CITY OF PORTLAND, MAINE

PLANNING BOARD



Brandon Mazer, Chair
Maggie Stanley, Vice Chair
Marpheen Chann
Sean Dundon
Bob Dunfey
David Silk
Austin Smith

AGENDA
PORTLAND PLANNING BOARD MEETING

The Planning Board will hold a remote meeting on Tuesday, December 14, 2021, 4:30 p.m. Due to the existence of an emergency or urgent issue, the Planning Board will conduct this meeting by remote methods/technology at the Zoom link provided below in accordance with the requirements of 1 M.R.S. section 403-B and the City Council's Remote Participation Policy.

Public comments will be taken for each item on the agenda during the allotted time and written comments should be submitted to planningboard@portlandmaine.gov. Please note that the placement of this item on the agenda is subject to change. Please check the Agenda & Minutes Center prior to the meeting for the item's approximate start time.

When participating via Zoom, allow your computer to install the free Zoom app to get the best meeting experience. For public comment, you will need to use the "raise your hand" feature. To raise your hand via the telephone, please hit *9. You will be un-muted by the moderator when it is time for public comment. For more information on how to use Zoom, please go to: https://www.portlandmaine.gov/remotePUD

ZOOM MEETING INSTRUCTIONS
You are invited to a Zoom webinar.
When: Dec 14, 2021 04:30 PM Eastern Time (US and Canada)
Topic: Planning Board Workshop and Public Hearing 12/14/2021

Please click the link below to join the webinar: https://us02web.zoom.us/j/84591568240
Or One tap mobile : US: +19292056099,,84591568240# or +13017158592,,84591568240#
Or Telephone: Dial(for higher quality, dial a number based on your current location): US: +1 929 205 6099 or +1 301 715 8592 or +1 312 626 6799 or +1 669 900 6833 or +1 253 215 8782 or +1 346 248 7799
Webinar ID: 845 9156 8240
International numbers available: https://us02web.zoom.us/u/kchHMHr5X

WORKSHOP - 4:30 PM

i. Zoning Text Amendment; 35 Commercial Street; Maine Public Broadcasting Corporation, Applicant. (estimated time 4:30 – 6:00 p.m.) The Planning Board will hold a remote workshop to consider a zoning text amendment to modify Land Use Code Table 9-C: Height Bonuses to include Commercial Street in addition to Congress Street, allowing 12 feet of additional building height for qualifying development located within the Urban Active (UA) subdistrict of the India Street Form-Based Code Zone (IS-FBC).

ii. Major Site Plan; 50 (44) Bedford Street; University of Southern Maine, Applicant. (estimated time 6:00 – 7:30 p.m.) The Planning Board will hold a remote workshop to consider a proposal for the development of a four-level, 504 space parking garage with a footprint of 45,100 square feet, along with associated site improvements, at 50 (44) Bedford Street. The subject property is 8.1 acres in size and is located in the R-5 Residential and B-2 Community Business zones as well as in the USM Overlay Zone.

PUBLIC HEARING - 7:30 PM

1. ROLL CALL AND DECLARATION OF QUORUM

2. COMMUNICATION AND REPORTS

3. REPORT OF ATTENDANCE AT THE MEETING HELD ON NOVEMBER 23, 2021

Evening Hearing
58 Fore Street Master Development Plan: Dundon, Dunfey, Mazer, Silk, Stanley present; Chann absent; Smith recused.
58 Fore Street Zoning Text Amendment: Dundon, Dunfey, Mazer, Silk, Stanley present; Chann absent; Smith recused.
45 Forest Avenue: Dundon, Dunfey, Mazer, Silk, Smith, and Stanley present; Chann absent.
1 Union Wharf: Dundon, Dunfey, Mazer, Silk, Smith, and Stanley present. Chann absent.

4. REPORTS OF DECISIONS AT THE MEETING HELD ON NOVEMBER 23, 2021

i. Master Development Plan Amendment; 58 Fore Street; Portland Foreside Development Company, Applicant. Stanley moved and Dunfey seconded a motion to find the plan in conformance with the Master Development Plan standards of the Land Use Code with three conditions of approval. Vote 4-1, Silk opposed, Chann absent, Smith recused.

ii. Zoning Text Amendment; 58 Fore Street; Portland Foreside Development Company, Applicant. Stanley moved and Dunfey seconded a motion to find the proposed text amendment to Land Use Code Article 10, Section 10.2.3.B.11 and Section 10.2.7.C.4 to permit restaurants and food service uses as a limited component of a marina within the Eastern Waterfront Port Zone, as presented herein as Option A, consistent with the Comprehensive Plan for the City of Portland and recommends its adoption to the City Council. Vote 4-1, Silk opposed, Chann absent, Smith recused.

iii. Major Site Plan; 45 Forest Avenue; Redfern Properties, LLC., Applicant. Stanley moved and Dunfey seconded a motion to find the proposed conditional use for workforce housing meets the standards of Land Use Code Section 18.2.3 with two conditions of approval. Vote 6-0, Chann absent. Stanley moved and Dunfey seconded a motion to approve the site plan with three conditions of approval. Vote 6-0, Chann absent.

iv. Subdivision; 1 Union Wharf; Proprietors of Union Wharf, Applicant.Stanley moved and Dunfey seconded a motion to approve the subdivision. Vote 6-0, Chann absent.

5. NEW BUSINESS

i. Major Site Plan; 30-32 Atlantic Street; Kestrel, LLC., Applicant. (estimated time 7:30 – 8:30 p.m.) The Planning Board will hold a remote public hearing to consider a proposal for a three-story, four-unit multi-family building at 30-32 Atlantic Street. The subject property is 6,235 square feet in size, is zoned R-6 Residential, and is located within the Munjoy Hill Historic District and Neighborhood Conservation Overlay District.

ii. Level III Site Plan and Subdivision; 19 Willis Street (formerly 33-37 Montreal Street); 37 Montreal Street, LLC., Applicant. (estimated time 8:30 p.m.) The Planning Board will hold a remote public hearing to consider the construction of a four story, 12-unit residential development at 19 Willis Street (formerly 33-37 Montreal Street). The subject property is 10,804 square feet in size, is located in the Munjoy Hill Neighborhood Conservation Overlay District, and is zoned R-6 Residential.

Memorandum
Planning and Urban Development Department

To:	Chair Mazer & Members of the Planning Board
From:	Charles Tetelman, Planner
Date:	December 10, 2021
Re:	Zoning Text Amendment (Article 9)
Project ID:	ZN-001756-2021
Meeting Date:	December 14, 2021

I. INTRODUCTION

Maine Public Broadcasting Corporation ("Maine Public") has submitted a zoning text amendment application to amend Chapter 14, Article 9 of the City's Land Use Code to allow a height bonus in the Urban Active (UA) Subdistrict along Commercial Street within the India Street Form-Based Code Zone (IS-FBC). This application is being referred to the Planning Board for compliance with the City of Portland's Comprehensive Plan *Portland's Plan 2030* and adopted zoning policies stated in the IS-FBC section 9.1.

The Planning and Urban Development Department mailed 104 notices advertising this meeting to property owners within 500 feet of the site. A legal advertisement ran in the December 3, 2021 and December 4, 2021 editions of the *Portland Press Herald.*

Applicant:	Maine Public Broadcasting Corporation
Applicant Representatives:	Simons Architects (Steve Hoffman)

II. REQUIRED REVIEWS

Review	*Applicable Standards*
India Street Form-Based Code Zone	Section 9.1

III. BACKGROUND

Recommended by the Planning Board and formally adopted by the City Council (Order 83-15/16) in 2015, the India Street Form-Based Code Zone (IS-FBC) serves as a zoning district that encourages a vibrant, walkable, mixed-use, urban district, preserves and values the existing historic neighborhood fabric, and fosters and supports local businesses and residential areas. Form-based zones differ from standard Euclidean zoning and focuses on form, dimensional, and design elements of zoning. Where traditional zoning includes dimensional and use requirements with a focus on land use, the IS-FBC emphasizes a building's physical form with its relationship to the street and de-emphasizes land use.

In 2021, Maine Public purchased 29 and 35 Commercial Street which includes the Galt Block Building and the adjacent surface parking lot. They are planning to construct a new building in the location of the surface parking lot.

IV. EXISTING CONDITIONS

There are five lots that would be impacted by the proposed text amendment. These lots are shown below:



Figure 1: Parcels along Commercial Street

- Lot 029-P027 (9,000 square feet) contains the Galt Block Warehouse building, a **five story** office building on the corner of Commercial and Franklin Street. The building was purchased by Maine Public in 2021.
- Lot 029-P031 (9,416 square feet) is currently a surface parking lot and will be the site for Maine Public's new Portland headquarters.
- Lot 029-P032 (9,292 square feet) contains the **three story** Workingmen's Club building which has three office buildings inside. The lot also includes a surface level parking lot.
- Lot 029-N024 (7,509 square feet) is a **one story** building containing two units for commercial use.
- Lot 029-N026 (3,540 square feet) is a **four story** mixed-use building that formerly functioned as the New England House Hotel.

The IS-FBC applies to all new development designated on the India Street Regulating Plan (Section 9.1.3, Figure 9-A: IS-FBC Regulating Plan). The regulating plan shows the location of the zone boundary and subdistricts subject to regulation by the IS-FBC and is divided into three subdistricts: (i) Urban Neighborhood (UN) Subdistrict (ii) Urban Transitional (UT) Subdistrict (iii) Urban Active (UA) Subdistrict. With respect to height, the three subdistricts have the following standards:

Subdistrict	Pre-Bonus Height (max)	Bonus Height (max)	Bonus Floor Stepback (min)
UN	45 ft. and 4 stories	57 ft. up to 5 stories	15 ft.
UT	65 ft. and 6 stories	77 ft. up to 7 stories	15 ft.
UA (Congress Street Only)	50 ft. and 4 stories	62 ft. up to 5 stories	15 ft.

Recent IS-FBC Urban Active Subdistrict Site Plan Approvals:

- **7 India Street** (Level III Site Plan - 2020): Construction of a four story mixed-use building.
- **83 Middle Street** (Level III Site Plan - 2020): Construction of a five story building with 50 affordable residential units and rental commercial space on the first floor.

Commercial Street remains a primary corridor for tourism, commercial activity, and economic development. Access and proximity to the Portland waterfront is a significant draw for many businesses located in and around the Old Port. The block itself contains a variety of commercial uses including restaurants, a bank, and office space. The surrounding India Street neighborhood is characterized by a variety of mixed-use, commercial, and residential buildings.



Figure 2: Street View of Commercial Street

The block being considered is also within the Portland Waterfront (Old Port) Historic District. The block includes the Galt Block Warehouse building, Workingmen's Club Building, and the former New England House Hotel which are all contributing structures.

V. PROPOSED TEXT AMENDMENT

Text Amendment

The proposed text amendment would allow a Height Bonus along Commercial Street in the Urban Active (UA) Subdistrict of the IS-FBC. As shown below, the Commercial Street UA District includes five parcels between Franklin Street and India Street. Currently, UA Subdistrict height bonuses are only allowed along Congress Street.

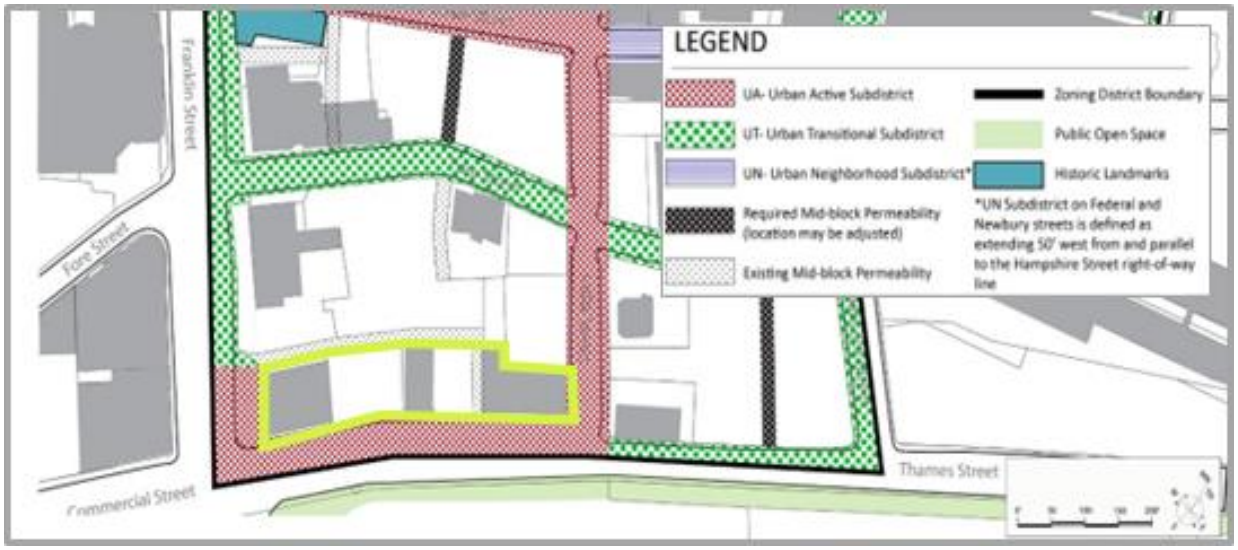


Figure 3: Parcels with frontage along the Commercial Street UA Subdistrict

There are two proposed text changes associated with this application (Attachment F and G):

1) A text amendment to 'Table 9-C: Height Bonuses' shown below:

TABLE 9-C: HEIGHT BONUSES

Subdistrict	Pre-Bonus Height (max.)	Mid-Block Permeability[1]	Residential Density	Green Roof	Affordable Housing	Height With Bonus (max.)	Bonus Floor Stepback[2] (min.)
UN	45 ft. and 4 stories	n/a	n/a	n/a	1 story up to 12 ft.	57 ft. up to 5 stories	15 ft.
UT	65 ft. and 6 stories	1 story up to 12 ft.	1 story up to 12 ft.	1 story up to 12 ft.	1 story up to 12 ft.	77 ft. up to 7 stories	15 ft.
UA (Congress Street and Commercial Street only)	50 ft. and 4 stories	1 story up to 12 ft.	1 story up to 12 ft.	1 story up to 12 ft.	1 story up to 12 ft.	62 ft. up to 5 stories	15 ft.

[1] Must be publicly accessible.
[2] Measured from the ground floor building edge facing any public right-of-way.

2) A text amendment to Chapter 14, Section 9 (9.1.7.C.1.a):

"If a frontage faces a UT street, UN street, ~~or Congress Street~~ or allowed UA street according to Table 9-C, then the portion of the building facing that street is eligible for a height bonus. For lots with multiple frontages where a frontage faces an ineligible street, bonus story must be stepped back at least 35 feet from ineligible street line."

Staff Analysis

As mentioned above, only a small section of Commercial Street falls within the IS-FBC and this change would impact five parcels in the zone. However, two of the parcels will still be partially restricted due to frontages along the UA Subdistrict portions of Franklin Street and India Street. "*For lots with multiple frontages where a frontage faces an ineligible street, bonus story must be stepped back at least 35 feet from ineligible street line.*" The dominant, or more restrictive, dimensional requirements take precedent in the IS-FBC. With this change, Lots 029-P027 and 029-N026 will have height restriction setbacks 35 feet from Franklin Street and India Street respectively. In addition, the subject block contains a mix of building types that range from one- to five-stories.

Staff also considered the height bonus in relation to the rest of Commercial Street as well as Thames Street moving towards the Eastern Promenade. The Downtown Height Overlay map dictates building heights within the B-3 zone on Commercial Street west of Franklin Street to Center Street. The maximum building height is 65 feet. The B-5b zone, mapped along Commercial Street between State Street and Maple Street roughly to a depth of 250 feet also has a permitted maximum height of 65 feet. To the east, Thames Street, between India Street and Hancock Street, is part of the IS-FBC Urban Transitional Subdistrict with a maximum height of 65 feet (and up to 77 feet with a height bonus). The proposed text amendment (62 foot maximum building height up to 5 stories) would be consistent with the rest of Commercial Street and Thames Street along the waterfront and would create continuity in the streetwall, enhancing the pedestrian streetscape.

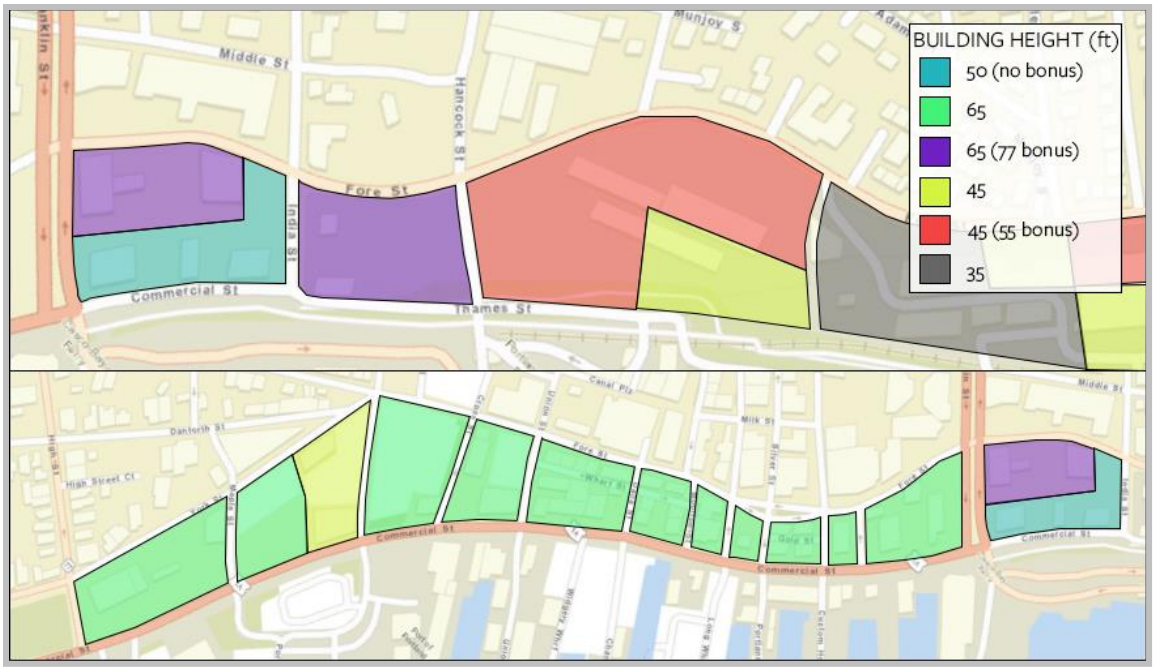


Figure 4: Building Height along Commercial Street

As part of the original IS-FBC adoption process in 2015, a key development principle was to ensure that neighborhood growth would carefully consider form and scale. This would include graduation of form to vary by location so that future development would be appropriately scaled to its surrounding context. In conducting its review of the application staff also evaluated the surrounding context to ensure compatibility. As mentioned above the majority of Commercial Street allows building heights of 65 feet. To the west, north, and east of the subject block nearby Franklin, Fore, and Thames streets allow buildings to be constructed up to 65 feet or 77 feet up to seven stories max. Furthermore, the subject block is located along Commercial Street and near the confluence of Franklin Street and Commercial Street, both wide major thoroughfares. This context contributes to the appropriateness of increasing height at this location.

VI. COMPREHENSIVE PLAN CONSISTENCY

Portland's Plan 2030

As part of their application, the applicant highlighted a variety of elements from *Portland's Plan 2030* as it relates to the proposed text amendment (Attachment D). Many elements of this attachment relate more directly to the future use associated with 29 Commercial Street. However, the applicant cites objectives outlined in the City's Historic Resources guide related to *Authenticity* and *Security*.

Secure

"We will prepare for emergencies and ready for a changing climate."

The height bonus along Commercial Street will allow for more space protected against any flooding associated with a category 4 Hurricane or larger. Potentially including important broadcasting infrastructure during emergencies.

Authentic

"The uniqueness and integrity of our neighborhoods will be maintained and enhanced."

The height bonus along the Urban Active Subdistrict of the IS-FBC will match the scale and style of other buildings along Commercial Street include the Galt Block building and the Workingmen's Club.

In conducting its review of the application, Staff identified a number of objectives outlined in *Portland's Plan 2030* that support the requested text amendment. Those sections include the Plan's stated desire to stabilize and enhance historic areas of the city by ensuring quality investment in existing structures and compatible infill development and ensuring both an appropriate balance of continuity and change as Portland grows and evolves (*Portland's Plan Historic Resources Policy Guide, Local Goals).* The Plan also highlights the importance of promoting and fostering an economic climate that increases job opportunities and overall economic well-being as well as evaluating zoning to ensure employment and housing growth can be supported. Furthermore, the proposed change supports the principles of future land use outlined in Portland's Plan 2030 including the vision for One Portland, where the form and characteristics of neighborhoods vary, but the City functions as a whole and Complete Neighborhoods by creating opportunities for all residents to have access to services. The proposed text amendment supports the Comprehensive Plan in the following ways:

Historic Resources
"Stabilize and enhance historic areas of the city by ensuring quality investment in existing structures and compatible infill development."

"Ensure an appropriate balance of continuity and change as Portland grows and evolves."

Waterfront:
"Prioritize and promote Portland's unique mix of water-dependent, marine-related uses and compatible non-marine uses."

Economy:
"Respect that our unique quality of place is key to our current and future economic success."



Figure 5: From *Portland's Plan 2030*

"Pursue policies that create, nurture, and retain local businesses."

"Evaluate zoning and the condition of existing infrastructure in priority areas – downtown, identified neighborhood nodes, and along transit corridors – to ensure that employment and housing growth can be supported."

Housing:
"Increase, preserve, and modify the overall supply of housing city-wide to meet the needs, preferences and financial capabilities of all Portland residents."

"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."

VII. PUBLIC COMMENT

Four public comments were received regarding the proposed text amendment (Attachments PC 1 - 4).

Three of the public comments were opposed to the proposed text amendment citing the differences between Congress Street as a downtown urban location and Commercial Street as a historic working waterfront. These comments were concerned that taller building heights are not appropriate in the historic Old Port and worry that continued expansion of height bonuses in the area could impact the character and future cityscape. One final comment noted the applicant's lack of reasoning or applicant's need to add a height bonus.

The fourth public comment (from an abutting tenant) wrote neither for nor against the text amendment, but expressed concern about future development on the 29 Commercial Street surface parking lot and how a new building could impact the use of the existing ATM on the side of the Five County Credit building by creating a blind spot or alley with limited visibility.

VIII. NEXT STEPS

1. Planning Board Workshop and initial feedback from the Board
2. Planning Board Public Hearing & Recommendation
3. City Council 1st Reading
4. City Council 2nd Reading and Adoption of Text Amendment (if approved)

IX. ATTACHMENTS

Applicant Submittal

A. Application Check-List
B. Deed QC with Covenant (EssexNorth 25)
C. Deed QC with Covenant (EssexNorth 35)
D. MP Consistency with Comprehensive Plan 10082021
E. MP Proposed text amendment 11302021
F. Table 9-C IS-FBC 11302021

Drawings

Plan 1. SITE PLAN & Massing
Plan 2. Location – 35 Commercial Street
Plan 3. ALTA_NSPS Land Title Survey 2019

Public Comment

PC 1 – PFS + MS
PC 2 – Voicemail
Pc 3 – KM
Pc 4 - MF

CITY OF PORTLAND
Planning & Urban Development Department

MAP AND TEXT AMENDMENT SUBMISSION CHECKLIST * Please submit each document and drawing as a separate PDF file * Please submit all drawings in a 24 x 36 sheet size * Please confirm each item by electronically checking the boxes to the left for each document/drawing	
GENERAL APPLICATION DOCUMENTS	
☑	**Project Description** • Cover Letter with detailed project description
☑	**Consistency with Comprehensive Plan** • Analysis of the consistency of the zone change request with the goals, policies and land use plan of Portland's Comprehensive Plan.
☑	**Proposed Text Amendment** • Provide proposed language for text amendment(s) and cite the relevant sections to be revised in the Land Use code.
☑	**Completed Checklist – Map and Text Amendment Application (this document)**
☑	**Right, Title and Interest** • Deeds, leases, or purchase and sales agreements
PLANS	
☑	**Vicinity Map**
☐	**Proposed Map Amendment** (please use the Portland zoning map as a reference)
☑	**Site Plan (if applicable)** On a separate sheet, please provide a site plan of the property showing existing and proposed improvements, including such features as buildings, parking, driveways, walkways, landscape and property boundaries.

This document has been recorded electronically
on 09/24/2021 at 08:18:09 AM
Please see the attached copy to view the
Recorder's Stamp as it now appears in the public record.
State: ME Jurisdiction: Cumberland County Registry of Deeds
Instrument # 68164
Book: 38692 Page: 244
Submitted by Monument Title Company

DLN: 10021401638O4

QUITCLAIM DEED WITH COVENANT

ESSEXNORTH 25 COMMERCIAL LLC, a Maine limited liability company, having a mailing address of P.O. Box 394, Topsfield, MA 01983 (the "Grantor"), FOR CONSIDERATION PAID, grants to MAINE PUBLIC BROADCASTING CORPORATION, a Maine nonprofit corporation, having a mailing address of 1450 Lisbon Street, Lewiston, ME 04240 (the "Grantee"), with QUITCLAIM COVENANT, certain real property, together with any improvements thereon, located on Commercial Street, City of Portland, County of Cumberland and State of Maine, more particularly described on **Exhibit A** attached hereto and made a part hereof.

For Grantor's source of title see Quitclaim Deed with Covenant granted by Auto Europe, LLC to EssexNorth 25 Commercial LLC dated October 25, 2019 and recorded in the Cumberland County Registry of Deeds in Book 36156, Page 203.

IN WITNESS WHEREOF, EssexNorth 25 Commercial LLC has caused this instrument to be executed by Terri Lee Carabillo, Manager of EssexNorth Portland LLC, Manager of EssexNorth 25 Commercial LLC, thereunto duly authorized, as of this 23rd day of September, 2021.

ESSEXNORTH 25 COMMERCIAL LLC
By: EssexNorth Portland LLC, its Manager

Witness

By: _____
Terri Lee Carabillo, Manager

Commonwealth of Massachusetts
County of Essex, ss

September 23, 2021

PERSONALLY APPEARED the above-named Terri Lee Carabillo, Manager of EssexNorth Portland LLC, Manager of EssexNorth 25 Commercial LLC as aforesaid, and acknowledged the foregoing instrument to be his/her free act and deed in his/her said capacity and the free act and deed of said limited liability companies.

Before me,

JOHN T. McLAUGHLIN
Notary Public
Commonwealth of Massachusetts
My Commission Expires November 25, 2022

_____
Notary Public/Attorney at Law
Commission Expires:
Print Name:

Exhibit A

A certain lot or parcel of land with the buildings thereon, situated on the northwesterly side of Commercial Street, in the City of Portland, County of Cumberland, Maine, comprising the premises numbered 23-31 on said Commercial Street and being bounded and described as follows:

Beginning on said Commercial Street at the center of the brick wall at the easterly end of the block of stores erected by Samuel Tyler, the center of said brick wall being distant from the easterly side of Franklin Street a distance of 100.85 feet; thence northwesterly through the center of said brick wall and in continuation of the same course to the southerly side of a passageway, which said passageway extends from said Franklin Street northeasterly; thence northeasterly by said passageway by various courses a distance of 112.65 feet, more or less, to line of land now or formerly of the heirs of Lemuel Dyer as established July 13, 1853 by deed recorded in the Cumberland County Registry of Deeds in Book 248, Page 183; thence southeasterly by said Dyer line a distance of ninety (90) feet to said Commercial Street; thence westerly by the northerly side line of said Commercial Street 105.27 feet, more or less, to the point of beginning, together with all its right, title and interest in and to all structures on the lot hereby conveyed which may extend into the limits of said passageway as originally laid out, also the right to the use in common with others of said passageway.

The above-described premises is subject to the following:

1. Certificate of Variance of Approval dated August 11, 1988 and recorded in the said Registry of Deeds in Book 8422, Page 121.

2. Rights and easements granted by Auto Europe Inc. to Central Maine Power Company and New England Telephone and Telegraph Company by instrument dated January 25, 1996 and recorded in the Cumberland County Registry of Deeds in Book 12368, Page 67.

3. Rights of others in and to the 20' common passageway located in the rear of the above described parcel.

4. Rights of the owners of the property next westerly thereof on Commercial Street to maintain one-half of the easterly wall of the building on said adjoining premieses along the westerly line of the premises above described.

5. Rights and easements set forth in the Easement Deed granted by EssexNorth 25 Commercial LLC to EssexNorth 35 Commercial LLC dated November 4, 2019 and recorded in the Cumberland County Registry of Deeds in Book 36156, Page 206.

This document has been recorded electronically
on 09/24/2021 at 08:19:08 AM.
Please see the attached copy to view the
Recorder's Stamp as it now appears in the public record.
State: ME Jurisdiction: Cumberland County Registry of Deeds
Instrument # 68670
Book: 38692 Page: 246
Submitted by Monument Title Company

DLN: 10021401163867

QUITCLAIM DEED WITH COVENANT

ESSEXNORTH 35 COMMERCIAL LLC, a Maine limited liability company, having a mailing address of P.O. Box 394, Topsfield, MA 01983 (the "Grantor"), FOR CONSIDERATION PAID, grants to MAINE PUBLIC BROADCASTING CORPORATION, a Maine nonprofit corporation, having a mailing address of 1450 Lisbon Street, Lewiston, ME 04240 (the "Grantee"), with QUITCLAIM COVENANT, certain real property, together with any improvements thereon, located on Commercial Street, City of Portland, County of Cumberland and State of Maine, more particularly described on **Exhibit A** attached hereto and made a part hereof.

For Grantor's source of title see Quitclaim Deed with Covenant granted by Auto Europe, LLC to EssexNorth 35 Commercial LLC dated October 25, 2019 and recorded in the Cumberland County Registry of Deeds in Book 36156, Page 200.

IN WITNESS WHEREOF, EssexNorth 35 Commercial LLC has caused this instrument to be executed by Terri Lee Carabillo, Manager of EssexNorth Portland LLC, Manager of EssexNorth 35 Commercial LLC, thereunto duly authorized, as of this 23rd day of September, 2021.

ESSEXNORTH 35 COMMERCIAL LLC
By: EssexNorth Portland LLC, its Manager

Witness

By: _____
Terri Lee Carabillo, Manager

Commonwealth of Massachusetts
County of Essex, ss

September 23, 2021

PERSONALLY APPEARED the above-named Terri Lee Carabillo, Manager of EssexNorth Portland LLC, Manager of EssexNorth 35 Commercial LLC as aforesaid, and acknowledged the foregoing instrument to be his/her free act and deed in his/her said capacity and the free act and deed of said limited liability companies.

Before me,

JOHN T. McLAUGHLIN
Notary Public
Commonwealth of Massachusetts
My Commission Expires November 25, 2022

_____
Notary Public/~~Attorney at Law~~
Commission Expires:
Print Name:

Exhibit A

PARCEL 1

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

Beginning at the junction of the northwesterly side of Commercial Street and northeasterly side of Franklin Street; thence running easterly on Commercial Street fifty (50) feet to the middle of a partition wall; thence northerly by the middle line of said wall about ninety (90) feet to the common passageway hereinafter named; thence westerly on the line of said passageway to Franklin Street; thence southerly by Franklin Street to the point begun at, together with the right of way in a common passageway twenty (20) feet wide laid out and reserved in the rear of said lot.

PARCEL 2

A certain lot or parcel of land, with the buildings thereon situated on the northerly side of Commercial Street in said Portland, and bounded and described as follows:

Commencing at the center of the partition wall of two brick stores in the block situated at the corner of Commercial and Franklin Streets, and formerly owned by A. and S.E. Spring; thence running northerly through the center of said brick wall ninety (90) feet to a passageway in the rear of said premises; thence easterly on the line of said passageway a distance of fifty (50) feet, more or less, to the outer or easterly face or outside of the wall forming the foundation wall on the easterly side of the block on the premises hereby conveyed; thence southeasterly by said wall ninety (90) feet, more or less, to said Commercial Street; thence southerly by said Commercial Street fifty (50) feet, more or less, to the point begun at; intending hereby to convey the third and fourth stores in the block of four stores fronting on Commercial Street at its intersection with Franklin Street,.together with a right of way in common passageway twenty (20) feet in width, extending in the rear of said premises.

The above-described premises is subject to the following:

1. Certificate of Variance of Approval dated August 11, 1988 and recorded in the said Registry of Deeds in Book 8422, Page 121.

2. Rights and easements granted by Auto Europe Inc. to Central Maine Power Company and New England Telephone and Telegraph Company by instrument dated January 25, 1996 and recorded in the Cumberland County Registry of Deeds in Book 12368, Page 67.

3. Rights of others in and to the 20' common passageway located in the rear of the above described parcels.

4. Rights of the owners of the property next westerly thereof on Commercial Street to maintain one-half of the easterly wall of the building on said adjoining premieses along the westerly line of the premises above described.

5. Rights and easements set forth in the Easement Deed granted by EssexNorth 25 Commercial LLC to EssexNorth 35 Commercial LLC dated November 4, 2019 and recorded in the Cumberland County Registry of Deeds in Book 36156, Page 206.

simons architects
designed for human potential

75 York Street
Portland, Maine 04101
phone 207 772 4656
fax 207 828 4656
www.simonsarchitects.com

Memorandum – Consistency with Comprehensive Plan

date: Friday, October 08, 2021
project: Maine Public 2019-0090
To: Portland Planning Department
From: Steve Hoffman, Simons Architects
Maine Public

RE. Text Amendment for the Urban Active designation within the India Street Form Based Code
Property: 35 Commercial Street. Parcel: 029-P027
29 Commercial Street. Parcel: 029-P031

Consistency with Portland's Comprehensive Plan 2030

The vision of Portland's Plan 2030 is represented by the venn diagram of the city's core belief that Portland is equitable, sustainable, connected, dynamic, authentic and secure. This proposed application and text amendment aligns with the specific Comprehensive Plan goals outlined below:

Dynamic

- Vibrant arts and cultural life will be central to our identity
  Maine Public Mission Statement includes this vision:
  "Maine Public will inform, inspire and delight" In addition to news, Maine Public delivers a variety of cultural content across radio, television, web and print. The proposed Commercial Street facility will include a public engagement space for up to 150 people to view live broadcasts, performances and programs.
- We will embrace innovation in order for our community too thrive
  Maine Public Mission Statement includes a core value of:
  "Life Long Learning — We believe in the power of knowledge to transform lives and promote greater understanding. We endeavor to maximize the opportunities available to the public to participate in a culture of learning throughout their lives."
- We will encourage an active and informed citizenry and facilitate civil discourse
  Maine Public Mission Statement includes a core value of:
  Civic Engagement — "We view our responsibility to promote awareness and participation in the democratic process as supremely important. We actively seek to make workings of government and the public conversation as accessible as possible."

Secure

- We will prepare for emergencies and ready for a changing climate
  Maine Public serves as the state's emergency broadcast facility. It will be 'hardened' to insure operation under any number of emergencies. The height exception of the text amendment will allow critical components to be positioned on upper floors as protection against any flooding associated with a category 4 hurricane.

Authentic

- The uniqueness and integrity of our neighborhoods will be maintained and enhanced

The scale and fabric of Commercial Street will be reinforced with the proposed Maine Public Facility. An existing surface parking lot will be replaced with a new infill building matching the scale and detailing of its adjacent neighbors, the Galt Block and the Workingmen's Club.

Connected

- Our Success will be tied to our connections to each other, our state, and our region

  Maine Public utilizes Web, radio, television and print to connect the people of Maine
- Diverse forums for community engagement will remain essential to a strong civil society

  Maine Public Mission Statement includes a core value of:
  Civic Engagement — "We view our responsibility to promote awareness and participation in the democratic process as supremely important. We actively seek to make workings of government and the public conversation as accessible as possible."

Under Future Land Use / Land Use Context

29 Commercial Street is shown as Mixed-Use / Commercial Offices (page 81). Maine Public will be a mixture of both broadcast studios and office space.

Under Future Land Use / Priority Nodes and Corridors

29 Commercial Street has been labeled in the "Enhance" designation (page 86). By replacing the surface parking lot with a new five story infill building Commercial Street will be given additional density and the existing streetscape and urban fabric will be complete.

simons architects
designed for human potential

75 York Street
Portland, Maine 04101
phone 207 772 4656
fax 207 828 4656
www.simonsarchitects.com

Memorandum

date: Monday August 16, 2021 Revised November 30, 2021
project: Maine Public 2019-0090
To: Portland Planning Department
From: Scott Simons, Simons Architects
Maine Public

RE. Text Amendment for the Urban Active designation within the India Street Form Based Code
Property: 35 Commercial Street. Parcel: 029-P027
29 Commercial Street. Parcel: 029-P031

Maine Public is currently in negotiations with the owner of 29 & 35 Commercial Street for the purchase on the Galt Block Building and the adjacent surface parking lot. The area in consideration is located at the corner of Commercial Street and Franklin Arterial. Both parcels are included in a single sale.

29 Commercial Street has an area of 9,476 SF and Maine Public is considering building a 31,000 sf office and broadcast facility to serve as the center of its statewide system. The Galt Block, a four story masonry building to the west, would be separated and sold.

Within the India Street Form Based Code there are three designations of subdistricts; Urban Active, Urban Transitional and Urban Neighborhood, (Figure 9-A IS-FBC Regulating Plan). 29 Commercial Street is located within the Urban Active Zone (UA) and has a height limitation of 50 feet, maximum. The ISFBC does, however, have a height bonus within the UA subdistrict for Congress Street. Height bonuses are granted for mid-block permeability, residential density, green roofs, and affordable housing. (Table 9-C)

Our request is that the same bonus floor provision be granted to Commercial Street that exists for Congress Street.
In Table 9-C Height Bonuses, Commercial Street would be added to the UA Subdistrict. Under 9.1.7 General Development Standards, C.1.a Height Bonus Applicability, I. first sentence, delete “or Congress Street”. Substitute “or allowed UA street according to Table 9-C”.
The Commercial Street height bonus criteria would be the same as those for Congress Street.

The results for Maine Public is, if meeting the exception criteria of an amended Table 9-C, that they would have a larger building-by-right envelope. Also of note, the adjacent existing Galt Block has a 50 foot street elevation. With the requested height bonus Maine Public would maintain a 50 foot street elevation. The bonus 12 feet of height would be recessed 15 feet from the street façade, and would be considerably lower than the roof structure on the Galt Block building.

simons architects
designed for human potential

75 York Street
Portland, Maine 04101
phone 207 772 4656
fax 207 828 4656
www.simonsarchitects.com

Memorandum – Proposed Text Amendment

date:	Wednesday, October 06, 2021 Revised November 30, 2021
project:	Maine Public 2019-0090
To:	Portland Planning Department
From:	Steve Hoffman, Simons Architects Maine Public
RE.	Text Amendment for the Urban Active designation within the India Street Form Based Code
Property:	35 Commercial Street. Parcel: 029-P027 29 Commercial Street. Parcel: 029-P031

Within the India Street Form Based Code there are three designations of subdistricts; Urban Active, Urban Transitional and Urban Neighborhood, (Figure 9-A IS-FBC Regulating Plan). 29 Commercial Street is located within the Urban Active Zone (UA) and has a height limitation of 50 feet, maximum. The ISFBC does, however, have a height bonus within the UA subdistrict for Congress Street. Height bonuses are granted for mid-block permeability, residential density, green roofs, and affordable housing. (Table 9-C)

Our request is that the same bonus floor provision be granted to Commercial Street that exists for Congress Street.
In Table 9-C Height Bonuses, Commercial Street would be added to the UA Subdistrict.
The Commercial Street height bonus criteria would be the same as those for Congress Street.

