes of transportation, and therefore the number of trips per day will likely be less than estimated. The relatively small amount of traffic that will be generated by the project is not expected to have a significant effect on the surrounding street network.

1.6 PARKING

The proposed project is required to provide one parking space per unit, or a total of four parking spaces, per ordinance requirements in the B2-b zone. The parking requirement will be satisfied by leasing four parking spaces at the abutting property at 757 Congress Street. The leased spaces will be located in the paved parking area north of the 757 Congress Street building. This parking area is accessed by the existing shared driveway off Congress Street between 757 and 765 Congress Street. The option to lease agreement between 765 Congress Street, LLC and Adams Management Company, LLC – 757 Congress Street is provided as Attachment 1-B.

In the future, the applicant intends to provide the 4 rewquired parking psaces on-site behind the building. The applicant is discussing an easement with the owner of 757 Congress Street to allow access to an existing paved area north of the 765 Congress Street building. Vehicle access to this area requires crossing the property boundary between the two parcels. The paved area north of the building will be striped with four parking spaces once the easement is executed. Additionally, an existing fence located on the 765 Congress and 757 Congress parcels will be relocated to provide access to these future proposed parking spaces. There is a fence easement in place that will be modified to allow the relocation of this fence.

Once these easements are complete, the fence will be relocated to the western 765 Congress Street property line, four parking spaces will be striped in the on-site paved area north of the building, and the spaces will be accessed from the shared driveway east of the building. Parking will be provided on-site and 765 Congress Street will no longer lease parking spaces from 757 Congress Street.

A bicycle hitch, containing 2 bicycle parking spaces will be provided within the sidewalk in front of the site.

1.7 UTILITIES AND STORMWATER

The existing building is currently serviced by underground and overhead utilities. The existing overhead electric and communication utilities will continue to service the building. The existing water and sewer services will also continue to service the building. It is anticipated that the domestic water service will remain, and a proposed fire suppression water service will be installed as part of this project. All new utility services will be provided from the existing utilities available within Congress Street. The proposed location of the new utility service is shown on the Site Plan (Sheet C-1.0). More information on proposed utility services is provided in Section 11 of this application.

Stormwater runoff patterns will not be effected by the proposed project. The existing impervious area and ground cover will not be modified as part of this project. More information on stormwater runoff from the site is provided in Section 9 of this application.

1.8 ATTACHMENTS

Attachment 1-A – Existing Site Photographs
Attachment 1-B – Option to Lease Parking

ATTACHMENT 1-A

Existing Site Photographs

PHOTO 1 – FRONT OF 765 CONGRESS STREET, TAKEN FROM CONGRESS STREET FACING WEST

PHOTO 2 –FROM CONGRESS STREET SIDEWALK FACING EAST

Photos taken on 4/17/2018 by Adrienne Fine of Terradyn Consultants, LLC

PHOTO 3 –FROM PARKING LOT BEHIND 765 CONGRESS STREET, FACING SOUTHWEST

PHOTO 4 –FROM PARKING LOT BEHIND 765 CONGRESS STREET, FACING SOUTHEAST

Photos taken on 4/17/2018 by Adrienne Fine of Terradyn Consultants, LLC

ATTACHMENT 1-B

Option to Lease Parking

Adams Management Company, Inc. Portland, Maine

April 16, 2018

Option to Lease Parking

This letter is to confirm that 757 Congress Street agrees to provide 765 Congress Street LLC an option to lease up to four (4) parking spaces at a current market price of $50 per month, or as agreed upon by both parties in the future.

With Regards,

Peter Adams
Manager
757 Congress Street
Portland, Maine 04102

2 Right, Title and Interest

2.1 OVERVIEW

The applicant and owner is 765 Congress Street, LLC by deed recorded in the Cumberland County Registry of Deeds in book 34768, page 170. A copy of the property deed is attached in attachment 2-A.

2.2 ATTACHMENTS

Attachment 2-A – Property Deed

ATTACHMENT 2-A

Title, Right, or Interest Documentation

WARRANTY DEED

F. SAMUEL REICHE, of Town of Brookline, County of Norfolk and Commonwealth of Massachusetts, whose mailing address is 25 Edgehill Road, Brookline, MA 02445, and 147 WESTERN AVENUE, LLC, a Maine limited liability company, with a mailing address at 54 Bartol Island Road, Freeport, Maine 04032, for consideration paid, grants to 765 Congress Street, LLC, a Maine limited liability company, with an address of 25 Edgehill Road, Brookline, MA 02445, WITH WARRANTY COVENANTS, that certain lot or parcel of land, with any buildings thereon, located at 765 Congress Street, County of Cumberland and State of Maine, bounded and described as follows:

A certain lot or parcel of land with the buildings thereon, situated on the northerly side of Congress Street in the City of Portland, County of Cumberland, State of Maine, and known as Number 765 Congress Street, more particularly bounded and described as follows, to wit:

Beginning at a stone post on the northerly side of said Congress Street which stone post is 332.77 feet westerly from the intersection of the northerly side of said Congress Street and the westerly side of Mellen Street; thence from said stone post westerly along the northerly side of said Congress Street a distance of fifty-five (55) feet to a stone post; thence in a northeasterly direction a distance of 118.72 feet to an electric pole; thence nearly at a right angle in a southeasterly direction a distance of four (4) feet to a stake; thence in a southerly direction a distance of fifty-four (54) feet to an iron spike and to land now or formerly of Walter G. Hay; thence in a southwesterly direction along an iron fence and along a line of land now or formerly of Walter G. Hay a distance of 78.4 feet to the northerly side line of said Congress Street and to the point of beginning.

This conveyance is subject to all restrictions, easements and encumbrances of record.

Being the same premises conveyed to the Grantors by Warranty Deed from Joseph M. Napolitano dated October 31, 2017 and recorded in the Cumberland County Registry of Deeds in Book 34431, Page 180.

Said premises are subject to Mortgage, Security Agreement, Lease Assignment and Financing Statement from 147 Western Avenue LLC and F. Samuel Reiche to Gorham Savings Bank in the original principal amount of $786,500.00 dated October 31, 2017 and recorded in the Cumberland County Registry of Deeds in Book 34431, Page 182, which Grantee assumes and agrees to pay.

WITNESS our hands and seals this 19TH day of March, 2018.

Witness

F. Samuel Reiche

M. Scheba Cius-Saintelmy
Witness

147 Western Avenue LLC

By: _____
Ford S. Reiche, its Manager

STATE OF MAINE
CUMBERLAND, ss.

March 26TH, 2018

Personally appeared the above-named F. Samuel Reiche and acknowledged the foregoing instrument to be his free act and deed.

Before me,

MARIE SCHEBA CIUS-SAINTHELMY
Notary Public
Massachusetts
Commission Expires Jun 18, 2021

_____
Notary Public/Maine Attorney-at-Law

M. Scheba Cius-Saintelmy
Print name

My commission expires 6/18/2021

3 STATE AND FEDERAL PERMITS

The development is subject to Site Plan and Subdivision approval by the City of Portland and Building Permit(s) are also required. No additional State or Federal Permits are required.

4 LAND ORDINANCE REVIEW

4.1 OVERVIEW

The property currently lies within the City of Portland B2-b Community Business zone. The following Space and Bulk requirements apply to the B2-b Zone:

	B2-b Zone Summary Dimensional and Parking Requirements Applied to 765 Congress Street	
Zoning Requirements	B2-b	Provided
Minimum Lot Size	None	4,544 sf
Minimum Lot Area per Dwelling Unit	435 sf	1,136 sf
Minimum Street Frontage	20 ft	55 ft
Minimum Front Yard*	None	Same as existing
Maximum Front Yard*	10 ft	Same as existing
Minimum Side Yard*	None	Same as existing
Minimum Rear Yard*	10 ft	Same as existing
Maximum Impervious Surface Ratio*	None for residential uses	Same as existing
Maximum Structure Height*	45 ft	Same as existing
Parking**	4 spaces	4 spaces
Bicycle Parking	2 spaces	2 spaces

*The exterior of the existing building will not be modified as part of this project, so the existing front, side and rear yard dimensions, impervious surface ratio, and structure height will remain the same as what exists today.
**Parking spaces will be provided by a lease of 4 spaces from the adjacent property at 757 Congress Street. In the future 4 parking spaces will be provided on site once an access and fence easement are executed.

4.2 SHORELAND ZONING

The site is not located within the Shoreland Zoning District.

5 EASEMENTS OR OTHER BURDENS

5.1 OVERVIEW

Boundary Points Professional Land Surveying, LLC completed a boundary survey of the site in October of 2017. There are currently two access easements between 765 Congress Street and McIntosh Realty, LLC located at 757 Congress Street. These easements are recorded in the Cumberland Country Registry of deeds book 33471, pages 214 through 218. The easements provide for shared access over the existing driveway between the 757 and 765 Congress Street buildings. A fence easement is also included in this recorded easement that allows a portion of the 757 Congress Street fence to be located on the 765 Congress Street parcel. A copy of the easement is attached in attachment 5-A.

A proposed easement between 765 Congress Street and 757 Congress Street for access to the future proposed parking spaces north of the 765 Congress Street building is being drafted. This easement will allow vehicles to cross the property line onto 757 Congress Street's paved driveway and parking lot to access the paved area on-site north of the building. The easement will also allow 765 Congress Street to re-locate an existing fence to allow access to the future proposed parking spaces.

5.2 ATTACHMENTS

Attachment 5-A – Easement

ATTACHMENT 5-A

Easement Documentation

EASEMENT DEED

KNOW ALL BY THESE PRESENTS, that **ROBERT NAPOLITANO** and **THE JOSEPH M. NAPOLITANO TRUST**, with a mailing address of 765 Congress Street, Portland, ME 04102, their successors and assigns ("Grantors"), for consideration paid, hereby grant to **MCINTOSH REALTY LLC**, a Maine limited liability company with a place of business in Portland, County of Cumberland, State of Maine ("Grantee"), a perpetual easement over property of Grantors located at 765 Congress Street, as described in deed recorded in the Cumberland County Registry of Deeds in Book 24692, Page 42, for the benefit of Grantee's premises at 757 Congress Street (front and rear), more particularly described in deed recorded at said Registry in 32103, Page 178, and 32103, Page 183. The Easements below are also for the potential benefit of adjoining property currently owned by Rochelle G. Dassa Residuary Trust, as set forth in deeds recorded at said Registry in Book 28907, Page 204 and 208, in the event a joint development project occurs between the properties. The Dassa easement is an easement in gross at this juncture and will become an appurtenant easement to Dassa at such time a joint development is established. This easement is upon the terms set forth below.

EASEMENT ONE

A perpetual easement and right of way bounded and described as follows ("the Easement Area"):

> The more southerly of the two cross-hatched easement areas shown on attached Exhibit A. The easement shall be an area that is twelve feet (12') westerly from and parallel to the curb as shown on Grantee's premises in Exhibit A.

This is an easement appurtenant to the Grantee's premises and shall run with the land. The perpetual easement and right of way shall be for ingress and egress only, and the right to enter with persons and machinery upon the Easement Area to maintain, repair and replace as necessary the paved surface of the Easement Area. Grantee shall have the right to maintain the Easement Area, including without limitation painting and restriping of travel lanes and snow and ice removal.

Grantor shall not erect any building, structure or other improvements on the Easement Area so as to prevent or interfere in any manner with Grantee's rights to use the Easement Area as set forth herein, and shall not otherwise impede, prevent or interfere with the rights granted to Grantee hereby.

RESERVING TO THE GRANTOR, it successors and assigns, all rights within the Easement Area that are not necessary for the purpose of ingress and egress.

EASEMENT TWO

A perpetual easement to install and maintain a fence at the location shown in Exhibit A.

This is an easement appurtenant to the Grantee's premises and shall run with the land. The perpetual easement shall be for installation of the fence only, and the right to enter with persons and machinery upon and near the Easement Area to maintain, repair and replace as necessary the fence.

RESERVING TO THE GRANTORS, their successors and assigns, all rights within the Easement Area that are not necessary for the purpose of construction and maintaining a fence.

PROVIDED, HOWEVER, Grantors shall not, in exercising its rights reserved hereby, unreasonably interfere with Grantee's use and enjoyment of the Easement Area as provided herein.

IN WITNESS WHEREOF, Robert Napolitano and the Joseph M. Napolitano Trust have caused this instrument to be signed this 22 day of September, 2016.

The Joseph M. Napolitano Trust

By: _____
Print Name: ROBERT NAPOLITANO
Its Trustee

_____
Robert Napolitano

STATE OF MAINE
COUNTY OF CUMBERLAND, SS September 22, 2016

Personally appeared the above-named, Robert Napolitano, and acknowledged the foregoing instrument to be his free act and deed.

Before me,

_____
~~Notary Public~~/Attorney at Law #9783
Gina Yamartino
Printed Name

STATE OF MAINE
COUNTY OF CUMBERLAND, SS

September 22, 2016

Personally appeared the above-named, Robert Napolitano, Trustee of the Joseph M. Napolitano Trust, and acknowledged the foregoing instrument to be his free act and deed and the free act and deed of the Trust.

Before me,

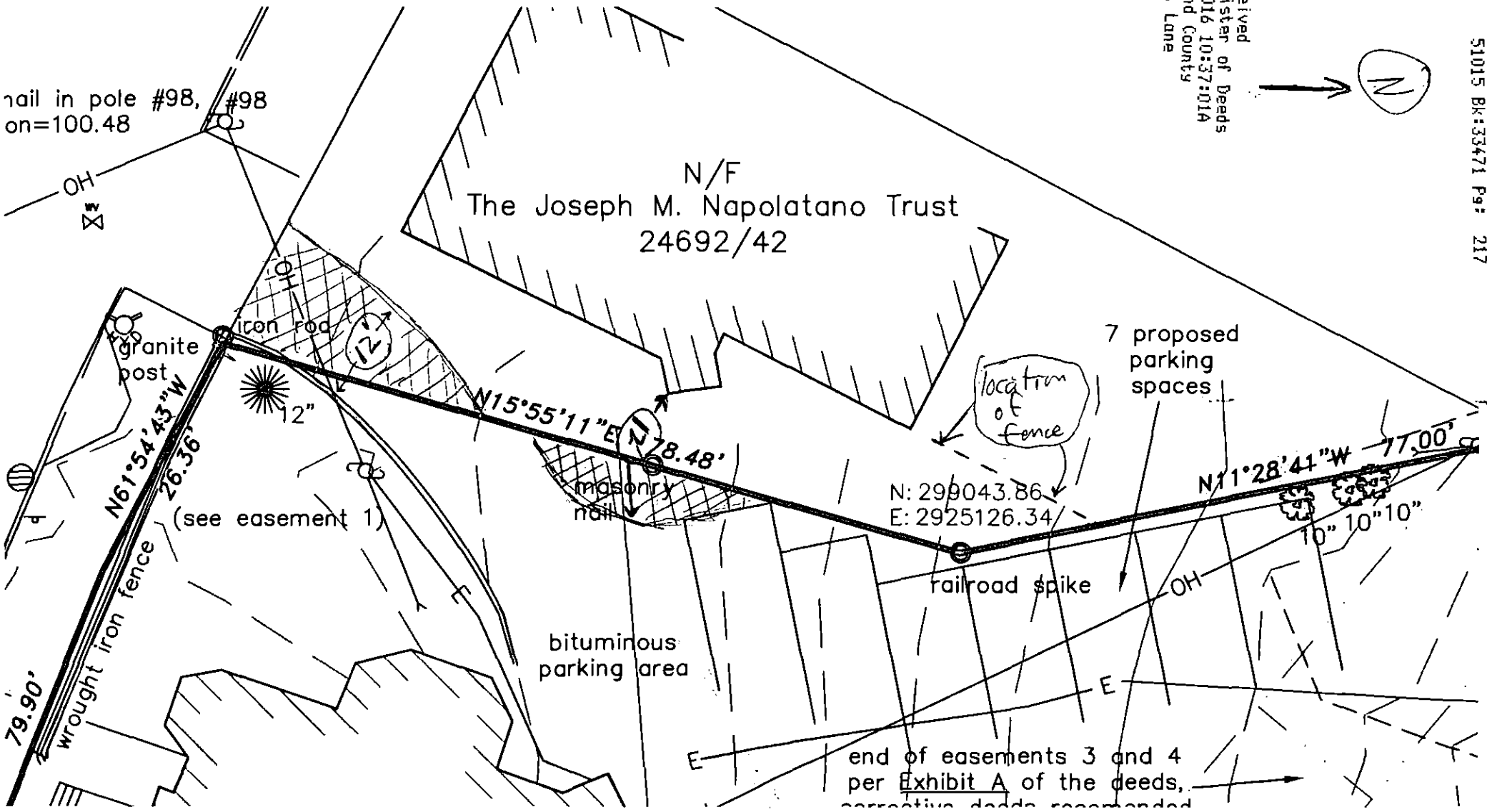
Gina Yamartino

~~Notary Public~~/Attorney at Law #9783

Gina Yamartino

Received
Recorded Register of Deeds
Sep 26,2016 10:37:01A
Cumberland County
Nancy A. Lane

Doc#: 51015 Bk:33471 Pg: 217



6 TECHNICAL AND FINANCIAL CAPACITY

6.1 TECHNICAL CAPACITY

The applicant has assembled a highly qualified team of professionals to plan, permit, and develop construction documents for the project. The Team is working under the direction of 765 Congress Street, LLC as Project Developers. The Team services will be provided by the following companies and their respective team leaders:

6.2 CONSULTANT TEAM

Civil Engineer	Michael Tadema-Wielandt, P.E. Terradyn Consultants, LLC 565 Congress Street Portland, ME 04101 (207) 632-9010 – Cell (207) 221-1317 – Fax mtw@terradynconsultants.com
Surveyor	David Bouffard Boundary Points Professional Land Surveying, LLC P.O. Box 175 Cumberland, Maine 04021 (207) 854-1015 boundarypoints@gmail.com
Architect	David Lloyd Archetype, PA 48 Wharf Street Portland, ME 04101 (207) 772-6022 – Work (207) 772-4056 – Fax lloyd@archetypepa.com

6.3 EXPERIENCE OF PROJECT TEAM

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

The applicant, 765 Congress Street, LLC, has experience in the development and management of residential projects of this scale.

6.4 FINANCIAL CAPACITY

The applicant has the capacity to finance the proposed project. A letter of financial capacity for the project is contained in Attachment 6-A.

6.5 CONSTRUCTION COST ESTIMATE

The project has an overall construction cost estimate of $400,000. This construction cost value is considered preliminary and subject to change as building design and project layout is refined, etc.

6.6 ATTACHMENTS

Attachment 6-A – Letter of Financial Capacity

ATTACHMENT 6-A

Letter of Financial Capacity

Gorham
SAVINGS BANK
Banking is believing℠

April 12, 2018

To Whom It May Concern:

I am pleased to inform you it is my opinion Sam Reiche and 765 Congress Street, LLC have the experience and financial capacity to successfully finance and complete the proposed property improvements located at 765 Congress Street, Portland. Sam Reiche has been a longstanding client of Gorham Savings Bank and has always handled his relationship with Gorham Savings in an exemplary fashion.

Please let me know if I can be of further assistance. If you have any questions, please email me at bahmida@gorhamsavingsbank.com or by phone at (207) 222-1473.

Sincerely,

Beth C. Ahmida

Beth C. Ahmida
Vice President

8 NATURAL FEATURES

8.1 OVERVIEW

The development site has been entirely developed and does not contain any significant natural features including wetlands, vernal pools or other protected resources or wildlife habitats.

9 STORMWATER MANAGEMENT

The following information is provided in accordance with the City of Portland Code of Ordinances Chapter 14 Land Use, Section 14-526(b)(3).

9.1 OVERVIEW

The existing project site is entirely developed. Stormwater runoff from the project site drains overland across the northern property boundary away from Congress Street. Post development stormwater runoff will follow existing patterns. The existing building footprint and roof will not be modified as part of this project. The existing site grading and impervious area will not be modified as part of this project.

The existing project site contains approximately 4,333 square feet of impervious surface that will remain. The extents of pavement in the parking area will remain the same. The off-site driveway apron will be re-constructed with brick, but the extent of impervious area will remain the same. Therefore, the project is not required to meet the General or Flooding Standards.

The project is not expected to cause ponding, flooding, or erosion problems on or downstream of the site.

10 CONSISTNECY WITH CITY MASTER PLANS

10.1 OVERVIEW

Our office is not aware of any applicable Master Plans created for the project site.

11 UTILITIES

11.1 OVERVIEW

The proposed project will involve installation of a new fire suppression water service. All other existing utility services for water, sewer, natural gas and electric will remain. The proposed location of the new utility service is shown on the Site Plan (Sheet C-1.0).

11.2 WATER SUPPLY

The proposed project will receive its water supply from the Portland Water District's (PWD) public water supply system. The existing domestic service will remain, and a new fire suppression water service will be installed to the building from PWD's existing main in Congress Street. Terradyn Consultants requested an ability to serve letter from PWD on April 11th, 2018.

11.2.1 Total Project Water Usage

The total average daily water demand for the proposed project is estimated to be 810 gallons per day, based on design flows published in the State of Maine Subsurface Wastewater Disposal Rules.

3 x 2 Bedroom Residential Units at 180 gpd/unit	= 540 gpd
1 x 3 Bedroom Residential Units at 270 gpd/unit	= 270 gpd
	Total = 810 gpd

11.3 WASTEWATER DISPOSAL

The building is connected to the Portland Water District's and City of Portland's wastewater collection and conveyance systems. The City of Portland Wastewater Capacity Application has been completed and will be forwarded to Brad Roland of the City's Water Resources Department.

The overall project is anticipated to generate an average daily flow of approximately 810 gpd. Based on the existing sewer system in the area, there appears to be adequate capacity to handle these projected flow amounts. The existing sewer service has been inspected and found to be suitable for continued use.

11.4 ELECTRICITY SUPPLY

CMP currently maintains overhead and underground utilities in the area. Overhead electric utilities connect to the existing building, and are proposed to remain.

11.5 ATTACHMENTS

Attachment 11-A – Correspondence with Utilities

ATTACHMENT 11-A

Correspondence with Utilities

Portland Water District

FROM SEBAGO LAKE TO CASCO BAY

May 2, 2018

Adrienne Fine
Terradyn Consultants, LLC
565 Congress Street Suite 310
Portland, ME 04102

Re: 765 Congress Street, PO
Ability to Serve with PWD Water

Dear Ms. Fine:

The Portland Water District has received your request for an Ability to Serve Determination for the noted site submitted on April 17, 2018. Based on the information provided per May 2, 2018, we can confirm that the District will be able to serve the proposed project as further described in this letter. **Please note that this letter constitutes approval of the water system as currently designed. Any changes affecting the approved water system will require further review and approval by PWD.**

Conditions of Service

The following conditions of service apply:

- A new 6-inch fire service may be installed from the water main in Congress Street. The service should enter through the properties frontage on Congress Street at least 10-feet from any side property lines.

- It is recommended to upgrade the domestic service to 1.5-inch diameter to accommodate the proposed use. If upgraded, the existing service would need to be retired per PWD standards which includes shutting the corporation valve and cutting the pipe from the water main.

Prior to construction, the owner or contractor will need to make an appointment to complete a service application form and pay all necessary fees. The appointment shall be requested through MEANS@pwd.org or by calling 207-774-5961 ext. 3199. Please allow (3) business days to process the service application paperwork. PWD will guide the applicant through the new development process during the appointment.

Existing Site Service

According to District records, the project site does currently have existing water service. A 1-inch diameter copper domestic service line provides water service to the site. Please refer to the "Conditions of Service" section of this letter for requirements related to the use of this service.

Water System Characteristics

According to District records, there is an 20-inch diameter cast iron water main in Congress Street and a public fire hydrant located approximately 35 feet from the site. Recent flow data is not available in this area. The most recent static pressure reading was 56 psi on March 8, 2017.

Public Fire Protection

The installation of new public hydrants to be accepted into the District water system will most likely not be required. It is your responsibility to contact the Portland Fire Department to ensure that this project is adequately served by existing and/or proposed hydrants.

Domestic Water Needs

The data noted above indicates there should be adequate pressure and volume of water to serve the domestic water needs of your proposed project. Based on the high water pressure in this area, we recommend that you consider the installation of pressure reducing devices that comply with state plumbing codes.

Private Fire Protection Water Needs

You have indicated that this project will require water service to provide private fire protection to the site. Please note that the District does not guarantee any quantity of water or pressure through a fire protection service. Please share these results with your sprinkler system designer so that they can design the fire protection system to best fit the noted conditions. If the data is out of date or insufficient for their needs, please contact MEANS to request a hydrant flow test and we will work with you to get more complete data.

Should you disagree with this determination, you may request a review by the District's Internal Review Team. Your request for review must be in writing and state the reason for your disagreement with the determination. The request must be sent to MEANS@PWD.org or mailed to 225 Douglass Street, Portland Maine, 04104 c/o MEANS. The Internal Review Team will undertake review as requested within 2 weeks of receipt of a request for review.

If the District can be of further assistance in this matter, please let us know.

Sincerely,
Portland Water District

Robert A. Bartels, P.E.
Senior Project Engineer

TERRADYN
CONSULTANTS, LLC
Civil Engineering - Land Planning - Stormwater Design - Environmental Permitting

1816

April 11, 2018

MEANS
means@pwd.org
Portland Water District
225 Douglass Street
Portland, ME 04104

Request for Ability to Serve Letter
4-Unit Residential Development
765 Congress Street, Portland, Maine

Dear Sir or Madam:

Terradyn Consultants LLC has been retained by 765 Congress, LLC to assist with site design and permitting for a proposed building modification located at 765 Congress Street in Portland, Maine. The existing building contains a mix of commercial and residential uses, which are being converted to 4 residential apartments. The existing domestic water service is proposed to remain, and a fire water service will be added. We are writing to request a letter confirming the Portland Water District's ability to serve the proposed development.

The 4,544 square foot parcel is identified as Lot 18 on the City of Portland Tax Map 47 Block A. The site is on the north side of Congress Street across from Neal Street. The site is currently developed with a mixed-use building in the front of the parcel with parking behind.

The proposed project includes the interior renovation of the building to convert the mixed uses to 4 residential apartments. Existing public water and sewer utilities will remain, and a 6" fire water service will be installed from the main in Congress Street.

Attached are site location figureS showing the property delineated on a USGS map and aerial photo, and a preliminary site plan for the project showing how the development may be served with a fire suppression water service.

Please provide our office with confirmation that the Portland Water District has the ability to serve the proposed development. As the design is refined, we will provide more detailed drawings of the project for your review.

If you have any questions or need more information to make your determination on ability to serve, please contact me at (207) 322-1223 or adrienne@terradynconsultants.com.

Sincerely,

TERRADYN CONSULTANTS LLC

Adrienne Fine, P.E.
Design Engineer

Enc.

12 SOLID WASTE

12.1 OVERVIEW

The project will generate solid waste both during construction and on an on-going basis after construction is complete. Estimates of solid waste generation, recycling rates, and procedures for the transport and disposal of solid waste that will be generated by the operation of the proposed development are provided below.

The following amount of solid waste associated with the construction and operation of the development have been estimated:

- 42 cubic yards of construction debris related to the new building construction activities (excluding volume of recycled materials).

- 136 pounds per week of solid waste will be generated by the operation of the development. Assuming that 50% of the waste is recycled, it is estimated that the project will generate 1.77 tons of recyclable waste and 1.77 tons of non-recyclable waste per year.

12.2 SOLID WASTE GENERATED DURING THE BUILDING CONSTRUCTION

Approximately 42 cubic yards of construction debris is expected to be generated during construction. Assuming that 80% of construction debris is recycled, construction of the project will generate approximately 8.5 c.y. of non-recyclable waste.

The waste stream will be transported and disposed of at the following locations:

Hazardous Materials:	WMI Crossroads Facility in Norridgewock, Maine
Mixed Construction Material:	Riverside Recycling Facility in Portland, Maine; WMI Crossroads Facility in Norridgewock, Maine or Juniper Ridge in Old Town, Maine (Contractor option)
Separated Wood Construction Debris:	KTI Biofuels in Lewiston, Maine
Separated Metal/Ferrous Material:	One Steel Recycling Inc. in Arundel or Oakland, Maine

The collection, transfer, disposal, and payment of all fees for solid wastes shall be the responsibility of the Contractor, with all waste transferred by a licensed non-hazardous waste transporter.

12.3 SOLID WASTE GENERATED FROM THE OPERATION OF THE DEVELOPMENT

Approximately 136 pounds of solid waste and recyclable material is expected to be generated every week by the residents of the project. The operational solid waste and recyclable material will be collected by the City of Portland in accordance with Chapter 12 of the City Code.

12.4 ATTACHMENTS

Attachment 12-A – Computations of Types and Volumes of Solid Wastes for Construction Project

ATTACHMENT 12-A

Computations of Types of Volumes of Solid Wastes

ATTACHMENT 12-A

SOLID WASTES COMPUTATIONS AND DISPOSAL

A. NEW BUILDING CONSTRUCTION:

Basis of Estimate: 10 c.y./1,500 s.f. of finished space

Area: Approximately 6,350 square feet of finished space

Solid Waste: Approximately 42 c.y.

Other Wastes Associated with Other Site Construction: Cardboard from packaging etc.: Limited Quantity

Total: 42 c.y. before recycling

Net: 8.5 c.y. if 80% of the material is recycled

Disposition:
Assume 10 percent is concrete which can be sent to the approved aggregate recycling facilities operated by Shaw Bros. or R.J. Grondin and Sons for processing into recycled aggregate.

Assume 70 percent is wood or metal which can be transported to KTI Biofuels in Lewiston (for wood) or One Steel Recycling in Oakland, Maine for metals.

Approximately 8.5 cubic yards of mixed construction debris that will be hauled to the Riverside Recycling Facility in Portland, WMI Crossroads facility in Norridgewock, Maine or the Juniper Ridge Facility in Old Town, Maine.

The contractor should provide dumpsters designated by material type and identify recycling methods and disposal sites prior to construction. All haulers must have a current non-hazardous waste haul license.

B. OPERATIONAL SOLID WASTE:

RESIDENTIAL USE:
Basis of Estimate: 17 pounds/wk per individual. Estimate of 2 individuals per residential unit. From Table 14-1 of the CEQR Technical Manual from January 2014 Edition; Source: New York City Department of Sanitation.

Number of individuals: 8

Solid Waste: Approximately 136 pounds/week

13 FIRE SAFETY

13.1 OVERVIEW

The project site will be accessed from Congress Street, which is improved with a 42’ wide paved surface. A water main owned by the Portland Water District currently exists in Congress Street, and the closest fire hydrant is located on the northern side of Congress Street in front of the abutting property to the east at 757 Congress Street.

One side of the proposed building will be fully accessible from Congress Street, and the three other sides will be fully accessible from paved driveway and parking areas accessed from Congress Street. The proposed building will be fully sprinkled in compliance with all applicable codes.

14 CONFORMITY WITH APPLICABLE DESIGN STANDARDS

14.1 OVERVIEW

This project conforms to all applicable Site Plan Standards of Section 14-526 of the city's Land Use Ordinance as described in the following narrative.

(a) Transportation Standards

1. Impact on Surrounding Street Systems:

   The project will not have a significant impact on the surrounding street system. Vehicles will access the site and parking areas from existing access points and the estimated number of new vehicle trips generated by the project is insignificant compared to existing trips on surrounding streets.

2. Access and Circulation:

   a. Site Access and Circulation

      (i) Pedestrian access to the site will be provided via the existing sidewalk along Congress Street. A railing will be added to existing stairs at an on-site walkway running along the western side of the existing building. Door controlled access will be provided at each of the building entry locations.

      (ii) The project will use existing points of access.

      (iii) Drive up features are not proposed

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

   b. Loading and Servicing

      (i) Delivery or service vehicles are expected to be infrequent and may temporarily use on-street parking on Congress Street.

   c. Sidewalks.

      (i) The existing sidewalk along the Congress Street frontage will remain. The existing asphalt driveway apron will be re-constructed as a brick driveway apron to match the surrounding existing brick sidewalk. All driveway improvements shall conform to the City of Portland Technical Manual as shown on the project drawings.

      (ii) NA

(iii) The existing on-site sidewalk will be improved with the addition of a railing at an existing set of stairs. The primary building entrance is on Congress Street. The second existing building entrance is at the northwestern building corner and exits onto the existing on-site sidewalk.

3. Public Transit Access:

Metro Bus Route 8 runs east-west on Congress Street in the proximity of the project site. The nearest bus stop to the project is along Congress Street at the corner of Deering Avenue, approximately 350' west of the site. The project does not meet the minimum threshold to require a new transit facility.

4. Parking:

a. Location and Required Number of Vehicle Parking Spaces:

(i) The project requires one parking space per unit, for a total of four parking spaces. The parking spaces will be leased from the abutting property at 757 Congress Street. In the future an easement will be executed and a fence will be re-located to allow four parking spaces to be striped on-site north of the existing building. Both the leased spaces and the future on-site spaces will be accessed from the shared driveway east of the 765 Congress Street building.

(ii) A parking study is not required for this project.

(iii) Not applicable

(iv) The dimensions of the 4 future parking spaces on-site will be 9' wide by 18' long.

(v) The future proposed on-site parking spaces will be located on the existing asphalt area to the north of the building. The leased parking spaces will be located on the existing asphalt parking lot north of the 757 Congress Street building.

b. Location and Required Number of Bicycle Parking Spaces:

(i) The project requires 2 bicycle parking spaces for every 5 dwelling units, or 2 spaces. A bicycle hitch, containing 2 bicycle parking spaces will be provided within the sidewalk in front of the site.

c. Motorcycles and Scooter Parking:

(i) Dedicated motorcycle/scooter parking is not provided.

d. Snow Storage:

(i) Snow storage will be provided on a paved area adjacent to the future parking spaces on-site.

(ii) Snow will not be stored in parking areas, and no bio-retention is proposed.

5. Transportation Demand Management (TDM):

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

(b) Environmental Quality Standards

1. Preservation of Significant Natural Features:

a. The development site has been entirely developed and does not contain any significant natural features including wetlands, vernal pools or other protected resources or wildlife habitats.

b. Not applicable

c. Not applicable

2. Landscaping and Landscaping Preservation:

a. Landscape Preservation.

(i) Three trees are located north of the building and the paved parking area on-site. These trees will be preserved. Existing plantings south of the building along Congress Street will also remain.

(ii) The existing trees will be preserved.

(iii) The three on-site trees and the existing street tree on Congress Street will be protected during construction.

(iv) Waiver: Not applicable.

(v) The project is not in the Shoreland Zone

b. Site Landscaping.

(i) Landscaped Buffers:

(a) Not applicable.

(b) Not applicable.

(c) Not applicable.

(d) Existing vegetation on-site will be preserved.

(ii) Parking Lot Landscaping:

(a) Not applicable.

(b) Not applicable.

(c) Not applicable.

(d) Not applicable.

(e) Not applicable.

(iii) Street Trees

(a) The existing street tree along Congress Street will be protected. The proposed project is 4 units, so 4 street trees are required per the Technical Manual. One of these 4 trees will be satisfied by protecting the existing street tree.

(b) There is no space for the 3 additional street trees required along the project site's frontage. An alternative for satisfying the street tree requirement will be implemented per the City of Portland Technical Manual. A contribution for the three required street trees will be made to the City of Portland's Tree Fund in the amount of $400 per tree.

3. Water Quality, Stormwater Management and Erosion Control:

a. Stormwater:

The existing project site contains approximately 4,333 square feet of impervious surface that will remain. No additional impervious area is proposed, and no re-development of on-site impervious areas is proposed. Therefore, the project is not required to meet the General or Flooding Standards.

Post development stormwater runoff will follow existing patterns. The existing roof and paved areas will not be modified as part of this project.

(i) The project will not result in flooding of adjacent lots.

(ii) Runoff volumes and rates will not increase onto adjacent lots.

(iii) Volumes and rates of stormwater runoff into the Congress Street right of way are expected to remain the same. The project will not create ponding, flooding, or other drainage problems within Congress Street.

(iv) Volumes and rates of stormwater runoff into the city's storm drain network are expected to remain the same. The project will not create problems downstream or exceed the capacity of the system.

b. The project will not result in any change in impervious surface and is not required to meet the General or Flooding Standards.

c. Not Applicable. The project is not located in a watershed of an urban impaired stream.

d. Not applicable.

e. The project will be served by both a public wastewater system and public drainage system. The project will not pose a risk of groundwater contamination.

f. Wastewater will flow to the public sewer system, which is adequately sized for the project flows.

(c) Public Infrastructure and Community Safety Standards.

1. Consistency with City Master Plans:

a. The project has been designed to be consistent with the City of Portland Land Use Ordinance and off-premises infrastructure.

b. Not applicable.

2. Public Safety and Fire Prevention:

a. The site has been designed to promote safety and security for residents and their guests. Access to the residential lobby will utilize keyed entry. Existing site lighting on the exterior of the building will remain to provide added security.

b. Emergency vehicle access will be via Congress Street (42’ wide paved surface).

c. An existing fire hydrant is located on the northern side of Congress Street just to the east of the existing site driveway. The proposed building will also feature sprinklers for fire suppression.

3. Availability and Adequate Capacity of Public Utilities:

a. The project will be served by a new fire suppression water service. The existing domestic water service is proposed to remain. An ability to serve letter was requested from the Portland Water District on April 11th, 2018 and will be provided when received. The existing sewer service is proposed to remain, and a Wastewater Capacity Application will be forwarded to Brad Roland at the City of Portland.

b. Existing overhead electrical and telecommunications utilities serve the building and will remain.

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

d. The existing sewer service connection to the main in Congress Street will remain.

e. Not applicable.

f. Not applicable.

(d) Site Design Standards

1. Massing, Ventilation and Wind Impact:

a. Not applicable – the building is existing.

b. Not applicable – the building is existing.

c. Existing ventilation locations will remain.

2. Shadows:

a. Not applicable – the building is existing.

3. Snow and Ice Loading:

a. Not applicable – the building is existing.

4. View Corridors:
   a. Not applicable – the building is existing.

5. Historic Resources:

   a. Not applicable – the building is existing and the exterior will not be modified.

   b. Not Applicable

   c. There are no known archaeological resources on the site.

6. Exterior Lighting:

   a. Site Lighting: No new site lighting is proposed.

      (i) Exterior site lighting will be provided by existing building mounted lights.

   b. Architectural and Specialty Lighting:

      (i) No architectural or specialty lighting is proposed.

      (ii) No up-lighting is proposed.

   c. Street Lighting

      (i) No new street lighting is proposed

7. Noise and Vibration:

   Noise levels are expected to meet the permitted levels for the R6 Zone.

   a. HVAC and Mechanical Equipment
      (i) The mechanical room housing the boiler for the building will be located in the same location as it is today in the basement mechanical room. Central air conditioning is not proposed as part of this project.

      (ii) No emergency generator is proposed for this project.

8. Signage and Wayfinding:

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

      (i) The project is not subject to a Certificate of Appropriateness.

(ii) Not applicable. No commercial or directional traffic signage is proposed as part of the project.

(iii) Not applicable. No on-site directional traffic signage is proposed as part of the project.

(iv) Not applicable. No waiver is required.

9. Zoning Related Design Standards:

a. The project is not located within a historic zone.

Portland, Maine Yes. Life's good here.

Planning & Urban Development Department

LEVEL II and LEVEL III APPLICATION SUBMISSION CHECKLIST

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

Please confirm by electronically checking the boxes to the left

Tab 1 – General Application Documents

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

LEVEL II AND LEVEL III SITE PLAN STANDARDS AND SUBMISSION CHECKLIST

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

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

Tab 2 - TRANSPORTATION

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

Tab 3 - ENVIRONMENTAL AND LANDSCAPE FEATURES

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

Tab 4 - ENVIRONMENTAL AND STORMWATER

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

Tab 5 - PUBLIC INFRASTRUCTURE AND SAFETY

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

Tab 6 - SITE DESIGN

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

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

Tab 7 - Construction Management Plan

Check list	
Yes NA Plan ✔	**Construction Management Plan** • Construction Management Document and Plan

Level II and Level III Site Plan Checklist

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

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

Must be in compliance with Technical Manual, Section 13

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

☑ Existing Conditions

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

☑ Proposed Site Plan

- Ground floor area, and grade elevations for all buildings

☑ Access, Circulation, and Parking

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

☑ Site Considerations

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

☑ **UTILITY PLAN** including:

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

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

Level III – Preliminary and Final Site Plans
Development Review Application
Portland, Maine

Planning and Urban Development Department
Planning Division

Portland's Planning and Urban Development Department coordinates the development review process for site plan, subdivision and other applications under the City's Land Use Code. Attached is the application form for a Level III: Preliminary or Final Site Plan. Please note that Portland has delegated review from the State of Maine for reviews under the Site Location of Development Act, Chapter 500 Stormwater Permits, and Traffic Movement Permits.

Level III: Site Plan Development includes:

- New structures with a total floor area of 10,000 sq. ft. or more except in Industrial Zones.
- New structures with a total floor area of 20,000 sq. ft. or more in Industrial Zones.
- New temporary or permanent parking area(s) or paving of existing unpaved parking areas for more than 75 vehicles.
- Building addition(s) with a total floor area of 10,000 sq. ft. or more (cumulatively within a 3 year period) except in Industrial Zones.
- Building addition(s) with a total floor area of 20,000 sq. ft. or more in Industrial Zones.
- A change in the use of a total floor area of 20,000 sq. ft. or more in any existing building (cumulatively within a 3 year period).
- Multiple family development (3 or more dwelling units) or the addition of any additional dwelling unit if subject to subdivision review.
- Any new major or minor auto business in the B-2 or B-5 Zone, or the construction of any new major or minor auto business greater than 10,000 sq. ft. of building area in any other permitted zone.
- Correctional prerelease facilities.
- Park improvements: New structures greater than 10,000 sq. ft. and/or facilities encompassing 20,000 sq. ft. or more (excludes rehabilitation or replacement of existing facilities); new nighttime outdoor lighting of sports, athletic or recreation facilities not previously illuminated.
- Land disturbance of 3 acres or more (includes stripping, grading, grubbing, filling or excavation).

Portland's development review process and requirements are outlined in the Land Use Code (Chapter 14), Design Manual and Technical Manual.