PROPOSED TEXT AMENDMENT

At Table 9-C Height Bonuses
Under UA Subdistrict: Change: "Congress Street Only" to "Congress Street **and Commercial Street** Only"

Under 9.1.7 General Development Standards, C.1.a Height Bonus Applicability
Delete "or Congress Street", substitute "or allowed UA street according to Table 9-C"

Proposed Text Amendment 11302021



TABLE 9-C: HEIGHT BONUSES

Subdistrict	Pre-Bonus Height (max.)	Mid-Block Permeability[1]	Residential Density	Green Roof	Affordable Housing	Height With Bonus (max.)	Bonus Floor Stepback[2] (min.)
UN	45 ft. and 4 stories	n/a	n/a	n/a	1 story up to 12 ft.	57 ft. up to 5 stories	15 ft.
UT	65 ft. and 6 stories	1 story up to 12 ft.	1 story up to 12 ft.	1 story up to 12 ft.	1 story up to 12 ft.	77 ft. up to 7 stories	15 ft.
UA ~~(Congress Street only)~~	50 ft. and 4 stories	1 story up to 12 ft.	1 story up to 12 ft.	1 story up to 12 ft.	1 story up to 12 ft.	62 ft. up to 5 stories	15 ft.

[1] Must be publicly accessible.
[2] Measured from the ground floor building edge facing any public right-of-way.

Change from "Congress Street Only" to "Congress Street and Commercial Street Only"

Delete "or Congress Street". Substitute "or allowed UA street according to Table 9-C,"

C. Height standards

1. *Height bonus applicability*
   a. If a frontage faces a UT street, UN street, ~~or Congress Street~~, then the portion of the building facing that street is eligible for a height bonus. For lots with multiple frontages where a frontage faces an ineligible street, bonus story must be stepped back at least 35 feet from ineligible street line. (See Subsection 9.1.8(D).)
   b. Only one height bonus may be applied per structure.
2. One additional story of up to 12 feet in height is allowed if one of the following provisions is met:
   a. For residential development with residential density equal to or greater than 150 dwelling units per acre (density may be achieved with the bonus floor).
   b. For any development providing a green roof, where:
      i. At least 50% of the cumulative lot area is pervious.
      ii. At least 50% of the cumulative roof area is a green roof. Green roof area may be applied towards the 50% lot area requirement.
   c. For residential development where 20% of the units meet the definition of either "Workforce Housing Unit for Sale" or "Low-income Housing Unit for Rent" as per Article 3.

D. Parking standards

1. Parking shall be provided as per Article 19.
2. Structured parking must meet the Building Design Standard for structured parking. (See City of Portland *Design Manual.*)
3. In the case of a building addition, non-conforming existing surface parking may remain. In the case of new construction, surface parking must be brought into conformance with IS-FBC standards.

Charles Tetelman - Planner
Planning Board, Portland Maine

Re: Plan Number ZN-001756-2021

Dear Mr. Tetelman,

We understand that you are the planner in charge of the proposed subject project along with the suggested zoning text amendment. We have reviewed the documents submitted by Maine Public Broadcasting Corporation that were available on the citizen portal. It appears that the property owner would like to modify the Land Use Code to allow an additional 12 feet of additional building height.

We live at 207 Fore Street, a block away from the proposed project and consider 35 Commercial Street to be a part of our neighborhood. We oppose the City of Portland granting a Land Use Code amendment for the following reasons:

1) Commercial Street is not downtown Congress Street. Simply because Congress Street has a bonus provision for projects meeting certain requirements does not mean Commercial Street should also have a bonus. To suggest that the Land Use Code be changed to allow additional building height is not consistent with the building height and character of existing buildings in the project area including the adjacent Workingmens' Club building.

2) Because of the ongoing pandemic, there is an abundance of office space available on the peninsula that would seem to meet the operational needs of the Maine Public Broadcasting Corporation. At this time, there is no reason to change the Land Use Code when plenty of commercial space is already available.

3) The City's Land Use Code including building height restrictions is important and is in place for a reason. The City's Comprehensive Plan states that "*over the past several years, the City has amended its zoning ordinance to … increase allowable heights in some parts of downtown…"* The Plan does not appear to contain language or otherwise promote allowance of increased building heights on Commercial Street. Further, the City should not decide to loosen existing height restrictions absent demonstration of real need by the applicant.

Sincerely,

Paula Foley-Stelmack
Mark Stelmack
207 Fore Street, Unit 1
Portland, Maine

On Thursday November 4th, 2021, the Planner received a voicemail from a Wireless Caller:

Good Afternoon,

I was calling to comment, Charles, on Commercial Street Text Amendment. I am a fourth generation Portlander and am so disheartened by what the town has just allowed to occur and reoccur and amend and add to and I'm shocked here reading another 12 feet added to a height that already people opposed back when it was approved. I mean where does it end? Do you want New York City? That's what's happening. Really disappointed and I just think Portland is robbing us who've been here of the historic charm that we all consider home and have for generations. It's a working waterfront – it should not be this metropolitan city urban gardens the whole works. So disappointed.

Portland Maine Yes. Google's good here.

Charles Tetelman <ctetelman@portlandmaine.gov>

Fwd: Maine Public Broadcasting Corporation development at 35 Commercial Street

jmy <jmy@portlandmaine.gov> Mon, Nov 22, 2021 at 8:05 AM
To: Charles Tetelman <ctetelman@portlandmaine.gov>

HI, this was saved to the project file.

Jen

---------- Forwarded message ---------
From: Kevin Mahoney <kevin@cascoworks.com>
Date: Friday, November 19, 2021 at 9:01:02 AM UTC-5
Subject: Maine Public Broadcasting Corporation development at 35 Commercial Street
To: planningboard@portlandmaine.gov <planningboard@portlandmaine.gov>
Cc: ksnyder@portlandmaine.gov <ksnyder@portlandmaine.gov>, bsr@portlandmaine.gov <bsr@portlandmaine.gov>, sthibodeau@portlandmaine.gov <sthibodeau@portlandmaine.gov>, tchong@portlandmaine.gov <tchong@portlandmaine.gov>, azarro@portlandmaine.gov <azarro@portlandmaine.gov>, mdion@portlandmaine.gov <mdion@portlandmaine.gov>, pali@portlandmaine.gov <pali@portlandmaine.gov>, nmm@portlandmaine.gov <nmm@portlandmaine.gov>, afournier@portlandmaine.gov <afournier@portlandmaine.gov>, dga@portlandmaine.gov <dga@portlandmaine.gov>, hcd@portlandmaine.gov <hcd@portlandmaine.gov>, Christine Grimando <cdg@portlandmaine.gov>, kkraft <kkraft@portlandmaine.gov>, rwiener@portlandmaine.gov <rwiener@portlandmaine.gov>, permitting@portlandmaine.gov <permitting@portlandmaine.gov>, hanscombe@portlandmaine.gov <hanscombe@portlandmaine.gov>, mdisanto@portlandmaine.gov <mdisanto@portlandmaine.gov>, mbud@portlandmaine.gov <mbud@portlandmaine.gov>, psf@portlandmaine.gov <psf@portlandmaine.gov>, kah@portlandmaine.gov <kah@portlandmaine.gov>, msarapas@portlandmaine.gov <msarapas@portlandmaine.gov>, inspections@portlandmaine.gov <inspections@portlandmaine.gov>, drm@portlandmaine.gov <drm@portlandmaine.gov>, amachado@portlandmaine.gov <amachado@portlandmaine.gov>, Stacey Tutorow <StaceyTutorow@epcs.com>, Christina V. Nguyen (Christina.Nguyen@eciusa.com) <Christina.Nguyen@eciusa.com>, publiccomment@portlandmaine.go <publiccomment@portlandmaine.go>

Dear Members of the Portland Planning Board,

I am a resident of Portland's East End who is being directly impacted by the proposed Maine Public Broadcasting Corporation development at 35 Commercial Street. While I fully respect the right of any landowner to develop their property, **I strongly object to the proposed zoning amendment** to modify Land Use Code Table 9-C: Height Bonuses to include Commercial Street in addition to Congress Street, allowing 12 feet of additional building height for qualifying developments located within the Urban Active (UA) sub-district of the India Street Form-Based Code Zone (IS-FBC).

Taller buildings allowed on Congress Street are simply not appropriate in the historic Old Port. Development of other buildings in the area have generally respected pre-existing zoning requirements and I am against exceptions for a specific project. There is no reasonable basis for allowing an even taller structure to overshadow the surrounding buildings and must not be permitted.

Preserving the character of the Old Port is critical to the quality of life for residents and appeal to tourists. The cumulative effect of small changes to the existing regulations will continue to "chip away" at this unique and vibrant cityscape! Save the Portland we love for future generations.

Thank you,

Kevin Mahoney

Kevin Mahoney

207 Fore Street

Portland, ME 04101

Cell 207-712-0590

Portland Maine Yes. Google's good here.

Charles Tetelman <ctetelman@portlandmaine.gov>

Maine Public Broadcasting Plan - Five County Credit Union 19 Commercial St.

1 message

Mike Foley <mfoley@fivecounty.com> Tue, Nov 23, 2021 at 10:06 AM
To: "ctetelman@portlandmaine.gov" <ctetelman@portlandmaine.gov>

Good Morning Charles,

Thank you for taking the time to speak with me this morning about Plan Number ZN-001756-2021, the Maine Public Broadcasting proposal for the lot adjacent to 19 Commercial St.

Five County Credit Union has been a tenant at 19 Commercial St since 1999 and has operated an ATM on the west side of the building, with approval from the City of Portland, for the last twenty years. At this early stage of the planning process for the Maine Public Broadcasting project, our current concerns are specific to the visibility and accessibility of the existing ATM for credit union members and employees, and all aspects of security relating to the use and servicing of the machine that may be impacted by the construction of a new building. These security considerations would include but not be limited to lighting, camera accessibility (we have a camera on the side of the 19 Commercial St. building, about halfway down, for a wide angle view), and general visibility without blind spots or alleys that could contribute to unsafe use of the ATM. Secondarily, I should note that multiple tenants of 19 Commercial St. do have signage on the west side of the building that may be impacted by the construction of a new building.

Should this project move forward to the site-plan phase, we look forward to seeing what the Maine Public Broadcasting team proposes.

Sincerely,

Mike

Michael J. Foley

Senior Vice President,

Support Services

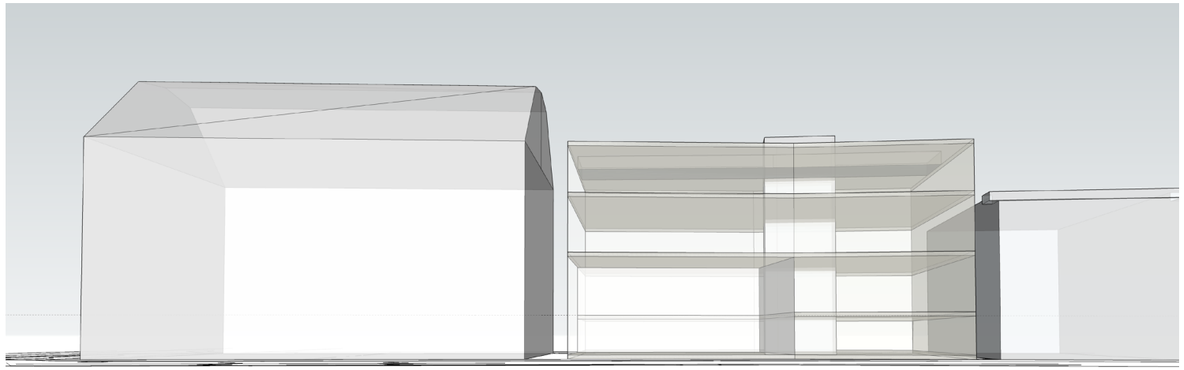
Five County Credit Union

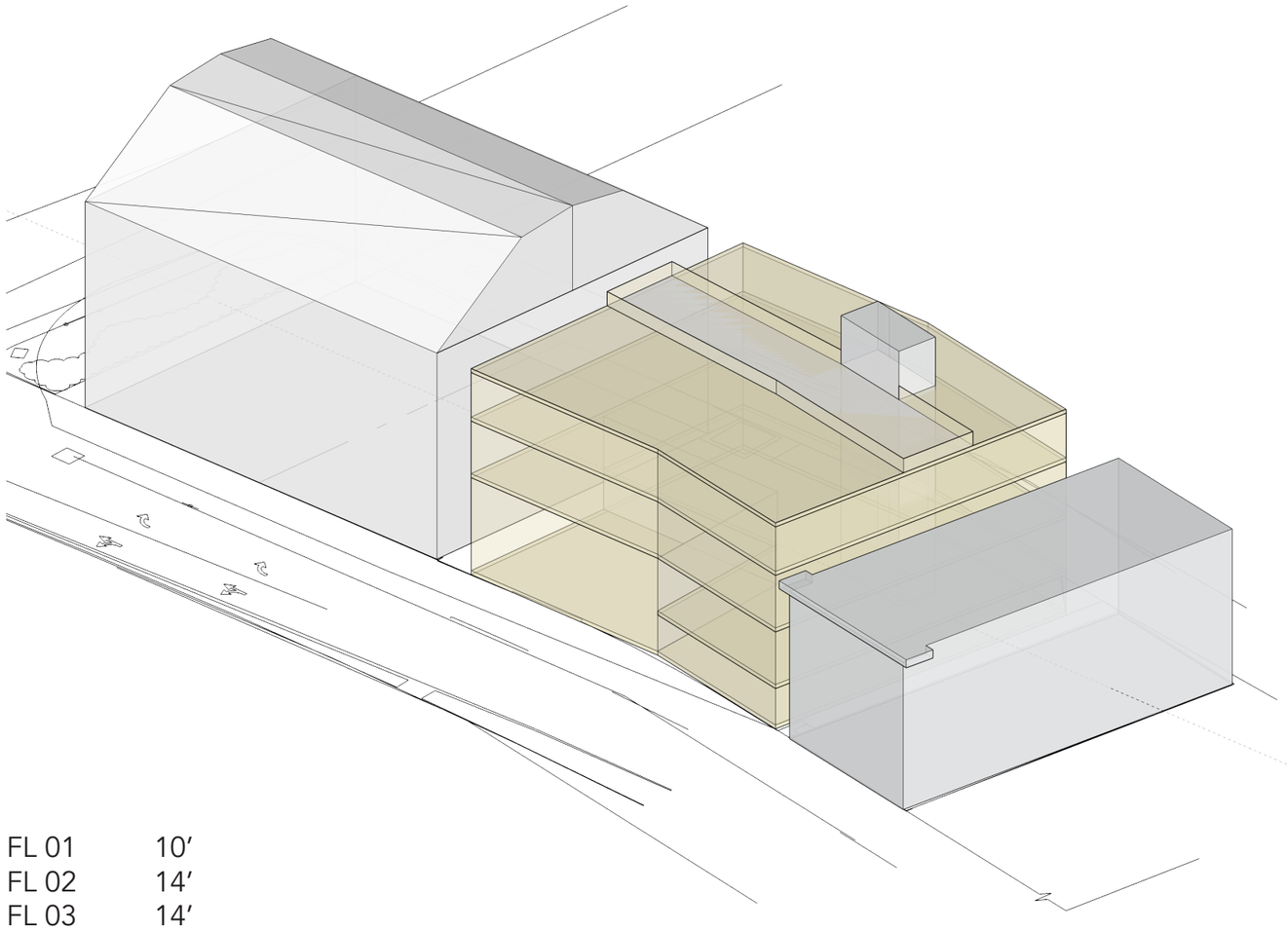
1-800-750-0959 Ext. 2207

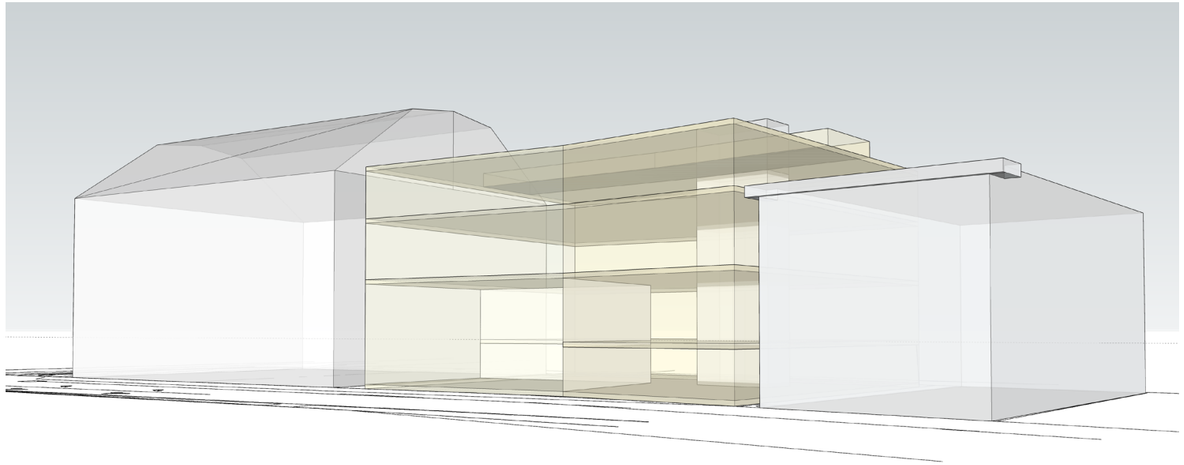
mfoley@fivecounty.com

IMPORTANT MESSAGE TO RECIPIENT: This email, along with any attached files, is intended only for the use of the individual or individuals to which it is addressed. This email may contain information that is confidential, subject to copyright or constitutes a trade secret. If you are not the intended recipient, you are hereby notified that any dissemination, copying or distribution of this email or files associated with this email, is strictly prohibited. If you have received this email in error please notify the sender immediately by replying to the message and deleting it from your computer. Messages sent to and from employees in our organization may be monitored.


WORKINGMENS' CLUB
BUILDING
GALT BLOCK
BUILDING
COMMERCIAL STREET
10'-0"
15'-0"
10'-0"
GL
GL
GL
GL
9
8
AOR BUILDING
AREA
FLOORS 1-4
50' HEIGHT
PROPOSED
BONUS FLOOR
AREA



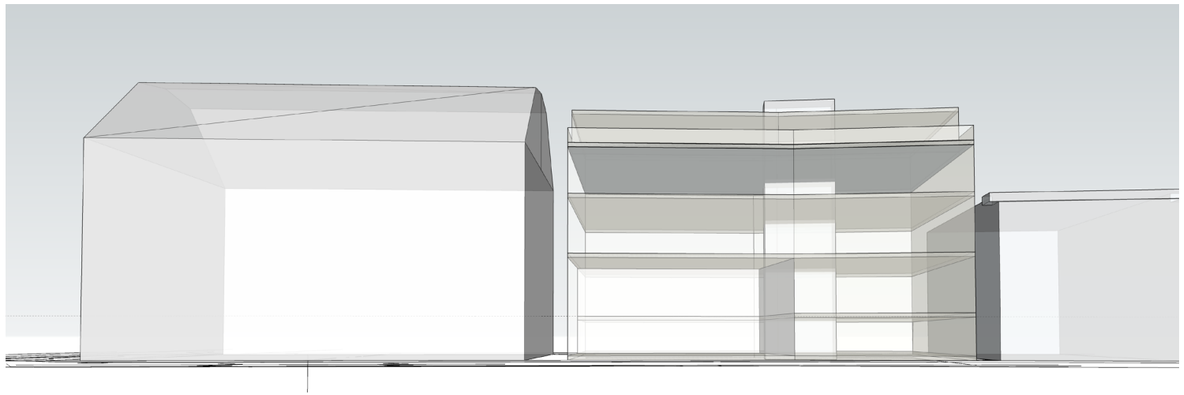


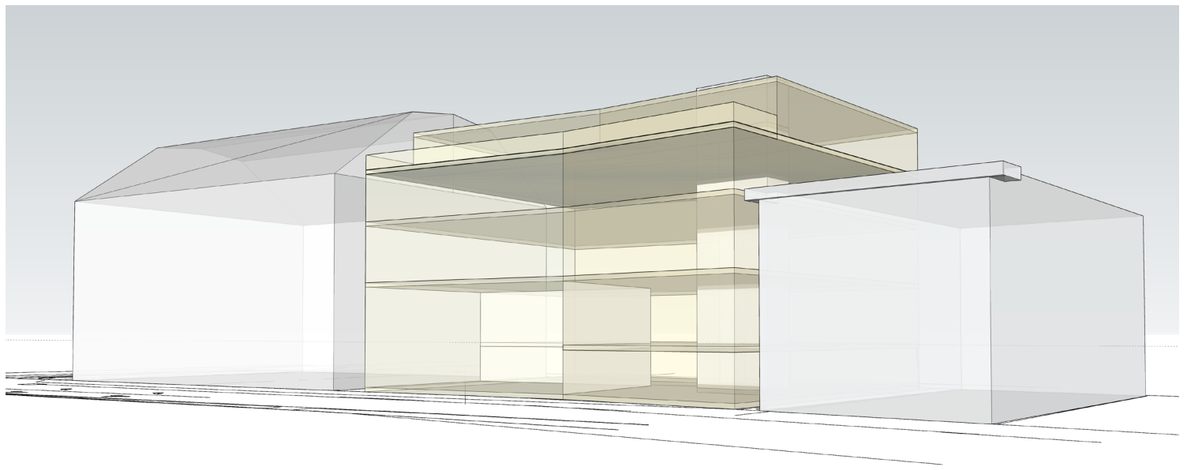


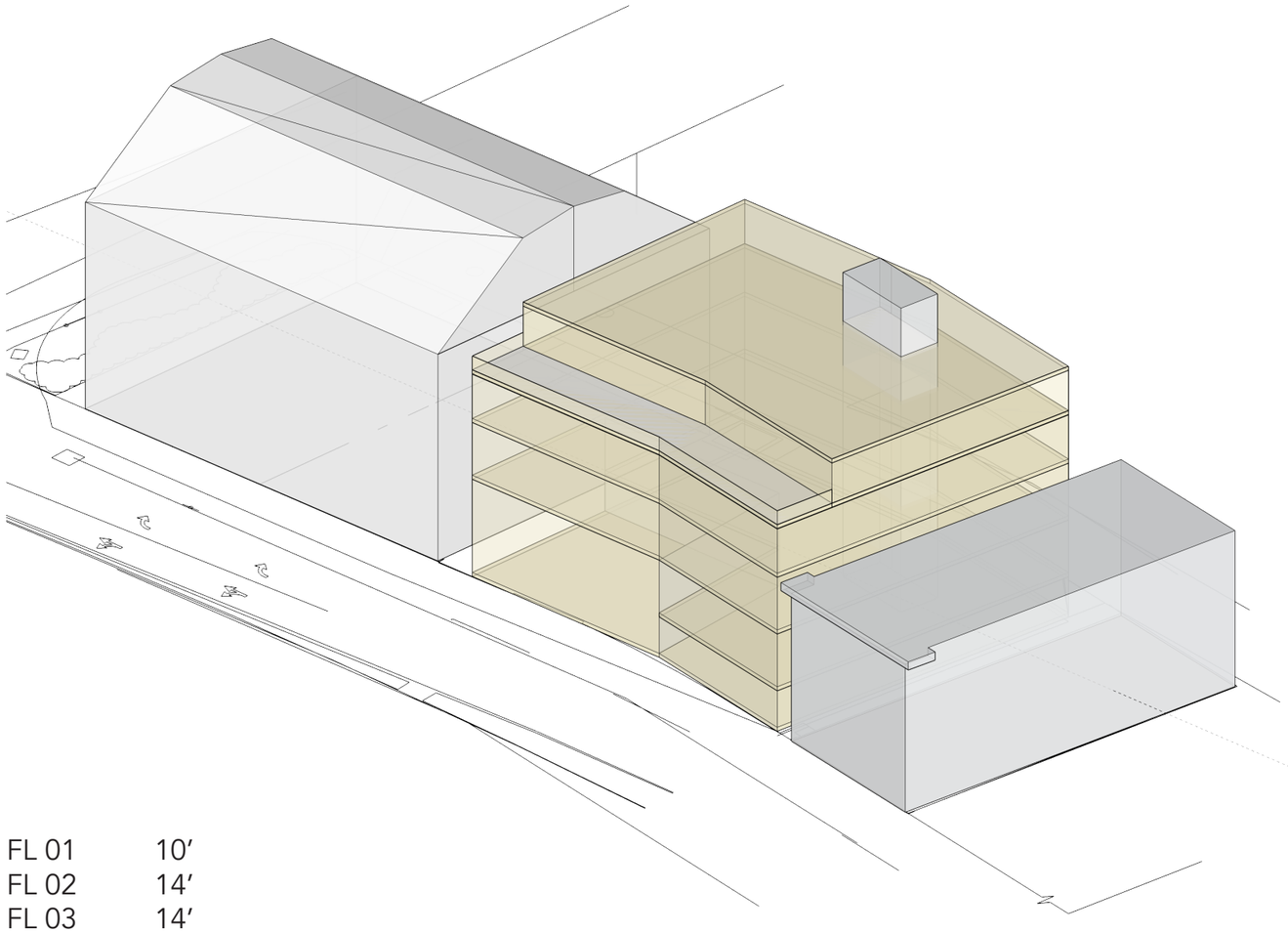
SCHEME A: "AS OF RIGHT" ALLOWED BY ZONING

Ground Floor	7800
Second Floor	7800
Third Floor	7800
Fourth Floor	7800
TOTAL	31,200

FL 01	10′
FL 02	14′
FL 03	14′
FL 04	12′





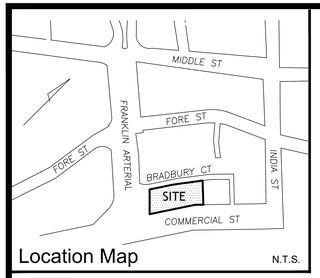


SCHEME B: TEXT AMMENDMENT TO UA SUB-DISTRICT TO ALLOW BONUS FLOOR; 4th FLOOR 15′ SET BACK

Ground Floor (01)	7800	
Mezzanine (02)	4680	
Second Floor (03)	7800	
Third Floor (04)	7800	
Fourth Floor (05)	6400	(MAX AS-OF-RIGHT)
TOTAL	34,480	

FL 01	10′
FL 02	14′
FL 03	14′
FL 04	12′
FL 05	12′

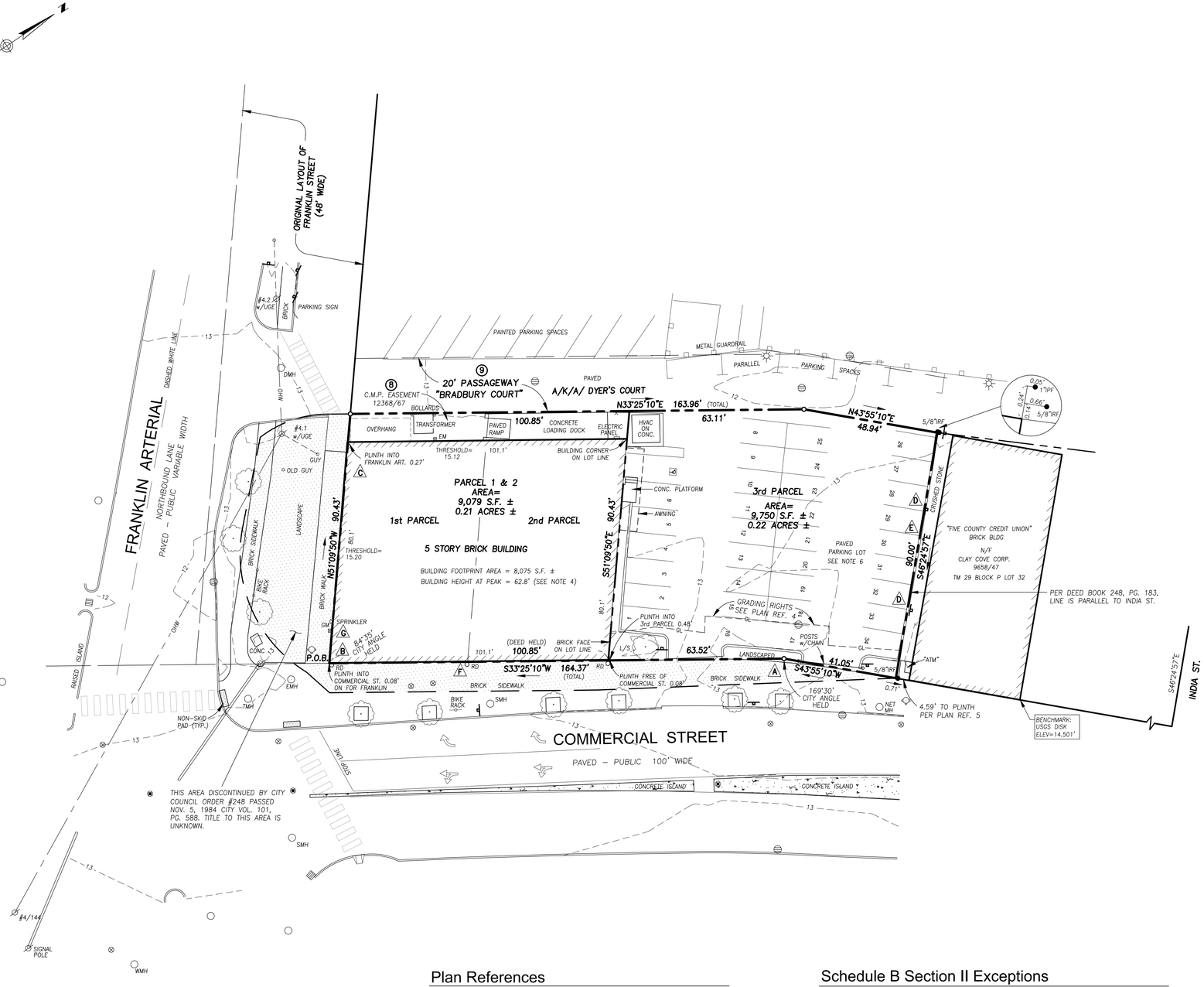

Page 29
City of Portland, DPS



Location Map N.T.S.

Legend

- IRON PIPE OR ROD FOUND
- CAPPED IRON ROD TO BE SET
- UTILITY POLE
- EM/GM ELECTRIC OR GAS METER
- RD ROOF DRAIN
- GAS VALVE
- WATER VALVE
- HYDRANT
- UTILITY POLE
- MANHOLE
- CATCH BASIN
- SIGN
- DECIDUOUS TREE
- METAL GUARDRAIL
- FENCE
- CURB
- OHW OVERHEAD WIRES
- UGE UNDERGROUND ELETRIC
- SS SANITARY SEWER
- 60 1' CONTOUR
- CIRF CAPPED IRON ROD FOUND
- N/F NOW OR FORMERLY
- 000/000 DEED BOOK / PAGE
- CONC. CONCRETE
- A POSSIBLE ENCROACHMENT
- 1 SCHEDULE B EXCEPTION
- P.O.B. POINT OF BEGINNING



Legal Description

PARCEL 1.

A CERTAIN LOT OR PARCEL OF LAND WITH THE BUILDINGS THEREON, SITUATED IN SAID PORTLAND, BOUNDED AND DESCRIBED AS FOLLOWS:
BEGINNING AT THE JUNCTION OF THE NORTHWESTERLY SIDE OF COMMERCIAL STREET AND NORTHEASTERLY SIDE OF FRANKLIN STREET; THENCE RUNNING EASTERLY ON COMMERCIAL STREET FIFTY (50) FEET TO THE MIDDLE OF A PARTITION WALL; THENCE NORTHERLY BY THE MIDDLE LINE OF SAID WALL ABOUT NINETY (90) FEET TO THE COMMON PASSAGEWAY HEREINAFTER NAMED; THENCE WESTERLY ON THE LINE OF SAID PASSAGEWAY TO FRANKLIN STREET; THENCE SOUTHERLY BY FRANKLIN STREET TO THE POINT BEGUN AT; TOGETHER WITH THE RIGHT OF WAY IN A COMMON PASSAGEWAY TWENTY (20) FEET WIDE LAID OUT AND RESERVED IN THE REAR OF SAID LOT.

PARCEL 2.

A CERTAIN LOT OR PARCEL OF LAND, WITH THE BUILDINGS THEREON SITUATED ON THE NORTHERLY SIDE OF COMMERCIAL STREET IN SAID PORTLAND, AND BOUNDED AND DESCRIBED AS FOLLOWS:
COMMENCING AT THE CENTER OF THE PARTITION WALL OF TWO BRICK STORES IN THE BLOCK SITUATED AT THE CORNER OF COMMERCIAL AND FRANKLIN STREETS, AND FORMERLY OWNED BY A. AND S.E. SPRING; THENCE RUNNING NORTHERLY THROUGH THE CENTER OF SAID BRICK WALL NINETY (90) FEET TO A PASSAGEWAY IN THE REAR OF SAID PREMISES; THENCE EASTERLY ON THE LINE OF SAID PASSAGEWAY A DISTANCE OF FIFTY (50) FEET, MORE OR LESS, TO THE OUTER OR EASTERLY FACE OR OUTSIDE OF THE WALL FORMING THE FOUNDATION WALL ON THE EASTERLY SIDE OF THE BLOCK ON THE PREMISES HEREBY CONVEYED; THENCE SOUTHEASTERLY BY SAID WALL NINETY (90) FEET,MORE OR LESS, TO SAID COMMERCIAL STREET ; THENCE SOUTHERLY BY SAID COMMERCIAL STREET FIFTY (50) FEET, MORE OR LESS, TO THE POINT BEGUN AT; INTENDING HEREBY TO CONVEY THE THIRD AND FOURTH STORES IN THE BLOCK OF FOUR STORES FRONTING ON COMMERCIAL STREET AT ITS INTERSECTION WITH FRANKLIN STREET, TOGETHER WITH A RIGHT OF WAY IN A COMMON PASSAGEWAY TWENTY–SIX (26) FEET IN WIDTH, EXTENDING IN THE REAR OF SAID PREMISES.

PARCEL 3:

ALSO, ANOTHER CERTAIN LOT OR PARCEL OF LAND WITH THE BUILDINGS THEREON SITUATED ON THE NORTHWESTERLY SIDE OF COMMERCIAL STREET, IN PORTLAND, COUNTY OF CUMBERLAND AND STATE OF MAINE, COMPRISING THE PREMISES NUMBERED 23–31 ON SAID COMMERCIAL STREET AND BEING BOUNDED AND DESCRIBED AS FOLLOWS, TO WIT:
BEGINNING ON SAID COMMERCIAL STREET AT THE CENTER OF THE BRICK WALL AT THE EASTERLY END OF THE BLOCK OF STORES ERECTED BY SAMUEL TYLER, THE CENTER OF SAID BRICK WALL BEING DISTANT FROM THE EASTERLY SIDE OF FRANKLIN STREET A DISTANCE OF ONE HUNDRED AND EIGHTY–FIVE HUNDREDTHS (100.85) FEET; THENCE NORTHWESTERLY THROUGH THE CENTER OF SAID BRICK WALL AND IN CONTINUATION OF THE SAME COURSE TO THE SOUTHERLY SIDE OF A PASSAGEWAY, WHICH SAID PASSAGEWAY EXTENDS FROM SAID FRANKLIN STREET NORTHEASTERLY; THENCE NORTHEASTERLY BY SAID PASSAGEWAY BY VARIOUS COURSES A DISTANCE OF ONE HUNDRED TWELVE AND SIXTY–FIVE HUNDREDTHS (112.65) FEET, MORE OR LESS, TO LINE OF LAND NOW OR FORMERLY OF THE HEIRS OF LEMUEL DYER AS ESTABLISHED JULY 13, 1853 BY DEED RECORDED IN THE CUMBERLAND COUNTY REGISTRY OF DEEDS IN BOOK 248, PAGE 183; THENCE SOUTHEASTERLY BY SAID DYER LINE A DISTANCE OF NINETY (90) FEET TO SAID COMMERCIAL STREET; THENCE WESTERLY BY THE NORTHERLY SIDE LINE OF SAID COMMERCIAL STREET ONE HUNDRED FIVE AND TWENTY–SEVEN HUNDREDTHS FEET, MORE OR LESS, TO THE POINT OF BEGINNING, TOGETHER WITH ALL ITS RIGHT, TITLE AND INTEREST IN AND TO ALL STRUCTURES ON THE LOT HEREBY CONVEYED WHICH MAY EXTEND INTO THE LIMITS OF SAID PASSAGEWAY AS ORIGINALLY LAID OUT, ALSO THE RIGHT TO THE USE IN COMMON WITH OTHERS OF SAID PASSAGEWAY.

THE ABOVE DESCRIBED PARCEL IS HEREBY CONVEYED SUBJECT TO THE RIGHT OF THE OWNERS OF THE PROPERTY NEXT WESTERLY THEREOF ON COMMERCIAL STREET TO MAINTAIN ONE–HALF OF THE EASTERLY WALL OF THE BUILDING ON SAID ADJOINING PREMISES ALONG THE WESTERLY LINE OF THE PREMISES ABOVE DESCRIBED.

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.

Flood Zone Note

BY GRAPHIC PLOTTING ONLY, THIS PROPERTY IS LOCATED IN ZONE C, AREAS OF MINIMUM FLOODING) ON THE FLOOD INSURANCE RATE MAP, COMMUNITY PANEL NO. 230051 0014B, WHICH BEARS AN EFFECTIVE DATE OF JULY 17, 1986.

Zoning Information

NONE PROVIDED

Possible Encroachments

- A LANDSCAPED ISLAND WITHIN LIMITS OF COMMERCIAL STREET 1.3'±
- B PLINTH AT BUILDING CORNER INTO COMMERCIAL STREET 0.08' ±
- C PLINTH AT BUILDING CORNER INTO FRANKLIN ARTERIAL 0.27'±
- D PARKING SIGNS ONTO LAND OF THE ABUTTER 1.3'±
- E BACK OF CURB ONTO LAND OF THE ABUTTER 0.5'±
- F ROOF DRAINS INTO COMMERCIAL STREET 1'±
- G GAS METER LIES ENTIRELY WITHIN THE LIMITS OF FRANKLIN ARTERIAL

SCALE : 1" = 20'

0' 10' 20' 40'

General Notes

1. OWNER OF RECORD: AUTO EUROPE, LLC, 39 COMMERCIAL STREET, PORTLAND, MAINE C.C.R.D. BOOK 13205 PAGE 28, BOOK 20957 PAGE 21
2. LOCUS IS SHOWN AS LOTS 27 AND 31, BLOCK P, ON CITY OF PORTLAND ASSESSORS MAP 29.
3. BEARINGS ARE BASED ON STATE PLANE COORDINATE SYSTEM, MAINE WEST ZONE, NAD83.
4. ELEVATIONS ARE BASED ON CITY DATUM, NGVD29.
5. BUILDING HEIGHT DOES NOT INCLUDE ANYTHING ABOVE VISIBLE BUILDING LINE.
6. THERE ARE 33 REGULAR PARKING SPACES AND 1 HANDICAP PARKING SPACE.
7. NO EVIDENCE OF RECENT EARTH MOVING WORK, BUILDING CONSTRUCTION, BUILDING ADDITIONS, OR RECENT STREET OR SIDEWALK CONSTRUCTION OR REPAIRS WAS OBSERVED.
8. NO PROPOSED CHANGES IN STREET LINES IS KNOWN BY THIS SURVEYOR.