Planning Division
Fourth Floor, City Hall
389 Congress Street
(207) 874-8719
planning@portlandmaine.gov

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

I. Project Information (Please enter n/a on those fields that are not applicable)

Project Name:	765 Congress Street
Proposed Development Address:	765 Congress Street
Project Description:	Renovation of an existing building to convert to 4-residential apartments
Chart/Block/Lot:	Map 47, Block A, Lot 18
Preliminary Plan	X
Final Plan	

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

APPLICANT

Name:	Samuel Reiche
Business Name:	765 Congress Street, LLC
Address:	25 Edgehill Road
City/State:	Brookline, MA
Zip Code:	02445
Work #:	
Home #:	
Cell #:	207-939-6308
Fax #:	
E-mail:	reiche.sam@gmail.com

OWNER

Name:	765 Congress Street, LLC
Address:	25 Edgehill Road
City/State:	Brookline, MA
Zip Code:	02445
Work #:	
Home #:	
Cell #:	
Fax #:	
E-mail:	reiche.sam@gmail.com

AGENT/REPRESENTATIVE

Name:	Michael Tadema-Wielandt, P.E., Terradyn Consultants, LLC
Address:	565 Congress Street, Suite 310
City/State:	Portland, ME
Zip Code:	04101
Work #:	
Home #:	
Cell #:	207-632-9010
Fax #:	
E-mail:	mtw@terradynconsultants.com

BILLING (to whom invoices will be forwarded to)

Name:	Samuel Reiche
Address:	25 Edgehill Road
City/State:	Brookline, MA
Zip Code:	02445
Work #:	
Home #:	
Cell #:	207-939-6308
Fax #:	
E-mail:	reiche.sam@gmail.com

ENGINEER

Name:	Michael Tadema-Wielandt, P.E., Terradyn Consultants, LLC
Address:	565 Congress Street, Suite 310
City/State:	Portland, ME
Zip Code:	04101
Work #:	
Home #:	
Cell #:	207-632-9010
Fax #:	
E-mail:	mtw@terradynconsultants.com

SURVEYOR

Name:	David Bouffard, Boundary Points Professional Land Surveying, LLC
Address:	P.O. Box 175
City/State:	Cumberland, ME
Zip Code:	04021
Work #:	207-854-1015
Home #:	
Cell #:	
Fax #:	
E-mail:	boundarypoints@gmail.com

ARCHITECT

Name:	David Lloyd, Archetype, P.A.
Address:	48 Union Wharf
City/State:	Portland, ME
Zip Code:	04101
Work #:	207-772-6022
Home #:	
Cell #:	
Fax #:	
E-mail:	lloyd@archetypepa.com

ATTORNEY

Name:	
Address:	
City/State:	
Zip Code:	
Work #:	
Home #:	
Cell #:	
Fax #:	
E-mail:	

DESIGNATED PERSON(S) FOR UPLOADING INTO e-PLAN

Name:	Michael Tadema-Wielandt, Terradyn Consultants
E-mail:	mtw@terradynconsultants.com
Name:	Adrienne Fine, Terradyn Consultants
E-mail:	adrienne@terradynconsultants.com
Name:	
E-mail:	

III. APPLICATION FEES

LEVEL III DEVELOPMENT (check applicable review)

☑	Less than 50,000 sq. ft.	$750.00
	50,000 – 100,000 sq. ft.	$1,000.00
	100,000 – 200,000 sq. ft.	$2,000.00
	200,000 – 300,000 sq. ft.	$3,000.00
	Over 300,000 sq. ft.	$5,000.00
	Parking lots over 100 spaces	$1,000.00
	After-the-fact Review	$1,000.00 + applicable application fee above

PLAN AMENDMENTS (check applicable review)

	Planning Staff Review	$250.00
	Planning Board Review	$500.00

OTHER REVIEWS (check applicable review)

	Traffic Movement	$1,500.00
	Stormwater Quality	$250.00
	Subdivision	$500.00 + applicable fee for lots/units below
	# of Subdivision Lots/Units [4] x $25.00 each	$ 100.00
	Site Location	$3,500.00 + applicable fee for lots/units below
	# of Site Location Lots/Units [ ] x $200.00 each	$
	Change of Use	
	Flood Plain	
	Shoreland	
	Design Review	
	Housing Replacement	
☑	Historic Preservation	
	TOTAL APPLICATION FEE DUE:	$ 1350.00

IV. FEES ASSESSED AND INVOICED SEPARATELY

- Notices to abutters (receipt of application, workshop and public hearing meetings) ($.75 each)
- Legal Ad in the Newspaper (% of total ad)
- Planning Review ($52.00 hour)
- Legal Review ($75.00 hour)
- Third Party Review (all outside reviews or analysis, eg. Traffic/Peer Engineer, are the responsibility of the applicant and will be assessed and billed separately)

V. PROJECT DATA (Please enter n/a on those fields that are not applicable)

TOTAL AREA OF SITE	4,544	sq. ft.
PROPOSED DISTURBED AREA OF THE SITE	0	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)	4,333	sq. ft.
Impervious Area (Total Proposed)	4,333	sq. ft.
Building Ground Floor Area and Total Floor		
Building Footprint (Total Existing)	1,540	sq. ft.
Building Footprint (Total Proposed)	1,540	sq. ft.
Building Floor Area (Total Existing)	6,160	sq. ft.
Building Floor Area (Total Proposed)	6,350	sq. ft.
ZONING		
Existing	B2-b	
Proposed, if applicable	B2-b	
LAND USE		
Existing	residential and commercial	
Proposed	residential	
RESIDENTIAL, IF APPLICABLE		
# of Residential Units (Total Existing)	2	
# of Residential Units (Total Proposed)	4	
# 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)	3	
# of Three-Bedroom Units (Total Proposed)	1	
PARKING SPACES		
# of Parking Spaces (Total Existing)	4	
# 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)	2	
ESTIMATED COST OF THE PROJECT	$400,000.	

VI. APPLICANT SIGNATURE

By digitally signing the attached document(s), you are signifying your understanding this is a legal document and your electronic signature is considered a ***legal signature*** per Maine state law.

I hereby certify that I am the Owner of record of the named property, or that the owner of record authorizes the proposed work and that I have been authorized by the owner to make this application as his/her authorized agent. I agree to conform to all applicable laws of this jurisdiction. In addition, if a permit for work described in this application is issued, I certify that the Planning Authority and Code Enforcement's authorized representative shall have the authority to enter all areas covered by this permit at any reasonable hour to enforce the provisions of the codes applicable to this permit.

This application is for a Level III Site Plan review. It is not a permit to begin construction. An approved site plan, a Performance Guarantee, Inspection Fee, Building Permit, and associated fees will be required prior to construction. Other Federal, State or local permits may be required prior to construction, which are the responsibility of the applicant to obtain.

Signature of Applicant:	
Date: 4/18/18	F. Samuel Reiche, 765 Congress Street LLC

PRELIMINARY PLAN (Optional) - Level III Site Plan			
Applicant Checklist	Planner Checklist	# of Copies	**GENERAL WRITTEN SUBMISSIONS CHECKLIST**
X		1	Completed Application form
X		1	Application fees
X		1	Written description of project
X		1	Evidence of right, title and interest
X		1	Evidence of state and/or federal approvals, if applicable
X		1	Written assessment of proposed project's compliance with applicable zoning requirements
X		1	Summary of existing and/or proposed easement, covenants, public or private rights-of-way, or other burdens on the site
NA		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)**
NA		Proposed grading and contours;	
X		Existing structures with distances from property line;	
X		Proposed site layout and dimensions for all proposed structures (including piers, docks or wharves in Shoreland Zone), paved areas, and pedestrian and vehicle access ways;	
NA		Preliminary design of proposed stormwater management system in accordance with Section 5 of the Technical Manual (note that Portland has a separate applicability section);	
X		Preliminary infrastructure improvements;	
NA		Preliminary Landscape Plan in accordance with Section 4 of the Technical Manual;	
X		Location of significant natural features (including wetlands, ponds, watercourses, floodplains, significant wildlife habitats and fisheries or other important natural features) located on the site as defined in Section 14-526 (b) (1);	
X		Proposed buffers and preservation measures for significant natural features, as defined in Section 14-526 (b) (1);	
X		Location , dimensions and ownership of easements, public or private rights of way, both existing and proposed;	
NA		Exterior building elevations.	

ZONING ANALYSIS Relevant Zone(s) B2-b

All Projects:

	Required	Proposed
Lot Size	NONE	4,544 SF
Area Per Dwelling Unit	435 SF	1,136 SF
Minimum Street Frontage	20 FT	55 FT
Front Yard Minimum	NONE	*
Front Yard Maximum	10 FT	*
Rear Yard	10 FT	*
Yard Right	NONE	*
Yard Left	NONE	*
Side Street Setback	NA	NA
Step Back	NA	NA
Maximum Lot Coverage	NA	*
Minimum Lot Coverage	NA	*
Maximum Height	45 FT	*
Open Space	NA	NA
Maximum Impervious Area	NONE	*
Pavement Setback	NA	NA
Floor Area Ratio	NA	NA
Off Street Parking Spaces	4	4 LEASED
Loading Bays	NA	NA
Other 1		
Other 2		
Other 3		

*The proposed project includes an existing building and existing paved areas. The exterior of the building will not be modified, and the extents of impervious area will not change as a result of this project.

Planned Residential Unit Developments (PRUD) Requirements

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

Affordable Housing Density Bonuses (if applicable)

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

Neighborhood Meeting Notes

765 Congress Street

6/29/18

Presenter: Sam Reiche, Owner/Developer

We held the neighborhood meeting yesterday evening at 5:30pm. The meeting was held at 765 Congress Street.

Two people attended the meeting. I spoke about the building and presented the plans for interior, exterior and site work. I spoke about the intention to maintain as many existing details as possible and limit new work as much as possible. Both attendees were possible about the project, and were enthusiastic about the addition of more housing in the City. There was some discussion about the process to date, previous uses, and uses I considered. Both attendees seemed to understand and agree with our approach to redevelopment as four residential units. Discussion was all positive.

At the end of the discussion I asked if there were any concerns about the project, and there were none.

End of Notes

765 Congress St. - Sign In

6/28/18

Name	Email	Phone
Megan Bremermann	megan@elliotsvilleplantation.org	207-756-9999
George Rheault	george.rheault@gmail.com	207-808-8223

1816

July 6, 2018

Bradley Roland, P.E.
Wastewater Resources Division
Department of Public Services
55 Portland Street
Portland, ME 04101

765 Congress Street, Portland
Wastewater Capacity Application

Dear Brad:

Terradyn Consultants LLC has been retained by 765 Congress Street, LLC to assist with site design and permitting for the proposed building modification located at 765 Congress Street in Portland. The existing building contains two residential units and two commercial units, which are being converted to 4 residential apartments. We are writing to request confirmation that the City of Portland has the ability to provide sanitary sewer service for the proposed development.

The 4,544 square foot parcel is identified as Block A, Lot 18 on the City of Portland Tax Map 47. The site is located on the north side of Congress Street across from Neal Street. The site is currently developed with a mixed-use building in the front of the parcel with parking behind.

The proposed project includes the renovation of the existing mixed-use building to convert the interior spaces to 4 residential apartments. Existing public water and sewer utilities will remain, and a 6" fire suppression water service will be installed. The four new units will consist of:

3 x 2-bedroom unit
1 x 3-bedroom unit

The project is expected to generate approximately 810 gallons of wastewater per day based on the Maine Subsurface Wastewater Disposal Rules.

Attached are a site location figure showing the property delineated on a USGS map, preliminary site plan of the project showing the approximate location of existing sanitary service per the City's sewer card date 5/13/97, and a City of Portland Wastewater Capacity Application form.

Please provide our office with confirmation that the City of Portland has the ability to provide sanitary sewer service to the renovated site and any comments you may have on the attached drawing.

Please contact me at (207) 322-1223 or adrienne@terradynconsultants.com if you have any questions or require additional information.

Sincerely,

TERRADYN CONSULTANTS LLC

Adrienne Fine, P.E.
Design Engineer

Enc. Wastewater Capacity Application Form
Site Location Figure
Preliminary Site Plan

CITY OF PORTLAND WASTEWATER CAPACITY APPLICATION

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

Bradley Roland, P.E.
Water Resources Division

Date: 7/6/2018

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

Site Address: 765 Congress Street, Portland

Chart Block Lot Number: 47/A/18

Proposed Use: Residential
Previous Use: Residential & office
Existing Sanitary Flows: approx. 456 GPD
Existing Process Flows: N/A GPD
Description and location of City sewer that is to receive the proposed building sewer lateral.
Existing 24" sewer in Congress Street

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: Christian Roadman Phone:
Owner/Developer Name: 765 Congress St, LLC - Sam Reiche
Owner/Developer Address: 25 Edgehill Road, Brookline, MA 02445
Phone: Fax: E-mail: reiche.sam@gmail.com
Engineering Consultant Name: Terradyn Consultants, LLC, Michaeal Tadema-Wielandt, P.E.
Engineering Consultant Address: 565 Congress Street, Suite 310, Portland, ME 04101
Phone: 207-632-9010 Fax: E-mail: mtw@terradynconsultants.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: 810 GPD
Peaking Factor/ Peak Times: x6
Specify the source of design guidelines: *(i.e. "Handbook of Subsurface Wastewater Disposal in Maine," "Plumbers and Pipe Fitters Calculation Manual," Portland Water District Records, Other (specify)* State of Maine Subsurface Wastewater Disposal Rules

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.

3 x 2-bedroom Residential Unit at 180 gallons per unit	= 540 gpd
1 x 3-bedroom Residential Unit at 270 gallons per unit	= 270 gpd
Total	= 810 gpd

4. Please, Submit External Grease Interceptor Calculations.

Total Drainage Fixture Unit (DFU) Values: N/A

Size of External Grease Interceptor: _____

Retention Time: _____

Peaking Factor/ Peak Times: _____

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

5. Please, Submit Industrial Process Wastewater Flow Calculations

Estimated Industrial Process Wastewater Flows Generated: N/A GPD

Do you currently hold Federal or State discharge permits? Yes_____ No _____

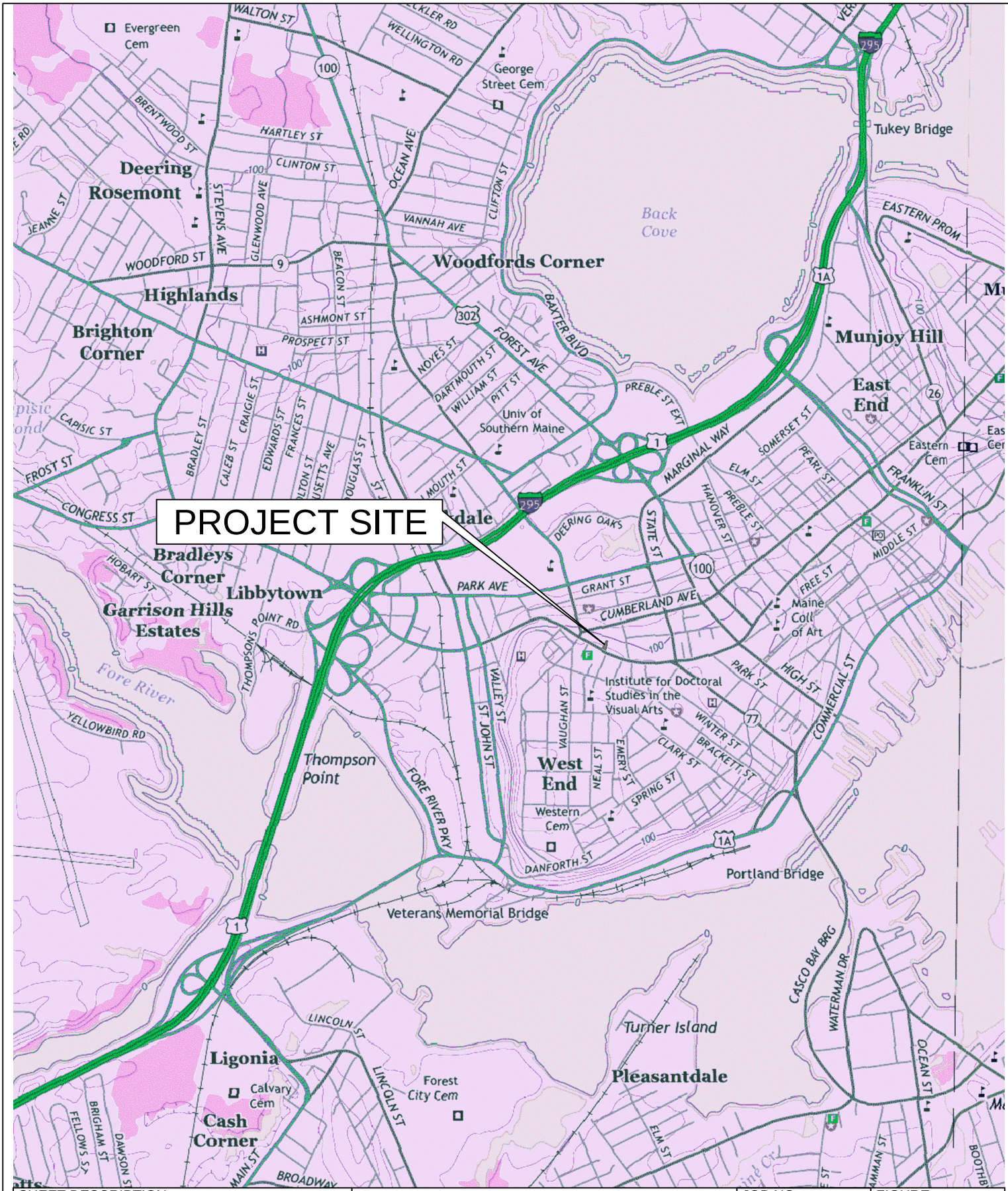
Is the process wastewater termed categorical under CFR 40? Yes_____ No _____

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

Peaking Factor/Peak Process Times: _____

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

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



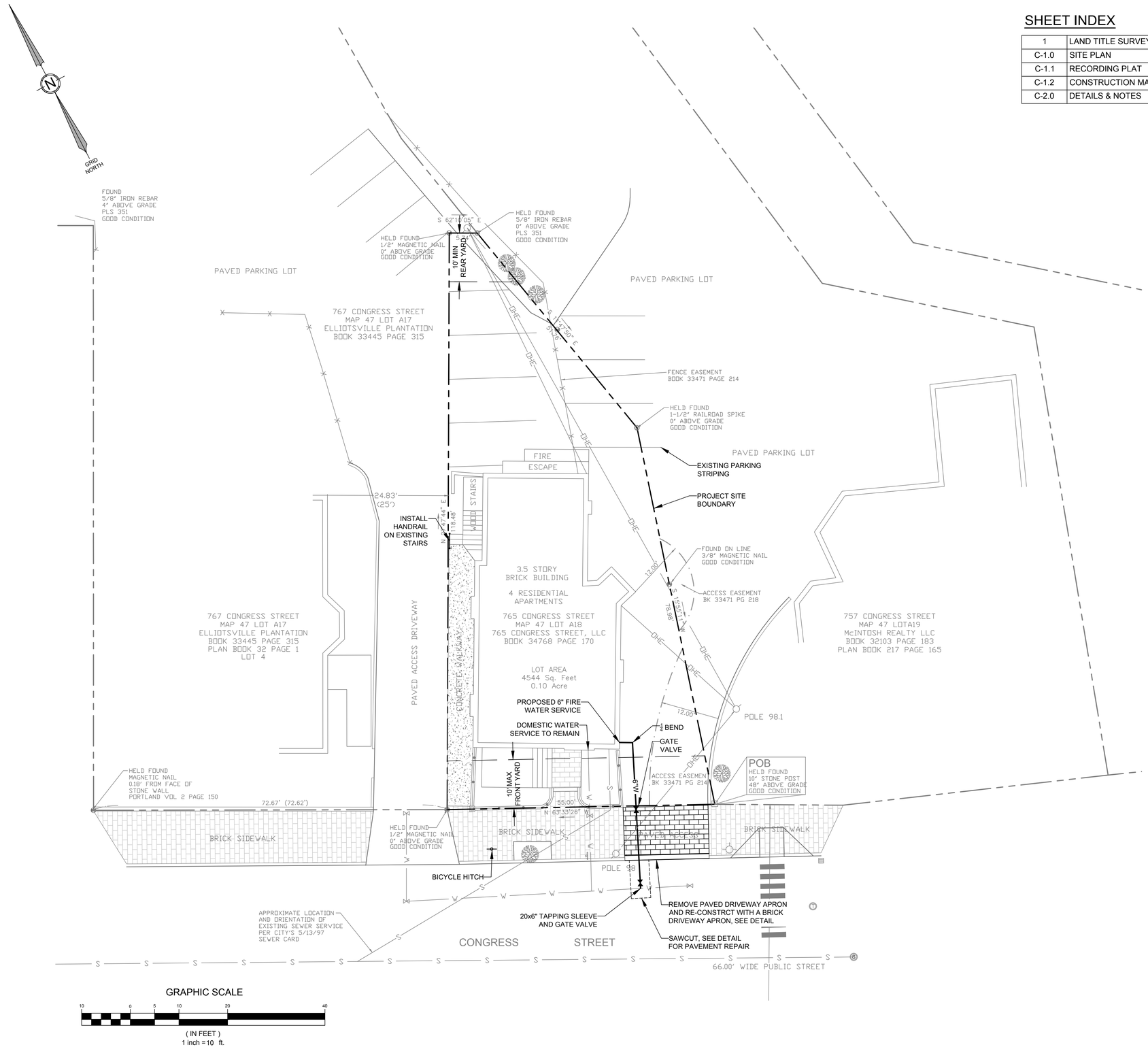
SHEET DESCRIPTION 765 CONGRESS STREET U.S.G.S. QUADRANGLE MAP PORTLAND WEST	TERRADYN CONSULTANTS, LLC P.O. Box 339 111 Elderberry Lane New Gloucester, ME 04260 Office: (207) 926-5111 Fax: (207) 221-1317 www.terradynconsultants.com Civil Engineering - Land Planning - Stormwater Design - Environmental Permitting	JOB NO. 1816 DATE 4/11/2018 SCALE 1"=2,000'	FIGURE 1 OF 2
PREPARED FOR 765 CONGRESS, LLC 25 EDGEHILL ROAD BROOKLINE, MA 02445			

SHEET INDEX

1	LAND TITLE SURVEY
C-1.0	SITE PLAN
C-1.1	RECORDING PLAT
C-1.2	CONSTRUCTION MANAGEMENT PLAN
C-2.0	DETAILS & NOTES

LEGEND

- EXISTING PROPERTY LINE
- PROJECT SITE BOUNDARY
- EXISTING SETBACK LINE
- EXISTING EASEMENT
- EXISTING SANITARY SEWER
- EXISTING WATER LINE
- PROPOSED WATER LINE
- EXISTING OVERHEAD ELECTRIC & TELEPHONE
- EXISTING EDGE OF PAVEMENT
- PROPOSED EDGE OF PAVEMENT
- EXISTING CURB
- EXISTING FENCE
- EXISTING WATER VALVE
- PROPOSED WATER VALVE
- EXISTING HYDRANT
- EXISTING UTILITY POLE
- EXISTING CATCH BASIN
- EXISTING DRAIN MANHOLE
- EXISTING SEWER MANHOLE
- SURVEY CONTROL POINT
- EXISTING MONUMENT
- EXISTING PIN
- EXISTING MAGNETIC NAIL
- EXISTING SIGN
- PROPOSED SIGN
- EXISTING BUILDING
- PROPOSED BRICK



GRAPHIC SCALE

10 0 5 10 20 40

(IN FEET)
1 inch = 10 ft.

GENERAL NOTES:

1. THE RECORD OWNER OF THE PARCEL IS 765 CONGRESS STREET, LLC BY DEED RECORDED IN THE CUMBERLAND COUNTY REGISTRY OF DEEDS IN BOOK 34768, PAGE 170.