Plan References

1. PLAN OF PROPERTY IN PORTLAND, MAINE MADE FOR CHASE TRANSFER CO. DATED JANUARY 1940 BY H.I. JORDAN.
2. TITLE PLAN OF PROPERTY IN PORTLAND, MAINE MADE FOR CHASE TRANSFER CORP. DATED SEPT. 1950 BY H.I. AND E.C. JORDAN.
3. STATE OF MAINE DEPARTMENT OF TRANSPORTATION RIGHT OF WAY MAP DATED AUGUST 1985 DOT FILE NO. 3–339.
4. ALTA/ACSM LAND TITLE SURVEY, 29 COMMERCIAL ST., PORTLAND, MAINE DATED FEBRUARY 19, 2004 BY INTERNATIONAL LAND SERVICES, INC./OWEN HASKELL, INC.
5. PLAN OF PROPERTY IN PORTLAND, MAINE MADE FOR THE ROMAN CATHOLIC BISHOP OF PORTLAND, BY H.I. & E.C. JORDAN, DATED NOV. 1974.
6. PLAN DEPICTING THE RESULTS OF A BOUNDARY SURVEY MADE FOR B.I.W. FIVE COUNTY CREDIT UNION, 13–19 COMMERCIAL STREET, PORTLAND, MAINE, PREPARED BY NADEAU & LODGE, DATED 05/09/2001.
7. PLAN OF PROPERTY, COMMERCIAL STREET, PORTLAND, MAINE MADE FOR W.L. BLAKE & CO., BY ROBERT P. TITCOMB, INC., SHEET 2 OF 3, DATED 7/02/81.

Schedule B Section II Exceptions

OLD REPUBLIC NATIONAL TITLE INSURANCE COMPANY
COMMITMENT FILE NO. 22956.2 EFFECTIVE DATE: SEPTEMBER 1, 2019

1 – 7. NON SURVEY ITEMS

8. EASEMENT DEED FROM AUTO EUROPE INC. TO CENTRAL MAINE POWER COMPANY DATED 1–25–1996, RECORDED IN THE REGISTRY IN BOOK 12368, PAGE 67. –AFFECTS SURVEYED PARCEL AS SHOWN HEREON.

RIGHTS OF OTHERS, IN COMMON WITH THE INSURED, TO THE USE OF (I) A COMMON PASSAGEWAY TWENTY (20) FEET WIDE AND (II) A COMMON PASSAGEWAY TWENTY–SIX (26) FEET WIDE TO THE "REAR" OR WESTERLY SIDE OF THE PREMISES, ALL AS RECITED IN PRIOR DEEDS IN THE TITLE RECORDED IN BOOK 3992, PAGE 18 (PARCEL 1, THEREIN; PARCEL 3 OF INSURED PREMISES), AND BOOK 2970, PAGE 847 (PARCEL 1 AND PARCEL 2, THEREIN, AND IN INSURED PREMISES) AND DEEDS THEREAFTER. –BENEFITS SURVEYED PARCEL AS SHOWN HEREON. HISTORICALLY, BRADBURY (DYERS COURT) HAS BEEN SHOWN AS 20 FEET WIDE. NO INDICATION OF A 26 FOOT WIDE PASSAGEWAY COULD BE FOUND.

9. SUCH STATE OF FACTS, NOTES OR CONDITIONS AS SHOWN ON A PLAN PREPARED BY INTERNATIONAL LAND SERVICES, INC. DATED FEBRUARY 19, 2004, PROJECT ADDRESS: 29 COMMERCIAL STREET, PORTLAND, MAINE, JOB NO. 03–11–036:001. –ALL PERTINENT ITEMS ARE SHOWN.

ALTA / NSPS Land Title Survey

29-39 Commercial Street
Portland, Cumberland County, Maine
Made For
EssexNorth Portland, LLC
P.O. Box 394, Topsfield, MA 01983

Surveyor's Certification

TO: ESSEXNORTH 35 COMMERCIAL LLC, ESSEXNORTH 25 COMMERCIAL LLC, NBT BANK, NATIONAL ASSOCIATION AND OLD REPUBLIC NATIONAL TITLE INSURANCE COMPANY

THIS IS TO CERTIFY THAT THIS MAP OR PLAT AND THE SURVEY ON WHICH IT IS BASED WERE MADE IN ACCORDANCE WITH THE 2016 MINIMUM STANDARD DETAIL REQUIREMENTS FOR ALTA/NSPS LAND TITLE SURVEYS, JOINTLY ESTABLISHED AND ADOPTED BY ALTA AND NSPS, AND INCLUDES ITEMS 1, 2, 3, 4, 6(A), 11, 13, 14, 16, 17, 19 AND 21 OF TABLE A THEREOF. THE FIELD WORK WAS COMPLETED ON OCTOBER 3, 2019.

SAMUEL D. GLIDDEN
PROFESSIONAL LAND SURVEYOR NO. 2520

DATE OF PLAT OR MAP: NOVEMBER 6, 2019
DATE OF LAST REVISION:

STATE OF MAINE · SAMUEL D. GLIDDEN · 2520 · PROFESSIONAL LAND SURVEYOR

OWEN HASKELL, INC.
PROFESSIONAL LAND SURVEYORS
390 U.S. ROUTE 1, UNIT 10, FALMOUTH, ME 04105 TEL. 207-774-0424

DRAWN BY: JCS / JLW	FIELD BOOK: FILE	JOB NO.	2019-256 P
CHECKED BY: JCS	SCALE: 1" = 20'	DRWG. NO.	1

Memorandum
Planning and Urban Development Department

To: Chair Mazer & Members of the Planning Board
From: Jimmy Dealaman, Planner
Date: December 10, 2021
Re: USM Parking Garage
Project ID: PL-001729-2021
CBL: 114 A001
Meeting Date: December 14, 2021

I. INTRODUCTION

The University of Southern Maine (USM) has submitted a Major Site Plan application to facilitate the construction of a four-level, 171,850 square foot structured parking garage with 504 parking spaces at 50 Bedford Street. The site is located in the Oakdale neighborhood and within the R-5 Residential and B-2 Community Business zones, and USM overlay zone.



Figure 1 – Aerial View of Subject Parcel

This application is being referred to the Planning Board for compliance with the City of Portland's Land Use Code Site Plan Standards, Section 14.6, along with delegated review of an amendment to a previous Maine Site Location of Development Act (SLODA) approval. The Planning Board previously held a workshop on September 28, 2021, which included discussion on the parking requirement, design standards, and the EV charging station waiver (See Section VII below for summary). Since the last workshop, the applicant has revised their proposal and has reduced the size of the proposed garage from a five-level 631 parking space garage to 504 parking spaces (See Section VI for more information).

The Planning and Urban Development Department mailed 56 notices advertising this meeting to interested parties and property owners within 500 feet of the site. A legal advertisement ran in the December 3rd and 4th, 2021 editions of the *Portland Press Herald*.

Applicant: The University of Southern Maine
Applicant Representatives: Woodard & Curran; Winton Scott Architects; VHB

II. REQUIRED REVIEWS

Review	*Applicable Standards*
Site Plan	Section 14.6
Design Review	City of Portland Design Manual Section (e) University of Southern Maine Overlay Zone, Appendix 3 Principles and Standards
Traffic Movement Permit (TMP) Amendment	Delegated Review from Maine DOT, Technical Manual, Section 1.1 – Traffic Studies
Maine Site Location of Development (SLODA) Amendment	Delegated Review from Maine DEP, Technical Manual Section 14

Waiver Requests	*Applicable Standards*
Request: To waive the required installation of EV chargers for 20% of parking spaces and provide EV charging for 12% of spaces.	Technical Manual, Section 1.17 Electric Vehicle Infrastructure: New structured and surface parking lots of five or more spaces shall include energized electrical outlets or installed chargers capable of providing Level 2 EV charging or higher to 20% of parking spaces
Request: To allow 4,000K CCT fixtures versus 3,000K CCT fixtures.	All fixtures must be LED and shall not exceed 3000K Correlated Color Temperature (CCT). Screw in light fixtures must have LED lamps specified to be maximum of 3000K CCT.

III. PROJECT DATA

Existing Zoning	R-5 Residential Zone, B-2 Community Business Zone, USM Overlay Zone
Property Size	353,446 square feet (8.1 acres)
Existing Use	Post-Secondary School (University)
Proposed Use	No Change
Proposed Development Program	Structured Parking Garage (Accessory to University)

	Existing	*Proposed*	*Net Change*
Building Footprint	0	44,266 SF	+44,266 SF
Building Floor Area	0	171,850 SF	+171,850 SF
Impervious Surface Area	63,162 SF	87,942 SF	+21,780 SF
Parking Spaces	1,247 spaces	1,659 spaces	+412 spaces
Bicycle Parking Spaces	84 spaces	334 spaces	+250 spaces
EV Charging Stations	0	58	+58



Figure 2 – Aerial View of USM Portland Campus and Surrounding Neighborhood Facing Southwest

IV. BACKGROUND

On November 10, 2020 the Planning Board Approved a Level III Site Plan application (PL-001040-2020) to facilitate construction of a student center, dorms, and associated open spaces at 25 Bedford Street. As a condition of approval the applicant is required to provide proof of parking commitments sufficient to provide the 396 parking spaces required by the proposed development, or shall submit a site plan application for a parking garage providing these spaces. The subject application would satisfy this condition.

On May 26, 2020, the subject parcel previously received Planning Board approvals for a 207-space surface parking lot. However, the applicant no longer intends to move forward with that approval and intends for the subject development to supplant that project.

V. EXISTING CONDITIONS AND SURROUNDING AREA

The University of Southern Maine occupies an approximately 29-acres campus just north of Portland's peninsula and situated in the Oakdale neighborhood. The campus is bounded by Forest Avenue and Durham Street to the East, Falmouth Street to the North, Exeter Street to the West and I-295 and Chamberlain Street to the South. The campus operates in conjunction with USM's two other campuses located in Gorham and Lewiston, and at present, largely serves a commuter student population, with residence halls housed on the university's Gorham campus. The campus consists of 34 buildings ranging from repurposed single-family homes to large academic buildings, ten surface parking lots, one parking garage, and pathways across campus.



Figure 3 – View of Proposed Development Site Facing East

The proposed development is planned for an 8.1-acre parcel located at 44 Bedford Street known informally as the Wishcamper Lot, which is currently utilized as surface parking totaling 92 spaces (See Figure 3). As mentioned in the background section this parcel previously received Planning Board approvals for a 207-space surface parking lot at its May 26, 2020 meeting. Currently, this site is occupied by several existing uses: i) the Glickman Family Library, a seven story structure, originally built as a commercial bakery in 1911, and was acquired in 1993 by USM; ii) the Abromson Community Education Center which includes classrooms, a 500-seat lecture hall/auditorium and 1,155 space parking garage and; iii) the Wishcamper Center, which hosts the schools Osher Lifelong Learning Institute, Cutler Institute, and Muskie School of Public Service.

The parcel is intersected by the R-5 Residential zone on the lower portion of the lot which continues to the south and west, and the B-2 Community Business zone on the upper portion of the lot which continues to the north and east of the site. The site also falls within the USM Overlay Zone which supersedes any requirements of the underlying zoning districts.

The site is proximate to public transit with METRO routes including local service route 4 to Westbrook, the Huskie Line which connects to the Gorham Campus, Westbrook, and Downtown Portland, as well as the Zoom Turnpike Express which connects the campus to Biddeford and Saco.

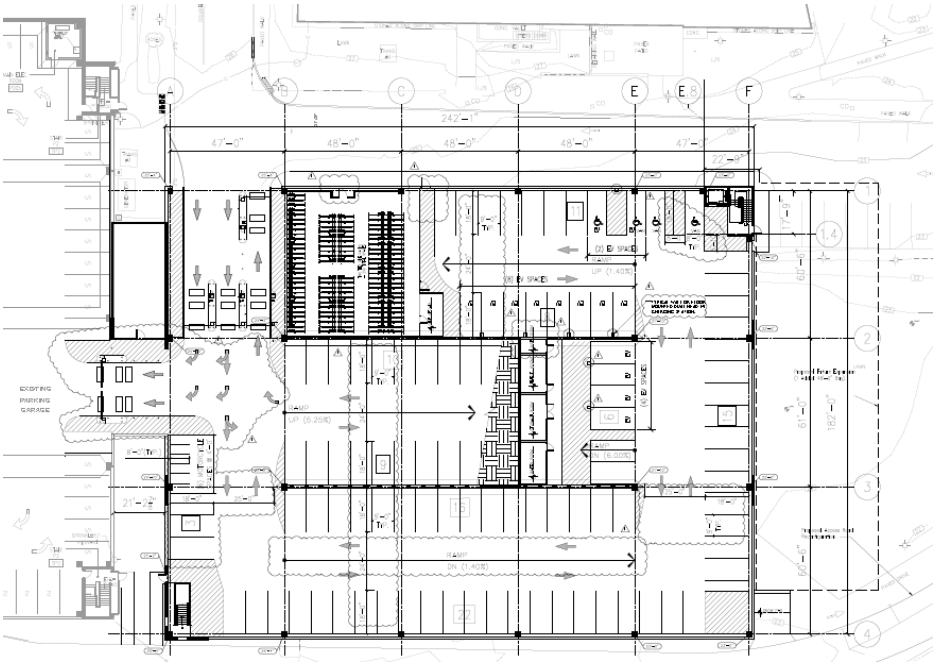


Figure 4 – Ground Level Striping Plan

VI. PROPOSED DEVELOPMENT

The original development proposal (previously a five-level 631 space structured parking garage) was reduced in size by removing one level of parking. The current development proposal now includes a four-level 504 space structured parking garage (127 space reduction). 58 of the total parking spaces in the proposed garage would be served by EV charging stations. The project includes a vehicle turnaround drive, two drop-off spaces accessing Glickman Library, a reconfigured library plaza space, new landscaping, lighting, extended fire access drive, pedestrian walkways and other associated site improvements. The proposed garage also includes a bicycle repair room with capacity for storing approximately 250 bikes. The applicant proposes making traffic and pedestrian site improvements along Bedford and Surrenden streets, as well as other streets and intersections in the project vicinity (See Section XIII for more information).

The proposed development would have a height of approximately 59 feet, approximately one level lower than the existing/adjacent garage, and is approximately two stories lower than the Wishcamper Center and five stories lower than Glickman Library. The proposed garage would be set apart approximately 21 feet from the existing parking garage, and connected via a one-way vehicle access route. The proposed circulation to both garages has been revised to keep primary traffic entering the existing garage entrance at Surrenden Street and directing all egress traffic through the proposed garage and exiting at the access drive (referred to as Winslow Street) to the east. The only exceptions are one resident only entrance (bypass) lane into the proposed garage, and a reversible garage gate at the existing garage entrance to accommodate PM peak hour load when more users are leaving campus.

The proposed structured parking garage is intended to accommodate the additional long-term parking needs associated with the development of a new Residence Hall (Portland Commons), which is currently under construction and expected to open in early summer of 2023.

VII. PREVIOUS WORKSHOP – SEPTEMBER 28, 2021

The project was introduced to the Planning Board by the applicant and staff at a workshop held on September 28, 2021. The Board provided initial feedback about the design, requested EV charging station waiver, and parking requirement, which is as follows:

Design – The Board expressed support of the proposed design providing minimal comments. One Board member suggested making the brick anchor pavilions on either end of the building a different color brick, and consider using grey brick so that the facility could be more compatible with the pre-cast panels and complement the Wishcamper complex. Additional Board feedback asked about the lighting and whether there could be more opportunity for planting between the buildings instead of gravel. (See Section XI.4.I below for Applicant's Response)

EV Charging Waiver – The Board expressed support for EV charging being primarily utilized by overnight parkers. Board members expressed interest in obtaining more information about the costs of the charging stations, and costs associated with providing EV charging to the remaining required spaces. Some Board members suggested the project consider applying the cost savings of waived EV charging stations into rooftop solar power. While not a requirement, during the pre-app stage, Staff encouraged the applicant to consider rooftop solar installation. (See Attachment U for Additional Information Provided by Applicant).

Some Board members expressed concern with the precedent that would be set by waiving the EV charging requirement. Other Board comments described that if considering a waiver, it would need to be narrowly tailored and justified for the precedent being set. The Board also requested an updated TDM plan be submitted which should speak to EV charging monitoring. (See Section XI.1.D. for Additional Information Provided by Applicant).

The applicant also commented that given that no other projects were currently proposed, that the institution is doing their best to balance the unknowns and resources available to address parking needs. In addition, the applicant stated they had looked into providing solar but the cost to support that infrastructure was too great.

Parking Requirement – Some of the Board were supportive of 631 parking spaces proposed for the site if there will be increased demand from future campus growth, or if the garage is used as a centralized place for commuters taking a shuttle on peninsula. Board members were also interested if a future addition could be accommodated if more supply was needed or the university. Other Board members were not supportive of the iteration proposing five-levels of parking totaling 631 spaces, given the TDM includes a parking demand reduction goal and more information was requested about the parking program and justifying the need for 631 spaces. It was suggested by one Board member to remove a story off the building or provide no more than 396 spaces to meet the previous condition of approval. Another board member was supportive of the parking moving away from the residential neighborhood and having excess capacity to serve future growth. (See Section XI.1.D for Additional Information Provided by the Applicant).

Overall, the Board sought more information from the applicant justifying the need for the 631 parking spaces proposed and how it fit with the future development plans, parking needs, and campus wide balance.

VIII. RIGHT, TITLE, & INTEREST

The owner of the property is the University of Maine System. The applicant has provided a copy of quitclaim and governor's deed, recorded at the Cumberland County Registry of Deeds (Book 29219 Page 218 and Book 24387 Page 258, respectively), which demonstrates their right, title and interest in the property (Attachment E).

IX. FINANCIAL & TECHNICAL CAPACITY

The applicant has submitted a Statement of Financial Capacity letter from their Chief Operations Officer as demonstration of their financial capacity (Attachment J).

The applicant has submitted a Technical Capability narrative summary explaining the development teams relevant experience to complete the proposed development (Attachment J).

X. ZONING ANALYSIS

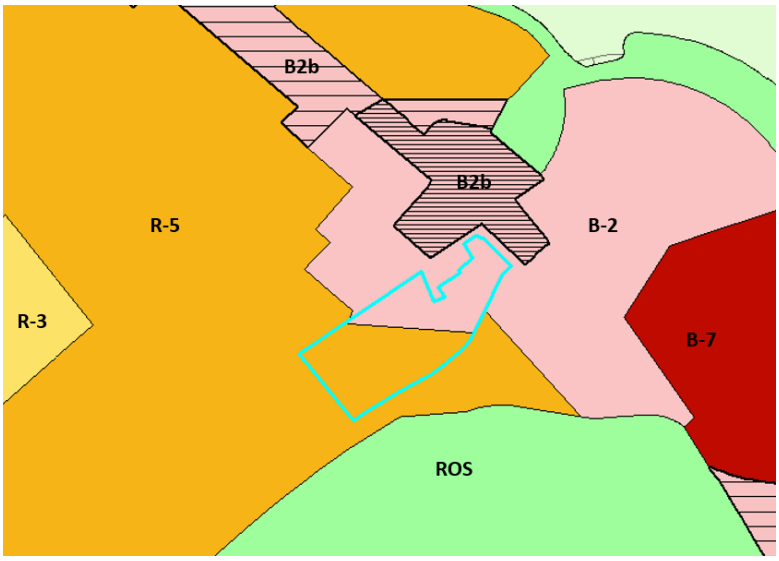


Figure 5 – Zoning Map with Subject Parcel Outlined in Blue

The parcel is located in the R-5 Residential and B-2 Community Business zones, and is also within the USM Overlay Zone which supersedes any of the specific requirements of the underlying zoning districts. In parcels with a split zone condition, the zoning requirements consider the more restrictive dimensional standard unless modified by an overlay zone or other Land Use Code provisions.

The proposed use of parking garage is listed as a permitted use in the USM Overlay Zone (Section 8.10.3.A.12).

Staff analyzed the proposal and found that the project complies with all dimensional requirements. The applicable dimensional standards under the USM Overlay Zone (Section 8.10.5) and underlying zones (Section 7.3) which are summarized below. The University Campus Overlay Setback and Height Map is attached to this report as additional reference (Attachment 1).

USM Overlay Zone	***Permitted***	***Proposed***
Minimum Setback	10 feet	30.5 feet
Maximum Building Height	85 feet	59 feet
Minimum Building Height	35 feet	73 feet
Maximum Impervious Surface Ratio (of USM overlay zone)	66 percent	55%
Maximum Coverage by Buildings (of USM overlay zone)	40 percent	30%

R-5 Residential Zone	***Permitted***	***Proposed***
Minimum Lot Area (Post-secondary school)	2 acres	8.1 acres
Minimum Street Frontage	50 feet	>50 feet
Minimum Lot Width	60 feet	>60 feet

XI. SITE PLAN REVIEW STANDARDS (Section 14.6)

The proposed development has been reviewed by staff for conformance with the relevant review standards of the City of Portland's Site Plan Ordinance, Section 14.6. Staff comments are below.

1. Transportation Standards (Section 14.6.1)

A. Impact on surrounding street systems

The proposed project is expected to increase the traffic and circulation for access and egress to the existing and proposed parking garages and surrounding street systems. Due to the volume of passenger car equivalents exceeding 100 peak hour trips, a Traffic Movement Permit (TMP) was required. Due to the overlap between the review of the Site Plan standards staff have included the review of the Impact of surrounding street systems standard as part of the TMP review section (See Section XIII below).

Staff find that requiring the project to follow the final recommendations of the TMP review process will result in providing adequate traffic safety measures and mitigation of congestion in proportion to the level of impact on the surrounding street systems.

B. Access and circulation

The existing site is accessed via a two-way access drive (referred to in the proposal as 'Winslow Street'). Additional vehicle traffic to the site occurs from Bedford Street to Surrenden Street which circulates through the existing parking garage and empties as exit-only to Winslow Street. The existing parking garage also includes an emergency vehicle access drive with gated/restricted access off of Winslow Street. The main access drive provides a loop for vehicles to access surface parking areas which serve the Wishcamper Center and Glickman Library. There are existing asphalt walkways and sidewalks connecting buildings and the brick sidewalk on the main Bedford Street frontage.

The current application is proposing to continue traffic circulation through the existing garage and provide a one-way route of egress via the proposed parking garage, and provide a reversible entry/exit lane. All lanes will utilize active/LED signage and the reversible lane will include LED signage inside and outside the garage indicating traffic flow direction at each lane (Attachment V) to manage higher peak hour PM traffic volumes.

The Winslow Street access drive is reconfigured to provide a much narrower loop road which extends to a two-vehicle loading/unloading space in front of the Glickman library as well as an emergency access road to the rear of the parking garage (See Figure 6). The applicant has submitted vehicle turning templates to demonstrate sufficient turning radius of emergency vehicles (Plan 35). The emergency access drive will extend behind the existing and proposed garage and will continue to be gated to restrict unauthorized access.

The proposal (Plan 15) shows a new concrete pedestrian walkway running along the front of the new garage which connects via two crosswalks across the access drive to repaved asphalt walkways and an updated plaza area fronting Glickman library. The applicant has submitted a plan showing pedestrian routes between the three buildings (Plan 36). Pedestrian access to the bicycle repair/storage room will be from the front of the parking garage within a recessed alcove.

City staff have reviewed the access and circulation standards in conjunction with the submitted TMP application (See Section XIII) and Impact on Surrounding Street System (See Section XI.1.A.) standards and find that requiring the project to follow the final recommendations of the TMP review process will result in providing safe and reasonable access and internal circulation for users of the site and comply with applicable site plan standards of this section.

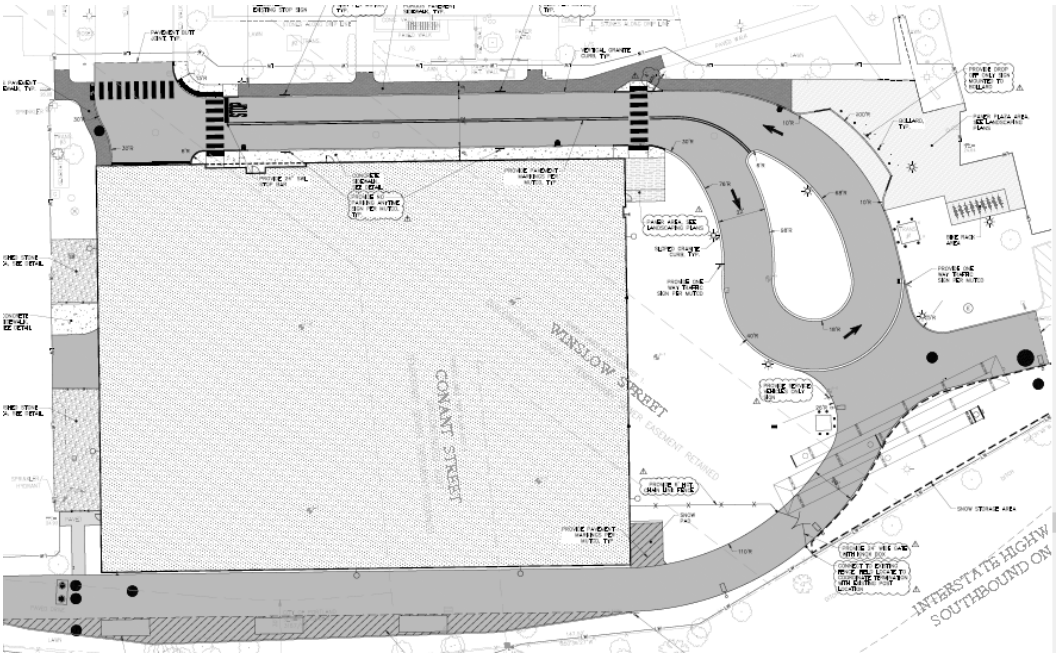


Figure 6 – Site Layout and Materials Plan

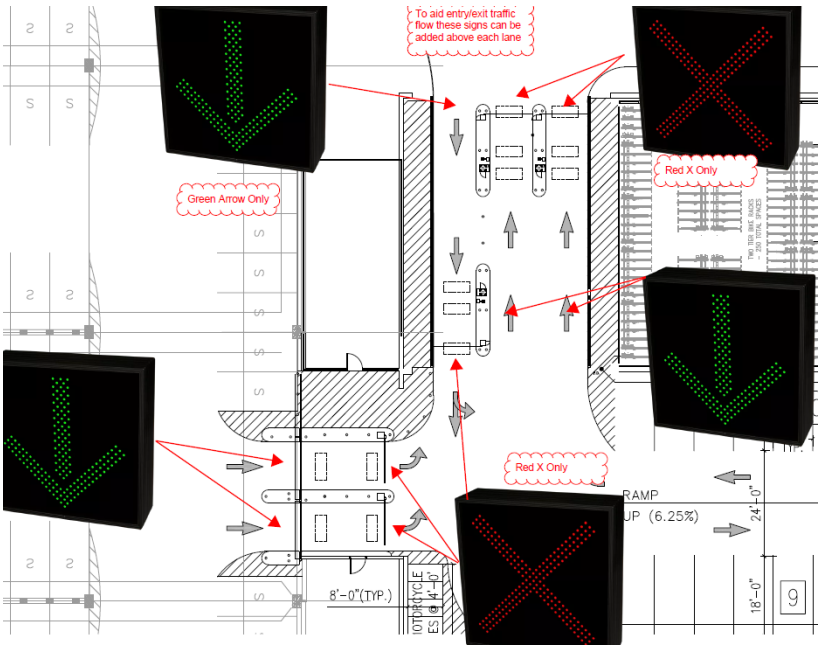


Figure 7 – Circulation Route to Proposed Garage

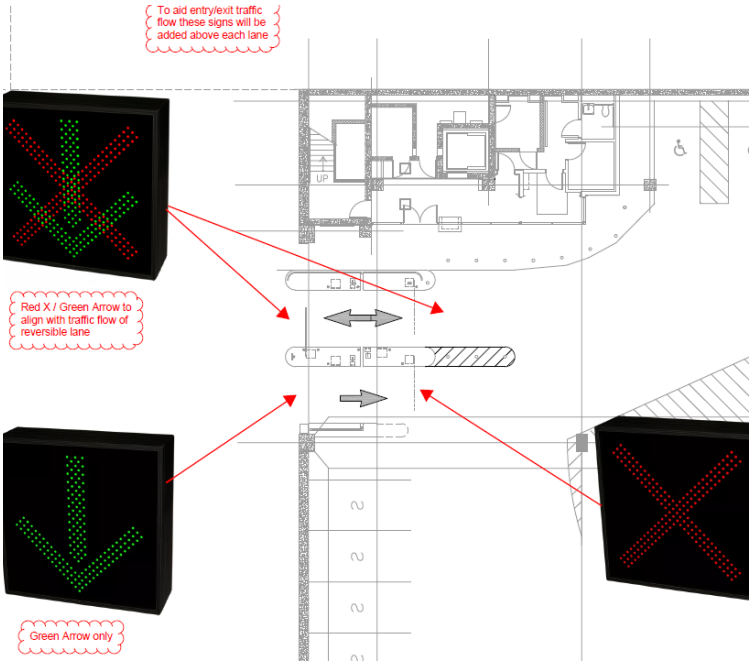


Figure 8 – Primary Entrance to Garages and Reversible Lane during Peak PM Egress

C. Public transit access

The University is located along the 2, 4, and Husky METRO lines which connects to the Westbrook and Gorham Campus and Downtown Portland. No changes to public transit access are proposed as part of this project. An existing bus shelter is located on Bedford Street.

D. Parking

Vehicular Parking: Based on the requirements in the USM Overlay Zone (Land Use Code Section 8.10.6), the parking requirement/amount for any university buildings must be determined by the Planning Board during site plan review.

The current proposal is intended to satisfy the amount of parking required as part of a condition of approval required by the Planning Board in 2020 under a separate approval (PL-001040-2020) for USM's student center, dorm, & quad (Attachment 5)to provide **396 parking spaces.** This parking requirement was based on a parking study (Attachment Y) which looked at the campus supply changes and demand projections. Some of the key highlights from the 2020 parking study include:

- **130 parking spaces** lost at the Woodbury parking lot permanently due to the student center, dorm & quad project
- 122 new parking spaces would be added at the Wishcamper surface parking lot which has 92 parking spaces (PL-000974-2020) for a total of **214 parking spaces**
- A new 425 space parking garage which would be situated at the Sullivan Recreation parking lot (net gain of 364 spaces)

Since the 2020 approval requiring 396 parking spaces, the location of the proposed new parking garage has moved to Bedford Street with the current plan submission. As a result, the Wishcamper surface parking expansion (214 spaces), which was intended to replace parking displaced by the University's future developments and to satisfy the University's existing parking demands, is not being pursued and the proposed garage is providing parking to accommodate both the previously planned parking at the Wishcamper site and the Planning Board's prior condition of approval to provide 396 parking spaces.

The applicant has recently reduced the amount of proposed parking from 631 to 504 vehicle parking spaces. This amount is intended to a) meet the 396 parking spaces needed for the student center, dorm and quad project and loss of parking supply at the Woodbury lot, as well as b) proposing 108 additional spaces to accommodate displaced parking and loss of existing and planned parking supply at the Wishcamper lot. Adjusting for the number of existing parking spaces present at the Wishcamper site, the net increase in parking at the Wishcamper site is 412 spaces, or 16 spaces more than required 396 parking spaces.

Given the updates described above, the current proposal is expected to provide slightly less than the amount of future parking supply indicated in the 2020 parking study to meet campus demands, currently showing an overall future parking supply of 1,909 parking spaces (74 less than previously proposed).

The City's Parking Director has provided recommendation (Attachment 9) that the size of the original garage with 631 parking spaces be reconsidered due to USM's potential for future expansion, expected student demand for the garage, and benefits to the surrounding neighborhood's on-street parking supply.

When determining the parking requirement for university buildings, the Planning Board is asked to take factors into consideration such as:

Land Use Code Section 8.10.6 Parking:
"A. The availability of off-campus parking and shuttle transportation to and from such off campus facilities.
B. The ratio of commuter students to resident students.
C. The use of centrally located on-campus parking facilities so situated that students, faculty, staff and visitors arriving on campus can reasonably be expected to park in the central facilities and walk to their various on-campus destinations during the course of a school day.
D. Shared use of a single parking facility by two or more buildings when the peak parking demand period for such buildings do not overlap.
E. Development and implementation of a parking management plan which discourages on-street parking. On-street parking shall not be used to satisfy the university's parking demand.
F. Development and implementation of programs designed to reduce the number of automobiles parking on campus, such as ride share programs and incentives for use of bicycles and public transportation."

Staff is seeking Planning Board feedback on the applicant's proposed reduction of parking spaces from 631 to 504 parking spaces.

Bicycle Parking: The proposal includes a covered and secured bicycle repair and storage room with a capacity for 250 bikes as well as the storage needs of the new dormitory.

Additional bicycle parking includes 84 existing outdoor spaces.

Snow Storage: The applicant is proposing snow storage areas to occur primarily on landscaped areas. The submitted drawings show the location of a snow pad off of the landscaped area (Plan 30). The applicant has indicated that if snow exceeds the available space on-site it will be hauled off-site.

Electric Vehicle (EV) charging: Section 1.17 of the Technical Manual requires that new structured parking lots of five or more spaces shall include energized electrical outlets or installed chargers capable of providing Level 2 EV charging or higher to 20% or parking spaces. Remaining spaces must be served by sufficient conduit, wiring, and electrical service to allow for future installation of electric vehicle supply equipment.

The proposed 504 parking space garage necessitates the applicant provide 100 EV charging stations or energized electrical outlets to meet *Technical Manual Standard Section 1.17 Electrical Vehicle Infrastructure.* The applicant

requests a waiver (Attachment I) to the EV standard and is proposing to install 58 EV chargers (12 percent). The applicant noted that the number of charging stations proposed with construction of the garage is based upon an analysis of the current and future demand for EV charging stations by the targeted users of the garage and that 58 stations will meet their 2023 forecasted demand for campus commuters and residents. Additionally, the applicant has stated that they are prepared to increase the supply of EV charging stations to meet future demand and intend to monitor the EV demand by utilizing charging stations usage data as well as collecting data during parking pass registration.

Described as a note on the Utility and Grading Plan (Sheet C-104) the proposed parking garage will be constructed to accommodate future electric vehicle supply equipment with electrical circuits designed to be expandable as new equipment is added. The proposed project includes the following EV features:

- Installation of a transformer sized to accommodate a 20% EV buildout.
- Installation of conduit from the electric room to the future transformer pad site to accommodate the remaining 80% EV spaces.
- Ensure there is sufficient room for future panels in the electric room and the satellite electric rooms on the various floors.
- Design pathways for future conduit (and wiring) to satellite electric rooms.
- Future conduit from the satellite electric rooms will be overhead and utilize the blockouts that will be provided in the double tees. According to the applicant this will allow for additional conduit to be ceiling mounted and enable routing to all parking spaces if/when needed.

The applicant believes that the proposed measures will limit the amount of unused materials from being installed and subject to deterioration and/or damage; Ensures that capability to expand, as needed is in place now; and limits spending for elements that might never be necessary.

In response to the Planning Board's questions during the last workshop, the applicant has provided more information regarding the costs of EV charging stations and supporting infrastructure, anticipated rate for premium overnight parking available, and the number of EV vehicle users on campus (Attachment U). Additionally, in response to staff questions asking if electrical outlets were considered as an alternative to smart stations, the applicant has responded that while uncontrolled outlets are cheaper, they do not allow the University to track and charge a fee for users, which presents a significant risk to the University's ability to control demand charges and recover the electrical cost. Also that a charging fee is a means to encourage turnover at charging stations when not in use and increase availability.

To demonstrate its commitment to monitoring EV charging demand and provide future EV charging stations, the applicant has proposed an addendum to their TDM plan (see Section E below) which describes installing additional EV Charging Stations in the parking garage in response to future demand until the number of Charging Stations equals 20% of parking spaces in the garage as well as a providing an EV Use and Forecast Report to the City each year starting in 2024.

Staff notes that the applicants requested reduction is reasonable given that the applicant proposes to install 12 percent of parking spaces with EV chargers, which is a sufficient number of spaces for the current and expected demand as demonstrated by the applicant's analysis. The applicants will also install a transformer sized to accommodate a 20% EV buildout for a large 504 parking space garage and install conduit from the electric room to the transformer pad site to accommodate full build out of the garage space. The applicants have also proposed an addendum to their TDM Plan describing installing additional EV charging Stations in response to future demand and providing an EV use and Forecast Report to the City each year starting in 2024.

Given that the applicant is providing a substantial number of EV chargers capable of handling current and future demand and proposes to install sufficient capacity for expansion and also proposes data collection and an addendum to their TDM plan staff believes the waiver requested is appropriate.

Staff have reviewed the request and generally find it to be reasonable given a) the higher cost of installing 'smart' charging stations which track usage and encourage increased availability to EV charging, and b) the applicant has taken additional steps in the TDM plan to monitor and increase EV supply based on future demand. Staff believe the proposal and steps taken provide sufficient justification for granting a partial waiver for the 42 spaces not served by EV charging.

Staff are seeking the Planning Board's feedback on whether a waiver to the 20 percent EV charging station requirement and EV readiness approach for remaining spaces is supported.

E. Transportation demand management (TDM)

The Planning Board previously approved a Transportation Demand Management (TDM) plan (Attachment CC) for the student center, dormitory, quad project (PL-001040-2020) that included a trip reduction goal of between 3% and 6%, and a parking reduction of between 10% and 14 % by the year 2025. Due to the current proposal's reliance on trip generation and parking data analyzed under a prior site plan approval no new TDM was required for this project. However, due to the applicant's desire to install future EV charging based on future demand as well as to implement an annual monitoring plan based on supply and demand statistics, at the request of staff, the applicant has proposed an addendum (Attachment X) to incorporate this language to the Strategies and Reporting sections of their current TDM plan. The City's Transportation Program Manager has reviewed the addendum and finds all comments are sufficiently met (Attachment 11), and the addendum is acceptable to append the respective sections of the current TDM plan.

2. Environmental Quality Standards (Section 14.6.2)

A. Preservation of significant natural features

The applicant reports that the site is currently developed with no known areas of significant natural features. While US Fish and Wildlife has identified the northern long-eared bat as a federally threatened species that may live within the project area, the applicant states that *"tree-clearing for this project will be minimal; it is not anticipated that this project will have an impact on the northern long-eared bat species."*

B. Landscape preservation

To accommodate the proposed development, the plans intend to remove a majority of the existing landscaping/trees present throughout the site. Only two trees are proposed to be removed within the 10-foot setback area and the project will preserve more than 30 percent of existing trees within the required setback.

The applicant is currently proposing an erosion control berm around the southwest property line as well as noting that existing trees along the Wishcamper Center will be protected (Plan 14).

C. Site landscaping and buffers

The Applicant has submitted a Planting Plan (Plan 32) proposing 23 Princeton Elm Trees which will create a vibrant tree canopy within the open space at the end of the Winslow Street access loop. Five additional bayberry shrubs are also proposed to screen the transformer and generator at the entrance to the new parking garage. This standard is sufficiently met. However, feedback provided by the City Arborist(Attachment 7), encourages the applicant to diversify the plantings with a few other types of trees to improve chances of survival and to consider breaking up the large planting area.

D. Water quality/storm water management/erosion control

The proposed development provides a stormwater management system comprised of a series of catch basins, a subsurface detention system, and proprietary treatment unit. Once stormwater flows are treated, the site runoff will be piped and discharged to the City's separated stormwater system on Forest Avenue.

The City's consulting stormwater engineer has reviewed the applicant's grading plan (Plan 16) Stormwater Management Report and Plans (Attachment O) for water quality and erosion control and finds the project complies with MaineDEP Chapter 500 Stormwater Standards, Section 5 of the City Technical Manual as well as the Site Location of Development Act Permit requirements (Attachment 4). The applicant is required to submit a stormwater maintenance agreement for the proposed stormwater system prior to issuance of a building permit, which is a standard condition of approval included in approval letters.

3. Public Infrastructure and Community Safety Standards (Section 14.6.3)

A. Consistency with City Master Plans

The applicant has analyzed the City's comprehensive plan, Portland's Plan 2030, and finds that the project is aligned with the document given the project will help support the growth of the University of Southern Maine's student body, a vital resource for the economic development of the City of Portland. Furthermore, the proposed project is consistent with objectives outlined under the transportation policy guide. By providing sufficient parking on campus the proposal is in alignment with the goal of "*supporting livability by improving the quality of life in neighborhoods and improving the public health of residents*,". By providing 58 new EV charging stations, and over 200 bicycle parking spaces and repair room the proposed project aligns with the goal of "*Supporting sustainability by reducing energy consumption, greenhouse gas emissions, and stormwater impacts*."

Portland's Plan also emphasizes "*supporting sustainable growth in our educational institutions,"* and *"promoting the orderly expansion of institutional uses, including educational campuses, which are central to workforce development, employment, and the health of the local and regional economies*." While this application is focused on a new parking garage, the proposed project should be viewed in the lens of USM's overall campus development which includes the construction of a new student center and introduction of on-campus housing. In combination, the current application and previous approvals align with the City's goal to ensure that the growth of Portland's educational institutions are integrated into Portland's urban fabric. Furthermore, the introduction of student housing and additional support services on-campus will further support sustainability goals and reduction of greenhouse gas emissions.

B. Public safety and fire prevention

In order to demonstrate how public safety CPTED principles are incorporated into the site's design, the applicant has provided an analysis highlighting how the design promotes natural surveillance conditions and manages access to the site (Attachment K). The applicant explains that the program of the outdoor space will include clusters of picnic tables to encourage small group use in dedicated spaces. The site also provides walkways which are open and readily connected to plazas and destination uses. Additionally, the applicant is proposing site lighting to provide uniform coverage of entrances, exits and pathways. Due to the garage's 24-hours a day accessibility, it includes a surveillance system, monitored in the parking office, that will allow for viewing areas not easily observed within the garage.

The City's Fire Marshal finds that all site plan review comments are satisfactorily addressed with the new FDC locations, and finds the amended site plan is acceptable.

C. Availability and capacity of public utilities

The applicant has submitted a Utility Plan (Plan 16). The proposed parking garage does not propose any new water services with the exception of the dry stand pipe and sprinkler system with a Fire Department Connection (FDC). The applicant has provided documentation from the Portland Water District showing a capacity to serve demonstrating that public infrastructure can accommodate the development (Attachment BB)

Due to the project not producing any dry weather wastewater flow, a capacity authorization is not required by the Public Works Department.

4. Site Design Standards (Section 14.6.4)

A. Massing, ventilation, and wind impact

The massing of the proposed structured garage is approximately one level lower than the existing garage. The applicant states that the garage was designed within the context of the surrounding scaled buildings. The development is not anticipated to have adverse impacts related to ventilation and wind.

B. Shadows

The applicant has described that the new structure was designed to minimize impacts of shadows on open space and public areas that would affect the viability of the public use and existing vegetation. The landscaped space is situated to the north of the site and trees are spaced approximately 20 feet apart to minimize the effects of building shadows on open space. The development is not anticipated to have adverse impacts related to shadows.

C. Snow and ice loading

The applicant shows a snow dump gate from the rooftop (Plan 7) as well as a snow pad to dispose of snow. The applicant states that the structure is designed to prevent snow and ice from accumulating and falling onto abutting properties and public ways. Additionally, the applicant has indicated that snow that exceeds the available space on-site will be hauled off-site. The development is not anticipated to have adverse impacts related to snow and ice loading.

D. View corridor

There are no designated view corridors within the project vicinity.

E. Historic resources

The proposed development is not located in or within a 100 feet of a historic district or historic landmark.

F. Exterior lighting

Staff have reviewed have reviewed the submitted photometric plans (Plan 34) and associated catalog cut sheets (Attachment K) and find the application sufficiently meets the site lighting requirements of the City's Technical Manual with one exception. The applicant has requested a waiver to Section 12.3.5 of the Technical Manual for color temperature exceeding 3,000K CCT. The applicant has stated that 4,000K color temperature fixtures were selected to match the existing fixtures immediately adjacent to the scope of work area. Given the fixtures proposed that exceed the allowable color temperature currently exist on site and do no create a nuisance to abutting properties and users, staff support a waiver to the standard.

G. Noise and vibration

No adverse impacts related to noise and vibration are anticipated as mechanical equipment is located away from residential properties. In addition, the site abuts Interstate 295 to the east and additional campus buildings and Forest Avenue to the north and west.

H. Signage and wayfinding

Existing signage is proposed to be maintained, and new traffic signage will be provided as shown on the drawings.

I. Zoning-related design standards

The proposed garage is subject to meeting all applicable USM Overlay Zone design standards under Section e and Appendix 3 of the design manual (Attachment 8). As part of the original application, the applicant submitted a narrative about the project's consistency with the USM Design Principles (Attachment L), as well as perspective views (9, 10, 33) and elevations (Plans 7, 8) which have been updated in response to staff comment.



Figure 9 – Perspective View of Proposed 4 Level Garage (Building Front)

The project was reviewed by a design review team made up of three Planning staff which found the project met the goals to minimize the impact on the street and to create an attractive façade to neighboring uses (Principle C). To better clarify the pedestrian environment and experience (Standard A-3) the applicant has provided a circulation plan (Plan 36).



The applicant has provided five Bayberry shrubs near at the north elevation of the proposed garage to screen the existing transformer and generator. No other HVAC systems are planned or will be visible on the building's exterior. Staff find that HVAC is sufficiently unobtrusive and screened by the proposed landscaping (Standard C-6).

Since the last workshop and in response to staff comment, the applicant has added a schedule of materials indicating type and color to the elevations (Plans 7, 8). In response to the Board's questions about consideration of a different brick type/color, the applicant has responded (Attachment S) that several products were explored further but due to an inability to incorporate such products into precast concrete units as well as the potential of an undesired contrast with the middle portion of the building, the red-orange thin brick was retained to follow the initial staff commendation to provide a red-bronze blend consistent with the rest of campus. While the waterstruck (lightly textured) brick is not an exact match to brick found on campus, the applicant believes the proposed brick has a similar variety of colors and blend of tones and avoids a thin appearance. Staff find the proposed material is compatible with adjacent uses and architecture (Standard C-1).

In response to the Board's recommendation to consider additional plantings in the space between the two garages, the applicant has responded (Attachment S) that due to the many utilities and the need to maintain access to them, as well as a number of other factors such as visibility/security concerns, no additional plantings are provided.

At this time staff believe the proposal has complied with all applicable design standards related to the USM Overlay Zone design standards (Attachment 8).

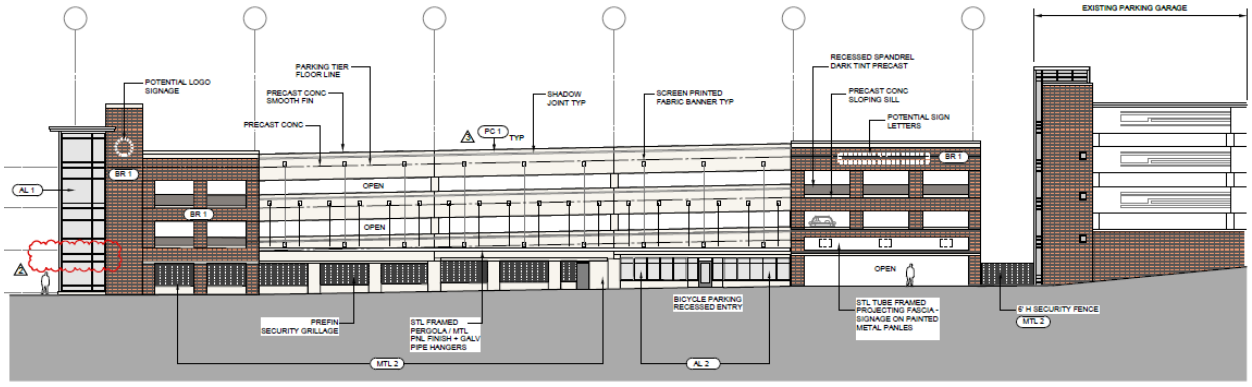


Figure 11 – North Elevation

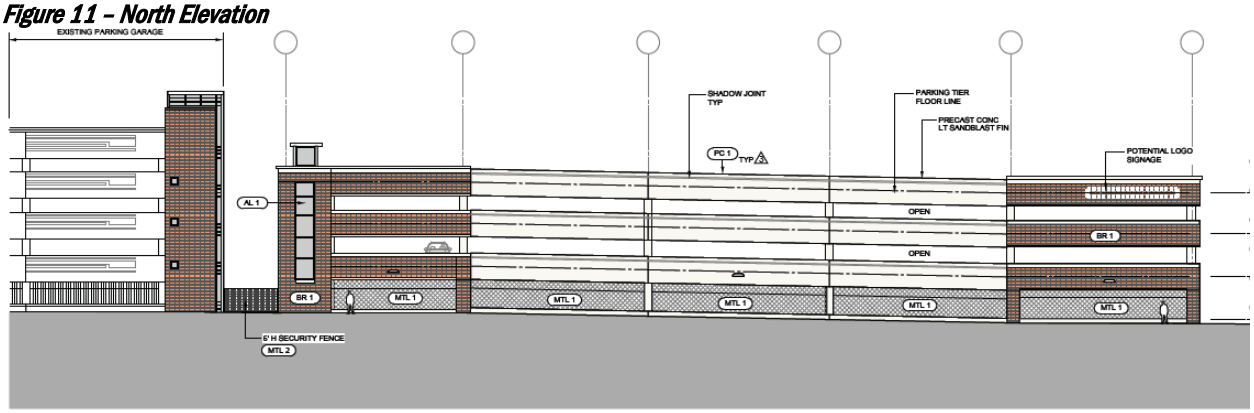


Figure 12 – South Elevation

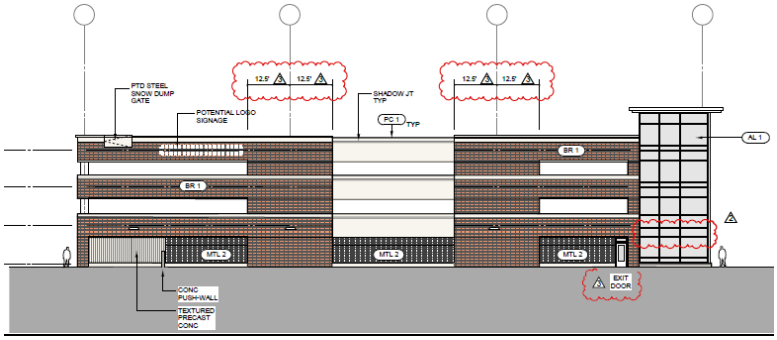


Figure 13 – East Elevation

XII. SITE LOCATION OF DEVELOPMENT ACT (SLODA) AMENDMENT

As part of the Major Site Plan application the applicant also prepared a SLODA Amendment which Planning Staff have submitted to MaineDEP (Attachment 2) in accordance with the Chapter 500 Rules.

The City of Portland has delegated review authority from the MaineDEP for large projects that trigger Site Location of Development Act (SLODA) review. According to the standards for this review listed under Section 14 of the City's Technical Manual, sections are responded to below which overlap with a number of site plan standards:

- Financial & Technical Capacity: see Section VIII above.
- Traffic Movement: see site plan standards, X.1.A., above, and Traffic Movement Permit, below.
- No Adverse Effect on the Natural Environment, Ground Water, Flooding, Storm Water Management & Erosion and Sedimentation Control: see site plan standards, X.2.D., above. The development is not located within a

flood hazard zone, as shown on the FEMA Flood Insurance Rate Map provided in this application. The proposed development is not anticipated to cause or increase flooding or cause an unreasonable hazard to any adjacent structures (Attachments 2, O).

- Soil Types: The applicant provided a soil survey, the applicant is also participating in a VRAP for the site. A soil management plan will be developed for the site (Attachment 2).
- Infrastructure: see site plan standards, X.3.C., above.

XIII. TRAFFIC MOVEMENT PERMIT (TMP) REVIEW

For projects generating more than 100 passenger car equivalents (PCEs) during its peak hour of traffic generation, a Traffic Movement Permit (TMP) is required under Maine state statute 704—A. Any project surpassing this threshold is required to make adequate provision for traffic movement of all types into and out of the project area such that any traffic increase that is attributable to the project will not result in unreasonable congestion or unsafe conditions within the vicinity of the development. TMPs are a requirement of the Maine Department of Transportation (DOT), but the City of Portland has delegated review of them from the DOT, requiring all TMP applications to be approved or denied by the Planning Board.

On November 10, 2020, the Planning Board approved USM's TMP application (PL-001040-2020) for a new Student Center, Dormitory, & Quad which was estimated to generate 160 AM peak hour and 160 PM peak hour trips. This estimate was based on the forecasted enrollment to 2028 and the TMP review and approval assumed that a future parking garage would be built with access on Falmouth Street.

The applicant has submitted a TMP Modification Application (Attachment P) to amend the previously approved TMP for a new parking garage location accessible from Bedford Street. The applicant's required scoping meeting was conducted on September 27th, 2021, and the applicant has since updated their TMP amendment application materials by providing additional documentation (Attachments T,U,V,W) in response to reviewer comments.

The number of new peak hour trips anticipated with enrollment growth is 160 trips (125 in and 35 out) in the highest AM peak hour and 160 trips (51 and 109 out) in the highest PM peak hour. To promote pedestrian and traffic safety the applicant has proposed making improvements to Bedford Street (Plan 37) which include but are not limited to: a new dedicated left turn lane for vehicles entering Winslow Street, replacing the raised median island and relocating the crosswalk, and extending a painted median to separate vehicle and bicycle traffic in each direction. To address concerns of queuing and circulation, access to the site will continue via Surrenden Street for commuter traffic, while a resident only entrance lane will be maintained via the Winslow access drive. Surrenden Street will be reconfigured to include two exiting lanes at Bedford Street that taper back to a single lane in each direction at the crosswalk and widen at the garage entrance to accommodate two lanes of traffic for at least three vehicles (including the vehicle at the gate) (See Figure 14). To manage higher peak hour PM trips exiting the garage volumes, the applicant has proposed a reversible entry/exit lane using an active/LED signage inside and outside the garage indicating traffic flow direction at each lane (Attachment V).

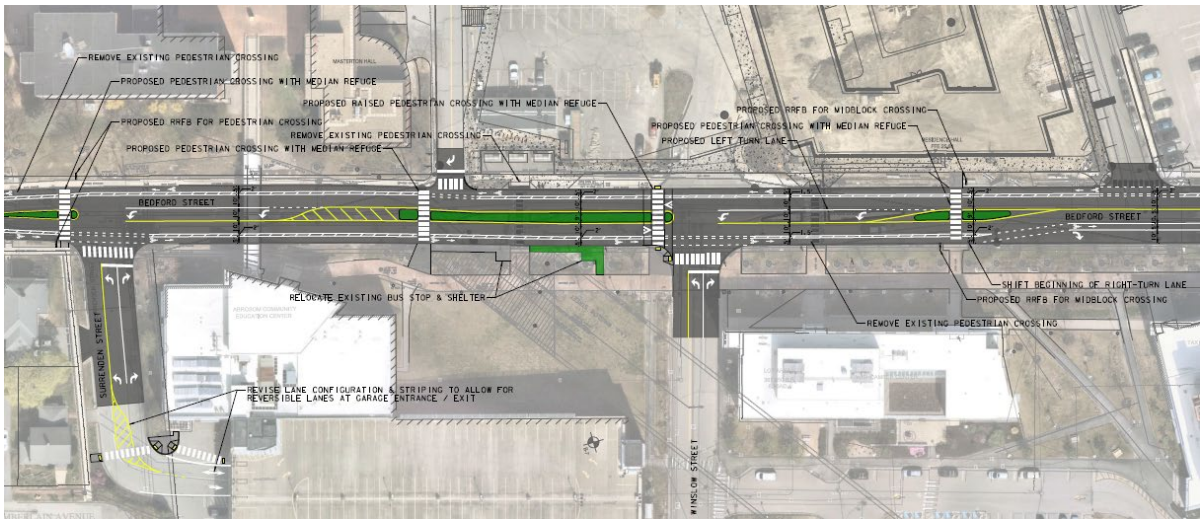


Figure 14 – Proposed Conceptual Plan for USM Intersection Improvements for Parking Garage Circulation

The City's traffic engineering consultant in conjunction with staff have reviewed the TMP amendment application and have provided a draft of mitigation requirements related to the TMP as well as other comments below that will need to be addressed before the review can be finalized

Staff recommend that TMP approval be contingent upon conditions of approval, which are summarized as follows:

Mitigation Requirements:

1. The applicant shall provide conceptual design plans, preliminary and final plans and specifications for Bedford Street Improvements as detailed on the plan prepared by VHB (Plans continue to be reviewed and approval is pending). Said improvements shall be constructed by the applicant prior to completion of a parking garage structure and Final design plans will need to be stamped by a professional engineer. **These improvements are being required to facilitate access and egress movements to the garage and providing safe pedestrian and bicycle movements.**

2. The applicant shall provide conceptual design plans, preliminary and final plans and specifications for Traffic calming/ pedestrian improvements at the Falmouth Street / Oakdale Street intersection for review and approval by the Department of Public Works and Planning Authority. Said improvements shall be constructed by the applicant prior to completion of a parking garage structure or five years from TMP approval, whichever is sooner. **This improvement is required to address safety concerns as it relates to vehicles speeds and general neighborhood impacts on Falmouth Street.**

3. The applicant shall be responsible for the implementation of do not block driveway pavement markings and signage on Forest Avenue at the Oakhurst driveway. The applicant shall provide conceptual design plans, preliminary and final plans and specifications to the City for review and approval. Final design plans will need to be stamped by a professional engineer and implementation prior to completion of a parking garage structure. **This improvement is required due to vehicle blockage and impacts at Oakhurst's driveway as traffic queues extend from the Bedford/Baxter intersection.**

4. The applicant shall be responsible for implementing traffic signal equipment improvements at the Forest Avenue/Bedford Street intersection. This upgrade shall include all equipment necessary for a traffic signal system that is fully active and functioning within the Surtrac Adaptive network. The proposed system shall be coordinated with Rapidflow Technologies and shall be field tested and verified before being accepted by the

City. Said improvements shall be constructed by the applicant prior to completion of a parking garage structure. **This improvement is to address congestion issues documented at the subject intersection.**

5. The applicant shall provide conceptual design plans, preliminary and final plans and specifications for improvements at the Forest Avenue/Bedford Street/Baxter Boulevard intersection based on the Smart Corridor Study recommendations for review and approval by the Department of Public Works and Planning Authority. These shall include geometric modifications to the corners on the Baxter Boulevard approach and upgrades to pedestrian traffic signal equipment. The applicant shall construct the said improvements prior Certificate of Occupancy, with all work complying with ADA standards. **This improvement is to address pedestrian safety concerns at the subject intersection.**

6. The applicant shall be responsible for implementing traffic signal equipment improvement on the I-295 Southbound Off-Ramp. The improvements shall include all equipment necessary for installing a vehicle queue detection system that is compatible with the RapidFlow signal system at Forest/Bedford/Baxter intersection. The proposed system shall be field tested and verified before being accepted by the City. Said improvements shall be constructed by the applicant prior to completion of a parking garage structure. **This improvement is being required to address long vehicle queues on the ramp with the goal of avoiding any backups onto I-295.**

Pending Review Items:

- Staff and the City's traffic engineering consultant continue to review the construction management plan, but recommend that a construction management plan be provided for the Bedford Street improvements as well.

- Staff continue to review the revised Section 7 Study and review is on-going.

- The applicant has provided a revised plan on how traffic will be managed on Surrenden Street under a reversible garage gate scenario related to traffic control entering and exiting the garage and recent comments seek changes to diagonal pavement markings in the area of the reversible lane.

- Staff have concerns about pedestrians crossing Surrenden Street near the Garage entry (See Figure 15) under a two-lane entry scenario (pedestrians having to navigate through two entry lanes of queued vehicles).

XIV. NEIGHBORHOOD MEETING & PUBLIC COMMENT

The applicant's neighborhood meeting was held on September 22nd, 2021 and the required neighborhood meeting documentation has been submitted (Attachment Z). The neighborhood meeting included eight members of the public that met with the project team. Feedback provided at this meeting was supportive about the new location but concerns were voiced about the traffic on Forest Ave, bus traffic contributing to congestion, questioning the extent that upgrades to the intersection will improve conditions, as well as seeking traffic calming measures to slow vehicles and improve pedestrian safety.

At the time of writing this report no written public comments have yet been received for this project.

XV. NEXT STEPS

At this time staff are specifically seeking feedback about the **TMP mitigation requirements, if the EV charging station waiver is supported, and if the amount of proposed parking is supported.**

Following the first workshop, the application will:

1. Continue to address staff and board review comments
2. Prepare final plan submission.
3. Schedule and hold planning board public hearing

XVI. ATTACHMENTS

PLANNING BOARD REPORT ATTACHMENTS

1. University Campus Overlay Setback and Height Map
2. SLOD Application
3. Traffic Engineer Comments (dated 12.9.2021)
4. Stormwater Consultant Comments (dated 9.24.2021)
5. Planning Board Approval Letter for 25 Bedford Street (dated 11.10.2020)
6. Planning Board Approval Letter for 44 Bedford Street (dated 5.26.2020)
7. City Arborist Comments (dated 9.13.2021)
8. Design Manual, Appendix 3
9. Parking Director Comments (dated 12.1.2021)
10. Fire Department Comments (dated 12.2.2021)
11. Transportation Manager Comments (dated 12.3.2021)

APPLICANT'S SUBMITTAL

A. Cover Letter & Table of Contents
B. Application Checklist
C. Application Fees
D. Project Description
E. Right, Title & Interest
F. Evidence of State and Federal Approvals
G. Zoning Assessment
H. Easements & Other Burdens
I. Waiver Requests
J. Financial & Technical Capability
K. Compliance with Site Plan Standards
L. Consistency with USM Design Principles
M. Construction Management Plan
N. Boundary Survey
O. Stormwater Management Report
P. TMP Modification Application (dated 9.10.2021)
Q. Response to Staff Comments (dated 9.13.2021)
R. Response to Staff Comments (dated 9.17.2021)
S. Response to Staff Comments (dated 10.25.2021)
T. Response to Staff Comments (dated 11.09.2021
U. Response to Staff Comments (dated 11.23.2021)
V. Response to Staff Comments (dated 12.03.2021)
W. USM Garage Updated TMP Section 7 (dated 12.07.2021)
X. TDM Addendum
Y. 2020 Parking Analysis
Z. Neighborhood Meeting Certification
AA. Construction Management Plan
BB. Ability to Serve from Portland Water District
CC. TDM Plan (approved 11.10.2020)

PLANS

Plan 1 A-100 SITE PLAN
Plan 2 A-101 GROUND LEVEL STRIPING PLAN
Plan 3 A-102 FIRST LEVEL STRIPING PLAN

Plan 4	A-103 SECOND LEVEL STRIPING PLAN
Plan 5	A-104 THIRD LEVEL STRIPING PLAN
Plan 6	A-105 ROOF LEVEL STRIPING PLAN
Plan 7	A200 Elevations
Plan 8	A201 Elevations
Plan 9	A202 Views
Plan 10	A203 Views
Plan 11	C-000 General Notes & Legend
Plan 12	C-100 Existing Conditions Survey - 1
Plan 13	C-101 Existing Conditions Survey -2
Plan 14	C-102 Demolition & Erosion & Sediment Control Plan
Plan 15	C-103 Site Layout & Materials Plan
Plan 16	C-104 Utility & Grading Plan
Plan 17	D-200 Civil Details – 1
Plan 18	D-201 Civil Details – 2
Plan 19	D-202 Civil Details – 3
Plan 20	D-203 Civil Details – 4
Plan 21	D-204 Civil Details – 5
Plan 22	E-000 - ELECTRICAL LEGEND AND ABBREVIATIONS
Plan 23	E-500 - ELECTRICAL DETAILS
Plan 24	E-501 - ELECTRICAL DETAILS
Plan 25	E-600 - ELECTRICAL SCHEDULES
Plan 26	ES-000 - ELECTRICAL SITE LEGEND, DETAILS, AND NOTES
Plan 27	ES-100 - ELECTRICAL SITE PLAN AND NOTES
Plan 28	G-000 Cover Sheet
Plan 29	G100 Context Plan
Plan 30	G101 Ground Level Code Information Plan
Plan 31	G102 Upper Levels Code Information Plan
Plan 32	L-100 Planting Plan
Plan 33	North Aerial View
Plan 34	SL-100 - SITE PHOTOMETRIC PLAN AND SCHEDULES
Plan 35	Turning Templates
Plan 36	Pedestrian Routes
Plan 37	Bedford Street Improvement Plan

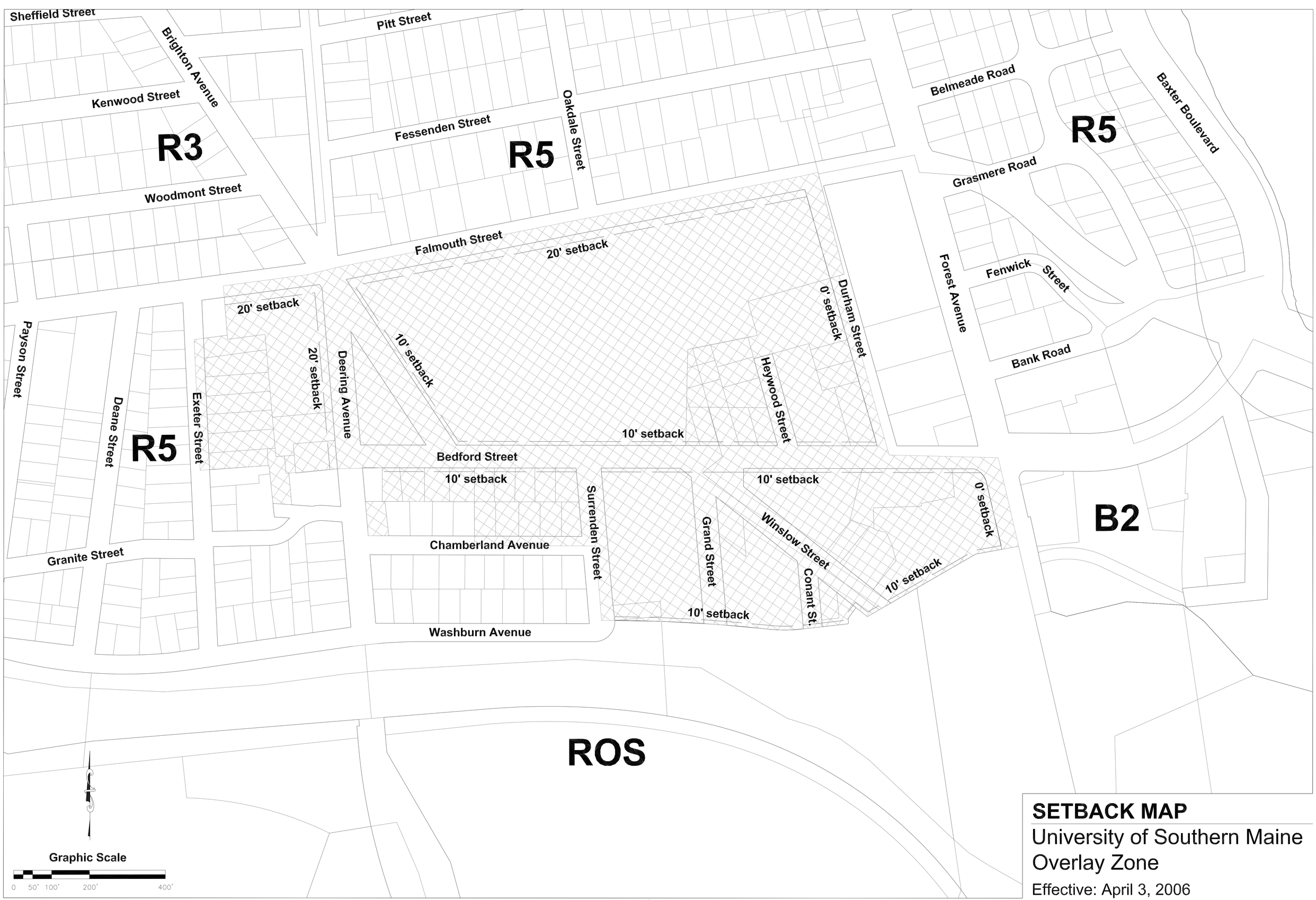
Att. 1

Sheffield Street
Brighton Avenue
Kenwood Street
R3
Woodmont Street
Pitt Street
Fessenden Street
R5
Oakdale Street
Falmouth Street
Belmeade Road
Grasmere Road
R5
Baxter Boulevard
Forest Avenue
Fenwick Street
Bank Road
Durham Street
Heywood Street
Deering Avenue
Payson Street
Deane Street
R5
Exeter Street
Bedford Street
Surrenden Street
Chamberland Avenue
Granite Street
Washburn Avenue
Grand Street
Winslow Street
Conant St.
B2
ROS

Graphic Scale
0 50' 100' 200' 400'

OVERLAY ZONE MAP
University of Southern Maine

Overlay Zone
Efffective: April 3, 2006


Sheffield Street
Brighton Avenue
Kenwood Street
R3
Woodmont Street
Pitt Street
Fessenden Street
R5
Oakdale Street
Belmeade Road
Baxter Boulevard
R5
Grasmere Road
Falmouth Street
20' setback
20' setback
Forest Avenue
Fenwick Street
Bank Road
Payson Street
Deane Street
R5
Exeter Street
20' setback
Deering Avenue
10' setback
Durham Street
0' setback
Heywood Street
10' setback
Bedford Street
10' setback
10' setback
Surrenden Street
Grand Street
Winslow Street
Conant St.
10' setback
10' setback
0' setback
B2
Chamberland Avenue
Granite Street
Washburn Avenue
ROS
Graphic Scale
0 50' 100' 200' 400'
SETBACK MAP
University of Southern Maine
Overlay Zone
Effective: April 3, 2006

Sheffield Street
Brighton Avenue
Pitt Street
Kenwood Street
Fessenden Street
Oakdale Street
Belmeade Road
Baxter Boulevard
R3
R5
R5
Woodmont Street
Grasmere Road
160'
Falmouth Street
80'
B: 75'
B: 75'
C: 85'
Durham Street
Forest Avenue
Fenwick Street
Bank Road
Payson Street
Deering Avenue
Heywood Street
Deane Street
R5
Exeter Street
Bedford Street
800'
384'
A: 45'
R5: 35'
R5: 35'
Surrenden Street
B: 75'
Grand Street
Winslow Street
Conant St.
C: 85'
B2
Granite Street
Chamberland Avenue
Washburn Avenue
ROS
Graphic Scale
0 50' 100' 200' 400'

HEIGHT MAP

University of Southern Maine
Overlay Zone

Effective: April 3, 2006

DEPARTMENT OF ENVIRONMENTAL PROTECTION
Bureau of Land Quality Control
State House Station 17
Augusta, Maine 34333
Tel: (207) 287-2111

FOR DEP USE

#L- _____

Date Received _____

NOTIFICATION OF APPLICATION ACCEPTANCE
MUNICIPAL REVIEW OF DEVELOPMENT
(38 M.R.S.A. Section 489-A)

This form is to be used by a registered municipality to notify the Department upon the acceptance of an application for review pursuant to 38 M.R.S.A. Section 489-A. This form must be received by the Department within 14 days of acceptance of an application. The municipality must also submit one copy of the project application and one copy of the record of review and action.

If the application which is the subject of this notice should subsequently be amended during the review process, this form should also be used to submit notice to the Department of the amendment.

Municipality: Portland, ME

Contact Person: James Dealaman, Planner

Address/Phone: Portland Planning and Urban Development, 389 Congress St., Portland, ME 04101. General Number (207) 874-8719.

Project Applicant: University of Southern Maine

Address/Phone: 25 Bedford St., Portland ME (207)780-4177

Title of Project: Structured Parking Garage

Date Accepted as Complete by Municipality: 8/24/2021

I. Type of Project for which permit is sought: (Check One)

_____ Subdivision as described in section 482, subsection 5 of more than 20 acres but less than 100 acres; *(Note: Subdivision review will occur at future dates)*

__✓__ Structure as described in section 482, subsection 6, paragraph B, in excess of 3 acres but less than 7 acres;

_____ Excavation on more than 5 acres of land for borrow, topsoil, clay or silt, whether alone or in combination as described in section 482, subsection 2-B.

II. Description of Project. (Include number of units or lots, parcel size, footprint, etc.)

The project is seeking an amendment to the Site Location of Development (SLOD) Permit for the University of Southern Maine (USM) Portland campus located at 44 Bedford Street. The proposed work will take place on a single parcel, identified by the City of Portland Assessor as Tax Map 114, Lot A001001, which is approximately 8.1 acres in size. The proposed work will be limited to approximately 2.4-acres of the property.

The project proposes constructing a new five-level, 632 space structured parking garage with a footprint of 45,100 square feet, along with associated site improvements, at 50 (44) Bedford Street. Site work includes installing sidewalks, landscaping, utilities, and stormwater management infrastructure.

III. Submit as attachments to this form:

A. One copy of complete application filed with municipality (include site plans);

Included as an attachment.

B. Identification of any outside review agents or consultants who will be performing reviews of any aspect of the application;

Thomas Errico, P.E. TY Lin, Traffic
Michael Guethle, P.E., Wright Pierce, Stormwater

C. One copy of the legal notices served by the municipality.

The Legal Notice for Receipt of Application is included as an attachment.

NOTE: APPLICANT IS ADVISED TO REVIEW THE NATURAL RESOURCES PROTECTION ACT 38 M.R.S.A. SECTIONS 480-A 480-U (N.R.P.A.) TO ENSURE CONSISTENCY WITH THAT LAW. THE MUNICIPALITY'S DELEGATED REVIEW AUTHORITY PURSUANT TO 38 M.R.S.A. SECTION 489-A DOES NOT EXTEND TO THE N.R.P.A. IF AN N.R.P.A. PERMIT IS NECESSARY IT MUST BE OBTAINED FROM THE DEPARTMENT PRIOR TO THE COMMENCEMENT OF CONSTRUCTION.

Town or City of: PORTLAND, ME Date: September 1, 2021

By: _____

Printed Name: James Dealaman

Title: Planner

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

July 26, 2021

James Rather
City of Portland Development Review Services Manager
389 Congress Street
Portland, ME 04101

Re: University of Southern Maine Structured Parking Garage
Major Site Plan Application & Site Location of Development Amendment

Dear James:

On behalf of the University of Southern Maine, Woodard & Curran is pleased to submit applications for a Major Site Plan Review and a Site Location of Development (SLOD) Amendment for a structured parking garage located at 44 Bedford Street. The proposed development includes a five-level structured parking garage, vehicle turnaround and drop-off area, fire access drive, pedestrian walkways, site landscaping, exterior lighting, and associated site improvements. The proposed parking garage will be approximately 45,100 square-feet in size and will create a total of 632 parking spaces, which includes 13 ADA accessible parking stalls, for a net increase in 425 additional off-street parking spaces for the University. The proposed garage will provide parking for the Portland Commons Residence Hall, which is currently under construction, and enable future developments at the University by replacing some of the parking that will be displaced by future developments (to be submitted under separate cover at a later date). The proposed stormwater management plan will consist of a subsurface detention and proprietary treatment device.

This application has been prepared in accordance with the City of Portland's Land Use Code of Ordinances and the applicable sections of the City of Portland Design and Technical Manuals. The SLOD Amendment has been prepared in accordance with Maine Department of Environmental Protection Chapter 500 Rules. It is our understanding that the City will be reviewing the SLOD Amendment under their Delegated Review Authority.

The application materials, supporting documents, and design drawings will be uploaded into the Eplan folder when it is available for the project. Thank you for coordinating the review of this project. If you have any questions regarding this application, please feel free to contact me at (207) 558-3665 or by email at aefletcher@woodardcurran.com.

Sincerely,

WOODARD & CURRAN INC.

Ashley Fletcher, PE
Technical Manager

cc: Ann Vashon, University of Southern Maine
Wes Wilson, Desman Design Management, Inc.

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:	University of Southern Maine	**6. Name of Agent (if applicable):**	Ashley Fletcher, PE (W&C)
2. Applicant's Mailing Address:	25 Bedford St., Portland ME	**7. Agent's Mailing Address:**	41 Hutchins Drive, Portland, ME
3. Applicant's Daytime Phone #:	(207)780-4177	**8. Agent's Daytime Phone # :**	(207)558-3665
4. Applicant's Fax # (if available):	N/A	**9. Agent's Fax # (if available):**	N/A
5. Applicant's *e-mail address* (REQUIRED -license will be sent via: e-mail):	ann.vashon@maine.edu	**10. Agent's *e-mail address* (REQUIRED - license will be sent via e-mail):**	aefletcher@woodardcurran.com

PROJECT INFORMATION

11. Name of Development:	USM Structured Parking Garage						
12. Map and Lot #'s:	**Map #:** 114	**Lot #:** A001	**13. Deed Reference #'s:**		**Book #:**	**Page #:**	
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:	Construction of a new structured parking garage and associated storm water infrastructure.						