2. THE PROPERTY IS SHOWN AS LOT 18, BLOCK A ON THE CITY OF PORTLAND TAX MAP 47 AND IS LOCATED IN THE B2-b COMMUNITY BUSINESS ZONE.

3. SPACE AND BULK CRITERIA:

B2-b COMMUNITY BUSINESS ZONE

MIN. LOT SIZE:	.NONE
MIN. LOT AREA PER DWELLING UNIT.	.435 SF
MIN. STREET FRONTAGE:	.20 FT
MIN. FRONT YARD:	.NONE
MAX. FRONT YARD:	.10 FT
MIN. SIDE YARD:	.NONE
MIN. REAR YARD:	.10 FT
MAX. BUILDING HEIGHT:	.45 FT.
MAX. IMPERVIOUS SURFACE RATIO.	.NONE FOR RESIDENTIAL USES

4. TOTAL AREA OF PARCEL: .4,544 SF

5. BOUNDARY INFORMATION SHOWN HEREON IS BASED UPON AN ALTA/NSPS LAND TITLE SURVEY BY BOUNDARY POINTS PROFESSIONAL LAND SURVEYING, LLC, COMPLETED IN OCTOBER 2017.

6. PARKING CALCULATION

USE	REQUIRED SPACES
RESIDENTIAL PARKING	1 PER UNIT = 4 SPACES
BICYCLE PARKING	2 PER EVERY 5 UNITS = 2 SPACES

STATE OF MAINE
MICHAEL E. TADEMA-WIELANDT
No. 10121
REGISTERED PROFESSIONAL ENGINEER

DATE: 7-10-2018
P.E.: MICHAEL E. TADEMA-WIELANDT

NO.	DATE	REVISIONS	APP'D BY
3	7-10-2018	REVISED PER STAFF COMMENTS	MTW
2	5-2-2018	MODIFIED FIRE SUPPRESSION WATER SERVICE PER PWD COMMENTS	MTW
1	4-20-2018	SUBMITTED TO PLANNING BOARD FOR APPROVAL	MTW

565 CONGRESS STREET
SUITE 310
PORTLAND, ME 04102

P.O. BOX 339
41 CAMPUS DRIVE
SUITE 105
NEW GLOUCESTER, ME 04260

OFFICE: (207) 926-5111 FAX: (207) 221-1317
www.terradynconsultants.com

TERRADYN CONSULTANTS, LLC

Civil Engineering - Land Planning - Stormwater Design - Environmental Permitting

SHEET DESCRIPTION
765 CONGRESS STREET
PORTLAND, MAINE
SITE PLAN

PREPARED FOR
765 CONGRESS STREET, LLC
25 EDGEHILL ROAD
BROOKLINE, MA 02445

DATE:	4/10/2018
SCALE:	1"=10'
DESIGNED:	MTW
JOB NO:	1816
FILE:	1816-B.DWG
SHEET	C-1.0

PRELIMINARY - NOT FOR CONSTRUCTION

July 10, 2018

Christian Roadman, Planner
Planning Division
City of Portland
389 Congress Street
Portland, ME 04101

Subject: **Response to Comments – Level III Development Review**
765 Congress Street

Dear Christian:

Terradyn Consultants, LLC is pleased to provide responses to comments for the proposed renovation of an existing 4-story building located at 765 Congress Street. The renovation of the building will convert the interior spaces into four residential apartments. We received written comments from staff on June 28, 2018. We have reviewed the comments and prepared the additional information and responses below.

CIVIL ENGINEERING COMMENTS

Comment 1: The boundary survey is required to be stamped by a professional land surveyor.

Response: A stamped boundary survey will be uploaded to the City's electronic plan submission system when available.

Comment 2: Applicant has noted they have requested ability to serve verification from utilities. Provide final ability to serve letters when available.

Response: An ability to serve letter was received from the Portland Water District on May 2, 2018 and is included with this response to comments. No changes are proposed to the sanitary sewer service but uses within the building are changing from office to residential. A wastewater capacity application has been uploaded to the City's electronic plan system.

Comment 3: The plans do not show the location of the existing sewer service. Update plans to show the sewer service.

Response: The approximate location of the existing sewer service has been added to the plans. This location is based on a May 1997 sewer card provided by the City of Portland Public Services Utility Coordinator in April 2018.

PLANNING COMMENTS

Comment 1: Proposed parking should have a longer time frame accounted for. Provide updated parking lease agreement specifying the parking space leases are available for five years. Alternatively, finalize vehicle access easement for on-site parking.

Response: The parking lease agreement is in the process of being updated to specify a 5 year term for the parking space leases. The updated agreement will be uploaded to the City's electronic plan system when available.

Comment 2: Application materials do not include subdivision plat. Provide subdivision plat.

Response: A subdivision plat has been uploaded to the City's electronic plan system.

Comment 3: Application materials do not include a plan-form Construction Management Plan (though a document-form CMP is uploaded). Such a plan should particularly address the proposed work in the right of way (utility work and driveway apron) and specify anticipated length/periods of the work.

Response: A plan-form Construction Management Plan has been uploaded to the City's electronic plan system.

Comment 4: Street Trees – Based upon specifications listed under Section 4.6 of the City's Technical Manual, street trees are required at a rate of one street tree per residential unit for a total requirement of four trees. It is not clear that three of the four trees shown on the site plan and survey should be counted towards the street tree requirement. Additional trees shall be provided, and/or a contribution to the City's street tree fund.

Response: One street tree exists along Congress Street and will be protected. The applicant intends to use the protection of this tree to satisfy 1 of the 4 required street trees. There is no space for the 3 additional street trees required along the project site's frontage, so the applicant proposed to contribute to the City of Portland's Tree Fund in the amount of $400 per tree for the remaining 3 required street trees.

CLOSURE

In addition to the information provided above, revised site plans and have been prepared and will be uploaded to the city's electronic plan review system. We trust that the above responses and attached materials address the comments and provide the necessary additional information for the Planning Board to approve the project. We look forward to meeting with the Planning Board and participating in the upcoming public hearing on the project. Please contact me at (207) 632-9010 or mtw@terradynconsultants.com if you have any questions or require additional information.

Sincerely,
TERRADYN CONSULTANTS LLC

Michael E. Tadema-Wielandt, P.E.
Vice President

Enclosures:
Portland Water District Ability to Serve

cc. 765 Congress Street, LLC
David Lloyd, Archetype

Portland Water District

FROM SEBAGO LAKE TO CASCO BAY

May 2, 2018

Adrienne Fine
Terradyn Consultants, LLC
565 Congress Street Suite 310
Portland, ME 04102

Re: 765 Congress Street, PO
Ability to Serve with PWD Water

Dear Ms. Fine:

The Portland Water District has received your request for an Ability to Serve Determination for the noted site submitted on April 17, 2018. Based on the information provided per May 2, 2018, we can confirm that the District will be able to serve the proposed project as further described in this letter. **Please note that this letter constitutes approval of the water system as currently designed. Any changes affecting the approved water system will require further review and approval by PWD.**

Conditions of Service

The following conditions of service apply:

- A new 6-inch fire service may be installed from the water main in Congress Street. The service should enter through the properties frontage on Congress Street at least 10-feet from any side property lines.

- It is recommended to upgrade the domestic service to 1.5-inch diameter to accommodate the proposed use. If upgraded, the existing service would need to be retired per PWD standards which includes shutting the corporation valve and cutting the pipe from the water main.

Prior to construction, the owner or contractor will need to make an appointment to complete a service application form and pay all necessary fees. The appointment shall be requested through MEANS@pwd.org or by calling 207-774-5961 ext. 3199. Please allow (3) business days to process the service application paperwork. PWD will guide the applicant through the new development process during the appointment.

Existing Site Service

According to District records, the project site does currently have existing water service. A 1-inch diameter copper domestic service line provides water service to the site. Please refer to the "Conditions of Service" section of this letter for requirements related to the use of this service.

Water System Characteristics

According to District records, there is an 20-inch diameter cast iron water main in Congress Street and a public fire hydrant located approximately 35 feet from the site. Recent flow data is not available in this area. The most recent static pressure reading was 56 psi on March 8, 2017.

Public Fire Protection

The installation of new public hydrants to be accepted into the District water system will most likely not be required. It is your responsibility to contact the Portland Fire Department to ensure that this project is adequately served by existing and/or proposed hydrants.

Domestic Water Needs

The data noted above indicates there should be adequate pressure and volume of water to serve the domestic water needs of your proposed project. Based on the high water pressure in this area, we recommend that you consider the installation of pressure reducing devices that comply with state plumbing codes.

Private Fire Protection Water Needs

You have indicated that this project will require water service to provide private fire protection to the site. Please note that the District does not guarantee any quantity of water or pressure through a fire protection service. Please share these results with your sprinkler system designer so that they can design the fire protection system to best fit the noted conditions. If the data is out of date or insufficient for their needs, please contact MEANS to request a hydrant flow test and we will work with you to get more complete data.

Should you disagree with this determination, you may request a review by the District's Internal Review Team. Your request for review must be in writing and state the reason for your disagreement with the determination. The request must be sent to MEANS@PWD.org or mailed to 225 Douglass Street, Portland Maine, 04104 c/o MEANS. The Internal Review Team will undertake review as requested within 2 weeks of receipt of a request for review.

If the District can be of further assistance in this matter, please let us know.

Sincerely,
Portland Water District

Robert A. Bartels, P.E.
Senior Project Engineer

SURVEYOR'S NOTES

1 THIS SURVEY PLAN IS ONLY VALID IF AUTHENTIC EMBOSSED SEAL AND SIGNATURE OF CERTIFYING PROFESSIONAL APPEAR ON THE FACE OF THIS SURVEY PLAN.

2 REFERENCE IS MADE TO THE CONTRACTUAL AGREEMENT BETWEEN THE PROFESSIONAL LAND SURVEYOR AND THE CLIENT.

3 THIS SURVEY PLAN IS SUBJECT TO POSSIBLE REVISION UPON RECEIPT OF A CERTIFIED TITLE OPINION.

4 NO CERTIFICATION IS MADE TO THE EXISTENCE OR NONEXISTENCE OF HAZARDOUS SUBSTANCES, ENVIRONMENTALLY SENSITIVE AREAS, UNDERGROUND UTILITIES, UNDERGROUND STRUCTURES, ZONING REGULATIONS OR REAL ESTATE TITLE.

5 DIG SAFE MUST BE CONTACTED AND CONTRACTOR SHALL FIELD VERIFY LOCATIONS AND DIMENSIONS OF ALL UTILITIES PRIOR TO EXCAVATION.

6 THE SOURCE OF BEARINGS FOR THIS LAND SURVEY WAS DETERMINED FROM PLAN OF EXISTING CONDITIONS SURVEY BY TITCOMB ASSOCIATES PLAN BOOK 217, PAGE 165. BEARINGS STATED AS BEING MAINE STATE GRID PLANE N.A.D. 83.

7 THE PROPERTY SURVEYED IS DESCRIBED IN A DEED TO JOSEPH M. NAPOLITANO DATED SEPTEMBER 6, 2016 AND IS RECORDED IN CUMBERLAND COUNTY REGISTRY OF DEEDS IN BOOK 34293, PAGE 318.

8 THE PROPERTY IS DEPICTED ON THE CITY ASSESSOR'S MAP 47 AS LOT A18.

9 REFERENCE IS MADE TO PLOT PLAN OF LAND IN PORTLAND MAINE OWNED BY CLINTON F. RINES DATED JANUARY 15, 1945 RECORDED IN CUMBERLAND COUNTY REGISTRY PLAN BOOK 32 PAGE 1.

10 REFERENCE IS MADE TO CHICAGO TITLE INSURANCE COMPANY TITLE INSURANCE COMMITMENT DATED OCTOBER 10, 2017 FOR 763-765 CONGRESS STREET.

11 THE PROPERTY SURVEYED IS BENEFITED BY A TWELVE FOOT INGRESS AND EGRESS EASEMENT OVER THE PROPERTY LOCATED AT 757 CONGRESS STREET AS DESCRIBED IN THE DEED RECORDED IN CUMBERLAND COUNTY REGISTRY OF DEEDS IN BOOK 33471 PAGE 218.

12 THE PROPERTY SURVEYED IS BURDENED BY A TWELVE FOOT INGRESS AND EGRESS EASEMENT OVER THE PROPERTY LOCATED AT 765 CONGRESS STREET AS DESCRIBED IN THE DEED RECORDED IN CUMBERLAND COUNTY REGISTRY OF DEEDS IN BOOK 33471 PAGE 214.

LEGAL DESCRIPTION

A certain lot or parcel of land with any buildings and improvements thereon, situated on the Northerly Side of Congress Street in the City of Portland, County of Cumberland, State of Maine, more particularly bounded and described as follows, to wit:

Beginning at a found 10" square stone post, as called for in Deed Book 1825 Page 55, on the Northerly Side of Congress Street at the land now or formerly of McIntosh Realty LLC described in Book 32103 Page 183;

Thence N 63°33'26" W, along Congress Street a distance of 55.00' to a found magnetic nail at the land now or formerly of Elliotsville Plantation described in Book 33445 Page 315;

Thence N 27°47'44" E, along Elliotsville Plantation a distance of 118.48' to a found magnetic nail;

Thence S 62°10'05" E, along Elliotsville Plantation a distance of 5.74' to an iron rod at the land now or formerly of McIntosh Realty LLC;

Thence S 11°47'50" E, along land of McIntosh Realty LLC a distance of 51.76' to a found Railroad Spike;

Thence S 15°55'11" W, along land of McIntosh Realty LLC and through a magnetic nail a distance of 78.98' to the point of beginning.

Containing an area of 0.10 Acre, more or less.

The basis of bearings for this land survey determine from the Plan of Existing Conditions Survey made for John McIntosh and recorded in the Cumberland County Registry of Deeds in Plan Book 217 Page 165. Said bearing base stated as Maine State Grid Plane N.A.D. 1983 located in the West Zone.

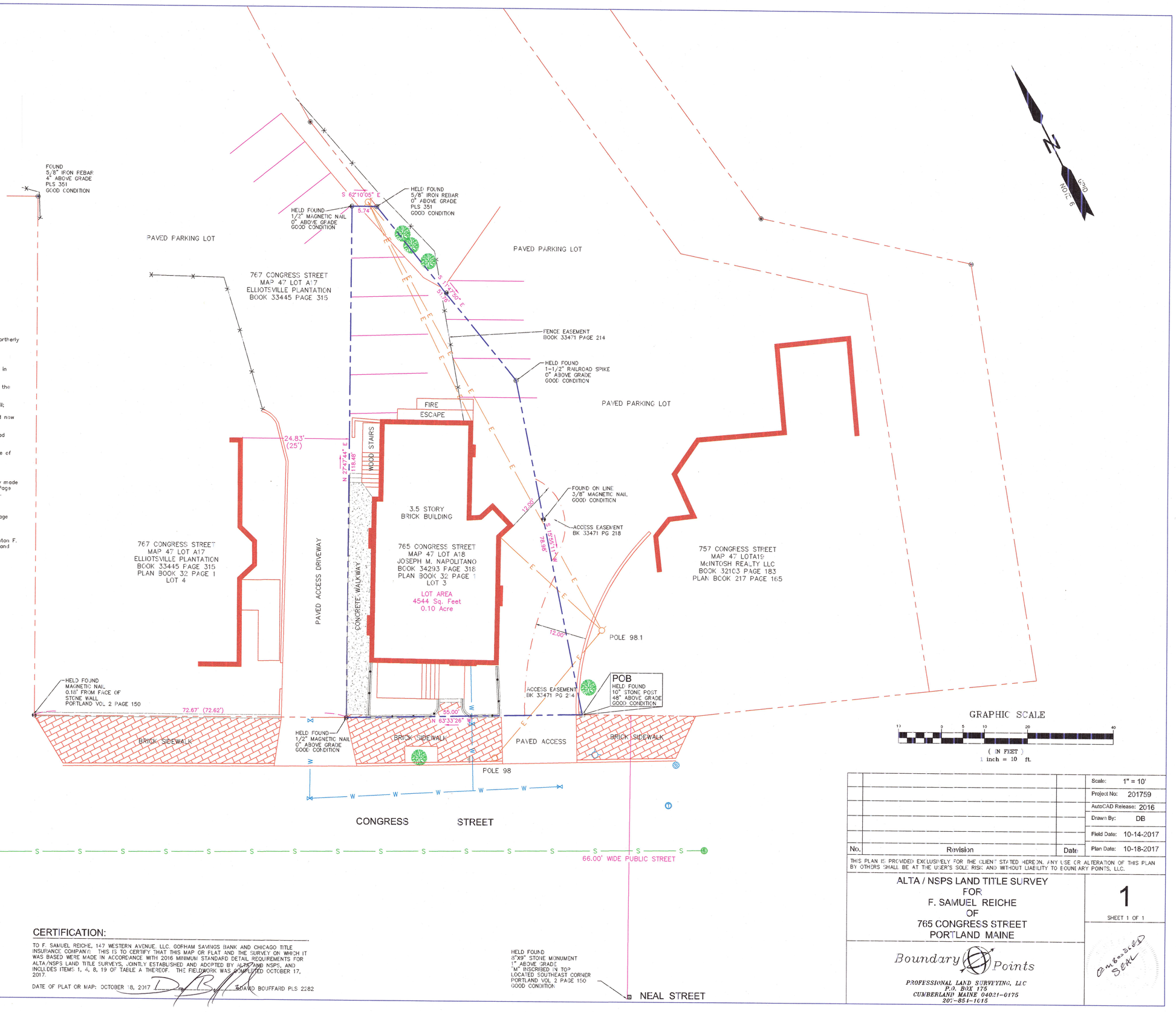
Together with an Ingress and Egress Easement as described in Book 33471 Page 218.

Subject to an Ingress and Egress Easement and Fence Easement as described in Book 33471 Page 214.

Meaning and intending to convey a parcel of land with buildings and improvements thereon and designated as Lot No. Three (3) on Plot Plan of Land in Portland, Maine, formerly owned by Clinton F. Rines and others, prepared by P.W. Varney, Engineer, January 15, 1945, and recorded in Cumberland County Registry of Deeds in Plan Book 32, Page 1.

LEGEND

EXISTING	DESCRIPTION
	PROPERTY LINE
	ADJOINER LINE
	BUILDING SETBACK
	EASEMENT
	CENTER LINE
	MONUMENT
	RAILROAD SPIKE
	IRON ROD
	5/8" IRON REBAR
	MAGNETIC NAIL
	BUILDING
	WET LANDS
	EDGE WETLAND
	SIGN
	STREAM
	ROCK OUTCROP
	EDGE PAVEMENT
	GRAVEL ROAD
	CURB LINE
	EDGE WATER
	TREE LINE
TP-7	TEST PIT
MW-8	MONITORING WELL
124	CONTOURS
G	GAS
W	WATER
S	SEWER
SD	STORM DRAIN
E	ELECTRIC LINES
	GATE VALVE
	LIGHT POLE
	UTILITY POLE
	HYDRANT
	CATCH BASIN
MH	MAN HOLE
W	POTABLE WELL
	CULVERT
	CHAIN LINK FENCE
	WOODEN FENCE
	CONIFEROUS TREE
	DECIDUOUS TREE



CERTIFICATION:

TO F. SAMUEL REICHE, 147 WESTERN AVENUE, LLC, GORHAM SAVINGS BANK AND CHICAGO TITLE INSURANCE COMPANY: THIS IS TO CERTIFY THAT THIS MAP OR PLAT AND THE SURVEY ON WHICH IT WAS BASED WERE MADE IN ACCORDANCE WITH 2016 MINIMUM STANDARD DETAIL REQUIREMENTS FOR ALTA/NSPS LAND TITLE SURVEYS, JOINTLY ESTABLISHED AND ADOPTED BY ALTA AND NSPS, AND INCLUDES ITEMS: 1, 4, 8, 19 OF TABLE A THEREOF. THE FIELDWORK WAS COMPLETED OCTOBER 17, 2017.

DATE OF PLAT OR MAP: OCTOBER 18, 2017

DAVID BOUFFARD PLS 2282

No.	Revision	Date

Scale:	1" = 10'
Project No:	201759
AutoCAD Release:	2016
Drawn By:	DB
Field Date:	10-14-2017
Plan Date:	10-18-2017

THIS PLAN IS PROVIDED EXCLUSIVELY FOR THE CLIENT STATED HEREON. ANY USE OR ALTERATION OF THIS PLAN BY OTHERS SHALL BE AT THE USER'S SOLE RISK AND WITHOUT LIABILITY TO BOUNDARY POINTS, LLC.