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:	Casco Bay		
21. Amount of Developed Area:	Total acres: 2.37	Existing Developed area: 2.37 acres	New Developed area: 0 acres
22. Amount of Impervious Area:	Total acres: 1.95	Existing Impervious areas 1.45 acres	New Impervious area: 0.5 acres

23. Development started prior to obtaining a license?:	☐ **Yes** ■ **No**		
24. .Development or any portion of the site subject to enforcement action?	☐ **Yes** ☐ **No**	**If yes**, name of enforcement staff involved?	
25. Common scheme of development?:	☐ **Yes** ☐ **No**	**26. Title, Right or Interest:**	☒ **own** ☐ **lease** ☐ **purchase option** ☐ **written agreement**
27. Natural Resources Protection Act permit required?:	☐ **Yes** ☐ **No**	**If yes:** ☐ **PBR** ☐ **Tier 1** ☐ **Full Permit** ☐ **Tier 2**	
28. Existing DEP Permit number (if applicable):	L-20438-22-D-A		
29. Names of DEP staff person(s) present at the pre-application meeting:	N/A		
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: _____ **Title** Technical Manager **Date:** 7/28/21

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:** 7/28/21

NOTE: You must file a MCGP Notice of Termination (Form K) within 20 days of completing permanent stabilization of the project site.

CERTIFICATION

The person responsible for preparing this application and/or attaching pertinent site and design information hereto, by signing below, certifies that the application for development approval is complete and accurate to the best of his/her knowledge.

Signature: _____

Name (print): Ashley Fletcher, PE

Date: 7/29/21

Re/Cert/Lic No.: _____

Engineer 13750

Geologist _____

Soil Scientist _____

Land Surveyor _____

Site Evaluator _____

Active Member of the Maine Bar _____

Professional Landscape Architect _____

Other _____

University Services
Facilities Management

University of Southern Maine

Maine's Public Universities
UNIVERSITY OF MAINE SYSTEM

University of Southern Maine
Facilities Management Department (CPPM)
96 Falmouth St
Portland, ME 04103
Tel: 207-780-4655
Fax: 207-780-4538
umaine.edu

July 28, 2021

To: Local, State, and Federal Review Officials

RE: AUTHORIZED REPRESENTATIVE – USM Structured Parking Garage

The University of Southern Maine, a member of the University of Maine System, is preparing plans for the new USM Structured Parking Garage located on the University of Southern Maine, Portland Campus. The University has retained Woodard & Curran, Inc., via Desman Design Management Inc., as our garage consultant, to assist in the preparation of the applications associated with permitting approvals for this project. When necessary, Woodard & Curran, Inc., is authorized as its agent to represent the University in addressing questions on the plans, or applicable applications, for this project.

Sincerely,

John M. Souther,
Executive Director of Facilities Management,
University of Southern Maine for the
University of Maine System

cc: to file.

FORM D

SUBMISSIONS CHECKLIST

If a provision is not applicable, put "NA"

Section 1. Development description

A. Narrative

X 1. Objectives and details

X 2. Existing facilities (with dates of construction)

B. Topographic map

X 1. Location of development boundaries

X 2. Quadrangle name

C. Construction plan

X 1. Outline of construction sequence (major aspects)

2. Dates

D. Drawings

X 1. Development facilities

X a. Location, function and ground area

X b. Length/cross-sections for roads

X 2. Site work (nature and extent)

X 3. Existing facilities (location, function ground area and floor area)

4. Topography

X a. Pre- and post-development (contours 2 ft or less)

X b. Previous construction, facilities and lot lines

X **Section 2. Title, right or interest** (copy of document)

Section 3. Financial capacity

X A. Estimated costs

B. Financing

____ 1. Letter of commitment to fund

2. Self-financing

____ a. Annual report

____ b. Bank statement

3. Other

____ a. Cash equity commitment

____ b. Financial plan

X c. Letter

NA 4. Affordable housing information

Section 4. Technical ability (description)

X A. Prior experience (statement)

x B. Personnel (documents)

Section 5. Noise

X A. Developments producing a minor noise impact (statement)

NA 1. Residential developments

NA 2. Certain non-residential subdivisions

NA 3. Schools and hospitals

X 4. Other developments

X a. Type, source and location of noise

NA b. Uses, zoning and plans

NA c. Protected locations

X d. Minor nature of impact

NA e. Demonstration
NA B. Developments producing a major noise impact (full noise study)
NA 1. Baseline
NA a. Uses, zoning and plans
NA b. Protected locations
NA c. Quiet area
NA 2. Noise generated by the development
NA a. Type, source and location of noise
NA b. Sound levels
NA c. Control measures
NA d. Comparison with regulatory limits
NA e. Comparison with local limits

X **Section 6. Visual quality and scenic character**(narrative, description, visual impact analysis)

X **Section 7. Wildlife and fisheries** (narrative)

X **Section 8. Historic sites** (narrative)

X **Section 9. Unusual natural areas** (narrative)

Section 10. Buffers
NA A. Site plan and narrative

Section 11. Soils
X A. Soil survey map and report
X 1. Soil investigation narrative
X 2. Soil survey map
NA B. Soil survey intensity level by development type
1. Class A (High Intensity) Soil Survey
2. Class B (High Intensity) Soil Survey
3. Class C (Medium High-Intensity) Soil Survey
4. Class D (Medium Intensity) Soil Survey
C. Geotechnical Investigation
NA D. Hydric soils mapping

Section 12. Stormwater management
A. Narrative
X 1. Development location
NA 2. Surface water on or abutting the site
NA 3. Downstream ponds and lakes
X 4. General topography
X 5. Flooding
NA 6. Alterations to natural drainage ways
X 7. Alterations to land cover
X 8. Modeling assumptions
X 9. Basic standard
X 10. Flooding standard
X 11. General standard
X 12. Parcel size
X 13. Developed area
X 14. Disturbed area
X 15. Impervious area
B. Maps
X 1. U.S.G.S. map with site boundaries
X 2. S.C.S. soils map with site boundaries
X C. Drainage Plans (a pre-development plan and a post-development plan)

X 1. Contours
X 2. Plan elements
X 3. Land cover types and boundaries
X 4. Soil group boundaries
X 5. Stormwater quantity subwatershed boundaries
X 6. Stormwater quality subwatershed boundaries
X 7. Watershed analysis points
X 8. Hydrologic flow lines (w/flow types and flow lengths labeled)
X 9. Runoff storage areas
X 10. Roads and drives
X 11. Buildings, parking lots, and other facilities
X 12. Drainage system layout for storm drains, catch basins, and culverts
NA 13. Natural and man-made open drainage channels
NA 14. Wetlands
NA 15. Flooded areas
X 16. Benchmark
X 17. Stormwater detention, retention, and infiltration facilities
X 18. Stormwater treatment facilities
NA 19. Drainage easements
X 20. Identify reaches, ponds, and subwatersheds matching stormwater model
NA 21. Buffers

X D. Runoff analysis (pre-development and post development)
X 1. Curve number computations
X 2. Time of concentration calculations
X 3. Travel time calculations
X 4. Peak discharge calculations
NA 5. Reservoir routing calculations

X E. Flooding Standard
NA 1. Variance submissions (if applicable)
NA a. Submissions for discharge to the ocean, great pond, or major river
NA i. Map
NA ii. Drainage plan
NA iii. Drainage system design
NA iv. Outfall design
NA v. Easements
NA b. Insignificant increase
NA i. Downstream impacts
NA
NA c. Submissions for discharge to a public stormwater system
NA i. Letter of permission
NA ii. Proof of capacity
NA ii. Outfall analysis and design (pictures)
X 2. Sizing of storm drains and culverts
NA 3. Stormwater ponds and basins
NA a. Impoundment sizing calculations
NA b. Inlet calculations
NA c. Outlet calculations
NA d. Emergency spillway calculations
NA e. Subsurface investigation report
NA f. Embankment specifications
NA g. Embankment seepage controls
NA h. Outlet seepage controls
NA i. Detail sheet
NA j. Basin cross sections
NA k. Basin plan sheet
NA 4. Infiltration systems
NA a. Well locations map
NA b. Sand and gravel aquifer map
NA c. Subsurface investigation report with test pit or boring logs

NA d. Permeability analysis
NA e. Infiltration structure design
NA f. Pollutant generation and transport analysis
NA g. Monitoring and operations plan
NA i. Locations of storage points of potential contaminants
NA ii. Locations of observation wells and infiltration monitoring plan
NA iii. Groundwater quality monitoring plan
NA 5. Drainage easement declarations.
X F. Stormwater quality treatment plan peak discharge calculations
X 1. Basic stabilization plan
NA a. Ditches, swales, and other open channel stabilization
NA b. Culvert and storm-drain outfall stabilization
NA c. Earthen slope and embankment stabilization
X d. Disturbed area stabilization
NA e. Gravel roads and drives stabilization

X 2. General Standard
X a. Calculations for sizing BMP
X b. Impervious area calculation
X c. Developed area calculation
X d. Summary spreadsheet of calculations

NA 3. Phosphorus control plan
NA a. Calculations for the site's allowable phosphorus export
NA b. Calculations for determining the developed site's phosphorus export
NA c. Calculations for determining any phosphorus compensation fees
NA 4. Offset Credits
NA a. Urban impaired stream
NA Offset credit calculation
NA b. Phosphorus credit determination
NA i. Location map
NA ii. Scaled plan
NA iii. Title and right
NA iv. Demolition plan
NA v. Vegetation plan
NA vi. Offset credit calculation
NA vii. Calculation for the new allowable export
X 5. Runoff treatment measures
X a. structural measures
X i. Design drawings and specifications
X ii. Design calculations
X iii. Maintenance plan
X iv. TSS removal or phosphorus treatment factor determinations
X v. Stabilization plan
NA b. Vegetated buffers
NA i. Soil survey
NA ii. Buffer plan
NA iii. Turnout and level spreader designs
NA iv. Deed restrictions
NA 6. Control plan for thermal impacts to coldwater fisheries
NA 7. Control plan for other pollutants
X 8. Engineering inspection of stormwater management facilities

X G. Maintenance of common facilities or property
X 1. Components of the maintenance plan
X A. Maintenance of facilities by owner or operator
X 1. Site owner or operator (name legally responsible party)
X 2. Contact person responsible for maintenance
X 3. Transfer mechanism

X 4. List of facilities to be maintained
X 5. List of inspection and maintenance tasks for each facility
X 6. Identifications of any deed covenants, easements, or restrictions
X 7. Sample maintenance log
X 8. Copies of any third-party maintenance contracts
NA B. Maintenance of facilities by homeowner's association
NA 1. Incorporation documents for the association
NA 2. Membership criteria
NA 3. Association officer responsible for maintenance
NA 4. Establishment of fee assessment for maintenance work
NA 5. Establishment of lien system
NA 6. Reference to department order(s) in association charter
NA 7. Transfer mechanism from developer to association
NA 8. List of facilities to be maintained
NA 9. Identification of any deed covenants, easements, or restrictions
NA 10. Renewal of covenants and leases
NA 11. List of inspection and maintenance tasks for each facility
NA 12. Sample maintenance log
NA 13. Copies of any third-party maintenance contracts
NA C. Maintenance of facilities by municipality or municipal district
NA 1. Identification of the municipal department or utility district
NA 2. Contact person responsible for maintenance
NA 3. Evidence of acceptance of maintenance responsibility
NA 4. Transfer mechanism from developer
NA 5. List of facilities to be maintained
NA 6. List of inspection and maintenance tasks for each facility
NA 7. Identifications of any deed covenants, easements, or restrictions
NA 8. Sample maintenance log
X 2. General inspection and maintenance requirements
NA a. Drainage easements
X b. Ditches, culverts, and catch-basin systems
X c. Roadways and parking surfaces
X d. Stormwater detention and retention facilities
NA 1. Embankment inspection and maintenance
X 2. Outlet inspection and clean-out
NA 3. Spillway maintenance
X 4. Sediment removal and disposal
NA e. Stormwater infiltration facilities
NA 1. Sediment protection plan
NA 2. Infiltration rehabilitation plan
NA 3. Sediment removal and disposal
NA 4. Groundwater monitoring plan
X f. Proprietary treatment devices
NA g. Buffers
NA h. Other practices and measures

Section 13. Urban Impaired Stream Submissions

NA 1. Off-site credits
NA 2. Compensation fees (Urban Impaired Stream/Phosphorus)
NA 3. Development impacts

Section 14. Basic Standards

X A. Narrative
X 1. Soil types
NA 2. Existing erosion problems
NA 3. Critical areas
NA 4. Protected natural resources
X 5. Erosion control measures

X 6. Site stabilization
X B. Implementation schedule
X C. Erosion and sediment control plan
X 1. Pre-development and post-development contours
X 2. Plan scale and elements
X 3. Land cover types and boundaries
NA 4. Existing erosion problems
NA 5. Critical areas
NA 6. Protected natural resources
X 7. Locations (general)
X 8. Locations of controls
X 9. Disturbed areas
X 10. Stabilized construction entrance
X D. Details and specifications (for both temporary and permanent measures)
X E. Design calculations
X F. Stabilization plan
X 1. Temporary seeding
X 2. Permanent seeding
NA 3. Sodding
X 4. Temporary mulching
X 5. Permanent mulching
X G. Winter construction plan
X 1. Dormant seeding
X 2. Winter mulching
X H. Third-party inspections
1. Inspector's name, address, and telephone number
X 2. Inspector's qualifications
X 3. Inspection schedule
4. Contractor contact
X 5. Reporting protocol

Section 15. Groundwater

X A. Narrative
NA 1. Location and maps
NA 2. Quantity
NA 3. Sources
NA 4. Measures to prevent degradation
NA B. Groundwater protection plan
NA C. Monitoring plan
NA 1. Monitoring points
NA 2. Monitoring frequency
NA 3. Background conditions
NA 4. Monitoring parameters
NA 5. Personnel qualifications
NA 6. Proof of training
NA 7. Equipment and methods
NA 8. Quality assurance/quality control
NA 9. Reporting requirements
NA 10. Remedial action plan
NA D. Monitoring well installation report
NA 1. Well location map
NA 2. Elevation data
NA 3. Well installation data
NA 4. Well construction details
NA 5. Borehole logs
NA 6. Summary of depth measurements
NA 7. Characteristics of subsurface strata
NA 8. Well installation contract

NA 9. Schematic cross-sections
NA 10. Monitoring point summary table
NA 11. Protective casing
NA 12. On-site well identification

Section 16. Water supply

NA A. Water supply method
NA 1. Individual wells (evidence of sufficient/healthful supply)
NA a. Support of findings by well drillers
NA b. Support of findings by geologist
NA 2. Common well(s) (reports)
NA a. Hydrogeology report
NA b. Engineering report
NA c. Well installation report
NA d. Long-term safe yield and zone of influence determination
NA e. Public water supply
NA i. Proposed well or wells
NA ii. Existing well or wells
NA iii. Water quality analysis
NA 3. Well construction in shallow-to-bedrock areas
NA 4. Additional information
NA 5. Off-site utility company or public agency
NA 6. Other sources
NA B. Subsurface wastewater disposal systems (locations of systems and wells)
NA C. Total usage (statement re: total anticipated water usage)

Section 17. Wastewater disposal

NA A. On-site subsurface wastewater disposal systems (investigation results)
NA 1. Site plan
2. Soil conditions summary table
NA 3. Logs of subsurface explorations
4. Additional test pits, borings or probes
NA a. Soil conditions A
NA b. Soils with Profiles 8 and 9 parent material
NA c. Soil conditions D
NA d. Disposal field length 60 feet or greater
NA 5. 3-bedroom design
NA 6. Larger disposal systems
a. System design details
NA b. Plan view
NA c. Cross sections
NA d. Test pit data
NA e. Mounding analysis
NA B. Nitrate-nitrogen impact assessment
NA 1. When required
NA a. Exempted____
i. Conventional systems meeting certain setbacks
NA ii. Denitrification systems
NA b. Special conditions and other exemptions
NA 2. Assumptions
NA a. Initial concentration
NA b. Background concentration
NA c. Contribution from development
NA d. Mixing and dilution
NA e. Severe-drought scenario
NA f. Wastewater flow to subsurface wastewater disposal fields

NA 3. Assessment report minimum requirements
NA a. Narrative and calculations
NA b. Site plan
NA i. Well locations
NA ii. 10 mg/l and 8 mg/l isocons
NA iii. Groundwater contours and groundwater flow divides
NA c. References
NA 4. Denitrification systems
NA a. Design plans and specifications
NA b. Installation information
NA c. Monitoring plan
NA d. Maintenance
NA e. Backup system
X D. Municipal facility or utility company letter
NA E. Storage or treatment lagoons

X **Section 18. Solid waste** (list: type, quantity, method of collection and location)
NA A. Commercial solid waste facility (final disposal location)
X B. Off-site disposal of construction/demolition debris (final disposal location)
C. On-site disposal of woodwaste/land clearing debris
NA 1. Applicability of rules (evidence re: applicability of rules)
2. Burning of wood wastes
NA a. Delineation on site plan
NA b. Plans for handling unburned woodwaste and woodash
NA c. Evidence of capacity to accept waste (approved facility)
NA d. Usage of materials
NA e. Data on mixing ratios and application rates
X D. Special or Hazardous Waste

Section 19. Flooding
NA A. Explanation of flooding impact
NA B. Site plan showing 100-year flood elevation
NA C. Hydrology analysis
X D. FEMA flood zone map with site boundaries

Section 20. Blasting
NA A. Site Plan or map
NA B. Report
1. Assessment
2. Blasting plan

Section 21. Air emissions (narrative and summary)
NA A. Point and non-point sources identified
NA B. Emission components (point sources)

Section 22. Odors
NA A. Identification of nature/source
NA B. Estimate of areas affected
NA C. Methods of control)

NA **Section 23. Water vapor** (narrative)

NA **Section 24. Sunlight** (statement and drawing, if required)

Section 25. Notices
NA A. Evidence that notice sent
NA B. List of abutters for purposes of notice

DEPARTMENT OF ENVIRONMENTAL PROTECTION
STORMWATER APPLICATION CHECKLIST

Applicant: University of Southern Maine			
Project Name: Structured Parking Garage			
Town: Portland			
Application Type:		☐ Stormwater	☑ Site Law
Watershed Name: MS4			
Watershed Type:	☐ UIS	☐ Phosphorus	☑ Neither

Project Area Information

	Existing to Remain[1]	New / Proposed	Total
Impervious (Im)	1.45 acres	0.5 acres	1.95 acres
Landscaped (Land)	0.92 acres	-0.5 acres	0.42 acres
Developed (Dev)[2]	2.37 acres	0	2.37 acres

1- If area is not subject to treatment, provide reason and show in a separate column in the Water Quality Calc table.
2- Developed area = Impervious Area + Landscaped Area

A. BASIC STANDARD

1. **Erosion and Sedimentation Controls** (Appendix A, page 32 of Chapter 500: https://www.maine.gov/sos/cec/rules/06/096/096c500.docx:)
   - Guidance in Department ESC BMP Manuals

2. **Inspection & Maintenance** (Appendix B, page 37 of Chapter 500)

   Construction Phase: Show on Plans the following:
   - Responsibility for inspection and maintenance
   - Construction schedule (how long will it take and in what sequence/critical path to build)
   - Inspection frequency
   - Scope of inspection
   - Inspector qualifications
   - Define storm event that triggers a wet weather inspection (0.5” of rain in 24 hours)
   - Documentation (3 years minimum)

   Post-Construction: Include in written I&M Plan the following:
   - Responsibility for inspection and maintenance
   - Inspection frequency for each BMP
   - Inspection form for each BMP
   - Inspector qualifications
   - Define storm event that triggers a wet weather inspection (1” of rain in 24 hours)
   - Documentation (5 years, minimum)
   - Project is subject to Department 5-Year Recertification

3. **Good Housekeeping** (Appendix C, page 41 of Chapter 500**)**
   - Show all seven elements on Plans.

B. GENERAL STANDARD

Must provide the following on WQ Treatment Plan: All BMPs with subcatchments including time of concentration (Tc) lines, flow lengths and flow types.

1. **Soil Explorations** (test pit completed by a certified soil scientist) at each proposed BMP
   - Include test pit summary table on detail plan.
   - If there is potential ledge, address in design.
   - If shallow groundwater, address in design.

2. **Treatment Standards** (modify to fit project): Fill out the following table for the applicable standards that apply.

Applicable Standard	Section in Ch. 500	Required Treatment (Im / Dev)	Area Eligible		Area Treated		Provided Treatment %	
			Im	Dev	Im	Dev	Im	Dev
General Standard	4(C)(2(a)(i)	95% / 80%						
Increased Runoff Treated[1]	4(C)(2)(a)(ii)	90% / 80% min						
% Parcel Developed[2]	4(C)(2)(a)(iii)	90% / 75% min						
Redevelopment[3] (Dev Area)	4(C)(2)(d)	0% min (SW) 50% min (Site)		2.37 ac.		1.42 ac.		60%
Linear	4(C)(5)(c)	75% / 50% min						
Other: Offsite Treatment/Mitigation								
Project Total Area =				2.37 ac.		1.42 ac.		60%

1- If proposing to treat more than the first flush, state why meeting Ch. 500, § 4(C)(2(a)(i) is not practicable.
2- Reduced % based on portion of parcel developed.
3- Include pollutant impact ranking calculations (current and proposed) and a figure showing the Redevelopment window.

3. **Proposed BMPs:** Please provide the following information on the Table below for EACH BMP.

BMPs Proposed	#	Pretreatment	Sizing calcs	Detail on Plans[1]	CPV Draindown Time	HydroCAD
StormFilter	1	See Contech Letter		D-204	See Contech Letter	14P

1- BMP details (cross sections, elevation sections, plan view)

Link to Stormwater Design BMP Volumes I, II, III
https://www.maine.gov/dep/land/stormwater/stormwaterbmps/index.html

- Provide Construction Oversight Notes.
- If BMP is unlined, review and satisfy (Appendix E Sections 4(b) and 4(c), page 50 of Chapter 500).
- Treatment buffers (Appendix F, page 56 of Chapter 500): must provide sample deed restriction (Appendix G, page 64 of Chapter 500).
- Infiltration must satisfy Appendix D, page 44 of Chapter 500.
- Is conveyance designed to a 10-year, 24-hour storm?
- Is a drainage easement required for any areas to be flooded?
- Discharge to a public storm sewer system: Must provide authorization from the authority.

If proposing Proprietary BMPs, provide:

- Letter from vendor approving sizing and siting https://www.maine.gov/dep/land/stormwater/stormwaterbmps/index.html.
- Executed 5-Year I&M Agreement with a provider approved by vendor.
- Narrative section and specific inspection forms in the written I&M Plan.
- Pervious pavement: Must provide Executed 5-Year I&M Agreement and vacuum equipment used.

C. PHOSPHORUS STANDARD

MUST provide on the WQ Treatment Plan: BMPs with subcatchments including time of concentration (Tc) lines, flow lengths and flow types;

Provide export calculations clearly showing distinct BMPs: Phosphorus Table Calculations Worksheet 4 july 2015.xlsx.

D. FLOODING STANDARD

1. Add pre- and post- peak flow rates table to post development plan for storms (2-, 10-, 25-year).
2. Is primary access road passable up to a 25-year, 24-hour storm?
3. If requesting a waiver of the Flooding Standard, must state justification for the waiver.
4. HydroCad or other runoff model
   - If post peak flow rate is > pre-peak flow, a waiver request will be needed with justification Ch. 500, § 4(F)(3)(a) or (b),
   - If discharging to wetland see Chap. 500, § 4(I).

This checklist has been designed by DEP stormwater engineers as a guidance tool to assist applicants and their consultants when preparing stormwater applications. Completing the checklist is recommended and valuable, but it is not a substitute for reviewing Ch. 500, and completing all the items on the checklist does not automatically mean all the Ch. 500 requirements have been satisfied. The contents of Ch. 500 should be reviewed carefully for the applicable requirements that apply to your proposed project.

I have reviewed this checklist and included in my submission all the required elements of this checklist that apply to the proposed project.

Maine Engineer of Record:



7/27/21

Signature **Date**

Ashley Fletcher, PE

Name (print)

USM Structured Parking Garage

Site Location of Development Amendment

41 Hutchins Drive
Portland, ME 04102
800-426-4262

0233035.00
University of Southern Maine
July 2021

woodardcurran.com
COMMITMENT & INTEGRITY DRIVE RESULTS

TABLE OF CONTENTS

SECTION		PAGE NO.
1.	DEVELOPMENT DESCRIPTION	1-1
	1.1 Objectives & Details	1-1
	1.2 Existing Facilities	1-1
	1.3 Topographic Map	1-1
	1.4 Construction Plan	1-1
	1.5 Drawings	1-2
	1.6 List of Attachments	1-2
2.	TITLE, RIGHT, OR INTEREST	2-1
	2.1 List of Attachments	2-1
3.	FINANCIAL CAPACITY	3-1
	3.1 List of Attachments	3-1
4.	TECHNICAL ABILITY	4-1
5.	NOISE	5-1
6.	VISUAL QUALITY & SCENIC CHARACTER	6-1
7.	WILDLIFE & FISHERIES	7-1
	7.1 List of Attachments	7-1
8.	HISTORIC SITES	8-1
	8.1 List of Attachments	8-1
9.	UNUSUAL NATURAL AREAS	9-1
	9.1 List of Attachments	9-1
10.	BUFFERS	10-1
11.	SOILS	11-1
	11.1 List of Attachments	11-1
12.	STORMWATER MANAGEMENT	12-1
	12.1 List of Attachments	12-1
13.	URBAN IMPAIRED STREAM	13-1
14.	BASIC STANDARD	14-1
	14.1 List of Attachments	14-1
15.	GROUNDWATER	15-1
16.	WATER SUPPLY	16-1
17.	WASTEWATER DISPOSAL	17-1
18.	SOLID WASTE	18-1

18.1 Solid Waste 18-1
18.2 Construction & Demolition Debris 18-1
18.3 Special & Hazardous Waste 18-1
19. FLOODING 19-1
19.1 List of Attachments 19-1
20. BLASTING 20-1
21. AIR EMISSIONS 21-1
22. ODORS 22-1
23. WATER VAPOR 23-1
24. SUNLIGHT 24-1
25. NOTICES 25-1

1. DEVELOPMENT DESCRIPTION

This narrative is being submitted in support of an amendment to the Site Location of Development (SLOD) Permit for the University of Southern Maine (USM) Portland campus located at 44 Bedford Street. The proposed work will take place on a single parcel, identified by the City of Portland Assessor as Tax Map 114, Lot A001001, which is approximately 8.1 acres in size. The proposed work will be limited to approximately 2.4-acres of the property. Proposed work includes construction of a structured parking garage and associated site improvements, sidewalks, landscaping, utilities, and stormwater management infrastructure.

In addition to this SLOD Amendment, the proposed project will require a City of Portland Site Plan Review. It is our understanding that the City of Portland will have delegated review authority over this project.

1.1 OBJECTIVES & DETAILS

As the University of Southern Maine expands to better serve its growing student body, available surface parking will be displaced. The proposed parking garage will enable future developments (a new residence hall (Portland Commons) and Career and Student Success Center (CSSC)) at the University by meeting parking demand for these developments and replacing displaced surface parking spaces.

The proposed development includes a five-level structured parking garage, access drive, pedestrian walkways, and associated site improvements, including landscaping and exterior lighting. The proposed parking garage will provide 632 parking spaces for a net increase in 425 parking spaces for the University. The proposed garage includes the required ADA accessible parking. A 250-space bike storage room and bike repair room will be included on the interior of the garage, and additional bike spaces will be provided outside. A small plaza and drop-off area will be developed in front of the Osher/Glickman Library entrance.

The proposed stormwater management system is comprised of a series of catch basins which discharge to a subsurface detention and treatment system that ultimately discharges to the separated storm sewer on Forest Avenue. Design drawings for the proposed project are included with this application.

1.2 EXISTING FACILITIES

The existing Site consists of several buildings, a parking lot, and a parking garage. Stormwater runoff from the project site drains to City of Portland infrastructure, and ultimately discharges to the Casco Bay. Existing site conditions are described in greater detail in the following sections of this Report.

1.3 TOPOGRAPHIC MAP

A USGS topographic map showing the approximate location of proposed development is attached to this Section for your reference.

1.4 CONSTRUCTION PLAN

Construction is anticipated to commence in the Spring of 2022 upon receipt of permit approvals, and will be completed by the Spring of 2023. The following is the anticipated sequence of construction for major aspects of the development:

- Installation of erosion and sediment control measures;
- Clearing and site preparation activities;
- Demolition and relocation of utilities and other subsurface infrastructure displaced by the building foundation;
- Construction of the structured parking garage and associated stormwater management system;
- Stabilization of the Site; and

- Removal of erosion and sediment control measures.

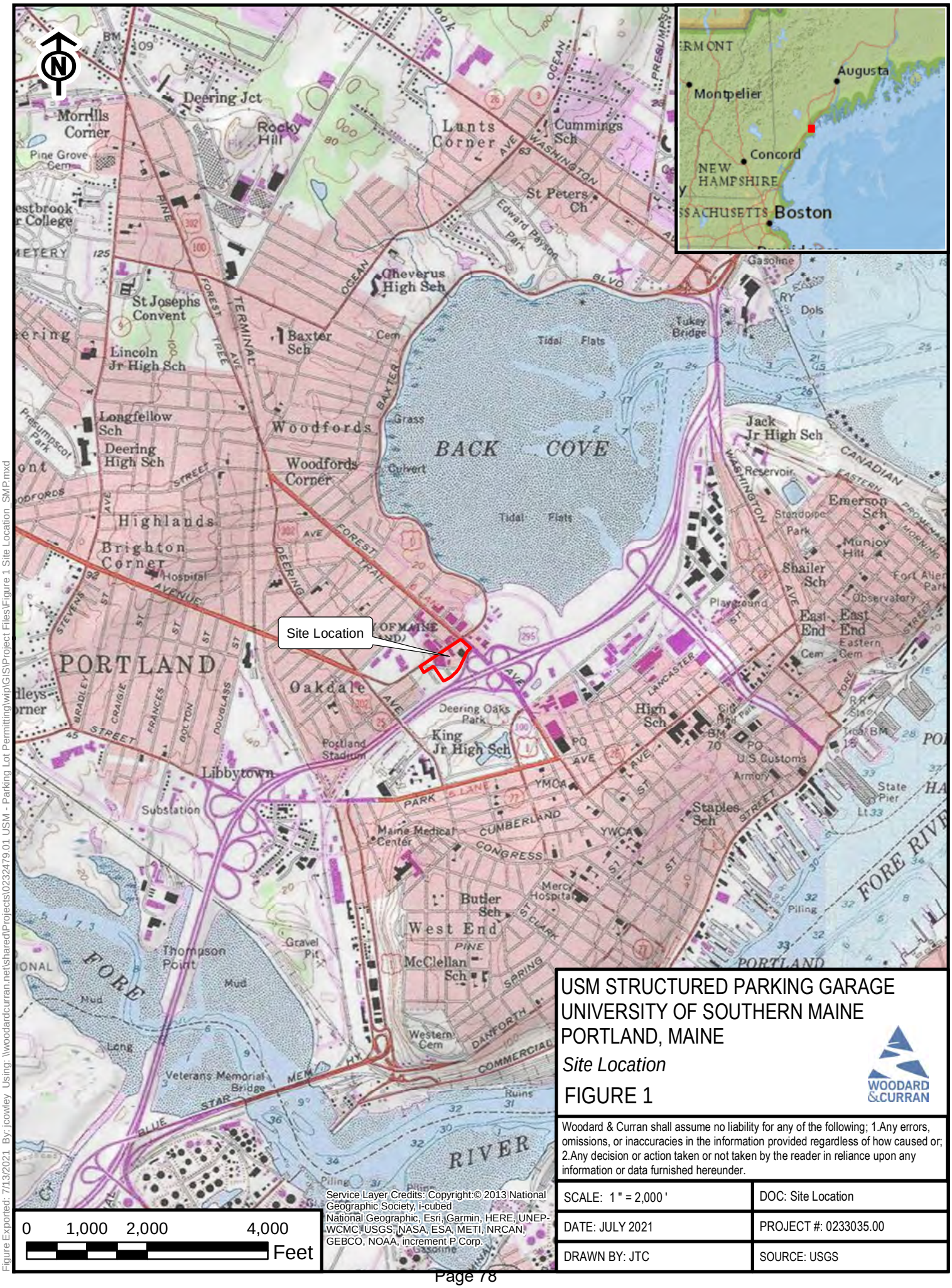
1.5 DRAWINGS

A survey of the existing Site, as well as design drawings of the proposed development, is attached to this Section for your reference. The design drawings show all proposed construction activities, site work, existing facilities, and topography.

1.6 LIST OF ATTACHMENTS

The following documents are attached to this Section:

- Topographic Map; and
- Design Drawings (bound separately).



USM STRUCTURED PARKING GARAGE
UNIVERSITY OF SOUTHERN MAINE
PORTLAND, MAINE

Site Location

FIGURE 1

WOODARD &CURRAN

Woodard & Curran shall assume no liability for any of the following; 1.Any errors, omissions, or inaccuracies in the information provided regardless of how caused or; 2.Any decision or action taken or not taken by the reader in reliance upon any information or data furnished hereunder.

SCALE: 1 " = 2,000 '	DOC: Site Location
DATE: JULY 2021	PROJECT #: 0233035.00
DRAWN BY: JTC	SOURCE: USGS

Figure Exported: 7/13/2021 By: jcowley Using: \\woodardcurran.net\shared\Projects\0232479.01 USM - Parking Lot Permitting\wip\GIS\Project Files\Figure 1 Site Location_SMP.mxd

2. TITLE, RIGHT, OR INTEREST

The proposed development is located on properties owned by the Applicant and identified as Tax Map 114, Lot A001001. Attached is a copy of the deeds associated with this property.

2.1 LIST OF ATTACHMENTS

- Deeds.

GOVERNOR'S DEED
(with Reverter)

KNOW ALL PERSONS BY THESE PRESENTS, that the STATE OF MAINE, acting by and through its Governor, on recommendation of the Commissioner of its DEPARTMENT OF TRANSPORTATION, under and pursuant to the provisions of 23 M.R.S.A., Section 61, for consideration, the sufficiency of which is hereby acknowledged, RELEASES to THE UNIVERSITY OF MAINE SYSTEM, organized as a non-profit corporation of the State of Maine, with offices at 16 Central Street in Bangor, Maine, its successors and assigns forever, all its right, title and interest in and to a certain lot or parcel of land situated on the southerly side of Winslow Street, so-called, at its intersection with the westerly sideline of the right-of-way of State Highway "295", also known as Interstate 295, in Portland, County of Cumberland and State of Maine, and being as shown on a Right-of-way Map for State Highway "295" Portland, Cumberland County, Federal Aid Project Number I-295-3(28), dated January 1967, File Number 3-185, sheet 57 of 73, on file at the offices of the Maine Department of Transportation in Augusta, bounded and described as follows:

BEGINNING at a point on the southerly sideline of Winslow Street at its intersection with the westerly sideline of the right-of-way of Route 295;

THENCE S 26° 51' 18" W along said westerly sideline of Route 295, a distance of 34.00 feet;

THENCE S 51° 22' 05" W continuing along said westerly sideline of Route 295, a distance of 23.93 feet to land now or formerly of the University Of Southern Maine Foundation;

THENCE N 38° 37' 55" W along said University Of Southern Maine Foundation land 20.00 feet;

THENCE N 6° 51' 23" E continuing along said University Of Southern Maine Foundation land, 33.28 feet to the southerly sideline of said Winslow Street;

THENCE S 85° 26' 46" E along said southerly sideline of Winslow Street, 42.70 feet, more or less to the aforementioned westerly sideline of the right-of-way of Route 295 and the POINT OF BEGINNING, and containing one thousand four hundred twenty-seven square feet, more or less (1,427 sq. ft. ±).

EXCEPTING AND RESERVING from this conveyance any and all rights of access from the herein described parcel of land to State Highway "295", also known as Interstate 295, all of which rights of access are expressly reserved to, and retained by, the State of Maine.

ALSO RESERVING to the State of Maine the perpetual right to enter upon said parcel to maintain any highway slopes and drainage facilities or installations that may exist.

SUBJECT TO all utility easements and installations located on the above described premises, including those shown on the herein referred to Right-of-way Map, and to those rights which any utility enjoys over the subject premises for maintenance, location or relocation of poles and other installations.

NOTWITHSTANDING the foregoing, Grantor gives this deed, and Grantee accepts the same, upon the express CONDITION that the property hereby conveyed is to be retained by the University of Maine system and used for

public purposes only; and if said property or any interest in it, or any portion of it, is transferred, or if it is used for any commercial or other non-public purposes, said property shall at once REVERT to, and re-vest in, the Grantor, its successors or assigns; and that such reversion, should it occur, shall be automatic and require no further act of conveyance or documentation in order to be effective.

BEING a portion of premises acquired by the State of Maine from Charles T. Hayes, Jr. and Beatrice Hayes by warranty deed dated July 19, 1968 and recorded at the Cumberland County Registry of Deeds on July 23, 1968 in Volume 3049 at Page 553; and a portion of premises acquired from Reuben Katz by warranty deed dated January 10, 1969 and recorded at said Registry Of Deeds on January 15, 1969 in Volume 3072 at Page 435.

THE STATE OF MAINE makes no representations or warranties with respect to the premises hereby conveyed. The representations and warranties so excluded encompass, but are not limited to, those pertaining to: land use and environmental matters; fitness of the premises or any portion thereof for any particular purposes; water quality or quantity; the condition or quality of the soil; inchoate or unrecorded liens; status of title to or rights within that area lying between the high and low water marks; or the existence, status, or condition of access to, or public utilities serving the premises. Any subsequent use of, improvement to, or construction on the parcel shall be subject to all applicable laws, regulations, ordinances, and permitting requirements.

IN WITNESS WHEREOF, I, John E. Baldacci, Governor of the State of Maine, have caused the name and Great Seal of the State of Maine to be hereunto affixed this 11th day of Sept. in the year two thousand six.

STATE OF MAINE

By: _____, Governor
John E. Baldacci

Received
Recorded Register of Deeds
Sep 20,2006 02:29:02P
Cumberland County
John B OBrien

Affixed by: _____
Secretary of State

STATE OF MAINE
Kennebec, *ss.*

Sept. 11th, 2006

Personally appeared the above-named, John E. Baldacci, Governor of the State of Maine and acknowledged the foregoing instrument to be his free act and deed in his said capacity and the free act and deed of the State of Maine.

Before me, _____
Notary Public/~~Attorney at Law~~

Print Name: _____

My commission expires: ROSEMARIE D. SMITH
Notary Public, Maine
My Commission Expires January 6, 2009

SEAL

SHORT FORM QUITCLAIM DEED WITH COVENANT

MAINE REAL ESTATE TAX PAID

THE UNIVERSITY OF SOUTHERN MAINE FOUNDATION, a Maine nonprofit corporation with a mailing address of 96 Falmouth Street, Portland, Maine 04104, FOR CONSIDERATION PAID, grants to UNIVERSITY OF MAINE SYSTEM, a body politic and instrumentality of the State of Maine, with a mailing address of 16 Central Street, Bangor, Maine 04401, with QUITCLAIM COVENANT, certain real property, together with any improvements thereon, located in the City of Portland, Cumberland County, Maine and more particularly described on Exhibit A attached hereto and made a part hereof.