ALTA / NSPS LAND TITLE SURVEY FOR F. SAMUEL REICHE OF 765 CONGRESS STREET PORTLAND MAINE

1

SHEET 1 OF 1

Boundary Points

PROFESSIONAL LAND SURVEYING, LLC
P.O. BOX 175
CUMBERLAND MAINE 04021-0175
207-854-1015

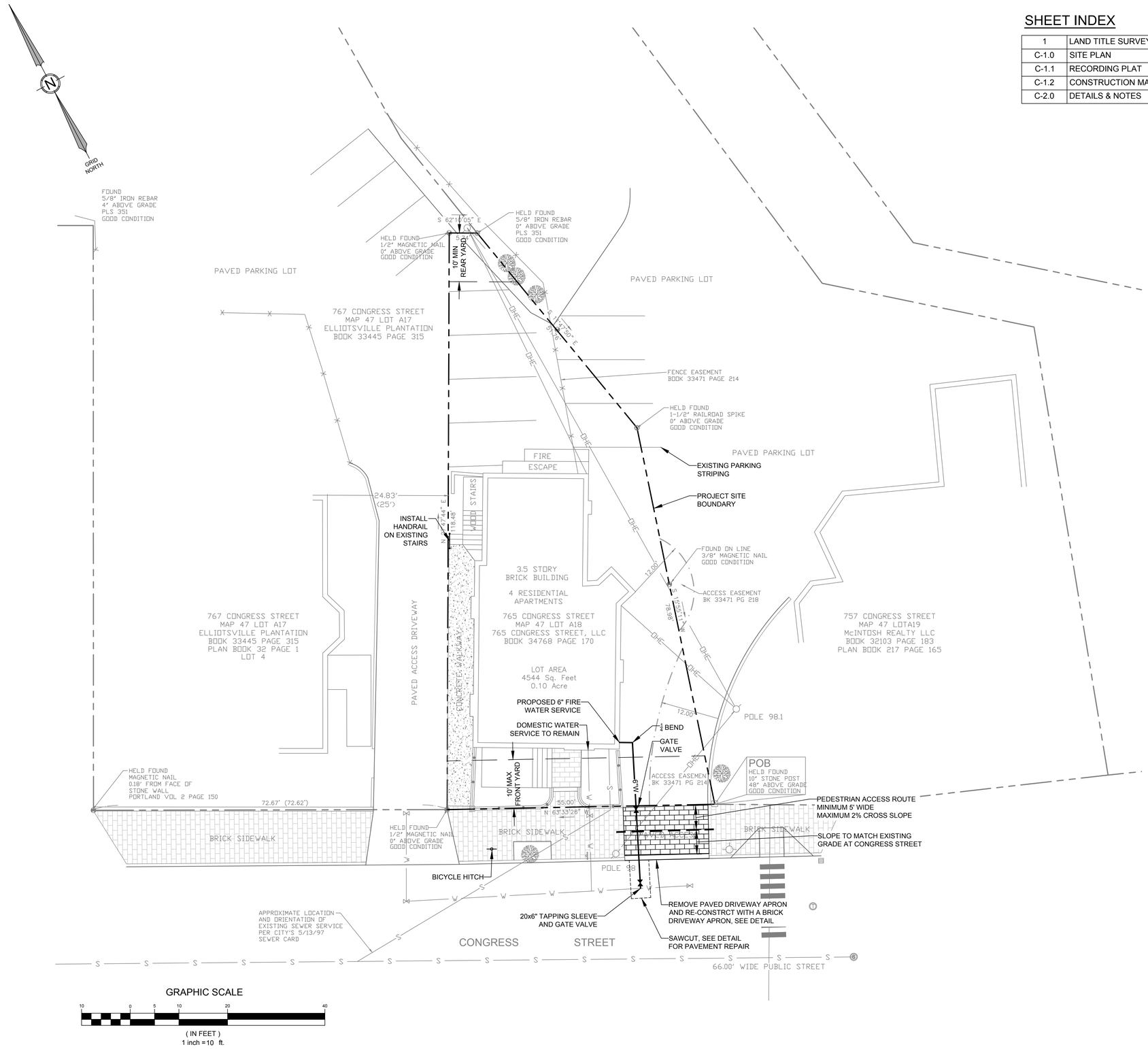
Embossed Seal

SHEET INDEX

1	LAND TITLE SURVEY
C-1.0	SITE PLAN
C-1.1	RECORDING PLAT
C-1.2	CONSTRUCTION MANAGEMENT PLAN
C-2.0	DETAILS & NOTES

LEGEND

- EXISTING PROPERTY LINE
- PROJECT SITE BOUNDARY
- EXISTING SETBACK LINE
- EXISTING EASEMENT
- EXISTING SANITARY SEWER
- EXISTING WATER LINE
- PROPOSED WATER LINE
- EXISTING OVERHEAD ELECTRIC & TELEPHONE
- EXISTING EDGE OF PAVEMENT
- PROPOSED EDGE OF PAVEMENT
- EXISTING CURB
- EXISTING FENCE
- EXISTING WATER VALVE
- PROPOSED WATER VALVE
- EXISTING HYDRANT
- EXISTING UTILITY POLE
- EXISTING CATCH BASIN
- EXISTING DRAIN MANHOLE
- EXISTING SEWER MANHOLE
- SURVEY CONTROL POINT
- EXISTING MONUMENT
- EXISTING PIN
- EXISTING MAGNETIC NAIL
- EXISTING SIGN
- PROPOSED SIGN
- EXISTING BUILDING
- PROPOSED BRICK



GRAPHIC SCALE

10 0 5 10 20 40

(IN FEET)
1 inch = 10 ft.

GENERAL NOTES:

1. THE RECORD OWNER OF THE PARCEL IS 765 CONGRESS STREET, LLC BY DEED RECORDED IN THE CUMBERLAND COUNTY REGISTRY OF DEEDS IN BOOK 34768, PAGE 170.

2. THE PROPERTY IS SHOWN AS LOT 18, BLOCK A ON THE CITY OF PORTLAND TAX MAP 47 AND IS LOCATED IN THE B2-b COMMUNITY BUSINESS ZONE.

3. SPACE AND BULK CRITERIA:

B2-b COMMUNITY BUSINESS ZONE

MIN. LOT SIZE:	.NONE
MIN. LOT AREA PER DWELLING UNIT.	.435 SF
MIN. STREET FRONTAGE:	.20 FT
MIN. FRONT YARD:	.NONE
MAX. FRONT YARD:	.10 FT
MIN. SIDE YARD:	.NONE
MIN. REAR YARD:	.10 FT
MAX. BUILDING HEIGHT:	.45 FT.
MAX. IMPERVIOUS SURFACE RATIO.	.NONE FOR RESIDENTIAL USES

4. TOTAL AREA OF PARCEL: .4,544 SF

5. BOUNDARY INFORMATION SHOWN HEREON IS BASED UPON AN ALTA/NSPS LAND TITLE SURVEY BY BOUNDARY POINTS PROFESSIONAL LAND SURVEYING, LLC, COMPLETED IN OCTOBER 2017.

6. PARKING CALCULATION

USE	REQUIRED SPACES
RESIDENTIAL PARKING	1 PER UNIT = 4 SPACES
BICYCLE PARKING	2 PER EVERY 5 UNITS = 2 SPACES

PRELIMINARY - NOT FOR CONSTRUCTION

STATE OF MAINE
MICHAEL E. TADEMA-WIELANDT
No. 9401
LICENSED PROFESSIONAL ENGINEER

DATE: 7-12-2018
P.E.: MICHAEL E. TADEMA-WIELANDT

NO.	DATE	REVISIONS	BY
4	7-12-2018	REVISED PER STAFF COMMENTS	MTW
3	7-10-2018	REVISED PER STAFF COMMENTS	MTW
2	5-2-2018	MODIFIED FIRE SUPPRESSION WATER SERVICE PER PWD COMMENTS	MTW
1	4-20-2018	SUBMITTED TO PLANNING BOARD FOR APPROVAL	MTW

565 CONGRESS STREET
SUITE 310
PORTLAND, ME 04102

P.O. BOX 339
41 CAMPUS DRIVE
SUITE 105
NEW GLOUCESTER, ME 04260

OFFICE: (207) 926-5111 FAX: (207) 221-1317
www.terradynconsultants.com

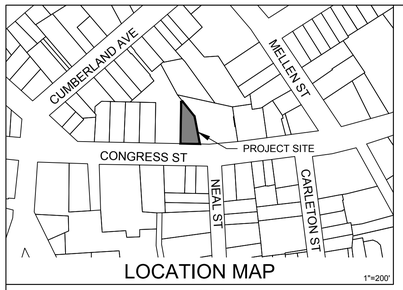
TERRADYN CONSULTANTS, LLC

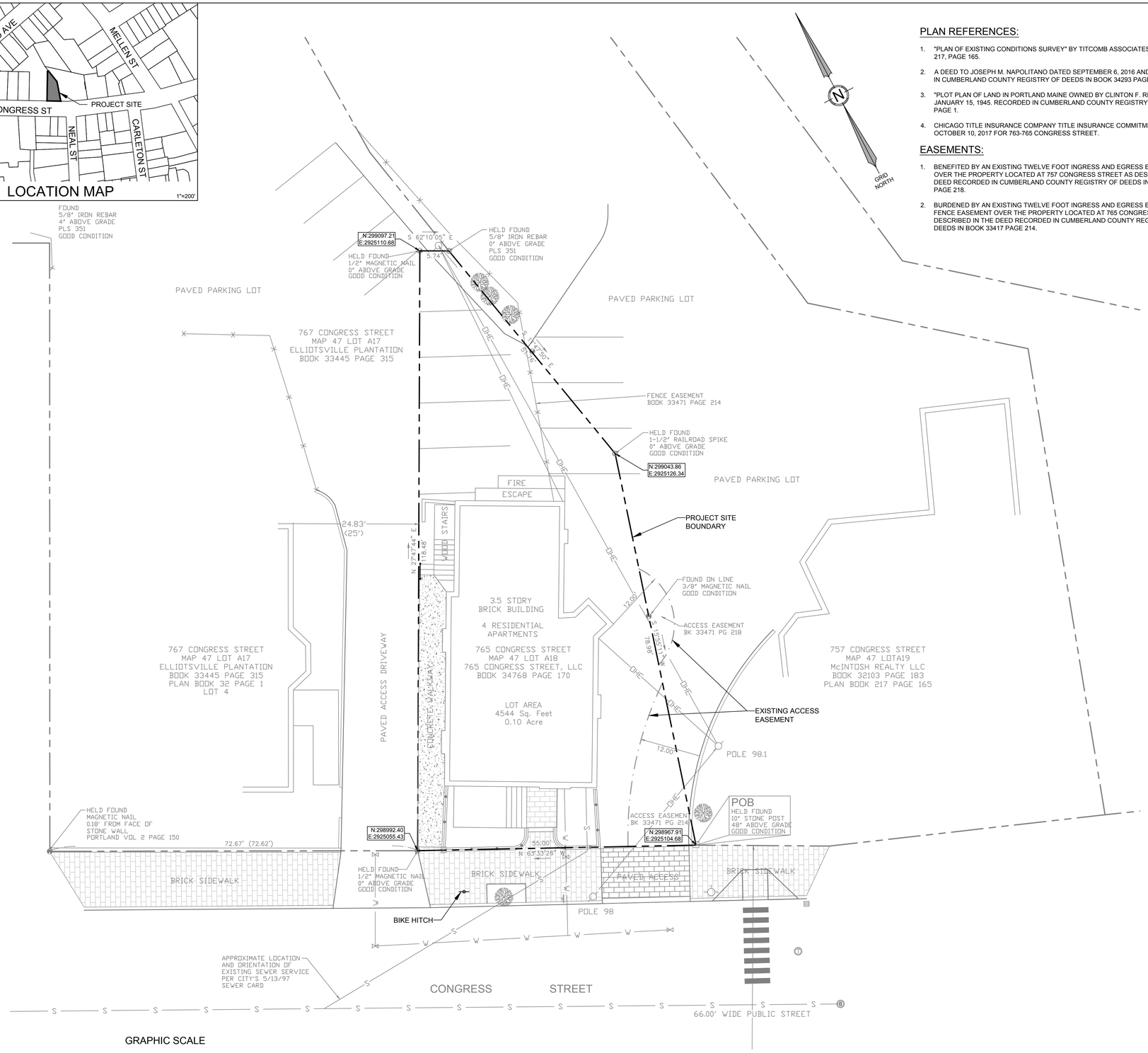
Civil Engineering - Land Planning - Stormwater Design - Environmental Permitting

SHEET DESCRIPTION
765 CONGRESS STREET
PORTLAND, MAINE
SITE PLAN

PREPARED FOR
765 CONGRESS STREET, LLC
25 EDGEHILL ROAD
BROOKLINE, MA 02445

DATE:	4/10/2018
SCALE:	1"=10'
DESIGNED:	MTW
JOB NO:	1816
FILE:	1816-B.DWG
SHEET	C-1.0





GRAPHIC SCALE

10 0 5 10 20 40

(IN FEET)
1 inch = 10 ft.

PLAN REFERENCES:

1. "PLAN OF EXISTING CONDITIONS SURVEY" BY TITCOMB ASSOCIATES, PLAN BOOK 217, PAGE 165.
2. A DEED TO JOSEPH M. NAPOLITANO DATED SEPTEMBER 6, 2016 AND IS RECORDED IN CUMBERLAND COUNTY REGISTRY OF DEEDS IN BOOK 34293 PAGE 318.
3. "PLOT PLAN OF LAND IN PORTLAND MAINE OWNED BY CLINTON F. RINES" DATED JANUARY 15, 1945. RECORDED IN CUMBERLAND COUNTY REGISTRY PLAN BOOK 32, PAGE 1.
4. CHICAGO TITLE INSURANCE COMPANY TITLE INSURANCE COMMITMENT DATED OCTOBER 10, 2017 FOR 763-765 CONGRESS STREET.

EASEMENTS:

1. BENEFITED BY AN EXISTING TWELVE FOOT INGRESS AND EGRESS EASEMENT OVER THE PROPERTY LOCATED AT 757 CONGRESS STREET AS DESCRIBED IN THE DEED RECORDED IN CUMBERLAND COUNTY REGISTRY OF DEEDS IN BOOK 33471 PAGE 218.
2. BURDENED BY AN EXISTING TWELVE FOOT INGRESS AND EGRESS EASEMENT AND FENCE EASEMENT OVER THE PROPERTY LOCATED AT 765 CONGRESS STREET AS DESCRIBED IN THE DEED RECORDED IN CUMBERLAND COUNTY REGISTRY OF DEEDS IN BOOK 33417 PAGE 214.

LEGEND

- EXISTING PROPERTY LINE
- PROJECT SITE BOUNDARY
- EXISTING SETBACK LINE
- EXISTING EASEMENT
- S — EXISTING SANITARY SEWER
- W — EXISTING WATER LINE
- OHE — EXISTING OVERHEAD ELECTRIC & TELEPHONE
- EXISTING EDGE OF PAVEMENT
- PROPOSED EDGE OF PAVEMENT
- EXISTING CURB
- EXISTING FENCE
- EXISTING WATER VALVE
- EXISTING HYDRANT
- EXISTING UTILITY POLE
- EXISTING CATCH BASIN
- EXISTING DRAIN MANHOLE
- EXISTING SEWER MANHOLE
- EXISTING CONTROL POINT
- EXISTING MONUMENT
- EXISTING PIN
- EXISTING MAGNETIC NAIL
- EXISTING SIGN
- PROPOSED SIGN
- EXISTING BUILDING
- BRICK SURFACE

GENERAL NOTES:

1. OWNERS OF RECORD: 765 CONGRESS STREET, LLC
   TAX MAP 47 BLOCK A LOT 18
   BOOK 34768 PAGE 170
2. APPLICANT: 765 CONGRESS STREET, LLC
   25 EDGEHILL ROAD
   BROOKLINE, MA 02445
3. CIVIL ENGINEER: TERRADYN CONSULTANTS, LLC
   565 CONGRESS STREET, SUITE 310
   PORTLAND, ME 04101
4. ARCHITECT: ARCHETYPE ARCHITECTS
   48 UNION WARF
   PORTLAND, ME 04101
5. SURVEYOR: BOUNDARY POINTS PROFESSIONAL LAND SURVEYING, LLC
   P.O. BOX 175
   CUMBERLAND, ME 04021
6. ZONING DISTRICT: B2-b COMMUNITY BUSINESS ZONE
7. BOUNDARY SURVEY INFORMATION WAS PROVIDED BY BOUNDARY POINTS PROFESSIONAL LAND SURVEYING, LLC. POB= 10" STONE POST 48" ABOVE GRADE AT SOUTHERN PROPERTY CORNER ALONG CONGRESS STREET.
8. BEARINGS AND COORDINATES ARE BASED ON MAINE STATE PLANE COORDINATE SYSTEM WEST ZONE NAD 83.
9. FEMA MAP COMMUNITY PANEL NUMBER 230051 0013 B. THE SITE IS LOCATED IN A C ZONE.
10. THE FACILITY IS SERVICED BY PUBLIC WATER, SEWER, AND OVERHEAD POWER.
11. FOUR OFF-STREET PARKING SPACES ARE REQUIRED FOR THE FOUR RESIDENTIAL UNITS PER CITY OF PORTLAND CODE OF ORDINANCES CHAPTER 14-LAND USE, DIVISION 20-OFF-STREET PARKING, SEC. 14-332 (a) . THE OWNER/APPLICANT WILL PROVIDE FOUR PARKING SPACES ON THE ADJACENT LOT (47/A/19) THROUGH A LONG TERM LEASE AGREEMENT WITH THE OWNER OF SAID PROPERTY.

CONDITIONS OF APPROVAL:

1. TBD

STATE OF MAINE
CUMBERLAND COUNTY REGISTRY OF DEEDS
RECEIVED _____, 20___
AT ___h _____m _____M. AND RECORDED IN
PLAN BOOK _____ PAGE _____

ATTEST _____ REGISTER

APPROVAL- CITY OF PORTLAND
PLANNING BOARD

_____ DATE

_____ CHAIRPERSON

PRELIMINARY - NOT FOR CONSTRUCTION

STATE OF MAINE
MICHAEL E. TADEMA-WIELANDT
No. 5201
REGISTERED PROFESSIONAL ENGINEER

DATE: 7-10-2018
P.L.S.: P.E.: MICHAEL E. TADEMA-WIELANDT

NO.	DATE	REVISIONS	APP'D BY
3	7-10-2018	REVISED PER STAFF COMMENTS	MTW
2	5-2-2018	MODIFIED FIRE SUPPRESSION WATER SERVICE PER PWD COMMENTS	MTW
1	4-20-2018	SUBMITTED TO PLANNING BOARD FOR APPROVAL	MTW

565 CONGRESS STREET
SUITE 310
PORTLAND, ME 04102

P.O. BOX 339
41 CAMPUS DRIVE
SUITE 105
NEW GLOUCESTER, ME 04260

TERRADYN CONSULTANTS, LLC

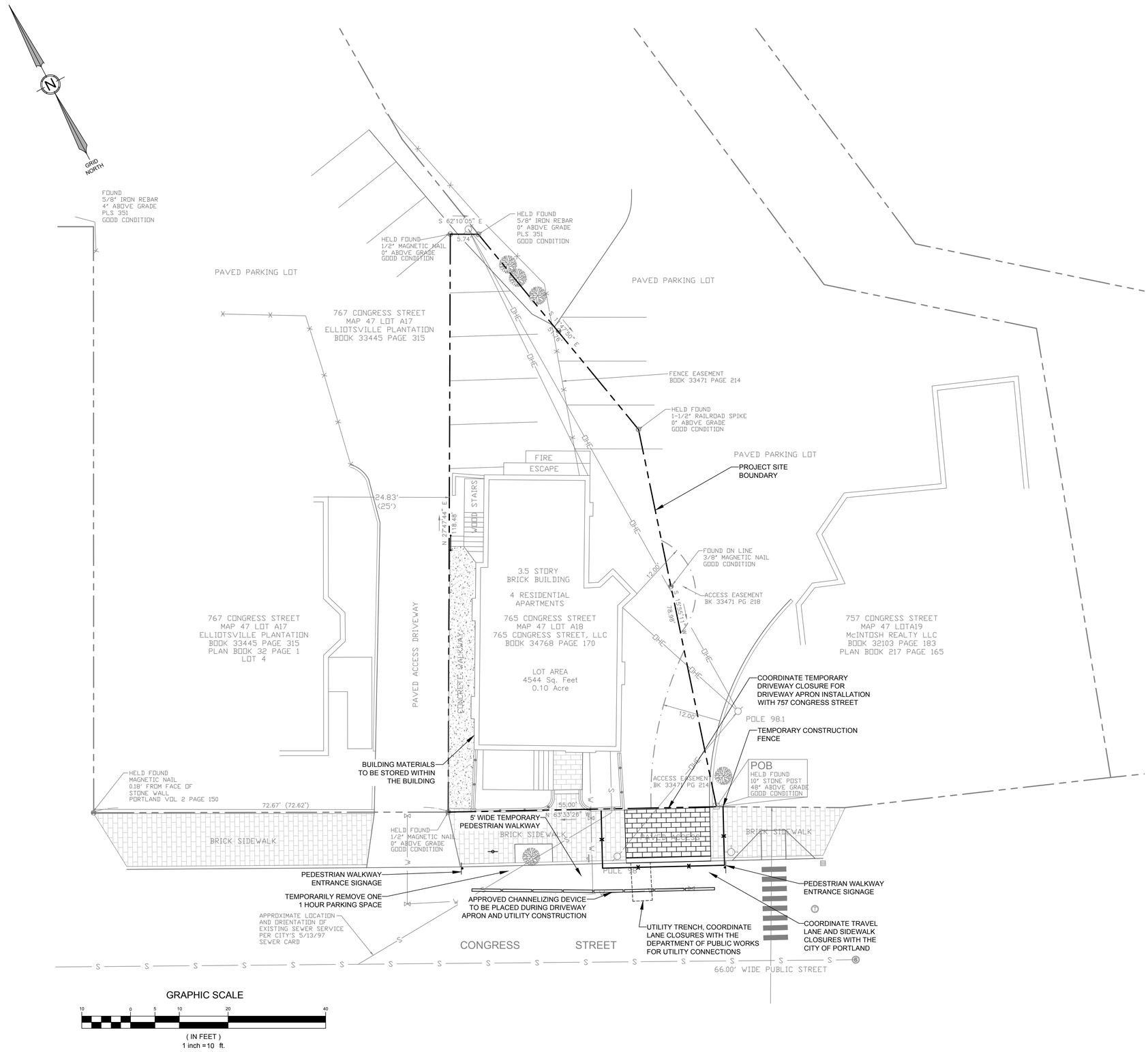
OFFICE: (207) 926-5111 FAX: (207) 221-1317
www.terradynconsultants.com

Civil Engineering - Land Planning - Stormwater Design - Environmental Permitting

SHEET DESCRIPTION
765 CONGRESS STREET
PORTLAND, MAINE
RECORDING PLAT

PREPARED FOR/RECORD OWNER
765 CONGRESS STREET, LLC
25 EDGEHILL ROAD
BROOKLINE, MA 02445

DATE:	4/10/2018
SCALE:	1"=10'
DESIGNED:	MTW
JOB NO:	1816
FILE:	1816-B.DWG
SHEET	C-1.1



CONSTRUCTION MANAGEMENT NOTES:

1. THE CONGRESS STREET SIDEWALK SURROUNDING THE 765 AND 757 CONGRESS STREET DRIVEWAY ENTRANCE WILL BE TEMPORARILY CLOSED FOR APPROXIMATELY 2 TO 3 DAYS FOR THE CONSTRUCTION OF THE BRICK DRIVEWAY APRON AND UNDERGROUND UTILITIES. THE DRIVEWAY AND SIDEWALK WILL ONLY BE CLOSED DURING CONSTRUCTION HOURS, AND ACCESS WILL BE RESTORED AT NIGHT.

2. PARTIAL TRAVEL LANE CLOSURES OF CONGRESS STREET WILL BE NECESSARY DURING UNDERGROUND UTILITY INSTALLATION. THIS WORK SHALL BE SCHEDULED AND SEQUENCED TO MINIMIZE THE DURATION OF ANY STREET OCCUPANCY. AT NO TIME CAN CONSTRUCTION ACTIVITY INCLUDING DELIVERY VEHICLES CLOSE OR BLOCK STREETS OR AFFECT PUBLIC SAFETY ACCESS WITHOUT PRIOR NOTICE AND APPROVAL OF THE DEPARTMENT OF PUBLIC WORKS.

PRELIMINARY - NOT FOR CONSTRUCTION

STATE OF MAINE
MICHAEL E. TADEMA-WIELANDT
No. 10121
REGISTERED PROFESSIONAL ENGINEER

DATE: 7-12-2018
P.E.: MICHAEL E. TADEMA-WIELANDT

NO.	DATE	REVISIONS	BY
4	7-12-2018	REVISED PER STAFF COMMENTS	MTW
3	7-10-2018	REVISED PER STAFF COMMENTS	MTW
2	5-2-2018	MODIFIED FIRE SUPPRESSION WATER SERVICE PER PWD COMMENTS	MTW
1	4-20-2018	SUBMITTED TO PLANNING BOARD FOR APPROVAL	APP'D

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www.terradynconsultants.com
565 CONGRESS STREET
SUITE 310
PORTLAND, ME 04101

SHEET DESCRIPTION
765 CONGRESS STREET
PORTLAND, MAINE

CONSTRUCTION MANAGEMENT PLAN

PREPARED FOR
765 CONGRESS STREET, LLC
25 EDGEHILL ROAD
BROOKLINE, MA 02445

DATE:	4/10/2018
SCALE:	1"=10'
DESIGNED:	MTW
JOB NO:	1816
FILE:	1816-B.DWG
SHEET	C-1.2

7 CONSTRUCTION MANAGEMENT PLAN

The following information is provided in accordance with the City of Portland Code of Ordinances Chapter 14 Land Use, Section 14-527(g)(1).

7.1 CONSTRUCTION MANAGEMENT PLAN

765 Congress Street, LLC is seeking to commence construction of 765 Congress Street renovations during the summer of 2018 and complete work by the winter of 2018. The construction will involve minor site work and existing building renovations. The attached construction plan outlines the anticipated sequence of activities.

7.2 ATTACHMENTS

Attachment 7-A – Construction Management Plan

ATTACHMENT 7-A

Construction Management Plan

CONSTRUCTION MANAGEMENT PLAN

Project:
765 Congress Street
Portland, Maine 04102

Applicant:
765 Congress Street, LLC
25 Edgehill Road
Brookline, MA 02445

Prepared By:
Terradyn Consultants, LLC
565 Congress Street, Suite 310

Construction Manager:
To be determined

A. Construction Management Principles

The following narrative provides an overview of the construction management principles that the Applicant has identified to minimize impacts from the construction of 765 Congress Street, such as noise, vibrations, ground movement, truck traffic, and other construction related factors to the surrounding buildings and communities.

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

Prior to scheduling a preconstruction meeting and the issuance of any city required permits, the Applicant and Contractor shall meet all of the requirements contained in Section 14-530. Development review fees and post approval requirements and 14-532. General requirements and enforcement of Portland's Land Use Code.

Other permits, as applicable, include

1. **Street Opening and Street Occupancy Permits:** Construction activity in the public right-of-way are controlled by Chapter 25 of the Land Use Code. All required permits shall be obtained through the Department of Public Works and the requests shall conform with the approved construction management plan.

C. Construction Administration and Communication

The Applicant and Contractor will implement a communication strategy to ensure that all construction operations are performed in accordance with all agreements, ordinances and special permits applicable to this project. The Applicant and Contractor will work closely with adjacent abutters, businesses and all parties informed, as far in advance as possible, of scheduled work, particularly work anticipated to cause reduced access or significant noise, vibrations, or dust.

The following person is designated the Contact Person and will be available 24 hours in the event of an emergency:

CONTACT PERSON:
To be determined

Construction Signage shall be posted at the site with Contact Information for the Contractor. Construction site signage shall be removed at project completion.

D. Construction Schedule

1. The contractor shall submit a schedule or time line for the construction project, including any Phasing, prior to construction.

2. Hours of Construction: Construction may occur during the daytime hours as defined in Section 17-18 of the City Code (Construction Activities) and Section 25-129 of the City Code (Noise, dust and debris).

3. Extended Hours or Night Work: Pursuant to Section 17-18, this section does not apply to emergency utility work or "Situations where the public works authority or the office of building inspections determines that the construction activity is of a unique character which cannot reasonably be completed or performed during the permitted hours and which is not of a recurring nature, provided that prior to engaging in such activity the contractor or his representatives gives notice of the time and scope of such proposed activity, the notice to be given in a manner approved by the public works authority."

4. Material Deliveries: Delivery of materials shall take place during the Hours of Construction listed above and shall be stored within the building. Site work will be limited to a few days so no site work materials will be stored on site.

E. Security & Public Safety

1. The Contractor shall erect temporary barriers around the driveway apron and water line work location with the intent of separating pedestrian and vehicle circulation from the short-term site construction. These barriers are expected to be in place for two to three days while this work takes place, but access will be restored at night. No other construction fence or barriers are necessary for this project.

2. Structures undergoing construction, alteration, or demolition operations, including those in underground locations, shall comply with NFPA 1 Chapter 16. *Safeguarding Construction, Alteration, and Demolition Operations.*

3. Fire Safety Program. An overall construction of demolition fire safety program shall be developed. Essential items to be emphasized include the following:
    - Good Housekeeping
    - On-site security
    - Installation of new fire protection systems as construction progresses
    - Preservation of existing systems during demolition
    - Organization and training of an on-site fire brigade
    - Development of a pre-fire plan with the local fire department
    - Rapid communication
    - Consideration of special hazards resulting from previous occupancies
    - Protection of existing structures and equipment from exposure fires resulting from construction, alteration, and demolition operations

F. Construction Permitting and Traffic Control Plans

1. Construction Activity in Public Streets: Construction activity in the public right-of-way is controlled by Chapter 25 Article VII of the City Code of Ordinances. Required licenses and permits, restrictions on activity, and fees & area are outlined in that Chapter. Rules and Regulations for Excavation Activity are available through the Street Opening Clerk at the Department of Public Works. At no time can construction activity including delivery vehicles close or block streets or affect public safety access without prior notice and approval of the Department of Public Works.

2. Public Sidewalk Closures: The existing driveway apron for the 757 and 765 Congress Street driveway will be reconstructed. The section of sidewalk crossing the driveway will be closed for approximately two days to complete this work and signage will be posted. The sidewalk and driveway will be re-opened at night.

3. Sewer, Water, and Stormwater: Required permits for new connections and/or abandonment of existing connections are available through the Street Opening Clerk at the Department of Public Works. Rules and Regulations for these utility systems are available through the City Engineer's office of the Department of Public Works and in Section II of the Technical Manual. The water system connection within Congress Street is not expected to cause an interruption of two-way traffic within Congress Street.

4. Work within City Right of Way: Construction activity that impacts the existing public street system must be controlled to protect the safety of the construction workers and all modes of the traveling public.

   All existing modes of travel in work zone areas shall be accommodated if impacted by the activity. The safe passage of pedestrians, bicyclists, transit

providers, and motorists are of equal importance when planning out the work zone; no pre-existing travel mode may be eliminated without the express approval of the Department of Public Works.

- Traffic control bicycle and pedestrian facilities or routes through work zones shall be maintained until the bicycle and pedestrian facilities or routes are ready for safe operation. Traffic control will not be removed to allow auto travel at the expense of bicycle and pedestrians.
- Barrier systems utilized to separate the construction activity from the public street and /or sidewalk shall not inhibit sight distances, particularly for visibility of pedestrians and bicyclists.
- ADA compliance shall be maintained.

Use of public parking spaces or the blockage of any portion of sidewalk for the purpose of construction activity shall require an occupancy permit and appropriate fee as assessed by the Department of Public Works.

G. Site Management and Controls

The contractor shall be responsible for maintaining the site in a safe condition and including the following:

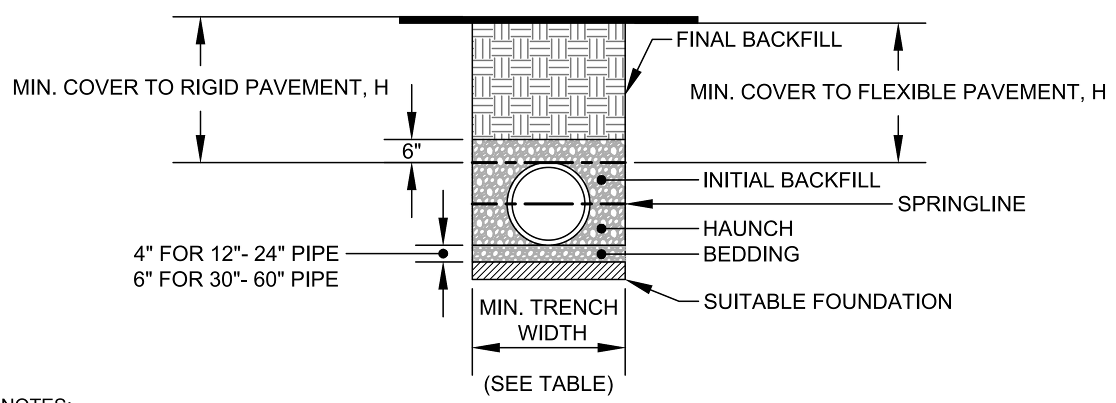
1. A solid waste dumpster shall be located on site for the disposal of trash and debris.
2. Noise: The construction shall comply with Portland's requirements under Section 17-18 of the City Code and Section 25-129 on Noise, dust and debris.
3. Rodent Control will be provided, if applicable, by a professional exterminator and consistent with Chapter 22 of the City Code.

H. Preservation of Trees

1. The existing street tree on Congress Street and the three on-site trees north of the building shall be protected during construction.

I. Parking During Construction

1. Construction Parking: Construction workers shall utilize off-site parking for the duration of construction.



NOTES:

1. ALL PIPE SYSTEMS SHALL BE INSTALLED IN ACCORDANCE WITH ASTM D2321, "STANDARD PRACTICE FOR UNDERGROUND INSTALLATION OF THERMOPLASTIC PIPE FOR SEWERS AND OTHER GRAVITY FLOW APPLICATIONS", LATEST ADDITION

2. MEASURES SHOULD BE TAKEN TO PREVENT MIGRATION OF NATIVE FINES INTO BACKFILL MATERIAL, WHEN REQUIRED.

3. FOUNDATION: WHERE THE TRENCH BOTTOM IS UNSTABLE, THE CONTRACTOR SHALL EXCAVATE TO A DEPTH REQUIRED BY THE ENGINEER AND REPLACE WITH SUITABLE MATERIAL AS SPECIFIED BY THE ENGINEER. AS AN ALTERNATIVE AND AT THE DISCRETION OF THE DESIGN ENGINEER, THE TRENCH BOTTOM MAY BE STABILIZED USING A GEOTEXTILE MATERIAL.

4. BEDDING: SUITABLE MATERIAL SHALL BE CLASS I, II OR III. THE CONTRACTOR SHALL PROVIDE DOCUMENTATION FOR MATERIAL SPECIFICATION TO ENGINEER. UNLESS OTHERWISE NOTED BY THE ENGINEER, MINIMUM BEDDING THICKNESS SHALL BE 4" (100mm) FOR 4"-24" (100mm-600mm); 6" (150mm) FOR 30"-60" (750mm-900mm).

5. INITIAL BACKFILL: SUITABLE MATERIAL SHALL BE CLASS I, II OR III IN THE PIPE ZONE EXTENDING NOT LESS THAN 6" ABOVE CROWN OF PIPE. THE CONTRACTOR SHALL PROVIDE DOCUMENTATION FOR MATERIAL SPECIFICATION TO ENGINEER. MATERIAL SHALL BE INSTALLED AS REQUIRED IN ASTM D2321, LATEST EDITION.

6. MINIMUM COVER: MINIMUM COVER, H, IN NON-TRAFFIC APPLICATIONS (GRASS OR LANDSCAPE AREAS) IS 12" FROM THE TOP OF PIPE TO GROUND SURFACE. ADDITIONAL COVER MAY BE REQUIRED TO PREVENT FLOATION. FOR TRAFFIC APPLICATIONS, MINIMUM COVER, H, IS 12" UP TO 48" DIAMETER PIPE AND 24" OF COVER FOR 54"-60" DIAMETER PIPE, MEASURED FROM TOP OF PIPE TO BOTTOM OF FLEXIBLE PAVEMENT OR TO TOP OF RIGID PAVEMENT.

RECOMMENDED MINIMUM TRENCH WIDTHS

PIPE DIAM.	MIN. TRENCH WIDTH
4"	21"
6"	23"
8"	26"
10"	28"
12"	30"
15"	34"
18"	39"
24"	48"
30"	56"
36"	64"
42"	72"
48"	80"
54"	88"
60"	96"

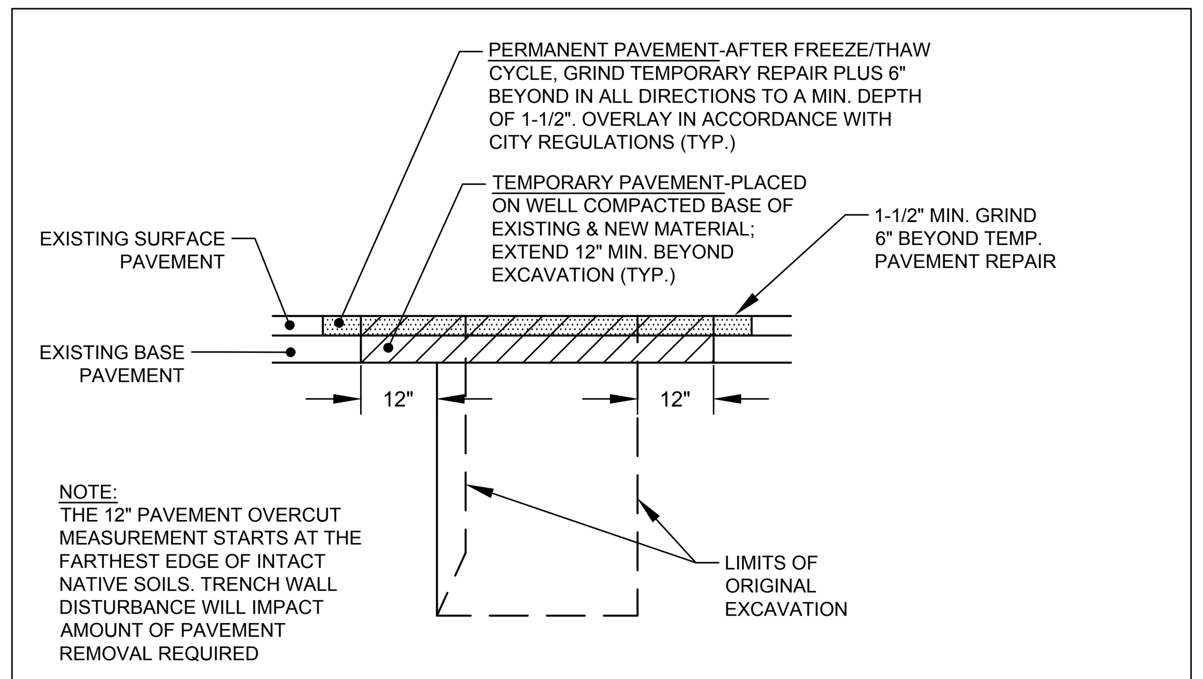
MINIMUM RECOMMENDED COVER BASED ON VECHICLE LOADING CONDITIONS

PIPE DIAM.	SURFACE LIVE LOADING CONDITION H-25	HEAVY CONSTRUCTION (75T AXLE LOAD) *
12" - 48"	12"	48"
54" - 60"	24"	60"

* VEHICLES IN EXCESS OF 75T MAY REQUIRE ADDITIONAL COVER

TYPICAL TRENCH DETAIL

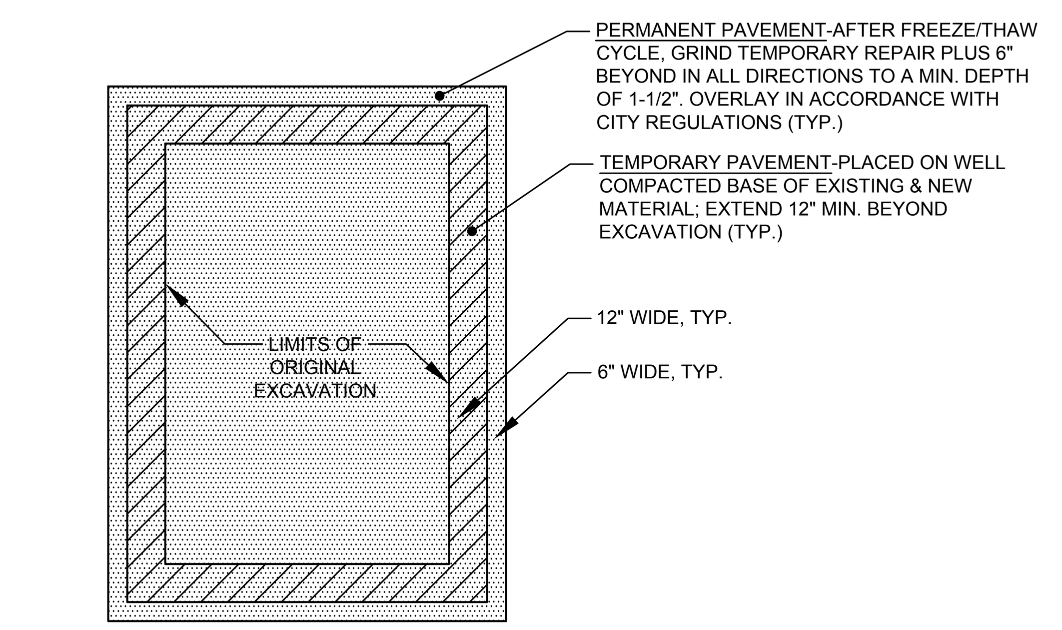
NOT TO SCALE



NOTE:
THE 12" PAVEMENT OVERCUT MEASUREMENT STARTS AT THE FARTHEST EDGE OF INTACT NATIVE SOILS. TRENCH WALL DISTURBANCE WILL IMPACT AMOUNT OF PAVEMENT REMOVAL REQUIRED

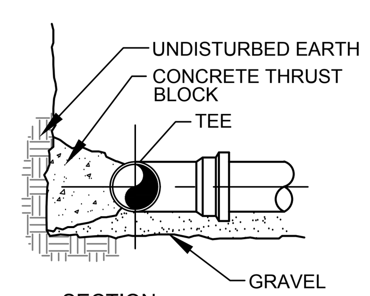
TYP. EXCAVATION IN CITY RIGHT OF WAY

NOT TO SCALE



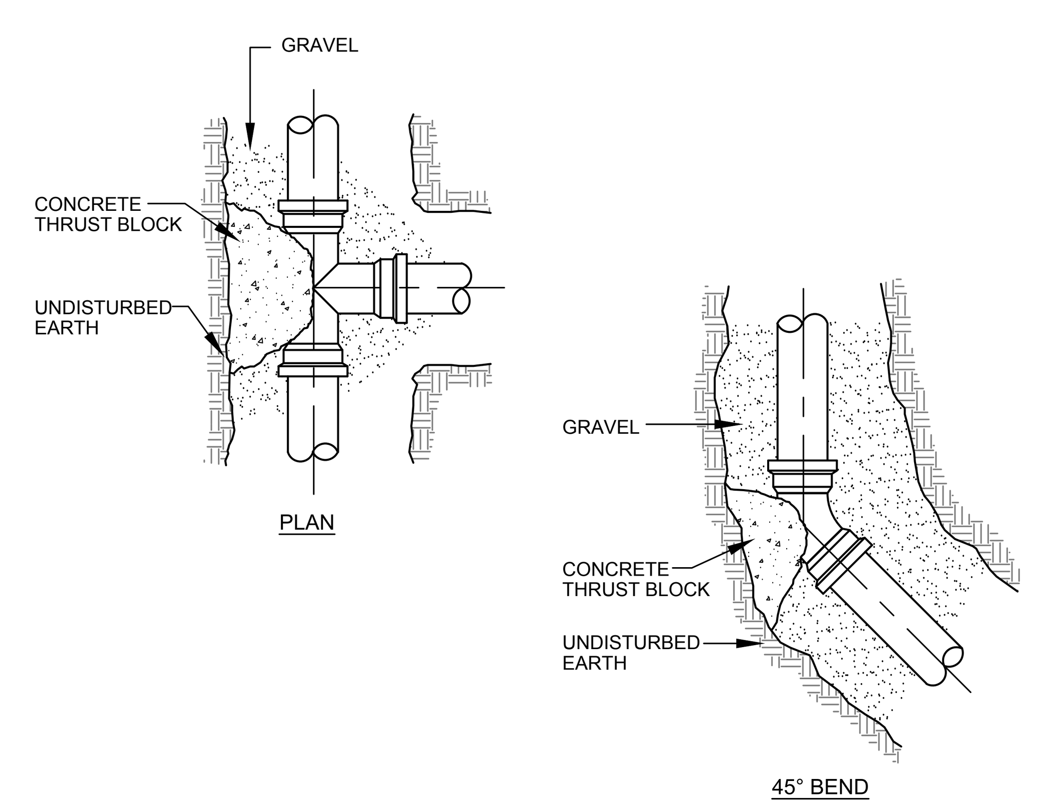
PLAN VIEW OF MINOR EXCAVATION PAVEMENT REPAIR