Being the same premises conveyed to the grantor herein by a Short Form Quitclaim Deed With Covenant from Frederick J. Olsen dated April 27, 2005 and recorded at the Cumberland County Registry of Deeds in Book 22577, Page 79.

IN WITNESS WHEREOF, The University of Southern Maine Foundation, has caused this instrument to be executed and delivered as of the 20th day of December, 2011.

The University of Southern Maine Foundation

Witness

By: Margaret A. Weston
Name: Margaret A. Weston
Its: President

State of Maine
County of Cumberland, ss. December 16, 2011

Personally appeared the above-named Margaret A. Weston, President of The University of Southern Maine Foundation, and acknowledged the foregoing instrument to be her free act and deed in her said capacity and the free act and deed of The University of Southern Maine Foundation.

Before me,

Amy Blaisdell
Notary Public/Attorney at Law
Name: Amy Blaisdell
Commission Expires: 10/16/2015

Amy Blaisdell
NOTARY PUBLIC
Lisbon Falls, ME
Commission expires on
October 16, 2015

Exhibit A

Formerly Tax Map 114, Block D, Lot 21:

Three (3) certain lots or parcels of land, with the buildings thereon, situated on the northerly side of Winslow Street in the City of Portland, County of Cumberland, State of Maine, being lots numbered 1, 2 and 3 on an unrecorded plan of the Heater piece at and adjoining the junction of said Winslow Street and Bedford Street made by E.C. Jordan & Co., Civ. Eng., in January 1918, and on file in the office of said E.C. Jordan & Co., said three lots taken together, being bounded and described as follows:

Beginning at a point on said northerly line of Winslow Street at the southwest corner of land now or formerly of John W. Lovely heirs and thence running, with an included angle of 88° 43' and by the westerly line of said Lovely land eighty-six (86) feet to a post and land now or formerly of the T.A. Huston & Co.; thence northwesterly and along said Huston land, forty-nine (49) feet to a post; thence northwesterly and along said Huston land thirty-two and three tenths (32.3) feet to an iron post; thence westerly and along said Huston land twenty-two and thirty-five hundredths (22.35) feet to an iron post; thence westerly and along said Huston land nineteen and eighty-four hundredths (19.84) feet to a post; said post being the southeasterly corner of lot numbered 11 on said plan; thence westerly and along the rear or southerly line of said lot numbered 11, fifty-nine and thirty-seven hundredths (59.37) feet to the southwesterly corner of lot numbered 11; thence southwesterly at right angles to said Winslow Street one hundred (100) feet to said northerly line of Winslow Street; thence easterly and along said northerly line of Winslow Street one hundred fifty-nine (159) feet to the point or place of beginning; said three lots having together an area of 18,027 square feet, be the same more or less.

EXCEPTING AND RESERVING from the above-described premises that portion thereof which was conveyed by Ellestad Hansen, Warren K. Webber and Mary E. Hansen to Charles A. Adams by deed dated April 8, 1924 and recorded in the Cumberland County Registry of Deeds in Book 1165, Page 79, and such portion thereof as may have been conveyed by Mary E. Hansen to the State of Maine by deed dated January 7, 1970 and recorded in the said Registry of Deeds in Book 3114, Page 724.

Formerly Tax Map 114, Block D, Lot 22:

ALSO a certain lot or parcel of land situated on the northerly side of Winslow Street in the City of Portland, County of Cumberland and State of Maine, bounded and described as follows, to wit:

Beginning at an iron hub at the southwest corner of a lot of land conveyed by Edward D. Noyes, et al. to Ellestad Hansen and Warren K. Webber by deed dated November 14, 1923 and recorded in the Cumberland County Registry of Deeds in Book 1153, Page 280; thence easterly along the northerly side line of Winslow Street forty-seven (47) feet to a stake; thence northerly at right angles to said Winslow Street one hundred sixteen and thirty-three hundredths (116.33) feet to an iron hub in the northerly line of the lot above mentioned; thence westerly with an included angle of seventy (70) degrees and thirty-six (36) minutes to the right, forty-nine and seventy-six hundredths (49.76) feet to a stake at the northwest corner of the lot above mentioned; thence southerly on a line at right angles to said Winslow Street one hundred (100) feet to the point of beginning.

Formerly Tax Map 114, Block C, Lot 1:

ALSO a certain lot or parcel of land in the City of Portland, County of Cumberland and State of Maine, described as follows: Beginning at a stake on the southerly side of Winslow Street at the intersection with the easterly side of Conant Street; thence 25° E by Conant Street one hundred ten (110) feet; thence easterly at right angles with Conant Street forty-six and thirty-one hundredths (46.31) feet to a stake; thence northerly to a point in the southerly side of Winslow Street distant easterly sixty-three and seventy-two hundredths (63.72) feet from the point of beginning; thence N 71° 37' W by said Winslow Street sixty-three and seventy-two hundredths (63.72) feet to the point of beginning.

Formerly Tax Map 114, Block C, Lot 2:

ALSO a certain lot or parcel of land situated in the City of Portland, County of Cumberland and State of Maine bounded and described as follows, to wit:

Beginning at a point on the present southerly boundary line of Winslow Street at the northeasterly line of land now or formerly of Frederick J. Olsen; thence southeasterly along the northeasterly line of land now or formerly of said Olsen, about sixty-six (66) feet to a corner; thence southwesterly along the southeasterly line of land now or formerly of said Olsen, about forty-six and three tenths (46.3) feet to the northeasterly boundary line of Conant Street; thence southeasterly along the northeasterly boundary line of Conant Street about eighteen (18) feet to a monument located about seventy-one (71) feet northwesterly from and as measured along a line normal to the Ramp F.A. 6 Base Line at about Sta. 5+50; thence northeasterly about sixty-six (66) feet to a point on a line, said line being a projected line between the beforementioned monument and a monument located fifty (50) feet northwesterly from and as measured along a line normal to the Ramp F.A. 6 Base Line at Sta. 4+50, said point being twenty-five (25) feet southwesterly of and as measured along said projected line from said monument located

northwesterly of Sta. 4+50; thence northwesterly at right angles to said projected line twenty (20) feet to a point; thence northerly by a direct course to a point on the present southerly boundary line of Winslow Street; thence westerly along the present southerly boundary line of Winslow Street sixty (60) feet to the point of beginning. Said lot or parcel of land contains about 2,867 square feet and is a portion of that land as acquired from Charles T. Hayes, Jr. and Beatrice Hayes, pursuant to a Notice of Layout and Taking dated March 8, 1973 and recorded at the Cumberland County Registry of Deeds in Book 3367, Page 58. Said parcel is shown on a certain Maine Department of Transportation Right-of-way Map entitled "State Highway '295', Portland, Cumberland County, Federal Aid Project No. 1-295-3(28)" dated January 1967, on file in Augusta, File No. 3-185.

The premises herein conveyed is SUBJECT to a State of Maine Notice of Layout and Taking dated February 28, 1973 and recorded in said Cumberland County Registry of Deeds in Book 3367, Page 58.

Received
Recorded Register of Deeds
Dec 21,2011 12:40:48P
Cumberland County
Pamela E. Lovley

3. FINANCIAL CAPACITY

The proposed project will cost approximately $22,000,000 to construct. Evidence of the University's financial capability to complete the proposed project is attached to this Section.

3.1 LIST OF ATTACHMENTS

- Evidence of Financial Capability.

DocuSign Envelope ID: 78157A2A-6DE5-4E27-B7A8-4B2065B0545F

UNIVERSITY OF
SOUTHERN MAINE
Finance and Administration

July 27, 2021

Mr. Darrin Stairs
Woodard & Curran
41 Hutchins Drive
Portland, ME 04102

Dear Mr. Stairs:

The University of Southern Maine expects the Structured Parking project to cost approximately $22 million.

To fund the project, the University would utilize bond anticipation notes and revenue bonding pursuant to approval by the University of Maine System Board of Trustees.

Thank you for your consideration.

Sincerely,

DocuSigned by:
Alexander E. Porteous
73AFFEE3455845F...

Alexander E. Porteous
Chief Operating Officer & Chief Business Officer

P.O. Box 9300, Portland, ME 04104-9300
(207) 780-4484 TTY (207) 780-5646, FAX (207) 780-4549
www.usm.maine.edu
A member of the University of Maine System

4. TECHNICAL ABILITY

On behalf of the Applicant, Woodard & Curran is preparing this application for the proposed development. Woodard & Curran (W&C), a Portland-based consulting firm, has provided engineering services to the public and private sector for over 40 years, including permitting, civil/site engineering, stormwater management, and construction services. W&C has completed projects for colleges, universities, and healthcare institutions that build strong, sustainable infrastructure and environmental programs serving both their business needs and the communities that make them so vibrant. With extensive experience in design and permitting for site development projects, W&C has completed many projects within the City of Portland and for the University of Maine System.

The University of Southern Maine (USM) is a public university with over 8,000 undergraduate and graduate students taking courses online and at campuses in Portland, Gorham, and Lewiston. Known for its academic excellence, student focus and engagement with the community, USM provides students with hands-on experience that complements classroom learning and leads to employment opportunities in one of the nation's most desirable places to live. USM is a member of the University of Maine System (UMS), the State's largest educational enterprise that includes seven universities and an annual enrollment of nearly 30,000 students.

Desman, Inc. is recognized as one of the nation's leading consulting architectural and engineering firms specializing in the planning, design and restoration of structured parking facilities, transportation improvements and other parking related consulting services. Desman offers a complete scope of services in the parking industry including planning, design, restoration, construction administration, financing methods, parking access/revenue control, operational and management techniques. In brief, its core business is parking planning, design, and all other parking related consulting services. Desman has over 45 years of experience in providing these services for parking structures and parking related projects.

Winston Scott Architects Established in 1975, Winton Scott Architects is a small, design-oriented architectural practice located in Portland, Maine. Their work encompasses a diverse array of project types and scales ranging from multi-block urban developments to historic renovations, commercial and institutional buildings, and multifamily and single-family residences. The firm has been recognized numerous times for design excellence by the Maine and New England Chapters of the American Institute of Architects, as well as the United States Green Building Council; and our work has been profiled in national trade journals, local publications, and several books focused on design and architecture.

Michael Boucher Landscape Architecture (MBLA) is a professional landscape design firm located in southern Maine. MBLA, founded in 1994, is engaged in ongoing collaborations with many acclaimed architecture firms. The office is currently involved in a variety of projects nationally and internationally, connecting them to many landscape typologies, cultural viewpoints, and methods of building. This experience benefits their clients and projects in providing a sense of objectivity that we fold into each new undertaking. MBLA offers a full scope of landscape architecture services tailored to assist clients in developing clear visions for their properties.

5. NOISE

The noise impact from the proposed development will be minor. The primary source of noise from the proposed project will be the result of construction. Construction activities will be limited to the hours permitted by the City. Noise associated with the proposed development will not exceed regulated levels and is not anticipated to negatively impact the surrounding urban environment.

6. VISUAL QUALITY & SCENIC CHARACTER

The proposed parking garage structure has been sited adjacent to the existing parking garage structure, and the architecture and landscaping have been designed to be consistent with the scenic character of the surrounding urban area and to meet City of Portland Standards, as shown on the drawings. It is not anticipated that the proposed development will result in any negative visual impacts.

7. WILDLIFE & FISHERIES

The Site has been previously developed and there are no known areas of significant natural features, including areas of significant wildlife habitats or wetlands. The attached Official Species List identifies the northern long-eared bat, which has been listed as a Federally Threatened Species, in association with the project area; however, there are no critical habitat areas located within the project area. Based on US Fish & Wildlife information, the northern long-eared bat typically lives in caves during the winter months and in trees larger than three inches in diameter during the summer, with migration between these two habitats in the spring in the fall. Tree-clearing for this project will be minimal.

A letter has been sent to the Maine Department of Inland Fisheries and Wildlife (MDIFW) requesting information regarding any known threatened or endangered species or critical habitat relative to the project area; a copy of this letter is attached to this Section for your reference. A copy of the MDIFW response can be provided upon receipt. It is not anticipated that the proposed development will have a negative impact on the northern long-eared bat.

7.1 LIST OF ATTACHMENTS

- Official Species List; and
- MDIFW Environmental Review Request Letter.

United States Department of the Interior

FISH AND WILDLIFE SERVICE
Maine Ecological Services Field Office
P. O. Box A
East Orland, ME 04431
Phone: (207) 469-7300 Fax: (207) 902-1588
http://www.fws.gov/mainefieldoffice/index.html

In Reply Refer To: April 01, 2021
Consultation Code: 05E1ME00-2021-SLI-0915
Event Code: 05E1ME00-2021-E-02772
Project Name: USM Garage

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

To Whom It May Concern:

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

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

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

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

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

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

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

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

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

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

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

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

Attachment(s):

- Official Species List

Official Species List

This list is provided pursuant to Section 7 of the Endangered Species Act, and fulfills the requirement for Federal agencies to "request of the Secretary of the Interior information whether any species which is listed or proposed to be listed may be present in the area of a proposed action".

This species list is provided by:

Maine Ecological Services Field Office
P. O. Box A
East Orland, ME 04431
(207) 469-7300

Project Summary

Consultation Code: 05E1ME00-2021-SLI-0915
Event Code: 05E1ME00-2021-E-02772
Project Name: USM Garage
Project Type: DEVELOPMENT
Project Description: An addition to the existing USM Surrenden Street Parking Garage on the University of Southern Maine's campus.

Project Location:

Approximate location of the project can be viewed in Google Maps: https://www.google.com/maps/@43.66203135,-70.27331546908917,14z



Counties: Cumberland County, Maine

Endangered Species Act Species

There is a total of 1 threatened, endangered, or candidate species on this species list.

Species on this list should be considered in an effects analysis for your project and could include species that exist in another geographic area. For example, certain fish may appear on the species list because a project could affect downstream species.

IPaC does not display listed species or critical habitats under the sole jurisdiction of NOAA Fisheries[1], as USFWS does not have the authority to speak on behalf of NOAA and the Department of Commerce.

See the "Critical habitats" section below for those critical habitats that lie wholly or partially within your project area under this office's jurisdiction. Please contact the designated FWS office if you have questions.

---

1. NOAA Fisheries, also known as the National Marine Fisheries Service (NMFS), is an office of the National Oceanic and Atmospheric Administration within the Department of Commerce.

Mammals

NAME	STATUS
Northern Long-eared Bat *Myotis septentrionalis*	Threatened

No critical habitat has been designated for this species.
Species profile: https://ecos.fws.gov/ecp/species/9045

Critical habitats

THERE ARE NO CRITICAL HABITATS WITHIN YOUR PROJECT AREA UNDER THIS OFFICE'S JURISDICTION.

COMMITMENT & INTEGRITY
DRIVE RESULTS

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

T 800.426.4262
T 207.774.2112
F 207.774.6635

July 27, 2021

Maine Department of Inland Fisheries and Wildlife
41 State House Station
Augusta, ME 04333

RE: USM Structured Parking Garage – Environmental Review Request

To Whom It May Concern:

The University of Southern Maine Portland Campus is proposing to construct a structured parking garage adjacent to the existing garage located at 44 Bedford Street in Portland, Maine. The proposed project will include the construction of a structured parking garage and associated lighting, landscaping, utilities, and stormwater management infrastructure. The entire limit of work has been previously developed. The proposed work will require a Maine Department of Environmental Protection Site Location of Development Permit Amendment, which requires coordination with the Maine Department of Inland Fisheries and Wildlife.

On behalf of the University, we are requesting a review of the project area for any known threatened or endangered species or critical habitat. A site location map and Site Plan have been attached for your reference. If you have any questions regarding this information or the proposed project, please do not hesitate to contact me at (207) 558-3665 or aefletcher@woodardcurran.com. Thank you for your assistance.

Sincerely,

WOODARD & CURRAN INC.

Ashley Fletcher, PE
Technical Manager

Enclosures: Site Location Map
Site Plan

Cc: MaineDEP

8. HISTORIC SITES

A letter has been sent to the Maine Historic Preservation Commission (MHPC) requesting a review of the project area relative to historic properties; a copy of this letter is attached to this Section for your reference. A copy of the MHPC response can be provided upon receipt.

8.1 LIST OF ATTACHMENTS

- MHPC Project Review Request Letter.

COMMITMENT & INTEGRITY
DRIVE RESULTS

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

T 800.426.4262
T 207.774.2112
F 207.774.6635

July 27, 2021

Kirk F. Mohney, Director
Maine Historic Preservation Commission
55 Capitol Street, 65 State House Station
Augusta, Maine 04333-0065

Re: USM Structured Parking Garage – Project Review Request

Dear Mr. Mohney:

The University of Southern Maine Portland Campus is proposing to construct a structured parking garage adjacent to the existing garage located at 44 Bedford Street in Portland, Maine. The proposed project will include the construction of a structured parking garage and associated lighting, landscaping, utilities, and stormwater management infrastructure. The entire limit of work has been previously developed. The proposed work will require a Maine Department of Environmental Protection Site Location of Development Permit Amendment, which requires coordination with the Maine Historic Preservation Commission.

On behalf of the University, we are requesting a review of the project area relative to historic properties. Please note that no bridges or buildings or other structures will be directly impacted by the proposed work, but that the proposed project is located adjacent to the Glickman Family Library, which was built in 1900. The building is located northeast of the proposed project, across a site access road, as shown on the enclosed Site Plan; a photo of the building, a USGS topographic map, and proposed Site Plan have been enclosed for your reference. The project is not located adjacent to or within any known historic properties or districts.

We appreciate your review of this project. If you have any questions regarding this information or the proposed project, please do not hesitate to contact me at (207) 558-3665 or aefletcher@woodardcurran.com. Thank you for your assistance.

Sincerely,

WOODARD & CURRAN INC.

Ashley Fletcher, PE
Technical Manager

Enclosures: Photograph of Glickman Family Library
USGS Map
Site Plan

Cc: MaineDEP

9. UNUSUAL NATURAL AREAS

The Site has been previously developed and there are no known unusual natural areas. A letter has been sent to the Maine Natural Areas Program (MNAP) requesting a review of the Site relative to rare and exemplary botanical features; a copy of their response confirming that there are no rare botanical features located within the project area is attached to this Section for your reference.

9.1 LIST OF ATTACHMENTS

- MNAP Site Review Letter.

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

JANET T. MILLS
GOVERNOR

AMANDA E. BEAL
COMMISSIONER

July 27, 2021

Ashley Fletcher
Woodard & Curran
41 Hutchins Drive
Portland, ME 04102

Via email: aefletcher@woodardcurran.com

Re: Rare and exemplary botanical features in proximity to: #0233035.00, USM Structured Parking Garage, Portland, Maine

Dear Ms. Fletcher:

I have searched the Maine Natural Areas Program's Biological and Conservation Data System files in response to your request received July 27, 2021 for information on the presence of rare or unique botanical features documented from the vicinity of the project in Portland, Maine. Rare and unique botanical features include the habitat of rare, threatened, or endangered plant species and unique or exemplary natural communities. Our review involves examining maps, manual and computerized records, other sources of information such as scientific articles or published references, and the personal knowledge of staff or cooperating experts.

Our official response covers only botanical features. For authoritative information and official response for zoological features you must make a similar request to the Maine Department of Inland Fisheries and Wildlife, 284 State Street, Augusta, Maine 04333.

According to the information currently in our Biological and Conservation Data System files, there are no rare botanical features documented specifically within the project area. Based on the information in our files and the landscape context of this project, there is a low probability that rare or significant botanical features occur at this project location.

This finding is available and appropriate for preparation and review of environmental assessments, but it is not a substitute for on-site surveys. Comprehensive field surveys do not exist for all natural areas in Maine, and in the absence of a specific field investigation, the Maine Natural Areas Program cannot provide a definitive statement on the presence or absence of unusual natural features at this site.

The Maine Natural Areas Program (MNAP) 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. MNAP welcomes coordination with individuals or organizations proposing environmental alteration or conducting environmental assessments. If, however, data provided by MNAP are to be published in any form, the Program should be informed at the outset and credited as the source.

The Maine 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.

MOLLY DOCHERTY, DIRECTOR
MAINE NATURAL AREAS PROGRAM
BLOSSOM LANE, DEERING BUILDING

PHONE: (207) 287-804490
WWW.MAINE.GOV/DACF/MNAP

Thank you for using MNAP 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,

Lisa St. Hilaire

Lisa St. Hilaire | Information Manager | Maine Natural Areas Program
207-287-8044 | lisa.st.hilaire@maine.gov

10. BUFFERS

The Site has been previously developed. There are no existing or proposed buffers. This Section is not applicable.

11. SOILS

A copy of the United States Department of Agriculture Natural Resources Conservation Service Web Soil Survey is attached to this Section for your reference. Environmental assessments of the Site have been conducted and the Owner is a participant in the Maine Department of Environmental Protection Voluntary Response Action Program (VRAP). A soil management plan will be developed for the site.

11.1 LIST OF ATTACHMENTS

- United States Department of Agriculture Natural Resources Conservation Service Web Soil Survey.

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



May 3, 2021

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.

The U.S. Department of Agriculture (USDA) prohibits discrimination in all its programs and activities on the basis of race, color, national origin, age, disability, and where applicable, sex, marital status, familial status, parental status, religion, sexual orientation, genetic information, political beliefs, reprisal, or because all or a part of an individual's income is derived from any public assistance program. (Not all prohibited bases apply to all programs.) Persons with disabilities who require

alternative means for communication of program information (Braille, large print, audiotape, etc.) should contact USDA's TARGET Center at (202) 720-2600 (voice and TDD). To file a complaint of discrimination, write to USDA, Director, Office of Civil Rights, 1400 Independence Avenue, S.W., Washington, D.C. 20250-9410 or call (800) 795-3272 (voice) or (202) 720-6382 (TDD). USDA is an equal opportunity provider and employer.

Contents

Preface.....2
How Soil Surveys Are Made.....5
Soil Map.....8
Soil Map.....9
Legend.....10
Map Unit Legend.....11
Map Unit Descriptions.....11
Cumberland County and Part of Oxford County, Maine.....13
WmB—Windsor loamy sand, 0 to 8 percent slopes.....13
References.....15

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: 1:1,190 if printed on A landscape (11" x 8.5") sheet.

N

Meters: 0 15 30 60 90

Feet: 0 50 100 200 300

Map projection: Web Mercator Corner coordinates: WGS84 Edge tics: UTM Zone 19N WGS84

MAP LEGEND

Area of Interest (AOI)
- Area of Interest (AOI)

Soils
- Soil Map Unit Polygons
- Soil Map Unit Lines
- Soil Map Unit Points

Special Point Features
- Blowout
- Borrow Pit
- Clay Spot
- Closed Depression
- Gravel Pit
- Gravelly Spot
- Landfill
- Lava Flow
- Marsh or swamp
- Mine or Quarry
- Miscellaneous Water
- Perennial Water
- Rock Outcrop
- Saline Spot
- Sandy Spot
- Severely Eroded Spot
- Sinkhole
- Slide or Slip
- Sodic Spot
- Spoil Area
- Stony Spot
- Very Stony Spot
- Wet Spot
- Other
- Special Line Features

Water Features
- Streams and Canals

Transportation
- Rails
- Interstate Highways
- US Routes
- Major Roads
- Local Roads

Background
- Aerial Photography

MAP INFORMATION

The soil surveys that comprise your AOI were mapped at 1:24,000.

Warning: Soil Map may not be valid at this scale.

Enlargement of maps beyond the scale of mapping can cause misunderstanding of the detail of mapping and accuracy of soil line placement. The maps do not show the small areas of contrasting soils that could have been shown at a more detailed scale.

Please rely on the bar scale on each map sheet for map measurements.

Source of Map: Natural Resources Conservation Service
Web Soil Survey URL:
Coordinate System: Web Mercator (EPSG:3857)

Maps from the Web Soil Survey are based on the Web Mercator projection, which preserves direction and shape but distorts distance and area. A projection that preserves area, such as the Albers equal-area conic projection, should be used if more accurate calculations of distance or area are required.

This product is generated from the USDA-NRCS certified data as of the version date(s) listed below.

Soil Survey Area: Cumberland County and Part of Oxford County, Maine
Survey Area Data: Version 17, Jun 5, 2020

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
WmB	Windsor loamy sand, 0 to 8 percent slopes	2.8	100.0%
Totals for Area of Interest		**2.8**	**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

WmB—Windsor loamy sand, 0 to 8 percent slopes

Map Unit Setting

National map unit symbol: 2w2x2
Elevation: 0 to 1,410 feet
Mean annual precipitation: 36 to 71 inches
Mean annual air temperature: 39 to 55 degrees F
Frost-free period: 140 to 240 days
Farmland classification: Farmland of statewide importance

Map Unit Composition

Windsor and similar soils: 85 percent
Minor components: 15 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Windsor

Setting

Landform: Deltas, outwash plains, dunes, outwash terraces
Landform position (three-dimensional): Riser, tread
Down-slope shape: Linear, convex
Across-slope shape: Linear, convex
Parent material: Loose sandy glaciofluvial deposits derived from granite and/or loose sandy glaciofluvial deposits derived from schist and/or loose sandy glaciofluvial deposits derived from gneiss

Typical profile

Oe - 0 to 1 inches: moderately decomposed plant material
A - 1 to 3 inches: loamy sand
Bw - 3 to 25 inches: loamy sand
C - 25 to 65 inches: sand

Properties and qualities

Slope: 0 to 8 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Excessively drained
Runoff class: Low
Capacity of the most limiting layer to transmit water (Ksat): Moderately high to very high (1.42 to 99.90 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Maximum salinity: Nonsaline (0.0 to 1.9 mmhos/cm)
Available water capacity: Low (about 4.5 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 2s
Hydrologic Soil Group: A
Hydric soil rating: No

Minor Components

Hinckley

Percent of map unit: 5 percent
Landform: Outwash plains, eskers, deltas, kames
Landform position (two-dimensional): Summit, shoulder, backslope
Landform position (three-dimensional): Nose slope, side slope, crest, head slope, rise
Down-slope shape: Convex
Across-slope shape: Linear, convex
Hydric soil rating: No

Agawam

Percent of map unit: 5 percent
Landform: Kames, moraines, outwash terraces, kame terraces, outwash plains
Landform position (two-dimensional): Footslope, summit, backslope, shoulder
Landform position (three-dimensional): Side slope, crest, tread, riser, rise
Down-slope shape: Convex
Across-slope shape: Convex
Hydric soil rating: No

Deerfield

Percent of map unit: 5 percent
Landform: Outwash plains, deltas, terraces
Landform position (two-dimensional): Footslope
Landform position (three-dimensional): Tread, talf
Down-slope shape: Linear
Across-slope shape: Linear
Hydric soil rating: No

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12. STORMWATER MANAGEMENT

The attached Stormwater Management Plan describes the proposed stormwater management measures for the project, as shown on the design drawings attached to Section 1 of this Report. A USGS map and a soils map are attached to Section 1 and Section 11 of this Report, respectively.

12.1 LIST OF ATTACHMENTS

- Stormwater Management Plan (Bound Separately)

13. URBAN IMPAIRED STREAM

The proposed development is not located within the watershed of an Urban Impaired Stream; the Urban Impaired Stream Standard does not apply.

14. BASIC STANDARD

The overall goal of the Soil Erosion and Sediment Control Plan is to restrict the potential for erosion and sedimentation at the site and down-gradient of the site. A variety of erosion control techniques will be implemented to achieve this goal. During construction, these include:

- Positive grades throughout the construction site to direct flow to sediment control barriers;
- Diversion barriers to keep up-gradient runoff from flowing through the active construction areas;
- Preservation and maintenance of vegetated areas to the maximum extent possible;
- Temporary stabilization of disturbed vegetated areas to be exposed for more than seven days;
- Installation and maintenance of sediment barriers adjacent to and down-gradient of the construction site;
- Installation and maintenance of construction entrances at the travelled interface between stabilized and non-stabilized areas;
- Controls for fugitive sediment and dust, debris, and other materials;
- Application of seeding and mulching (or other permanent surface treatment as indicated on the drawings) applied as soon as areas achieve final grades; and
- Inspection of all in-place measures after every significant rainfall until permanent measures are in place and the Site has been stabilized.

Structural measures will be installed where shown on the design drawings. Details for the installation of these measures, as well as implementation notes, are included on the drawings. All measures will be implemented in accordance with the "Maine Erosion and Sedimentation Handbook for Construction: Best Management Practices". All temporary measures will be installed prior to any earthmoving operation and removed after the areas are permanently stabilized. Permanent erosion control measures for the development will include vegetation and pavement. The anticipated construction schedule is provided in Section 1.3 of this Report, and information on soil types and protected natural resources is provided in Section 11 of this Report.

All measures will be maintained in an effective operating condition until the Site is permanently stabilized. During construction, the Contractor will be responsible for conducting inspections in accordance with the attached *Stormwater Erosion & Sediment Control Inspection Report Form* (or equivalent). Inspections shall be performed at least once a week, as well as before and after storm events. A person with knowledge of stormwater management and erosion and sediment control, including the standards and conditions in the permit, shall conduct the inspections and perform maintenance of the facilities. If maintenance or modifications are necessary, implementation will be completed within seven days and prior to any rainfall event. After construction, the responsible party for the owner will conduct inspections of the Site per the inspection and maintenance requirements outlined in Section 12 of this Report.

14.1 LIST OF ATTACHMENTS

- Stormwater Erosion & Sediment Control Inspection Report Form.

EROSION & SEDIMENT CONTROL
INSPECTION REPORT FORM

Inspectors: Date: ___ / ___ / _____

_____ of _____ (Project Owner)
_____ of _____ (Contractor)
_____ of _____
_____ of _____

Storm Event? ☐ Yes ☐ No Rainfall Amount _____ Storm Duration _____ hours

Visual Observations of Activity and Site Conditions:

Disturbed Soil Areas:

Storage Of Soils:

Sediment & Erosion Control Measures:

Construction Site Entrance:

Surface Stabilization:

Corrective Action Taken:

Attachments (if any):

Signature:

Name Title Date

15. GROUNDWATER

The proposed development is not located within a Significant Sand and Gravel Aquifer. Environmental assessments of the Site have been conducted and the Owner is a participant in the Maine Department of Environmental Protection Voluntary Response Action Program (VRAP). The proposed development will not infiltrate to or extract groundwater and is not anticipated to produce any hazardous waste. It is not anticipated that the proposed development will result in any impacts to groundwater.

16. WATER SUPPLY

The proposed project will not include any new water services; this Section is not applicable.

17. WASTEWATER DISPOSAL

The proposed parking garage will include floor drains and an associated oil/water separator that will discharge to the City's combined sewer system. A Wastewater Capacity Application was submitted to the City under separate cover as part of the Site Plan Application for the proposed development. A copy of the City's approval can be provided upon receipt.

18. SOLID WASTE

18.1 SOLID WASTE

The proposed project will not result in any additional solid waste after construction has been completed.

18.2 CONSTRUCTION & DEMOLITION DEBRIS

As with any construction project, the proposed construction will generate construction waste and demolition debris (CDD). The construction contractor(s) will be responsible for hauling the CDD or contracting with a waste management service to haul the CDD from the project site. The contractor(s) will be fully responsible for handling, managing, and disposing of all waste generated by construction in accordance with Maine Solid Waste Management Regulations – 06-096 CMR 400-409. The contractor(s) will be bound by contract to dispose of all materials in full accordance with all applicable local state and federal regulations.

18.3 SPECIAL & HAZARDOUS WASTE

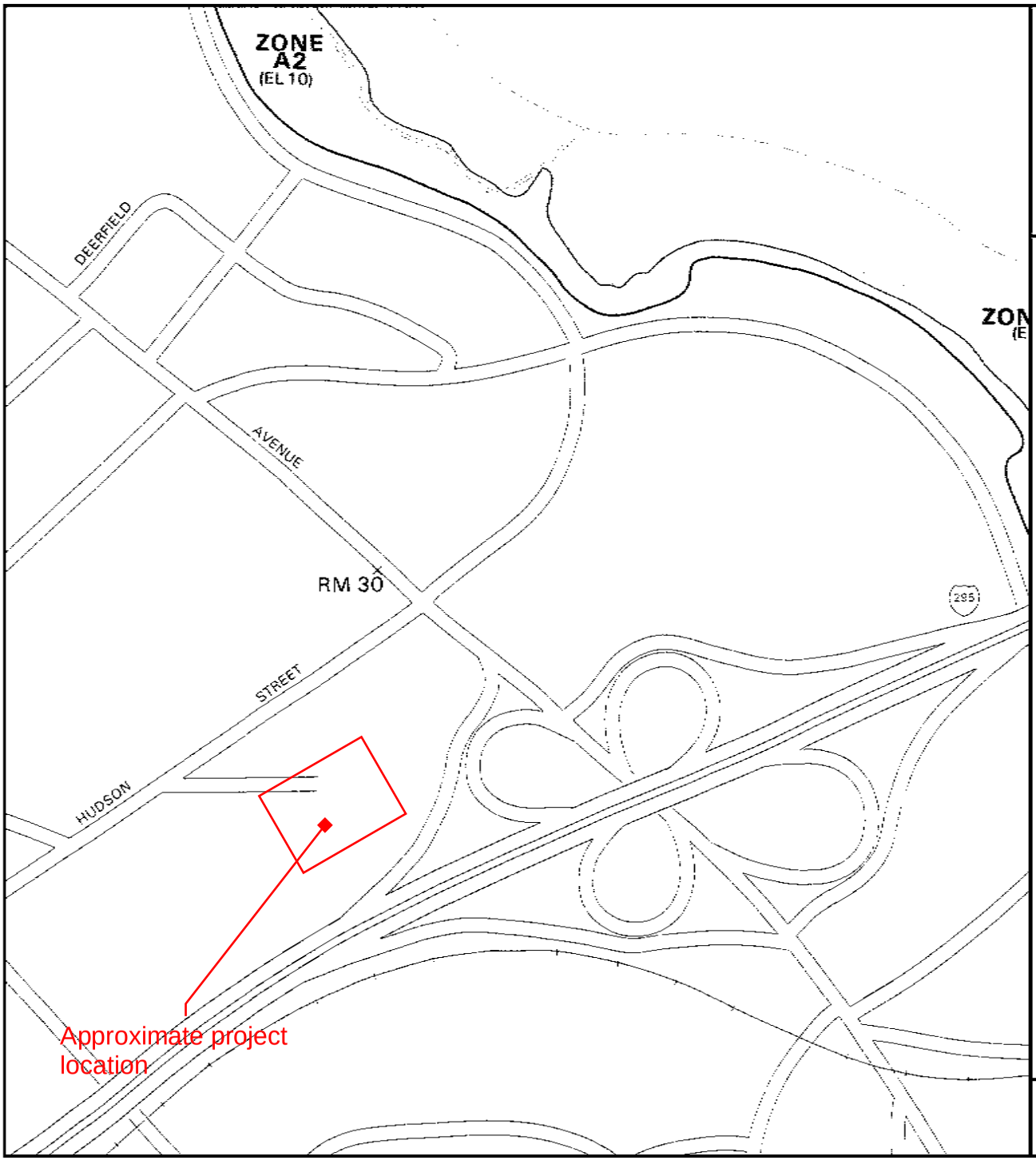
The proposed development is not anticipated to produce any hazardous waste. Environmental assessments of the Site have been conducted and the Owner is a participant in the Maine Department of Environmental Protection Voluntary Response Action Program (VRAP). A soil management plan will be developed for the Site.

19. FLOODING

The project is not located in a flood hazard zone, as shown on the attached FEMA FIRM Map.

19.1 LIST OF ATTACHMENTS

- FEMA Flood Insurance Rate Map.



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

20. BLASTING

No blasting is anticipated for this project; this Section is not applicable.

21. AIR EMISSIONS

The project will not require an air emissions license; this Section is not applicable.

22. ODORS

The proposed development will not involve any processes that emit significant odors; this Section is not applicable.

23. WATER VAPOR

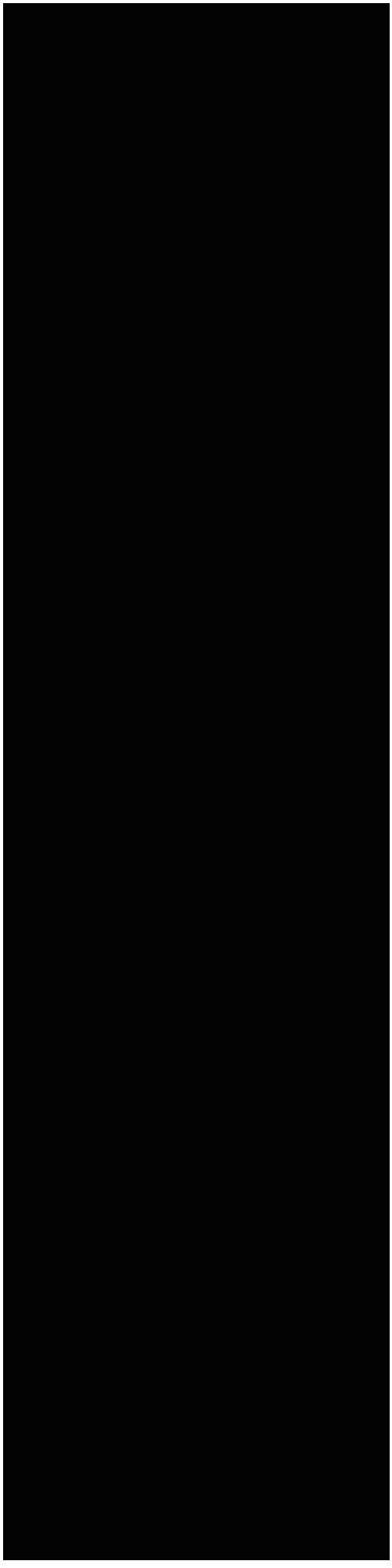
The proposed development will not use water for any processes that would emit water vapor; this Section is not applicable.

24. SUNLIGHT

The proposed development will not block access to sunlight for any structures utilizing solar energy; this Section is not applicable.