NOT TO SCALE



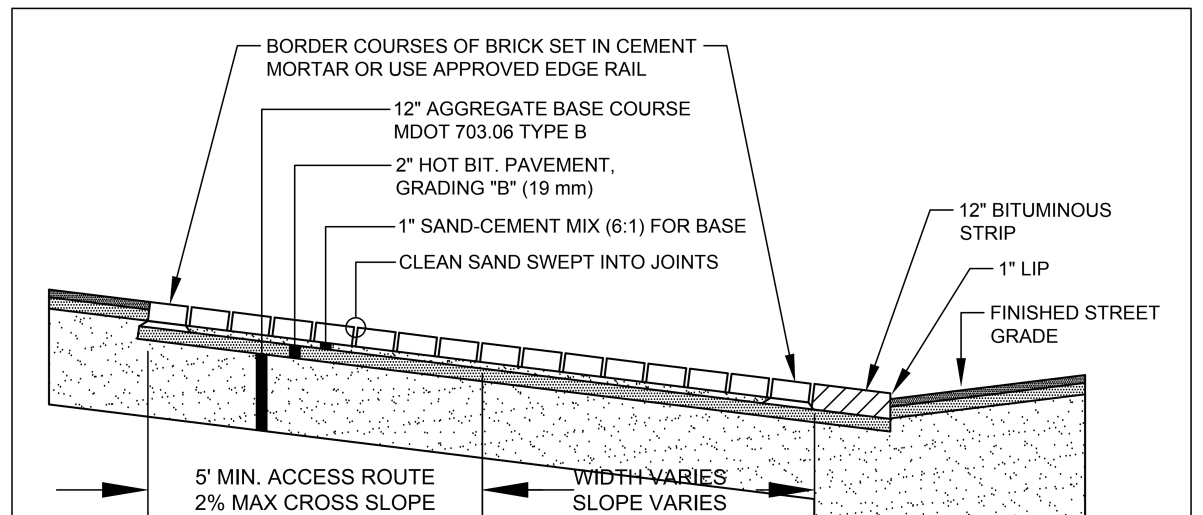
CONCRETE THRUST BLOCK SIZE REQUIREMENTS

FITTINGS		SQ. FT. OF BEARING ON UNDISTURBED SOIL 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



TEE & BEND DETAIL

NOT TO SCALE



BRICKS TO BE USED:
NEW CONSTRUCTION:
4"X8" PINE HALL PATHWAY PAVER BRICK MFG. BY PINE HALL BRICK CO., MADISON, NC, LACHANCE ITEM # 193623

REPAIR/MAINTENANCE TO EXISTING:
VERMONT BACKER BRICK, SUPPLIED BY GAGNE & SONS, ITEM # VBBB

BRICK DRIVEWAY APRON

NOT TO SCALE

PRELIMINARY - NOT FOR CONSTRUCTION

GENERAL NOTES:

1. THIS PROJECT IS SUBJECT TO THE TERMS AND CONDITIONS OF ALL REGULATIONS ADMINISTERED BY THE LOCAL UTILITY COMPANIES AND THE CITY OF PORTLAND.
2. ALL REQUIRED AND NECESSARY INSPECTIONS AND/OR CERTIFICATIONS REQUIRED BY CODES AND/OR UTILITY SERVICE COMPANIES SHALL BE PERFORMED PRIOR TO ANNOUNCED BUILDING POSSESSION AND THE FINAL SERVICE CONNECTIONS.
3. 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 (1-888-DIGSAFE). IT SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR TO RELOCATE ALL EXISTING UTILITIES WHICH CONFLICT WITH THE PROPOSED IMPROVEMENTS SHOWN ON THE PLANS, AT NO EXTRA EXPENSE 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 PROJECT CONTRACT SPECIFICATIONS, AND THE CITY OF PORTLAND TECHNICAL MANUAL STANDARDS, WHICHEVER IS MORE STRINGENT.
6. BOUNDARY SURVEY INFORMATION WAS PROVIDED BY BOUNDARY POINTS PROFESSIONAL LAND SURVEYING, LLC.
7. FEMA MAP COMMUNITY PANEL NUMBER 230051 0013 B. THE SITE IS LOCATED IN A C ZONE.
8. THE PROPERTY SHOWN ON THIS PLAN MAY BE DEVELOPED AND USED ONLY AS DEPICTED IN THIS APPROVED PLAN. ALL ELEMENTS AND FEATURES OF THE PLAN AND ALL THE PROPERTY WHICH APPEARS IN THE RECORD OF THE PLANNING BOARD PROCEEDINGS ARE CONDITIONS OF THE APPROVAL. NO CHANGE FROM THE CONDITIONS OF APPROVALS IS PERMITTED UNLESS AN AMENDED PLAN IS FIRST SUBMITTED TO AND APPROVED BY THE PLANNING AUTHORITY.
9. ALL DIMENSIONING UNLESS OTHERWISE NOTED IS TO THE FACE OF CURB OR FACE OF BUILDING.
10. THE CONTRACTOR IS REQUIRED TO NOTIFY THE CITY OF PORTLAND PUBLIC WORKS INSPECTION SERVICES DIVISION (874-8300 EXT. 8838), CODE ENFORCEMENT OFFICE AND DEVELOPMENT REVIEW COORDINATOR IN WRITING THREE (3) DAYS PRIOR TO THE BEGINNING OF CONSTRUCTION. A PRE-CONSTRUCTION MEETING MAY BE REQUIRED TO INCLUDE THE PUBLIC WORKS AUTHORITY OR DEVELOPMENT REVIEW COORDINATOR.
11. AN APPROVED SET OF PLANS AND ALL APPLICABLE PERMITS MUST BE AVAILABLE AT THE CONSTRUCTION SITE.
12. WARNING SIGNS, MARKERS, BARRICADES OR FLAGMEN MUST BE EMPLOYED ON ADJACENT STREETS AS NECESSARY. THE CONTRACTOR SHALL COORDINATE AND SEEK APPROVAL FROM THE PUBLIC SERVICE DIVISION FOR THE PLACEMENT/PARKING OF EQUIPMENT WITHIN THE PUBLIC RIGHT OF WAY.
13. CONSTRUCTION DEBRIS SHALL BE CONTAINERIZED AND DISPOSED OF IN ACCORDANCE WITH THE CITY OF PORTLAND'S SOLID WASTE ORDINANCE CHAPTER 12. ALL DEMOLITION MATERIAL FROM THE PROJECT SITES SHALL BE TAKEN TO THE RIVERSIDE RECYCLING FACILITY OR AS OTHERWISE DIRECTED PENDING THE RESULTS OF A HAZARDOUS BUILDING MATERIALS SURVEY AS AUTHORIZED AND COORDINATED BY THE OWNER. ALL SALVAGED MATERIAL WITHIN THE PUBLIC R.O.W.(SIDEWALKS, BRICKS, GRANITE CURB) NOT REUSED SHALL BE DISPOSED OF AS DIRECTED BY THE PORTLAND PUBLIC SERVICES DEPARTMENT AT NO EXTRA COST TO THE OWNER.
14. ANY DAMAGE TO PUBLIC OR PRIVATE PROPERTY RESULTING FROM CONSTRUCTION ACTIVITIES SHALL BE REPAIRED BY THE CONTRACTOR AT THEIR EXPENSE.
15. PROPERTY MARKERS AND STREET LINE MONUMENTS SHALL BE PROPERLY PROTECTED AT ALL TIMES DURING CONSTRUCTION TO INSURE INTEGRITY. IF DISTURBED THEY SHALL BE REPLACED BY A SURVEYOR REGISTERED IN THE STATE OF MAINE AT THE CONTRACTOR'S EXPENSE.
16. A STREET OPENING PERMIT MUST BE OBTAINED FROM THE CITY OF PORTLAND PUBLIC WORKS DEPARTMENT PRIOR TO BEGINNING ANY WORK WITHIN THE CITY RIGHT-OF-WAY. ALL WORK WITHIN THE PUBLIC RIGHT OF WAY SHALL BE COMPLETED IN CONFORMANCE TO THE CITY'S RULES AND REGULATIONS FOR EXCAVATION ACTIVITIES IN PUBLIC RIGHT OF WAYS.
17. CONTRACTOR MUST MAINTAIN THROUGH TRAFFIC ON ADJACENT STREETS AT ALL TIMES.
18. ALL METHODS AND MATERIALS USED IN THE CONSTRUCTION OF THE IMPROVEMENTS IDENTIFIED HEREIN SHALL CONFORM TO THE CITY OF PORTLAND CONSTRUCTION AND TECHNICAL STANDARDS AND SPECIFICATIONS AND/OR CURRENT MaineDOT STANDARDS AND SPECIFICATIONS, WHICHEVER IS MORE STRINGENT.
19. RECORD DRAWINGS MUST INCLUDE ALL BURIED UTILITIES INCLUDING, BUT NOT LIMITED TO, BENDS, APPURTENANCES, AND OTHER FEATURES, TO BE LOCATED IN THE FIELD BY GIS AND RECORDED AS AN AS-BUILT PLAN BY THE CONTRACTOR AT THE END OF THE PROJECT. THIS PLAN SHALL ALSO BE PROVIDED TO THE OWNER.
20. THE CONTRACTOR SHALL REFER TO THE ARCHITECTURAL DRAWINGS PREPARED BY ARCHETYPE ARCHITECTS FOR EXACT LOCATIONS AND DIMENSIONS OF THE ENTRANCES, EXIT PORCHES, PRECISE BUILDING DIMENSIONS AND EXACT BUILDING UTILITY ENTRANCE POINTS.
21. ALL REQUIRED AND NECESSARY INSPECTIONS AND/OR CERTIFICATIONS REQUIRED BY CODES AND/OR UTILITY SERVICE COMPANIES SHALL BE PERFORMED PRIOR TO ANNOUNCED BUILDING POSSESSION AND THE FINAL SERVICE CONNECTIONS.
22. CONTRACTORS SHALL NOTIFY OPERATORS WHO MAINTAIN UNDERGROUND UTILITIES IN THE AREA OF PROPOSED EXCAVATION OR BLASTING AT LEAST THREE (3) BUT NOT MORE THAN (30) DAYS PRIOR TO COMMENCEMENT OF EXCAVATION OR DEMOLITION. CONTRACTORS SHALL BE RESPONSIBLE FOR COMPLIANCE WITH THE REQUIREMENTS OF 23 MRSA 3360-A.
23. ALL PAVING WITHIN THE PUBLIC R.O.W. SHALL BE PERFORMED IN ACCORDANCE WITH THE CITY OF PORTLAND RULES AND REGULATIONS FOR EXCAVATION ACTIVITIES IN THE PUBLIC R.O.W.
24. NO HOLES, TRENCHES OR STRUCTURES SHALL BE LEFT OPEN OVERNIGHT IN ANY EXCAVATION ACCESSIBLE TO THE PUBLIC OR IN PUBLIC RIGHTS-OF-WAY.
25. THE CONTRACTOR SHALL TAKE FULL RESPONSIBILITY FOR ANY CHANGES AND DEVIATION OF APPROVED PLANS NOT AUTHORIZED BY THE ARCHITECT/ENGINEER AND/OR CLIENT/OWNER.
26. CONTRACTOR SHALL INCORPORATE PROVISIONS AS NECESSARY IN CONSTRUCTION TO PROTECT EXISTING STRUCTURES AND PHYSICAL FEATURES THAT ARE OUTSIDE THE SCOPE OF WORK. THE CONTRACTOR SHALL MAINTAIN SITE STABILITY DURING CONSTRUCTION TO AVOID EROSION AND SEDIMENT TRANSPORT. CONTRACTOR SHALL RESTORE ALL AREAS TO A FINAL STABILIZED CONDITION AS DIRECTED BY DESIGN DRAWINGS.
27. CONTRACTOR SHALL VERIFY ALL DIMENSIONS AND CONDITIONS IN THE FIELD PRIOR TO FABRICATION AND ERECTION OF ANY MATERIAL. ANY UNUSUAL CONDITIONS SHALL BE REPORTED TO THE ENGINEER.
28. ALL FILLS SHALL BE PLACED IN LAYERS NOT MORE THAN 12" LOOSE DEPTH AND COMPACTED BY HEAVY COMPACTION EQUIPMENT. MINIMUM COMPACTION SHALL BE 95% OF MAXIMUM DENSITY ASTM 1557, MODIFIED AND FIELD DENSITY ASTM D2922 (NUCLEAR METHODS).

CONSTRUCTION MANAGEMENT NOTES:

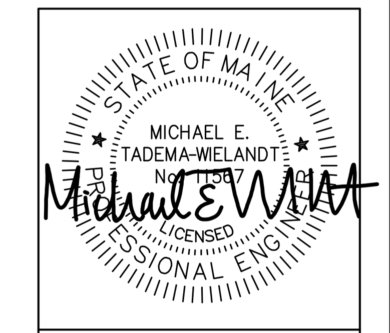
1. ALL CONSTRUCTION SHALL COMPLY WITH 2009 NFPA 1 CHAPTER 16 SAFE GUARDS DURING BUILDING CONSTRUCTION, ALTERATION AND DEMOLITION OPERATIONS.
2. ANY CUTTING AND WELDING WORK PERFORMED ONSITE SHALL REQUIRE A "HOT WORK" PERMIT FROM THE PORTLAND FIRE DEPARTMENT.
3. THE GENERAL CONTRACTOR SHALL POST EMERGENCY CONTACT INFORMATION ON THE PROJECT SITE PROPERTY DURING CONSTRUCTION IN THE EVENT OF AN AFTER HOURS EMERGENCY. THIS CONTACT INFORMATION SHALL ALSO BE PROVIDED TO THE PORTLAND FIRE DEPARTMENT.
4. STREETS SHALL MAINTAIN A 20' WIDTH FOR FIRE DEPARTMENT ACCESS AT ALL TIMES.
5. FIRE HYDRANTS SHALL NOT BE BLOCKED OR ENCLOSED BY FENCING. A 3' CLEARANCE SHALL BE MAINTAINED AT ALL TIMES AROUND FIRE HYDRANTS.

UTILITY NOTES:

1. ALL REQUIRED UTILITIES SERVING THE PROJECT SHALL BE COORDINATED BETWEEN THE SITE WORK CONTRACTOR AND DIVISION 22/26 CONTRACTOR(S). THE SITE WORK CONTRACTOR SHALL BE RESPONSIBLE TO EXTEND ALL PROPOSED UTILITIES TO WITHIN FIVE (5) FEET OF THE BUILDING TO A LOCATION COORDINATED WITH THE MECHANICAL AND ELECTRICAL SUBCONTRACTORS. THE BUILDING CONTRACTOR SHALL BE RESPONSIBLE FOR ALL UTILITIES WITHIN FIVE (5) FEET AND INSIDE THE BUILDING OR UNDER SLAB.
2. THE CONTRACTOR SHALL OBTAIN, PAY FOR, AND COMPLY WITH ALL REQUIRED PERMITS, ARRANGE FOR ALL INSPECTIONS, AND SUBMIT COPIES OF ACCEPTANCE CERTIFICATES TO THE OWNER PRIOR TO COMPLETION OF THE PROJECT.
3. THE CONTRACTOR SHALL PROVIDE AND INSTALL ALL BOXES, FITTINGS, CONNECTORS, COVER PLATES AND OTHER MISCELLANEOUS ITEMS NOT NECESSARILY DETAILED ON THE DRAWINGS TO RENDER INSTALLATION OF UTILITIES COMPLETE AND OPERATIONAL, AT NO EXTRA EXPENSE TO THE OWNER.
4. A 10 FOOT MINIMUM EDGE TO EDGE HORIZONTAL SEPARATION SHALL BE PROVIDED BETWEEN ALL WATER AND SANITARY SEWER LINES. A 12 INCH OUTSIDE TO OUTSIDE VERTICAL SEPARATION SHALL BE PROVIDED AT ALL WATER AND SANITARY SEWER CROSSINGS.

PERMITTING NOTES:

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



DATE: 7-12-2018
P.E.: MICHAEL E. TADEMA-WIELANDT

NO.	DATE	REVISIONS	APP'D BY
4	7-12-2018	REVISED PER STAFF COMMENTS	MTW
3	7-10-2018	REVISED PER STAFF COMMENTS	MTW
2	5-2-2018	MODIFIED FIRE SUPPRESSION WATER SERVICE PER PWD COMMENTS	MTW
1	4-20-2018	SUBMITTED TO PLANNING BOARD FOR APPROVAL	MTW

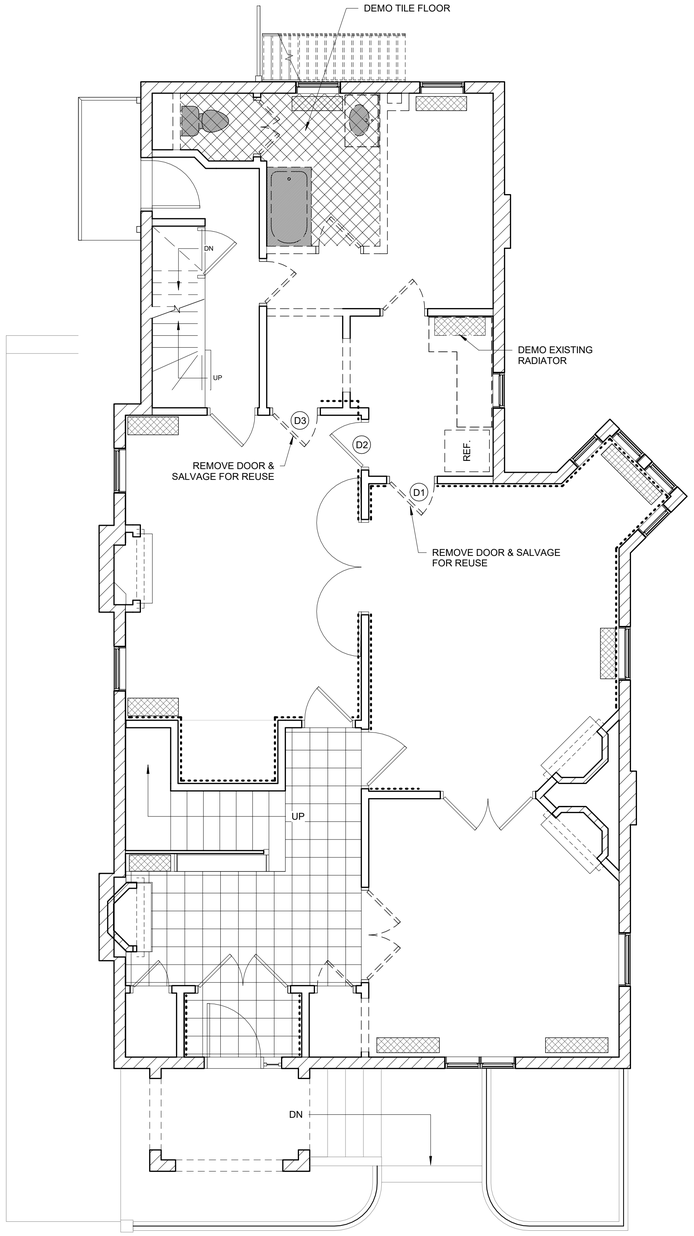
TERRADYN CONSULTANTS, LLC
P.O. BOX 339
41 CAMPUS DRIVE
SUITE 101
NEW GLOUCESTER, ME 04260
565 CONGRESS STREET
SUITE 310
PORTLAND, ME 04102
OFFICE: (207) 926-5111 FAX: (207) 221-1317
www.terradynconsultants.com
Civil Engineering - Land Planning - Stormwater Design - Environmental Permitting

SHEET DESCRIPTION
765 CONGRESS STREET
PORTLAND, MAINE
DETAILS & NOTES

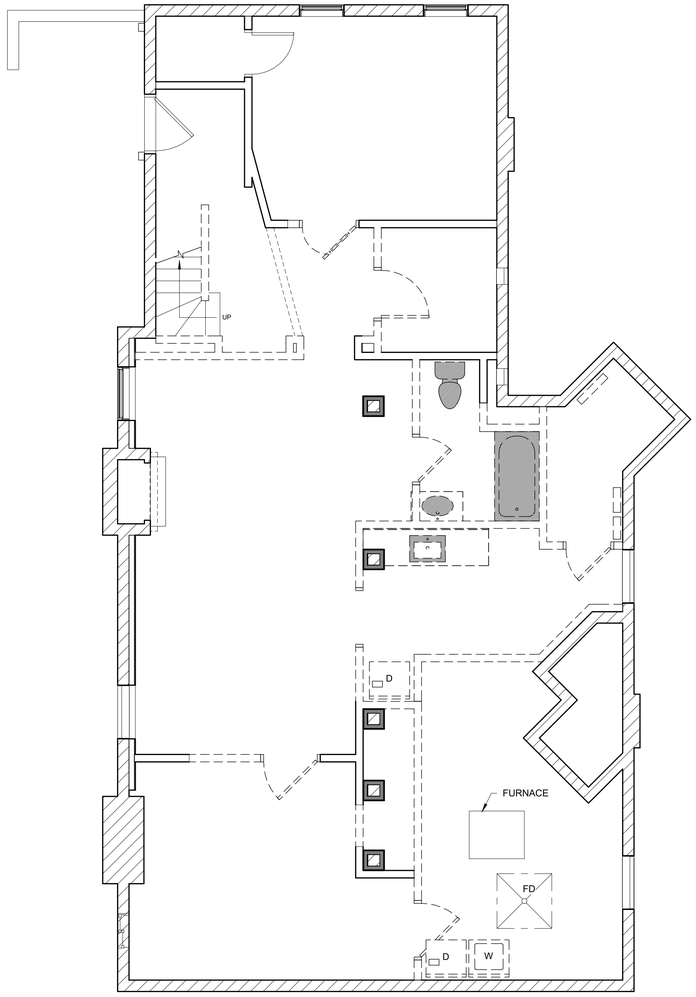
PREPARED FOR
765 CONGRESS STREET, LLC
25 EDGEHILL ROAD
BROOKLINE, MA 02445

DATE:	4/10/2018
SCALE:	1"=10'
DESIGNED:	MTW
JOB NO:	1816
FILE:	1728 BASE.DWG
SHEET	C-2.0

NEW WALL - STUD & GYP. BD.	
EXISTING STUD WALL OR FLOOR	
EXISTING MASONRY WALL	
DEMO AND REMOVE	
EXISTING WAINSCOTING	
SEMI RECESSED FIRE EXTINGUISHER CABINET	
EXISTING DOOR	
NEW DOOR	
EXISTING RADIATOR, TO REMAIN	