25. NOTICES

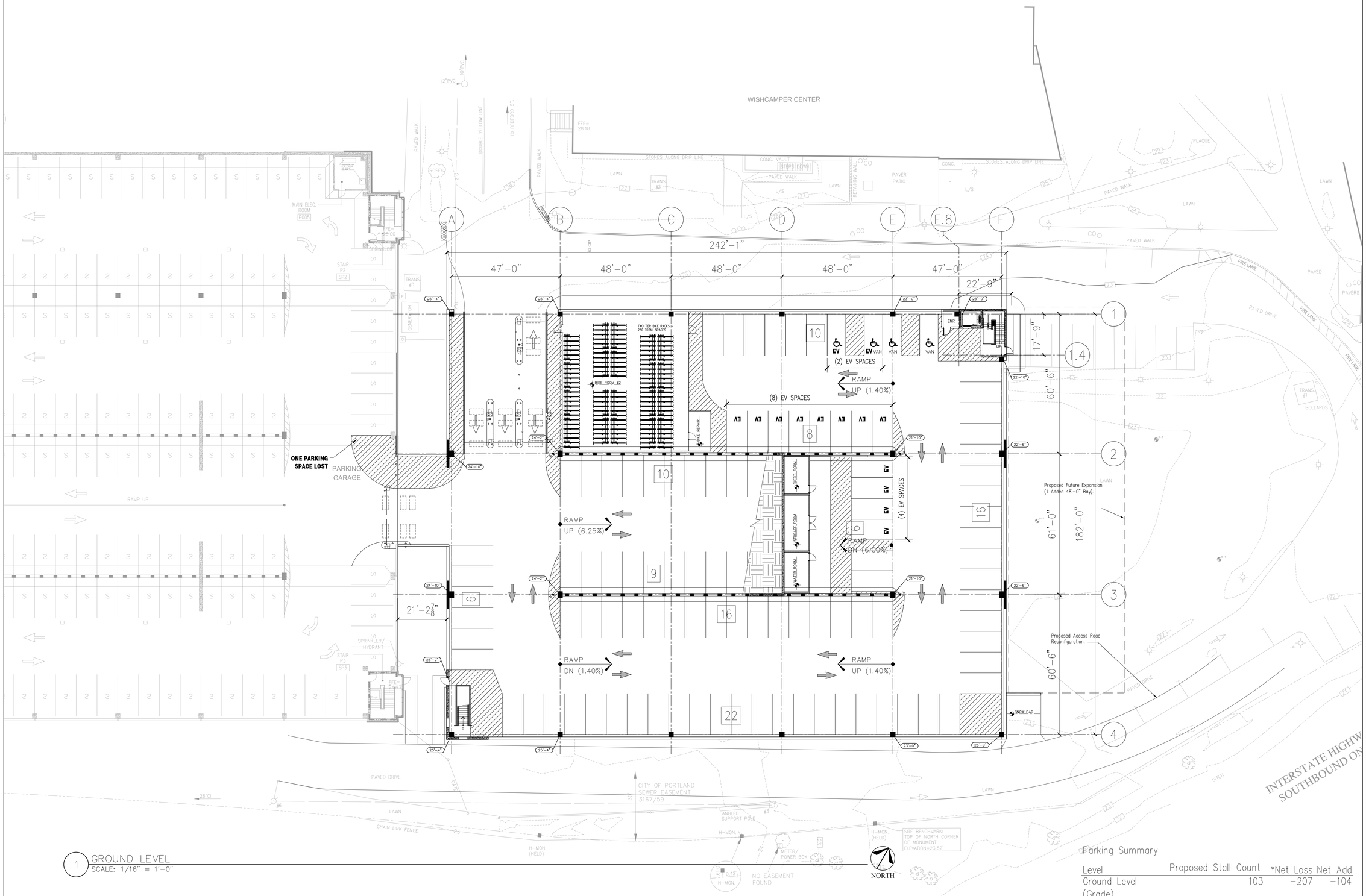
The City of Portland has Delegated Review Authority for this application; as such, it is our understanding that the public notice requirements associated with MaineDEP Site Law do not apply.



WOODARD &CURRAN

woodardcurran.com

COMMITMENT & INTEGRITY DRIVE RESULTS



1 GROUND LEVEL
SCALE: 1/16" = 1'-0"

Parking Summary

Level	Proposed Stall Count	*Net Loss	Net Add
Ground Level (Grade)	103	−207	−104
First Level	137	0	137
Second Level	137	0	137
Third Level	137	0	137
Fourth Level (Roof)	120	0	120
Total	634	−207	427

*Includes loss of stalls in the adjacent parking garage and off-site parking

** Includes 13 ADA Parking Stalls

UNIVERSITY OF SOUTHERN MAINE

25 Bedford Street, Portland, ME 04104
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Boston, MA 02108

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PROJECT:

USM - Structured Parking Garage

Address

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REVISIONS:

No.	Date	Description
	07/30/21	Site Plan Submittal

SUBMISSIONS:

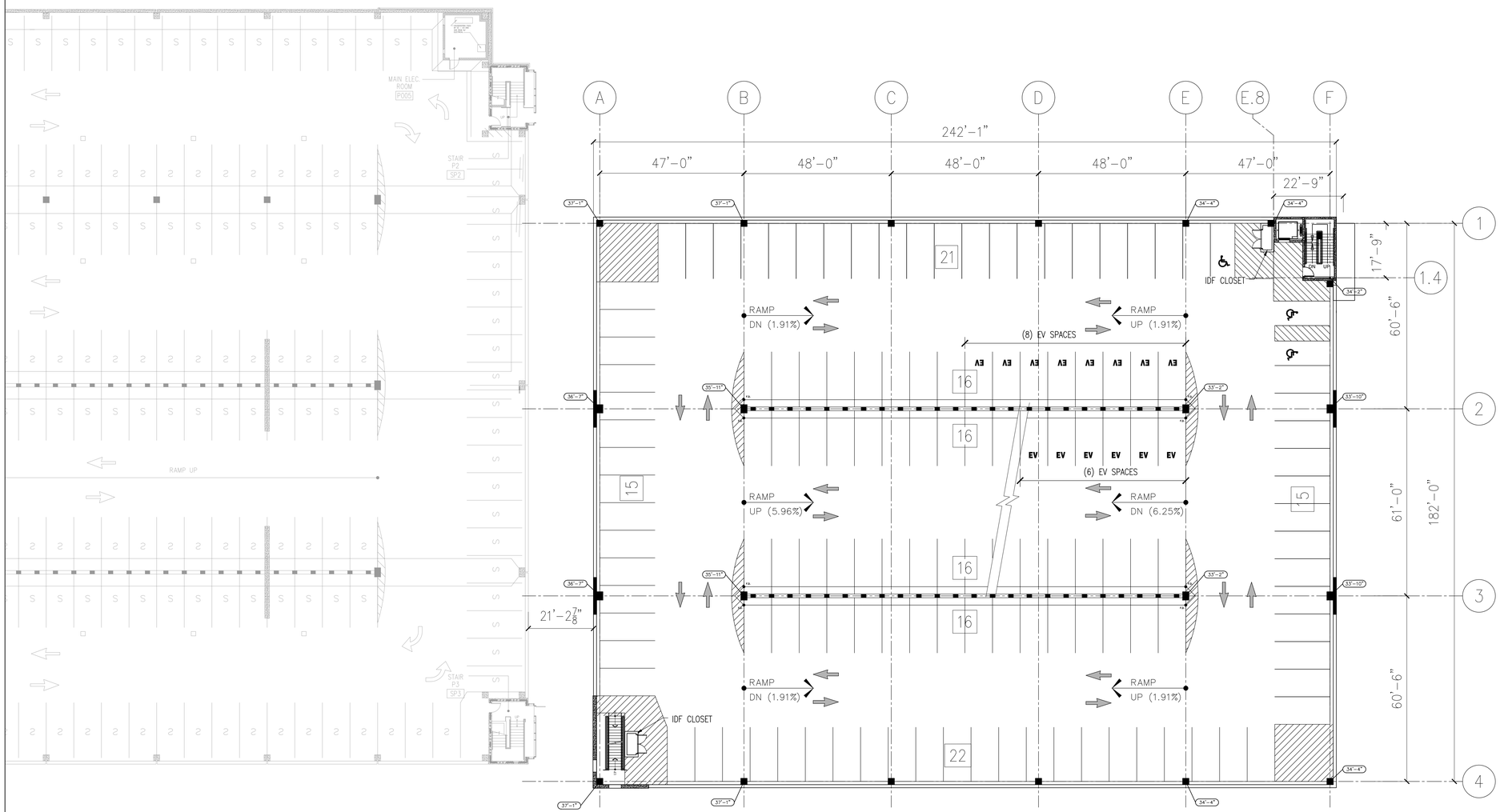
Date	Issued For:

SCALE	1/16" = 1'-0"
DATE ISSUED	07/30/2021
PROJECT NO	20-20145.00-1
DRAWN BY	C.M.
CHECKED BY	B.F.

SHEET TITLE:

GROUND LEVEL STRIPING PLAN

A-101



1 FIRST LEVEL
SCALE: 1/16" = 1'-0"

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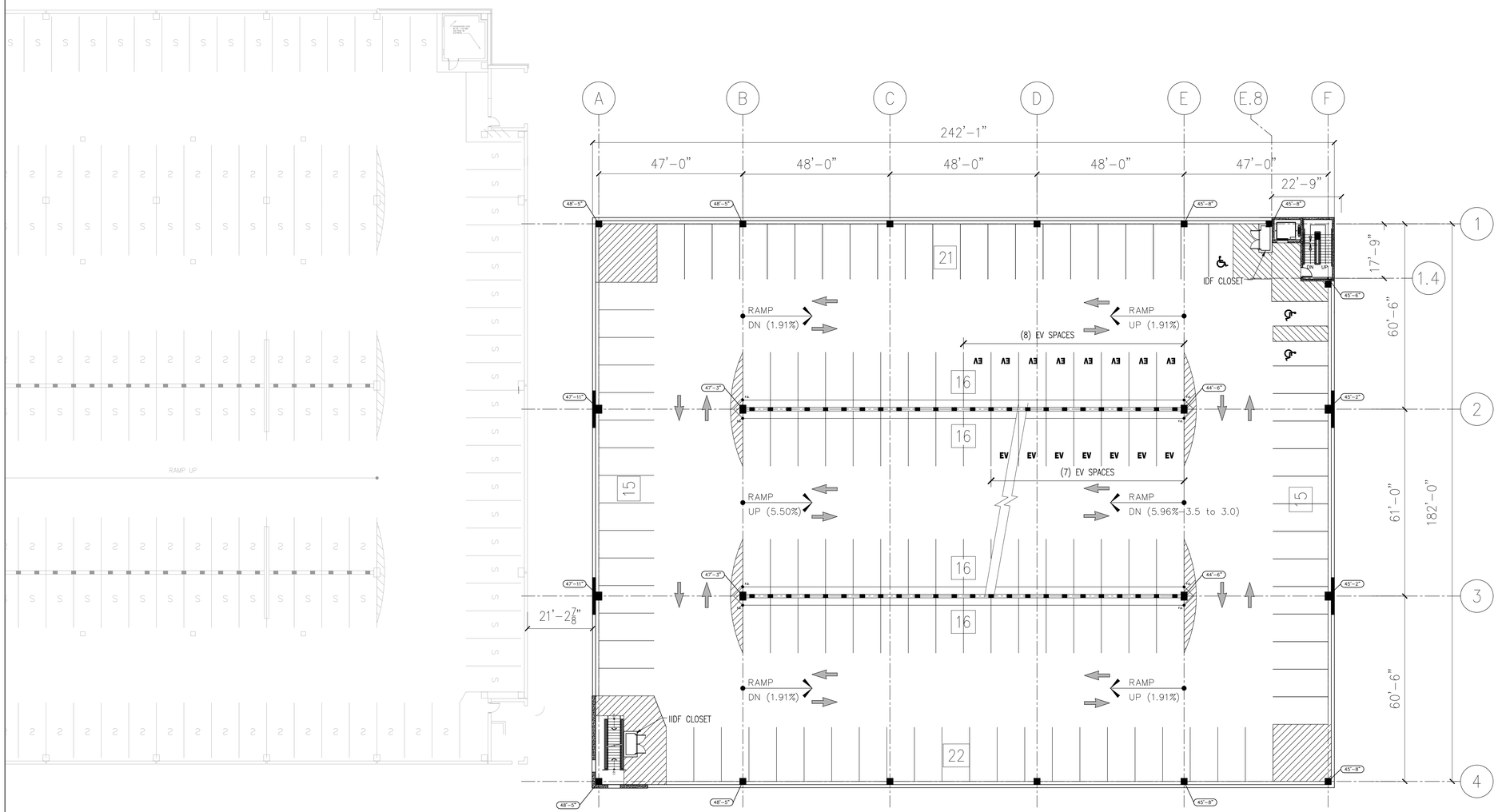
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SHEET TITLE:

FIRST LEVEL STRIPING PLAN

A-102



1 SECOND LEVEL
SCALE: 1/16" = 1'–0"

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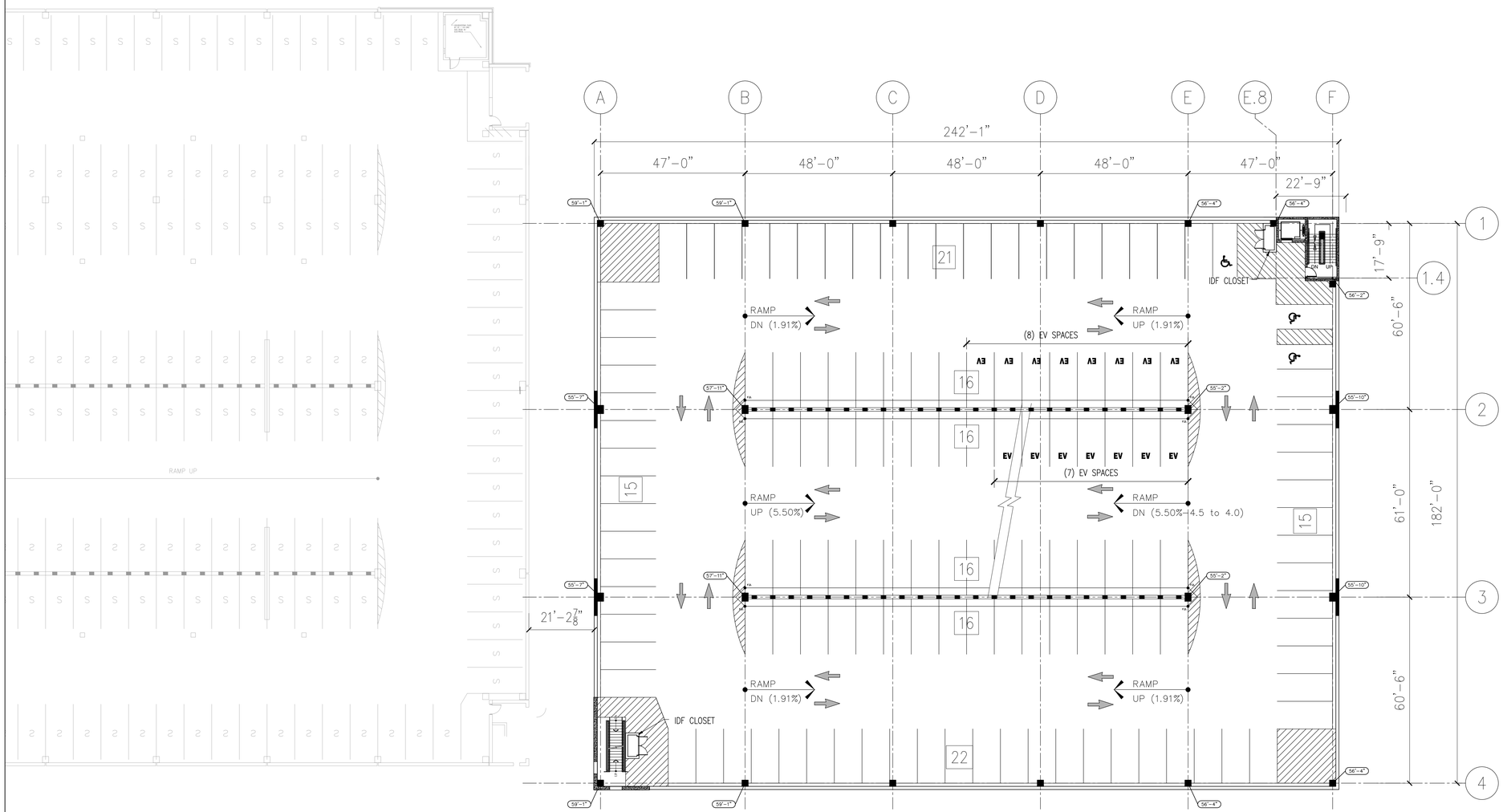
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SHEET TITLE:

SECOND LEVEL STRIPING PLAN

A-103



1 THIRD LEVEL
SCALE: 1/16" = 1'-0"

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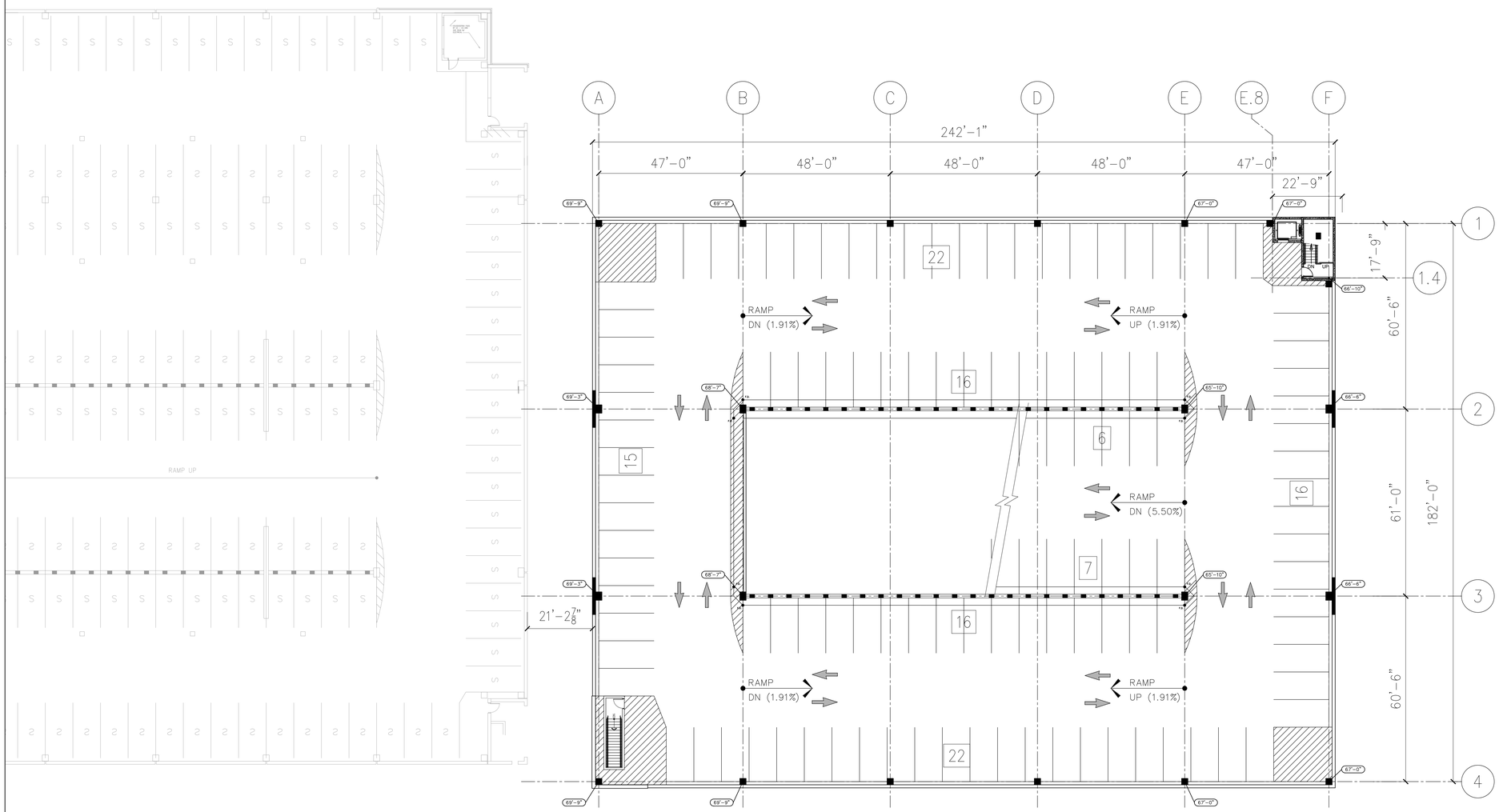
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SHEET TITLE:

THIRD LEVEL STRIPING PLAN

A-104



1 ROOF LEVEL
SCALE: 1/16" = 1'-0"

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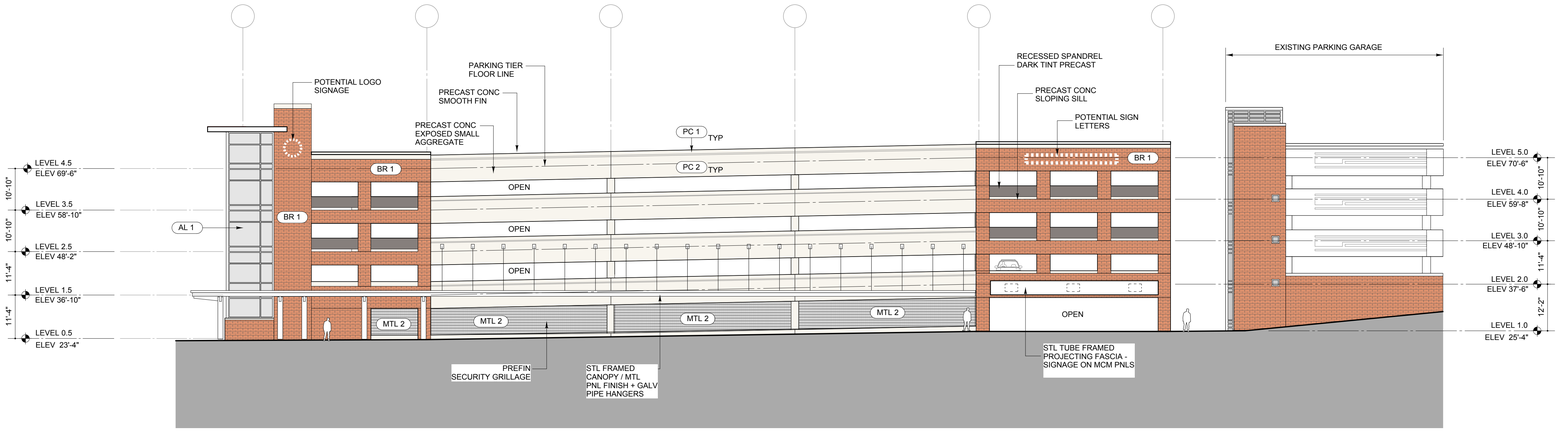
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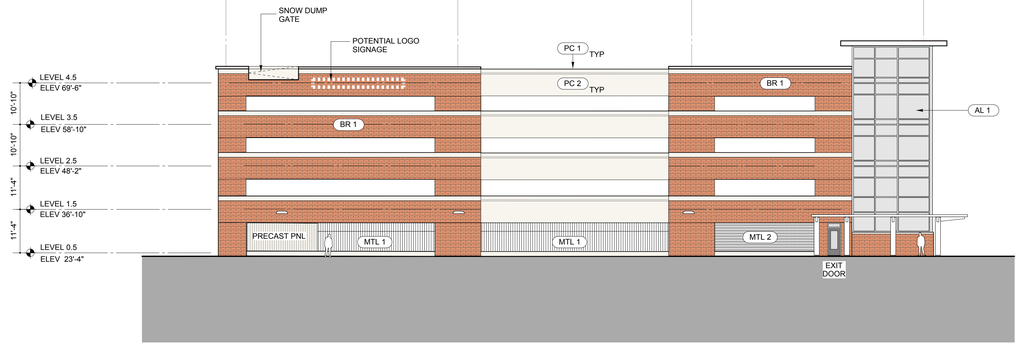
ROOF LEVEL STRIPING PLAN

A-105



NORTH ELEVATION

1/16" = 1' - 0"



EAST ELEVATION

1/16" = 1' - 0"



SECURITY BAR GRATING - MTL 2



BRICK - BR 1
GLEN-GERY 387 RUSTIC RED

MATERIALS LEGEND

KEY	MATERIAL	NOTES
AL 1	ALUMINUM CURTAINWALL	CLEAR ANODIZED / UN-TINTED GLASS
BR 1	BRICK	THIN BRICK INTEGRAL TO PRECAST
MTL 1	SECURITY BARS	1/2" BAR @ 9" O.C. / PAINTED DK BLUE
MTL 2	SECURITY BAR GRATING	2" x 5" OPENING / DK BLUE PREFINISH
MTL 3	PAINTED STEEL	FLUSH PANEL
PC 1	PRECAST CONCRETE	SMOOTH FINISH
PC 2	PRECAST CONCRETE	MEDIUM SANDBLASTED FINISH

16 0 16 32

BAR SCALE
1" = 16'
CHECK GRAPHIC SCALE BEFORE USING

7/2/2021 3:16:33 PM

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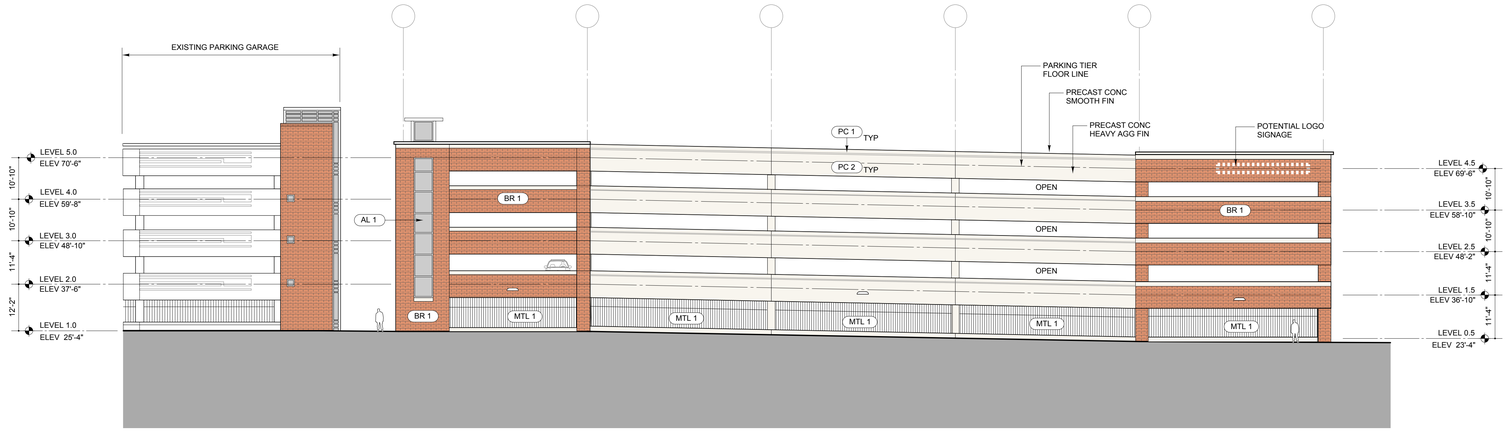
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07 /30/21	Site Plan Submittal

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CHECKED BY	

SHEET TITLE:

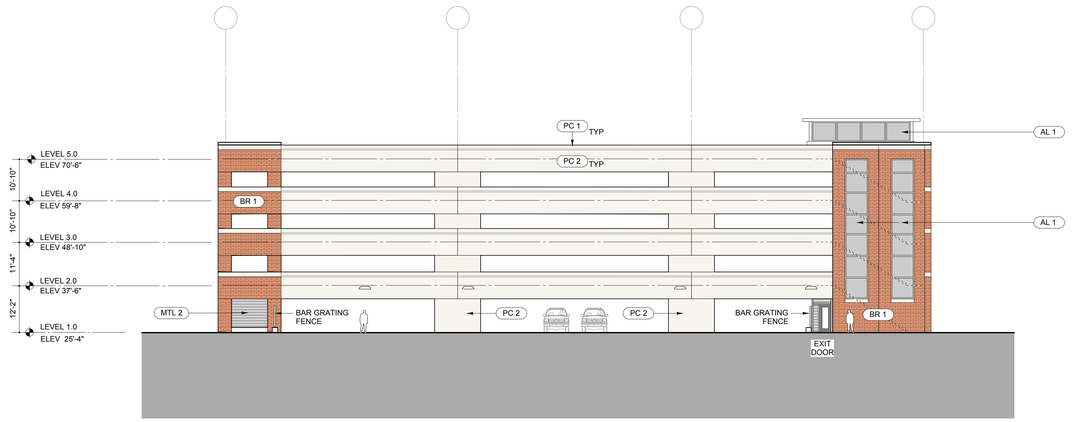
Building Elevations

A - 200



SOUTH ELEVATION

1/16" = 1' - 0"



WEST ELEVATION

1/16" = 1' - 0"

MATERIALS LEGEND

KEY	MATERIAL	NOTES
AL 1	ALUMINUM CURTAINWALL	CLEAR ANODIZED / UN-TINTED GLASS
BR 1	BRICK	THIN BRICK INTEGRAL TO PRECAST
MTL 1	SECURITY BARS	1/2" BAR @ 9" O.C. / PAINTED DK BLUE
MTL 2	SECURITY BAR GRATING	2" x 5" OPENING / DK BLUE PREFINISH
MTL 3	PAINTED STEEL	FLUSH PANEL
PC 1	PRECAST CONCRETE	SMOOTH FINISH
PC 2	PRECAST CONCRETE	MEDIUM SANDBLASTED FINISH

16 0 16 32

BAR SCALE

1" = 16'

CHECK GRAPHIC SCALE BEFORE USING

7/2/2021 3:16:33 PM

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25 Bedford Street, Portland, ME 04104
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MICHAEL BOUCHER
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ALLIED ENGINEERING
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S.W. COLE
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VANASSE HANGEN BRUSTLIN INC
40 IDX DR 100 #200, SOUTH
BURLINGTON, VT 05403

COST ESTIMATOR
PREFERRED CONSTRUCTION MGMT
94 AUBURN ST,
PORTLAND, ME 04103

SEAL / SIGNATURE

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PROJECT:

USM - Structured Parking Garage

Address
44 Bedford Street,
Portland ME 04104

REVISIONS:

No.	Date	Description

SUBMISSIONS:

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07/30/21	Site Plan Submittal

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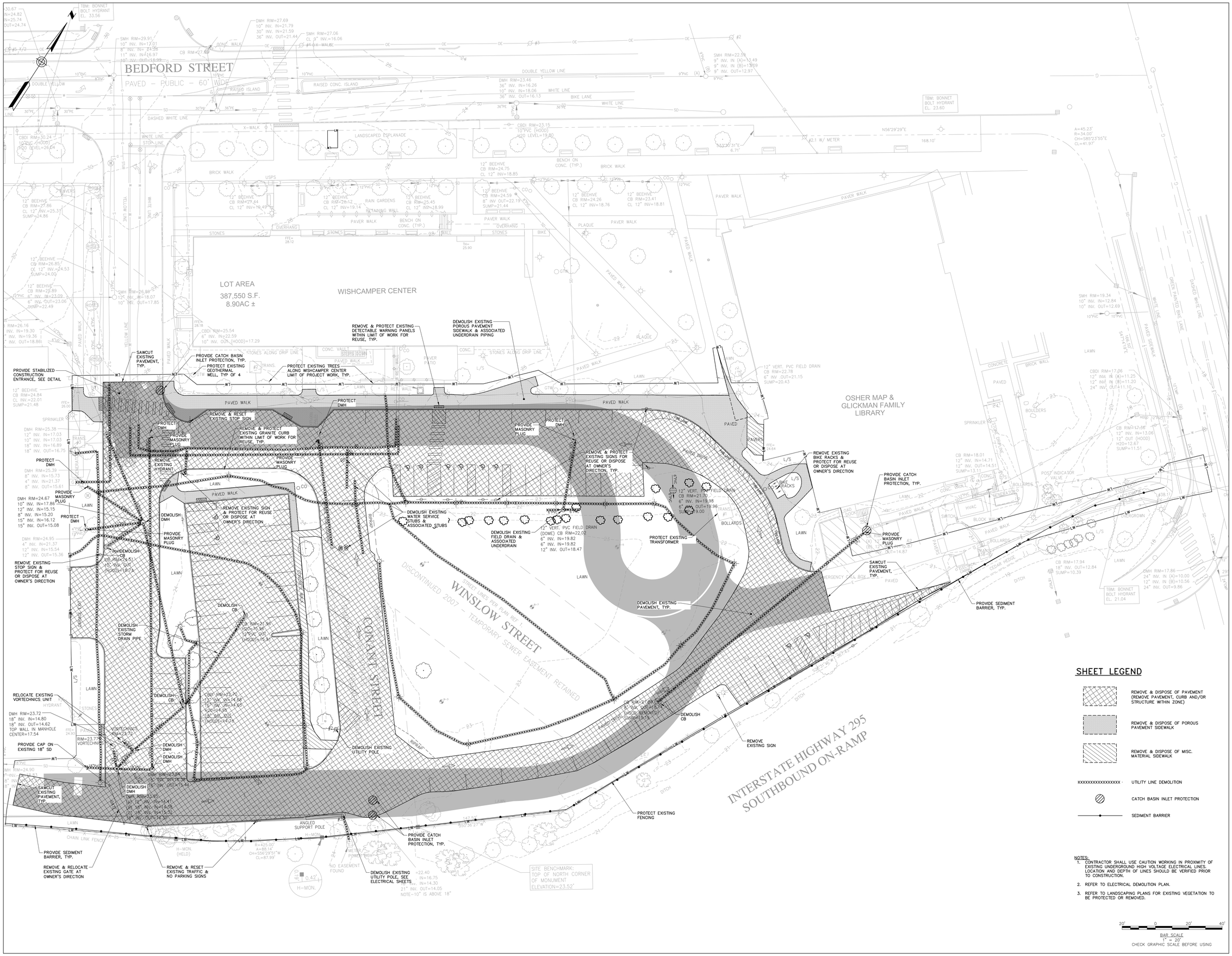
Building Elevations

A - 501



University of Southern Maine Parking Garage

Bedford Street View



\\wsodcdcsrvcn.net\shared\Projects\0233535.00 usm - falmouth street garage\vcp\Drawings\Civil\233535.00 C10X.dwg, Jul 29, 2021 - 2:50pm BMCDEVITT

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STATE OF MAINE
ASHLEY FLETCHER
No. 13750
LICENSED PROFESSIONAL ENGINEER

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PROJECT:

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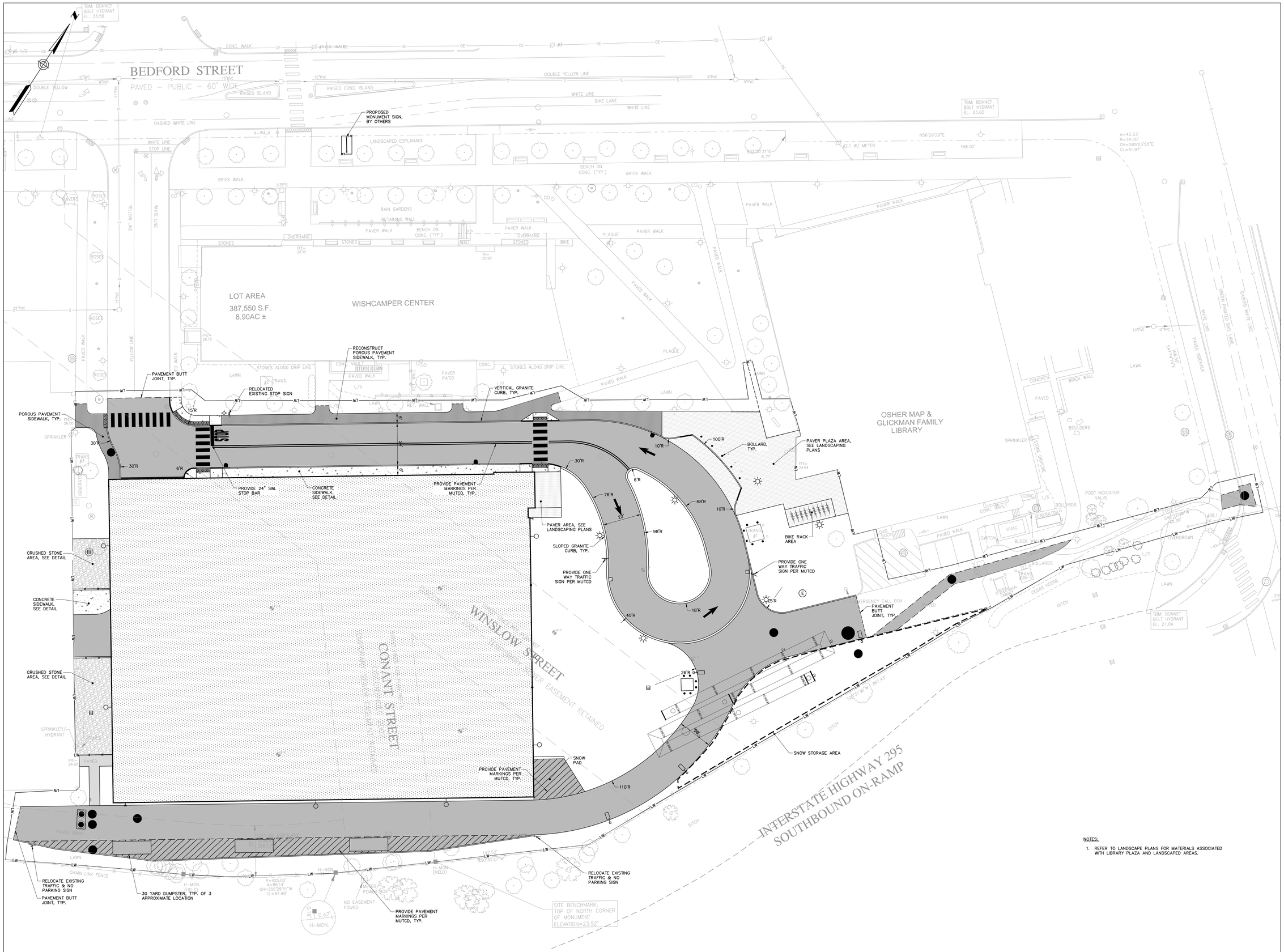
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DRAWN BY	**B.C.M.**
CHECKED BY	**A.E.F.**

SHEET TITLE:

DEMOLITION & EROSION & SEDIMENT CONTROL PLAN

C-001



NOTES:

1. REFER TO LANDSCAPE PLANS FOR MATERIALS ASSOCIATED WITH LIBRARY PLAZA AND LANDSCAPED AREAS.

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CHECKED BY	**A.E.F.**

SHEET TITLE:

SITE LAYOUT & MATERIALS PLAN

C-100

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PIPE TABLE			
PIPE NAME	SIZE	LENGTH	SLOPE
PIPE 1	18" PVC	140'	0.0092
PIPE 2	18" PVC	92'	0.0147
PIPE 3	18" PVC	75'	0.0176
PIPE 4	18" PVC	34'	0.1015
PIPE 5	18" PVC	9'	0.0556
PIPE 6	10" PVC	88'	0.0051
PIPE 7	10" PVC	65'	0.0051
PIPE 8	18" PVC	75'	0.0479
PIPE 9	12" PVC	7'	0.0000
PIPE 10	12" PVC	8'	0.0088
PIPE 11	18" PVC	26'	0.0069
PIPE 12	24" PVC	65'	0.0052
PIPE 13	24" PVC	171'	0.0051
PIPE 14	18" PVC	22'	0.0068
PIPE 15	18" PVC	29'	0.0045
PIPE 16	18" PVC	23'	0.0048
PIPE 17	18" PVC	89'	0.0049
PIPE 18	18" PVC	2'	0.0300
PIPE 19	18" PVC	3'	0.0200
PIPE 20	18" PVC	2'	0.0300
PIPE 21	18" PVC	54'	0.0033
PIPE 22	18" PVC	11'	0.0136
PIPE 23	18" PVC	99'	0.0072
PIPE 24	12" PVC	23'	0.0057
PIPE S1	4" PVC	5'	0.0100
PIPE S2	18" PVC	27'	0.0059

STRUCTURE TABLE				
NAME	DIA.	RIM	INV IN/SIZE/FROM	INV OUT/SIZE/TO
66" CMP IN	N/A	N/A	13.08/18"PVC/DMH1	
66" CMP OUT	N/A	N/A		13.08/12"PVC/STORMFILTER
72" CMP OUT	N/A	N/A		12.58/18"PVC/DMH2
CB1	4'	25.12	21.10/12"PVC/TRENCH DRAIN	21.00/18"PVC/CB8
CB2	4'	22.97	19.00/18"PVC/CB8 21.13/6"UD/	18.90/18"PVC/CB4
CB3	4'	23.90	14.96/18"PVC/EXDMH5	14.86/18"PVC/DMH9
CB4	4'	22.87	17.55/18"PVC/CB2 17.55/18"PVC/CB5	17.45/18"PVC/DMH1
CB5	4'	22.83		18.87/18"PVC/CB4
CB6	4'	22.50	17.70/10"PVC/ROOF DRAIN 2 17.70/10"PVC/ROOF DRAIN 1	17.59/18"PVC/DMH1
CB8	4'	24.01	19.71/18"PVC/CB1	19.71/18"PVC/CB2
DMH1	4'	22.60	14.00/18"PVC/CB6 14.00/18"PVC/CB4	13.58/18"PVC/66" CMP IN
DMH2	4'	21.65	12.51/12"PVC/STORMFILTER 12.40/18"PVC/72" CMP OUT	12.07/24"PVC/DMH3
DMH3	4'	20.85	11.73/24"PVC/DMH2	11.63/24"PVC/DMH4
DMH4	4'	17.21	10.75/24"PVC/DMH3	

STRUCTURE TABLE				
NAME	DIA.	RIM	INV IN/SIZE/FROM	INV OUT/SIZE/TO
DMH5	4'	25.90	16.64/18"PVC/EXDMH2 17.46/15"PVC/EXCB1 24.06/6"UD/ 24.06/6"UD/	16.54/18"PVC/EXDMH1
DMH9	4'	24.25	14.68/18"PVC/CB3	14.58/18"PVC/VOR IN 14.58/18"PVC/DMH10
DMH10	4'	24.17	14.20/18"PVC/VOR OUT 14.52/18"PVC/DMH9	14.10/18"PVC/DMH11
DMH11	4'	23.90	13.95/18"PVC/DMH10 13.90/18"PVC/O/W SEP	
EXDMH1	4'	25.39	16.41/18"PVC/DMH5 21.37/4"PVC/ 15.73/8"PVC/	15.61/18"PVC/EXDMH5
EXDMH5	4'	24.75	15.50/18"PVC/EXDMH1 15.54/12"PVC/ 21.37/4"PVC/	15.40/18"PVC/CB3
O/W SEP	4'	24.16	14.20/4"PVC/SAN. OUTLET	14.06/18"PVC/DMH11
ROOF DRAIN 1	N/A	N/A		18.15/10"PVC/CB6
ROOF DRAIN 2	N/A	N/A		18.03/10"PVC/CB6
SAN. OUTLET	N/A	N/A		14.25/4"PVC/O/W SEP
STORMFILTER	7'-2"	21.41	13.08/12"PVC/66" CMP OUT	12.58/12"PVC/DMH2
TRENCH DRAIN	1'	25.33		21.23/12"PVC/CB1
VOR IN	4'	24.40	14.52/18"PVC/DMH9	
VOR OUT	4'	24.28		14.26/18"PVC/DMH10

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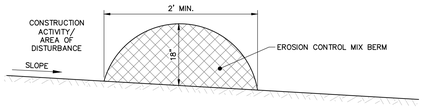
UTILITY & GRADING PLAN

C-101

PLAN NOTES:
1. REFER TO MEP PLANS FOR SITE ELECTRICAL.