2 EXISTING SECOND FLOOR PLAN
1/4" = 1'-0"



1 EXISTING FIRST FLOOR PLAN
1/4" = 1'-0"

Prepared For:
Sam Reiche

Consultant:

Architect:
ARCHETYPE architects
48 Union Wharf Portland, Maine 04101
(207) 772-6022ARCHETYPE@ARCHETYPEPA.COM

Project:
765 CONGRESS STREET
Address
City, State

Revisions:

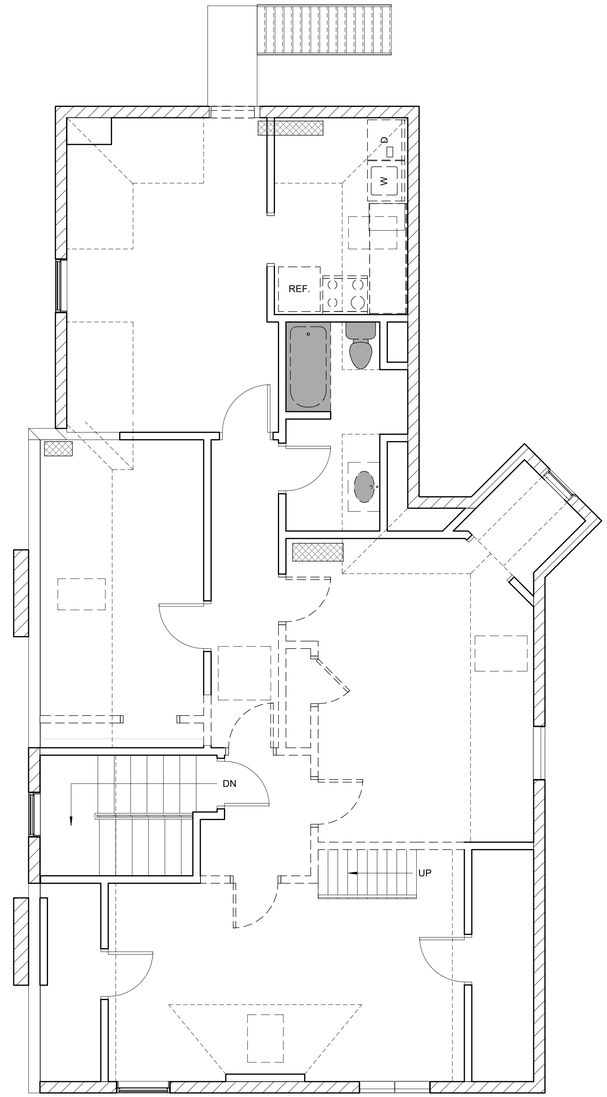
Scale: As indicated

Date: DECEMBER 4

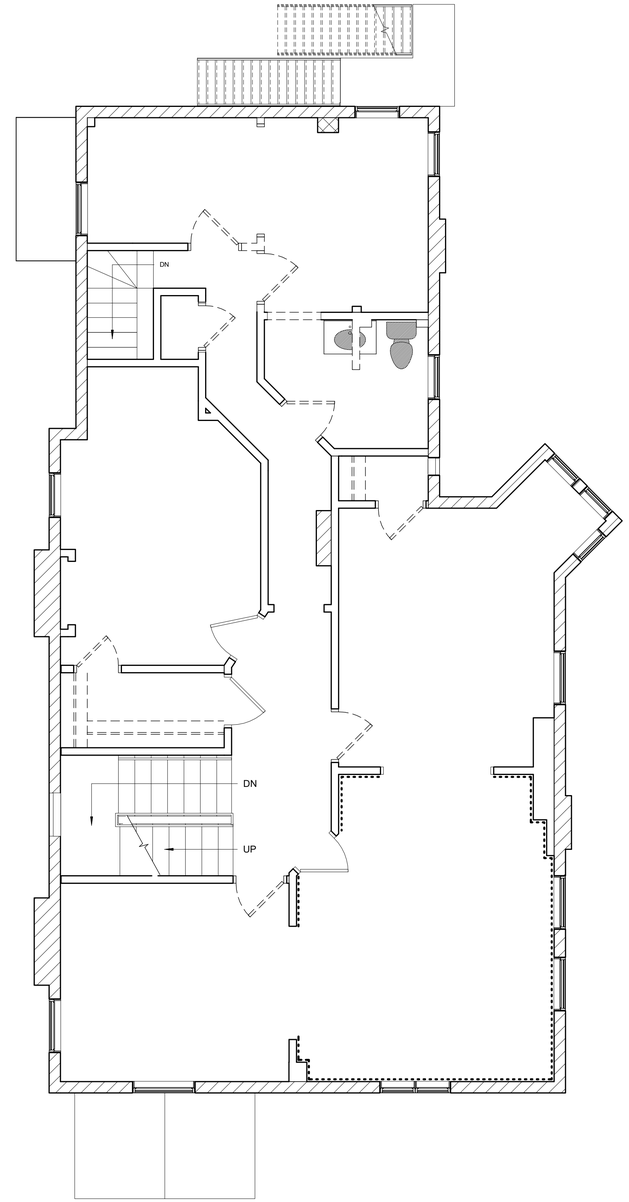
EXISTING FLOOR PLANS WITH DEMO

A0.01

NEW WALL - STUD & GYP. BD.	
EXISTING STUD WALL OR FLOOR	
EXISTING MASONRY WALL	
DEMO AND REMOVE	
EXISTING WAINSCOTING	
SEMI RECESSED FIRE EXTINGUISHER CABINET	
EXISTING DOOR	
NEW DOOR	
EXISTING RADIATOR, TO REMAIN	



2 EXISTING FOURTH FLOOR PLAN
1/4" = 1'-0"



1 EXISTING THIRD FLOOR PLAN
1/4" = 1'-0"

Prepared For:
Sam Reiche

Consultant:

Architect:
ARCHETYPE architects
48 Union Wharf Portland, Maine 04101
(207) 772-6022 ARCHETYPE@ARCHETYPEPA.COM

Project:
765 CONGRESS STREET

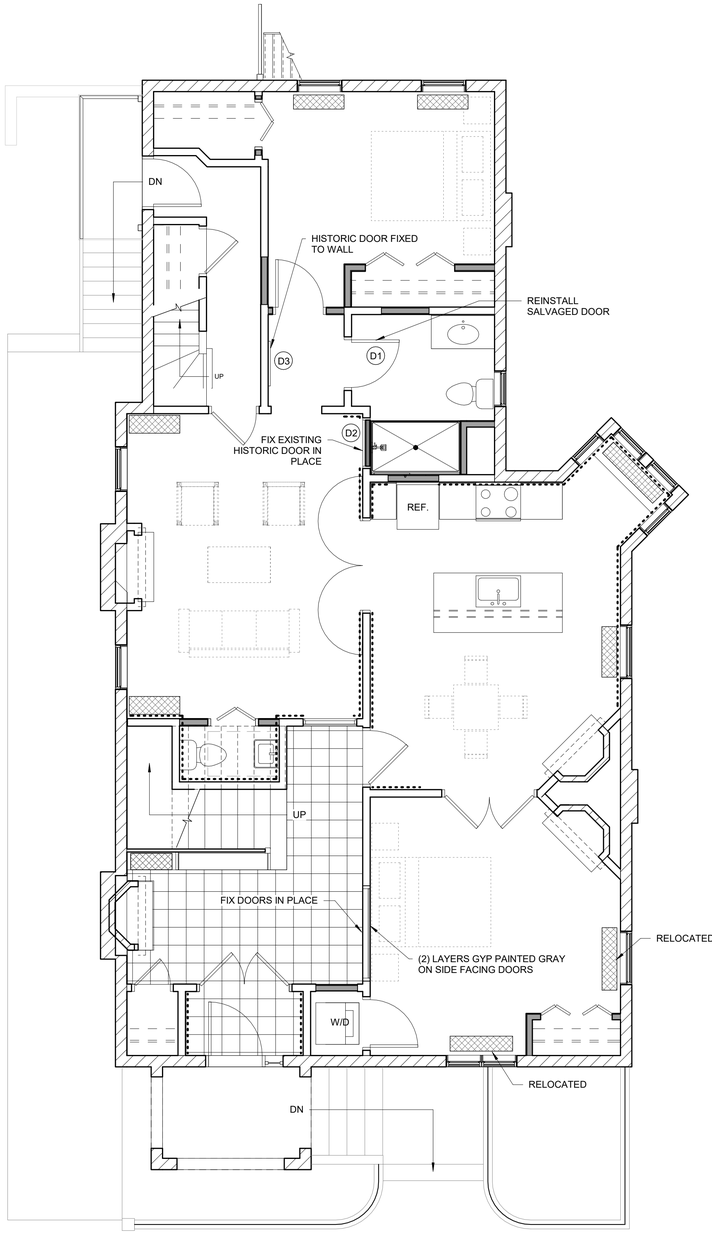
Revisions:

Scale: As indicated

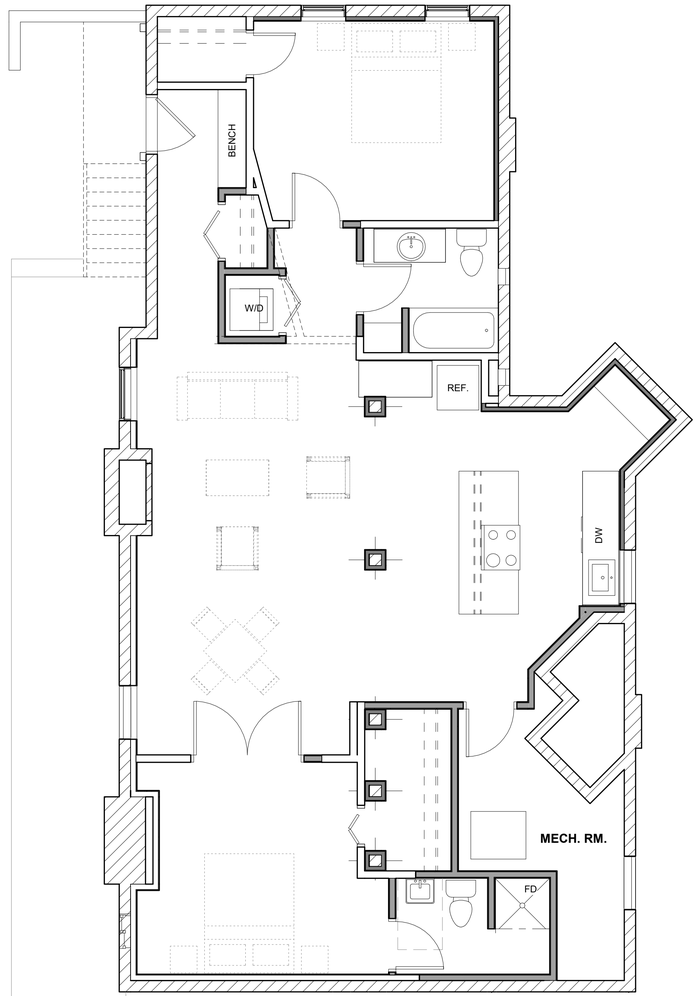
Date: DECEMBER 4

EXISTING FLOOR PLANS WITH DEMO

A0.02



2 | NEW SECOND FLOOR PLAN
1/4" = 1'-0"



1 | NEW FIRST FLOOR PLAN
1/4" = 1'-0"

Prepared For:
Sam Reiche

Consultant:

Architect:
ARCHETYPE architects
48 Union Wharf Portland, Maine 04101
(207) 772-6022 ARCHETYPE@ARCHETYPEPA.COM

Project:
765 CONGRESS STREET

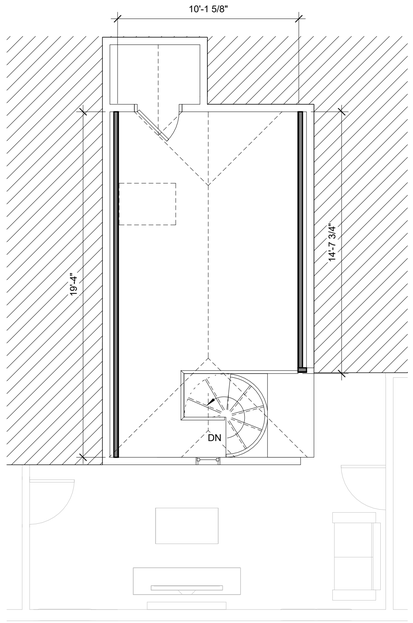
Revisions:

Scale:
1/4" = 1'-0"

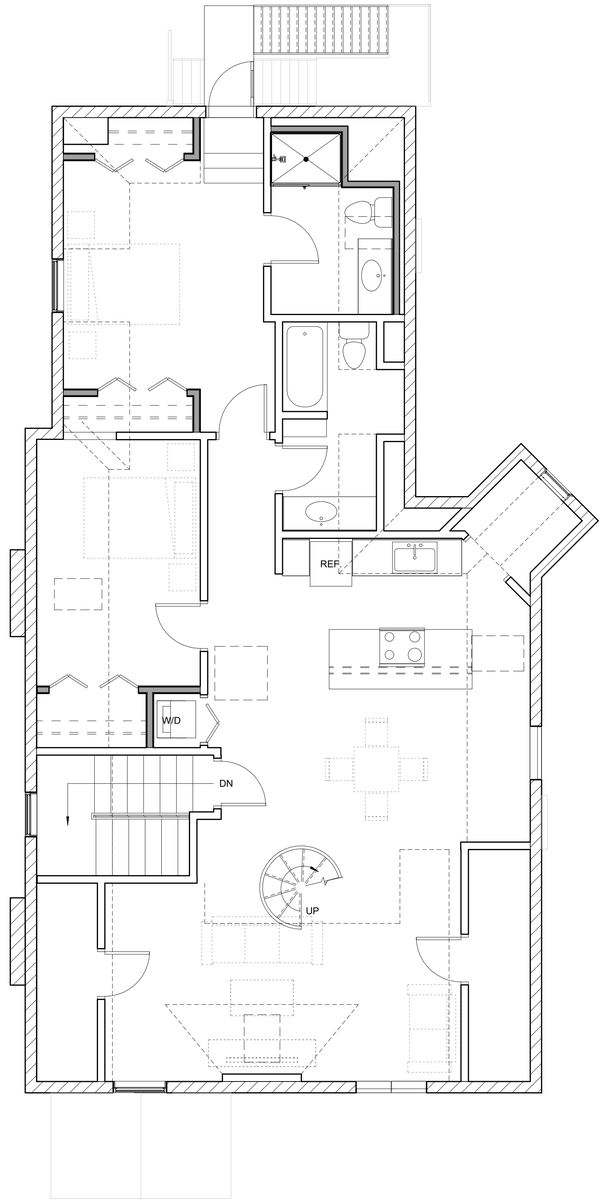
Date:
DECEMBER 4

NEW FLOOR PLANS

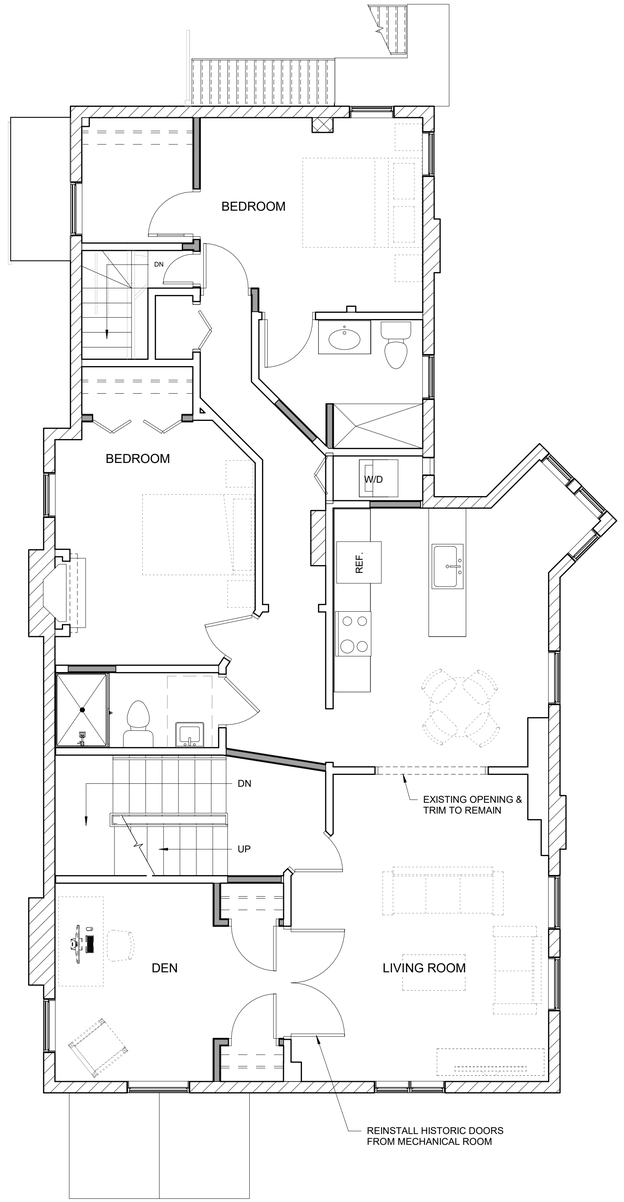
A1.01



1 NEW MEZZANINE PLAN
1/4" = 1'-0"



4 NEW FOURTH FLOOR PLAN
1/4" = 1'-0"



3 NEW THIRD FLOOR PLAN
1/4" = 1'-0"

Prepared For: Sam Reiche

Consultant:

Architect:
ARCHETYPE architects
48 Union Wharf Portland, Maine 04101
(207) 772-6022 ARCHETYPE@ARCHETYPEPA.COM

Project: 765 CONGRESS STREET
Address
City, State

Revisions:

Scale: 1/4" = 1'-0"

Date: DECEMBER 4

NEW FLOOR PLANS

A1.02

Google Groups

765 Congress St PL-000064-2018

Christine Horne <crh@portlandmaine.gov> Jul 13, 2018 4:26 PM
Posted in group: **Planning Board**

I would like to express my concern regarding the conversion of 765 Congress Street into four residential units. (Plan #PL-000064-2018).

I am glad to see there is an effort being made for off-street parking spaces. However, I am concerned that they are leased from someone else, and not part of the 765 Congress St property itself. The term "Option to lease parking" implies that parking off-street is optional and not guaranteed. Who leases the spaces? The landlord? The tenant? What if someone decides they don't want to pay for a space? or does it come with the apartment? The point I am trying to make is that there is heavy competition for on-street parking spaces, especially when the city restricts parking once a week during the fall/winter months. Anytime there is an addition to the area, whether it is a new business or housing, there is an increased need for on-street parking. Perhaps it would be possible to lease more spaces, or perhaps actually buy the land for spaces that belong to the property in question. Parking is a serious concern in the area and as someone who has lived here for over 30 years and has had to park on the street, it is something that has to be carefully considered, for both residents already in the area, and for the people coming in to the area.
Thank You,

Chris Horne
741 Congress St
Portland ME 04102

765 Congress St. PL #-000064-2018

bevybeat _ <bevybeat@msn.com> Jul 13, 2018 6:06 PM
Posted in group: **Planning Board**

Hello,
I am sorry I can not attend the July 17th meeting tonight, but I would like to draw attention to some concerns regarding the impact that this proposal would have on the 765 Congress Street area businesses and neighborhood residents.

I am writing to express concern about the proposal by 415 CA LLC to provide only 4 parking spaces at their 765 Congress street renovation & conversion. (Plan Number PL-000064-2018)

The developer plans to provide a total of 9 bedrooms in a total of 4 proposed units. That's a potential for at least 9 individuals (more if they are double beds), and thus potentially 9 or more cars that need to be parked.

I understand that the city requires 1 parking space per unit, thus 4 parking spaces are required at minimum... The city requires 1 parking space per unit as a measure to not create additional strain to the existing curbside parking.
The spirit and intent of that requirement is designed to assure low or no impact on existing curbside parking.

However, the developer intends to lease the 4 spaces... This raises multiple red flags: (1) What if any of the 4 units has more than one tenant with a car? (2) What if the lessor decides to change the terms of the parking lease? (i.e. raise the rent or terminate or not renew the lease for whatever reason?) (3) What if a tenant opts out of paying for a parking space? (4) The lease of these 4 spaces may displace vehicles that already use this lot. Employees at the Sawyer's Flower Shop (corner of Congress & Mellen) for example, already use this lot to park, and their delivery vehicles stay overnight there. There are other vehicles that use the lot on a regular daily/nightly basis.

The developer's compliance with this city requirement depends 100% on the lessor, a party who has no requirement to provide parking for someone else's tenants. The lessor could reclaim the parking spaces or renege on the deal at any time.

So in summary, because these are not single-bedroom units, 4 parking spaces is inadequate in complying with the spirit of a requirement designed to prevent exacerbating existing curbside parking. Displacing existing vehicles to provide leased spaces further defeats the spirit of the requirement. Even if more spaces were to be required, which in this case they should be, there's no guarantee that these 4 (or more) spaces will exist into the future, as they rely on the whim & circumstances of the lessor.

Finally, please bear in mind that City Manager Jon Jennings, Traffic Engineer Jeremiah Bartlett; Head of Parking John Peverada, and Neighborhood Liason Mike Murray recently made a group visit to this area, and they all agreed that the availability of curbside parking throughout the Bramhall section is thoroughly maxed-out, both day & night. It's a fact. Curbside parking is extremely tight here. In real-world terms, these 4 proposed units actually represent more than 4 people, and could represent at least 9, and possibly more. Many people own a car to commute to work, shop, travel, etc...

It would be remiss if the planning board were to approve only the 4 space minimum, when in this case there should be more, and derelict of them to not

insist and assure that these spaces would be available to the tenants of the converted 765 Congress St. units in perpetuity.

Thank you,
Respectfully,
Richard Julio
741 Congress Street (owner/resident)
Portland