WATERLINE INSTALLATION NOTES:
1. PROVIDE CEMENT LINED DUCTILE IRON PIPE PER AWWA C-151
2. INSTALL WATER MAINS IN ACCORDANCE WITH AWWA C-600
3. TEMPORARY CAPS SHALL BE INSTALLED TO ALLOW FOR TESTING AND DISINFECTION SPECIFIED IN NOTES 4 AND 5 PRIOR TO CONNECTING TO EXISTING WATER MAIN
4. PERFORM PRESSURE AND LEAKAGE TEST IN ACCORDANCE WITH AWWA C-600
5. WATER MAINS SHALL BE DISINFECTED PER AWWA C-651 STANDARDS

BAR SCALE
1" = 20'
CHECK GRAPHIC SCALE BEFORE USING

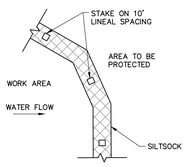


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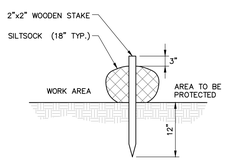
1. EROSION CONTROL MIX CAN BE MANUFACTURED ON OR OFF THE PROJECT SITE. IT MUST CONSIST PRIMARILY OF ORGANIC MATERIAL AND MAY INCLUDE: SHREDDED BARK, STUMP GRINDINGS, COMPOSTED BARK, OR ACCEPTABLE MANUFACTURED PRODUCTS. WOOD AND BARK CHIPS, GROUND CONSTRUCTION DEBRIS OR REPROCESSED WOOD PRODUCTS WILL NOT BE ACCEPTABLE AS THE ORGANIC COMPONENT OF THE MIX.
2. EROSION CONTROL MIX SHALL CONTAIN A WELL-GRADED MIXTURE OF PARTICLE SIZES AND MAY CONTAIN ROCKS LESS THAN 4" IN DIAMETER. EROSION CONTROL MIX MUST BE FREE OF REFUSE, PHYSICAL CONTAMINANTS, AND MATERIAL TOXIC TO PLANT GROWTH. THE MIX COMPOSITION SHALL MEET THE FOLLOWING STANDARDS:
   - THE ORGANIC MATTER CONTENT SHALL BE BETWEEN 80 AND 100%, DRY WEIGHT BASIS.
   - PARTICLE SIZE BY WEIGHT SHALL BE 100% PASSING A 6" SCREEN AND A MINIMUM OF 70%, MAXIMUM OF 85%, PASSING A 0.75" SCREEN.
   - THE ORGANIC PORTION NEEDS TO BE FIBROUS AND ELONGATED.
   - LARGE PORTIONS OF SILTS, CLAYS OR FINE SANDS ARE NOT ACCEPTABLE IN THE MIX.
   - SOLUBLE SALTS CONTENT SHALL BE < 4.0 MMHOS/CM.
   - THE PH SHOULD FALL BETWEEN 5.0 AND 8.0.

EROSION CONTROL MIX BERM (SEDIMENT BARRIER OPTION)

N.T.S.



PLAN VIEW



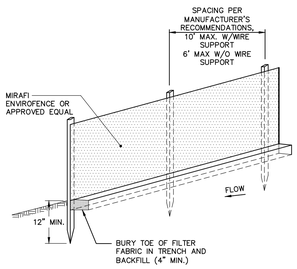
SECTION

NOTE:

1. WHEN STAKING IS NOT POSSIBLE, HEAVY CONCRETE BLOCKS SHALL BE USED BEHIND THE SEDIMENT BARRIER TO HELP STABILIZE DURING RAINFALL/RUNOFF EVENTS.

SILT SOCK (SEDIMENT BARRIER OPTION)

N.T.S.



NOTES:

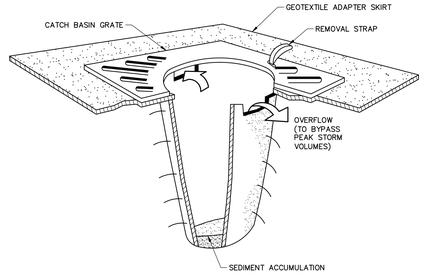
- INSTALL FABRIC ON UPHILL SIDE OF SUPPORT POSTS
- INSTALL SILT FENCE ACROSS SLOPES
- SILT FENCE SHALL NOT BE USED IN DRAINAGE WAYS

MAINTENANCE: INSPECT FOR TEARS IN THE FABRIC OR DAMAGE TO SUPPORTS. REPAIR AS NECESSARY. REMOVE ACCUMULATED SEDIMENT WHEN IT REACHES A DEPTH OF SIX-INCHES OR LESS.

REMOVAL: WHEN UPSLOPE AREAS ARE STABILIZED, THE STRUCTURE AND ANY ACCUMULATED SEDIMENT WILL BE REMOVED.

SILTATION FENCE (SEDIMENT BARRIER OPTION)

N.T.S.



NOTES:

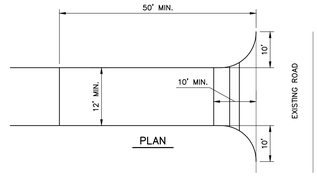
CATCH BASIN PROTECTION TO BE "SILTSACK" (BY ACF ENVIRONMENTAL) OR "STREAM GUARD" (BY FOSS ENVIRONMENTAL SERVICES).

INSERT TO BE EMPTIED IN AN APPROVED MANNER WHEN IT IS 1/2 FULL OF SEDIMENT.

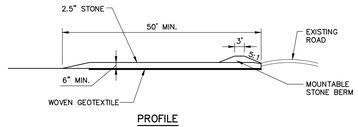
INSPECT INSERT AFTER ALL RAINFALL EVENTS, REPAIR AND MAINTAIN AS REQUIRED.

CATCH BASIN INLET PROTECTION DEVICE (SILTSACK OR EQUAL)

N.T.S.



PLAN



PROFILE

NOTES:

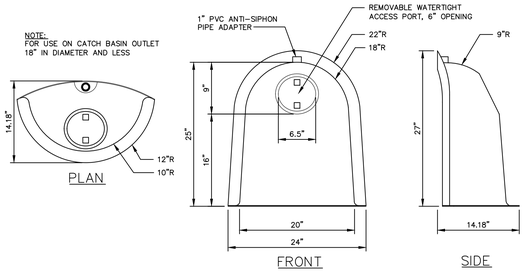
- CONSTRUCTION ENTRANCES MAY BE RELOCATED AS CONSTRUCTION PROGRESSES.
- WHEEL WASH PITS MAY ALSO BE USED, IF APPROVED.

MAINTENANCE: INSPECT FOR EFFECTIVE REMOVAL OF SOIL FROM VEHICLES PRIOR TO LEAVING THE SITE. SWEEP ANY SOIL FROM ADJACENT ROADWAYS.

AT LEAST ONE CONSTRUCTION ENTRANCE SHALL BE MAINTAINED UNTIL ALL AREAS OF THE SITE ARE STABILIZED.

STABILIZED CONSTRUCTION ENTRANCE

N.T.S.



PLAN FRONT SIDE

"THE SNOUT"

N.T.S.

EROSION AND SEDIMENT CONTROL NOTES

Temporary Controls

Contractor shall prepare and submit a soil erosion and water pollution control plan to engineer.

Measure	Dates For Use	Timing, Activity, and Location
Sediment Barrier	ALL	Before soil disturbance, install downhill of areas to be disturbed and around material stockpiles.
Up-slope Diversion	ALL	Before soil disturbance, install uphill of areas to be disturbed and material stockpiles.
Catch Basin Protection	ALL	Before soil or pavement disturbance, install ACF Environmental, Inc. High Flow Siltsack, Siltsaver Inlet Filter. or equal, installed per manufacturer's requirements.
Dust Control	ALL	During dry weather, apply water and calcium chloride to control dust.
Temporary Seeding	April 15 to Oct. 1	Soil stockpiles that are not covered and disturbed areas that will not be disturbed again within 14 days. If grass growth provides less than 95% soil coverage by Nov. 1, apply mulch and anchor with erosion control blanket.
Mulch	April 15 to Sept. 15	On all areas of exposed soil prior to rain events or every 7 days, apply 100-150 lbs (2.5 bales) per 1,000 sq ft. by mechanical blower.
Winter Mulch	Sept. 16 to Oct. 31	On all areas of exposed soil prior to precipitation or every 7 days, apply 150 to 170 lbs. mulch (4 bales) per 1,000 sq. ft. by mechanical blower, Erosion control blanket may be used as a substitute for winter mulch.
	Nov. 1 to April 14	On all areas of exposed soil, apply 150 to 170 lbs. mulch (4 bales) per 1,000 sq. ft. and anchor with netting at the end of each working day. Erosion control blanket may be used as a substitute for winter mulch.
Inspections	Until site is permanently stabilized	Inspect the erosion and sedimentation control measures daily, and maintain and repair as necessary.

Permanent Controls:

Measure	Dates For Use	Timing, Activity, and Location
Pavement – Base Course – Final Course	When no frost is in ground	Install only in areas shown on the plan, shortly after pavement base is brought to final grade. Install near completion of project.
Permanent Seeding	April 15 to Sept. 15	On final grade areas, within 7 days of grade preparation, prepare topsoil, followed by seed and mulch application.
Dormant Seeding	Sept. 16 to April 15	On final grade areas, with prepared topsoil. Apply seed at double the specified rate on bare soil, and follow with an application of winter mulch.
Ground Cover, Trees, Shrubs	April 15 to Nov. 1	Install with final landscaping.
Permanent Mulch	ALL	Install with final landscaping.

Inspections:

Regular inspections of all erosion and sedimentation controls shall be made at least weekly and prior to and following storm events. Minimum inspections shall be made as listed in the table below.

Inspected Item	Look For
Mulched Surfaces	Thin mulch or inadequate application. Wind movement.
Seeded Surfaces	Poor seed germination. Loss of mulch. Development of rivulets.
Sediment Barrier	Sediment build-up to one half the height of the barrier. Undermining of the barrier. Supporting stakes loose, toppled, or unmarked. Breaks in barrier.
Perimeter Diversion	Discharge is to stabilized area. Erosion or breaks in barrier. Supporting stakes loose, toppled or unmarked.
Catch Basin Protection	Sediment build-up and structure blockages. Slow flow/Ponding water. Breaks in fabric or voids in barrier.
Dewatering Filter	Breaks in fabric or supporting structure. Slow flow, indicating high sediment build-up.
Construction Entrance	Sedimentation of roadways. Off-site dust complaints.

EROSION AND SEDIMENT CONTROL NOTES

TEMPORARY EROSION CONTROL MEASURES MAY INCLUDE THE USE OF STABILIZED CONSTRUCTION ENTRANCES, HYDRAULIC MULCH, HAY AND STRAW MULCH, EROSION CONTROL BLANKET, TURF REINFORCED MATTING, RIPRAP AND TEMPORARY SEEDING. TEMPORARY SEDIMENT CONTROL MEASURES INCLUDE THE USE OF SILT FENCE, EROSION CONTROL MIX BERMS, CATCHBASIN SEDIMENT COLLECTION BAGS AND GEOTEXTILE FILTER BAGS. PERMANENT MEASURES INCLUDE PERMANENT VEGETATION OR PAVING.

GENERAL

A. THE PROJECT SHALL CONFORM WITH THE STANDARDS OF THE MAINE CONSTRUCTION GENERAL PERMIT.

B. ALL EROSION AND SEDIMENT CONTROL MEASURES SHALL BE CONSTRUCTED AND MAINTAINED IN ACCORDANCE WITH THE MAINE EROSION AND SEDIMENT CONTROL BMPS HANDBOOK PUBLISHED BY THE MAINE DEP UNLESS OTHERWISE NOTED IN THESE PLANS.

C. ANY ADDITIONAL EROSION AND SEDIMENT CONTROL MEASURES DEEMED NECESSARY BY THE OWNER'S REPRESENTATIVE, DEPARTMENT OF ENVIRONMENTAL PROTECTION, AND/OR MUNICIPAL OFFICIALS SHALL BE INSTALLED BY THE CONTRACTOR.

D. THE CONTRACTOR IS RESPONSIBLE FOR ALL FINES RESULTING FROM EROSION OR SEDIMENTATION FROM THE SITE TO SURROUNDING PROPERTIES, WATER BODIES, OR WETLANDS AS A RESULT OF THIS PROJECT.

E. THE CONTRACTOR SHALL MINIMIZE DISTURBANCE TO THE SITE WHENEVER POSSIBLE WHILE ALLOWING PROPER SITE DEVELOPMENT.

F. CONSTRUCTION STAGING SHALL BE CONDUCTED IN A WAY TO MINIMIZE THE POTENTIAL FOR STORMWATER RUN-ON TO DISTURBED AREAS.

G. THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE REPAIR/REPLACEMENT/MAINTENANCE OF ALL EROSION CONTROL MEASURES UNTIL ALL DISTURBED AREAS ARE STABILIZED TO THE SATISFACTION OF THE ABOVE PERSONNEL. DESCRIPTIONS OF PERMANENT STABILIZATION FOR VARIOUS COVER TYPES FOLLOWS:

   i. FOR SEEDED AREAS, PERMANENT STABILIZATION MEANS THAT 90% OF THE DISTURBED AREA IS COVERED WITH REASONABLY THICK UNIFORM STAND OF PERMANENT GRASS SPECIES, FREE FROM SIZABLE THIN OR BARE SPOTS.
   ii. FOR SODDED AREAS, PERMANENT STABILIZATION MEANS THAT COMPLETE BINDING OF THE SOD ROOTS INTO THE UNDERLYING SOIL WITH NO SLUMPING OF THE SOD OR DIE OFF.
   iii. FOR MULCHED AREAS, PERMANENT STABILIZATION MEANS TOTAL COVERAGE OF THE EXPOSED AREA WITH AN APPROVED MULCH MATERIAL.
   iv. FOR PAVED AREAS, PERMANENT STABILIZATION MEANS THE PLACEMENT OF THE ASPHALT BINDER COURSE.

H. IF THE AREA WILL REMAIN UNWORKED FOR MORE THAN ONE YEAR OR HAS BEEN BROUGHT TO FINAL GRADE, AND WILL NOT BE BUILT ON, THEN IMMEDIATELY PROVIDE PERMANENT STABILIZATION USING VEGETATION THROUGH PLANTING, SEEDING, SOD OR THROUGH THE USE OF PERMANENT MULCH OR RIPRAP. IF USING VEGETATION FOR STABILIZATION, SELECT THE PROPER VEGETATION FOR THE LIGHT, MOISTURE, AND SOIL CONDITIONS. AMEND AREAS OF DISTURBED, OVERLY-COMPACTED SUBSOIL WITH TOPSOIL OR COMPOST AND LIGHTLY TILL 2-3" OF SOIL AMENDMENTS INTO THE TOP 8" OF SOIL.

I. PERMANENT SEEDING SPECIFICATION: IT IS RECOMMENDED THAT PERMANENT SEEDING BE COMPLETED BETWEEN APRIL 1 AND AUGUST 15 OF EACH YEAR. LATE SEASON SEEDING MAY BE DONE BETWEEN AUGUST 15 AND SEPTEMBER 15. AREAS NOT SEEDED OR WHICH DO NOT OBTAIN A SATISFACTORY GROWTH BY OCTOBER 1 SHALL BE SEEDED WITH AROOSTOCK WINTER RYE OR MULCHED AT SPECIFIED RATES. SEE WINTER SEEDING AND MULCHING SPECIFICATIONS FOR STABILIZATION AFTER NOVEMBER 1.

   i. APPLY TOPSOIL TO A DEPTH OF 6 INCHES. IN COMPACTED AREAS TILL 2-3" OF COMPOST INTO UPPER 8" OF DISTURBED SOIL AND THEN APPLY 6 INCHES OF TOPSOIL.
   ii. APPLY LIME AND FERTILIZER ACCORDING TO SOIL TESTS. IN LIEU OF SOIL TESTS, APPLY GROUND LIMESTONE AT A RATE OF 33 LBS PER 1000 SQUARE FEET AND GRANULAR, COMMERCIAL-GRADE FERTILIZER 10-10-10 AT A RATE OF 18 LBS PER 1000 SQUARE FEET.
   iii. UNIFORMLY APPLY SEED MIXTURE AT THE RECOMMENDED SEEDING RATES AND DATES, APPLY HAY OR STRAW MULCH AT A RATE OF 2.5 BALES PER 1000 SQUARE FEET AND ANCHOR AS NECESSARY.

J. PROTECT ALL SEEDED AREAS WITH MULCH OR EROSION CONTROL BLANKET IN AREAS OF SHEET OR CONCENTRATED FLOWS. MULCH ALL AREAS SO THAT SOIL IS NOT VISIBLE THROUGH THE MULCH REGARDLESS OF THE APPLICATION RATE. SCHEDULE SEEDING OR SODDING TO AVOID FAILURE DUE TO SUMMER DROUGHT AND FALL FROST. NEWLY SEEDED AREAS SHOULD BE PROTECTED FROM VEHICLE TRAFFIC, PEDESTRIAN TRAFFIC AND CONCENTRATED RUNOFF UNTIL THE VEGETATION IS WELL ESTABLISHED. AREAS MUST BE REWORKED AND RESTABILIZED IF GERMINATION IS SPARSE OR SURFACE EROSION IS EVIDENT.

K. EROSION CONTROL BLANKET SHALL BE INSTALLED ON ALL PERMANENT SLOPES STEEPER THAN 3:1 OR AS OTHERWISE NOTED, EROSION CONTROL BLANKET SHALL BE NORTH AMERICAN GREEN S150BN OR APPROVED EQUAL. EROSION CONTROL BLANKET SHALL BE INSTALLED IN ACCORDANCE WITH THE MANUFACTURER'S RECOMMENDATIONS.

L. THE CONTRACTOR IS RESPONSIBLE FOR REMOVAL OF ALL TEMPORARY EROSION CONTROL MEASURE UPON STABILIZATION OF PROJECT AREA & COST SHALL BE INCIDENTAL TO CONTRACT.

WINTER CONDITIONS

A. WINTER CONSTRUCTION IS CONSTRUCTION ACTIVITY PERFORMED DURING THE PERIOD FROM NOVEMBER 1 THROUGH APRIL 1. IF AREAS WITHIN THE CONSTRUCTION AREA ARE NOT STABILIZED WITH TEMPORARY OR PERMANENT MEASURES OUTLINED ABOVE BY NOVEMBER 15 THEN THE SITE MUST BE PROTECTED WITH ADDITIONAL STABILIZATION MEASURES THAT ARE SPECIFIC TO WINTER CONDITIONS.

GOOD HOUSEKEEPING AND POLLUTION PREVENTION

A. SPILL PREVENTION CONTROLS MUST BE USED TO PREVENT POLLUTANTS FROM BEING DISCHARGED FROM MATERIALS ON SITE, INCLUDING STORAGE PRACTICES TO MINIMIZE EXPOSURE OF THE MATERIALS TO STORMWATER RUNOFF AND APPROPRIATE SPILL PREVENTION, CONTAINMENT AND RESPONSE PLANNING AND IMPLEMENTATION.

B. DURING CONSTRUCTION, PETROLEUM PRODUCTS AND OTHER HAZARDOUS MATERIALS WITH THE POTENTIAL TO CONTAMINATE GROUND OR SURFACE WATERS MAY NOT BE STORED OR HANDLED IN AREAS OF THE SITE DRAINING TO INFILTRATION AREAS. AN "INFILTRATION AREA" IS ANY ARE OF THE SITE THAT BY DESIGN, OR AS A RESULTS OF SOIL AND TOPOGRAPHY, ACCUMULATES RUNOFF THAT INFILTRATES IN THE SOIL. DIKES, BERMS, SUMPS AND OTHER FORMS OF TEMPORARY SECONDARY CONTAINMENT THAT PREVENT DISCHARGE TO GROUNDWATER MAY BE USED TO ISOLATE PORTIONS OF THE SITE FOR THE PURPOSES OF STORAGE AND HANDLING OF THESE MATERIALS.

C. LOCATE ALL MATERIAL STOCKPILES WITH CONSIDERATION FOR STORMWATER DRAINAGE PATTERNS AND INFRASTRUCTURE.

D. TAKE ALL REASONABLE MEASURES TO MINIMIZE DUST RESULTING FROM THE PROJECT. OIL MAY NOT BE USED FOR DUST CONTROL.

E. LOCATE ALL LITTER, CONSTRUCTION DEBRIS AND CONSTRUCTION CHEMICALS WITH CONSIDERATION FOR STORMWATER DRAINAGE PATTERNS AND INFRASTRUCTURE.

F. TRENCH OR FOUNDATION DE-WATERING MUST BE SPREAD THROUGH SUFFICIENT NATURAL BUFFERS THAT HAVE CAPACITY TO INFILTRATE THE PUMPED WATER OR SHOULD BE PUMPED TO DESIGNED CONSTRUCTION DEWATERING DEVICES AS DESCRIBED IN THE MAINE EROSION AND SEDIMENT CONTROL BMPS HANDBOOK.

G. SEDIMENTS AND SOIL MATERIALS SHOULD BE SWEPT FROM PAVED SURFACES AT THE END OF EACH WORKDAY OR PRIOR TO RAIN EVENTS, WHENEVER POSSIBLE.

INSPECTION AND MAINTENANCE

A. A PERSON WITH KNOWLEDGE OF EROSION AND STORMWATER CONTROLS, INCLUDING THE STANDARDS IN THE MAINE CONSTRUCTION GENERAL PERMIT, THE MAINE EROSION AND SEDIMENT CONTROL BMPS HANDBOOK OR ANY MUNICIPAL REQUIREMENTS MUST CONDUCT THE INSPECTION. THIS PERSON MUST BE IDENTIFIED IN THE INSPECTION LOG. IF ADDITIONAL BMPS OR MODIFICATIONS TO BMPS ARE NECESSARY, THE MODIFICATIONS MUST BE IMPLEMENTED WITH 7 CALENDAR DAYS OR PRIOR TO ANY PRECIPITATION EVENT. ALL MEASURES MUST BE MAINTAINED IN EFFECTIVE OPERATING CONDITION UNTIL AREAS ARE PERMANENTLY STABILIZED.

B. AN INSPECTION AND MAINTENANCE LOG MUST BE KEPT BY THE CONTRACTOR, SUMMARIZING THE SCOPE OF THE INSPECTION, DATE, AND MAJOR OBSERVATIONS RELATING TO THE OPERATION OF EROSION AND SEDIMENT CONTROL BMPS, MATERIAL STORAGE AREAS, AND VEHICLE ACCESS POINTS TO THE CONSTRUCTION AREA. THE INSPECTION LOG SHOULD BE DELIVERED TO THE PROPERTY OWNER OR RESPONSIBLE CONTRACTING ENTITY UPON COMPLETION OF THE PROJECT.

C. THE CONTRACTOR SHALL BE RESPONSIBLE FOR ALL INSPECTION AND MAINTENANCE DESCRIBED HEREIN.

D. EROSION AND SEDIMENT CONTROLS SHALL BE INSTALLED PRIOR TO INITIATING CONSTRUCTION ACTIVITIES, SHALL BE MAINTAINED THROUGHOUT CONSTRUCTION, AND REMOVED UPON ACHIEVING FINAL STABILIZATION.

E. WET WEATHER INSPECTIONS SHALL BE CONDUCTED AFTER ALL RAIN EVENTS EXCEEDING 0.5-INCHES IN 24-HOURS.

F. ALL INSPECTION AND MAINTENANCE DOCUMENTATION SHALL BE KEPT AS PROJECT RECORD FOR A MINIMUM OF THREE YEARS.

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STATE OF MAINE · ASHLEY FLETCHER No. 13750 · LICENSED PROFESSIONAL ENGINEER

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2021

PROJECT:

USM - Structured Parking Garage

Address

44 Bedford Street,
Portland ME 04104

REVISIONS:

No.	Date	Description

SUBMISSIONS:

Date	Issued For:
07/30/21	Site Plan Submittal

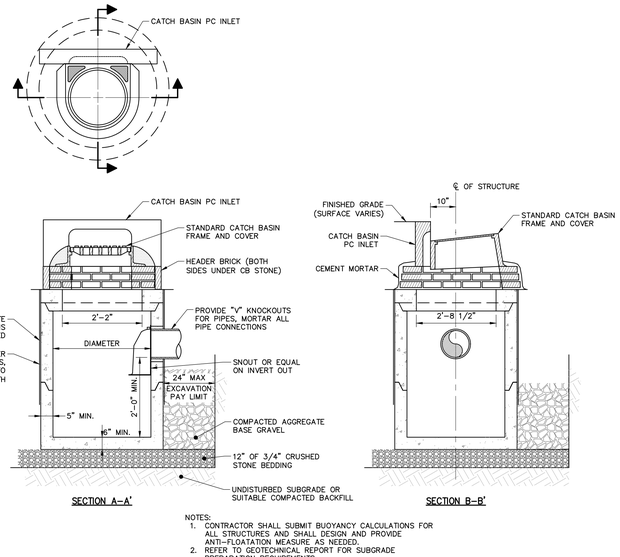
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DATE ISSUED	**7/30/2021**
PROJECT NO	**20-20145.00-1**
DRAWN BY	**B.C.M.**
CHECKED BY	**A.E.F.**

SHEET TITLE:

CIVIL DETAILS - 1

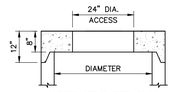
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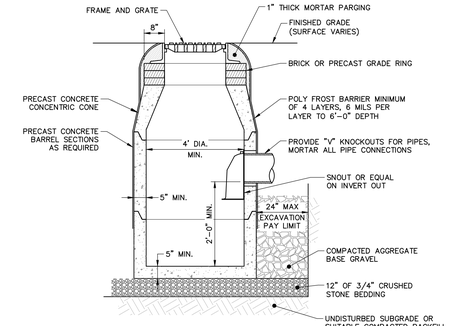


NOTES:
1. CONTRACTOR SHALL SUBMIT BUOYANCY CALCULATIONS FOR ALL STRUCTURES AND SHALL DESIGN AND PROVIDE ANTI-FLOATATION MEASURE AS NEEDED.
2. REFER TO GEOTECHNICAL REPORT FOR SUBGRADE PREPARATION REQUIREMENTS.

PRECAST CONCRETE CATCH BASIN WITH CURB INLET
N.T.S.



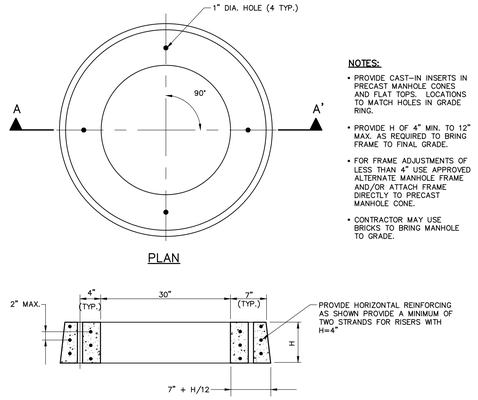
ALTERNATIVE TOP SLAB



NOTES:
1. PRECAST CONCRETE STRUCTURES AND CASTINGS SHALL BE SUITABLE FOR HS-20 LOADINGS.
2. PRECAST CONCRETE STRUCTURES SHALL BE MANUFACTURED IN ACCORDANCE WITH ASTM C-478.
3. ALTERNATE TOP SLAB MAY BE USED AS DICTATED BY DESIGN AND/OR FIELD CONDITIONS.
4. JOINT SEALANT BETWEEN PRECAST SECTIONS SHALL BE BUTYL RUBBER.
5. REFER TO GEOTECHNICAL REPORT FOR SUBGRADE PREPARATION REQUIREMENTS.

NOTE: CONTRACTOR SHALL SUBMIT BUOYANCY CALCULATIONS FOR ALL STRUCTURES AND SHALL DESIGN AND PROVIDE ANTI-FLOATATION MEASURE AS NEEDED.

PRECAST CONCRETE CATCH BASIN WITHOUT CURB INLET
N.T.S.

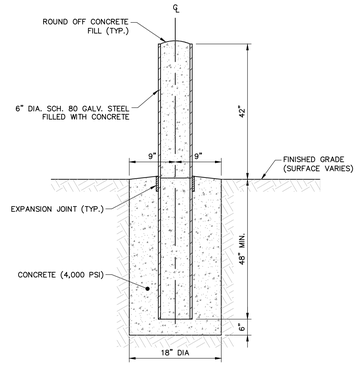


PLAN

SECTION A-A'

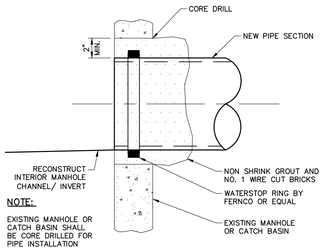
PRECAST CONCRETE GRADE RING
N.T.S.

NOTES:
- PROVIDE CAST-IN INSERTS IN PRECAST MANHOLE CONES AND FLAT TOPS. LOCATIONS TO MATCH HOLES IN GRADE RING.
- PROVIDE H OF 4" MIN. TO 12" MAX. AS REQUIRED TO BRING FRAME TO FINAL GRADE.
- FOR FRAME ADJUSTMENTS OF LESS THAN 4" USE APPROVED ALTERNATE MANHOLE FRAME AND/OR ATTACH FRAME DIRECTLY TO PRECAST MANHOLE CONE.
- CONTRACTOR MAY USE BRICKS TO BRING MANHOLE TO GRADE.



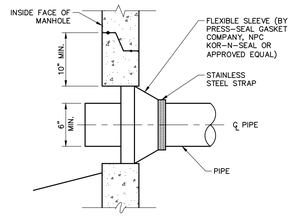
NOTE:
1. ALL BOLLARDS SHALL BE PAINTED. COLOR SELECTED BY OWNER.

6" DIA. SECURITY BOLLARD
N.T.S.

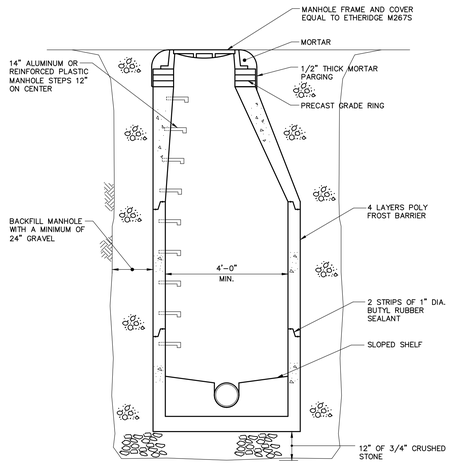


NOTE:
EXISTING MANHOLE OR CATCH BASIN SHALL BE CORE DRILLED FOR PIPE INSTALLATION

NEW PIPE TO EXISTING STRUCTURE
N.T.S.

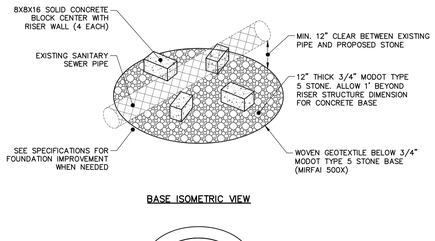


NEW PIPE TO NEW STRUCTURE CONNECTION DETAIL
N.T.S.

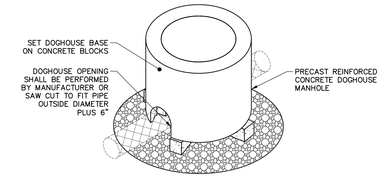


NOTES:
1. CONTRACTOR SHALL SUBMIT BUOYANCY CALCULATIONS FOR ALL STRUCTURES AND SHALL DESIGN AND PROVIDE ANTI-FLOATATION MEASURE AS NEEDED.
2. REFER TO GEOTECHNICAL REPORT FOR SUBGRADE PREPARATION REQUIREMENTS.

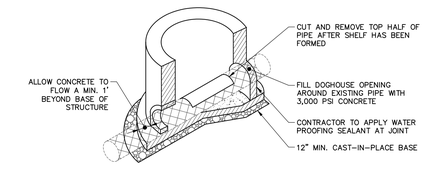
PRECAST MANHOLE
N.T.S.



BASE ISOMETRIC VIEW

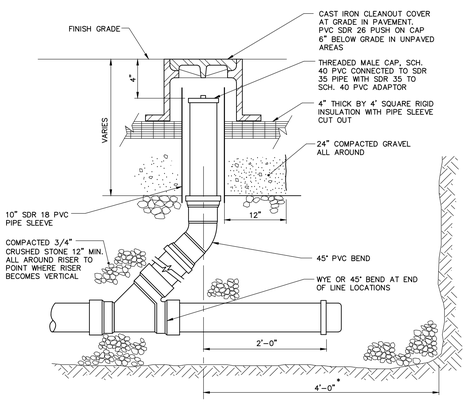


RISER ISOMETRIC VIEW

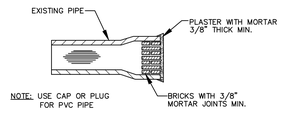


FOUNDATION SECTION VIEW

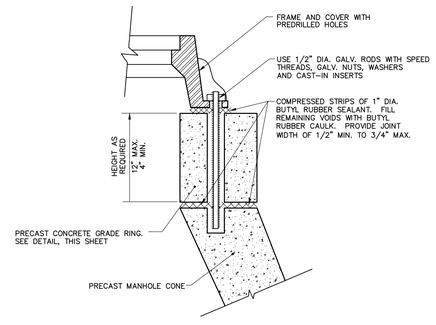
DOG HOUSE MANHOLE
N.T.S.



CLEANOUT
N.T.S.



MASONRY PLUG
N.T.S.



MANHOLE FRAME FASTENING
N.T.S.

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PORTLAND, ME 04103

SEAL / SIGNATURE

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PROJECT:

USM - Structured Parking Garage

Address

44 Bedford Street,
Portland ME 04104

REVISIONS:

No.	Date	Description

SUBMISSIONS:

Date	Issued For:
07/30/21	Site Plan Submittal

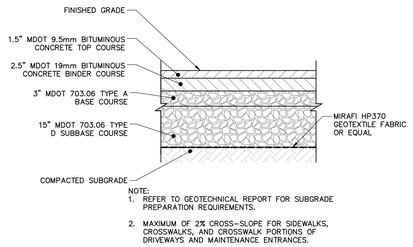
SCALE	**AS NOTED**
DATE ISSUED	**7/30/2021**
PROJECT NO	**20-20145.00-1**
DRAWN BY	**B.C.M.**
CHECKED BY	**A.E.F.**

SHEET TITLE:

CIVIL DETAILS - 2

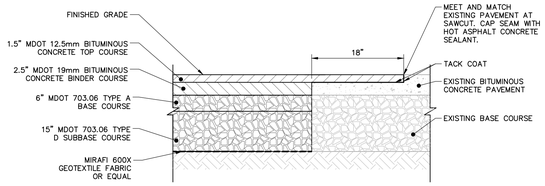
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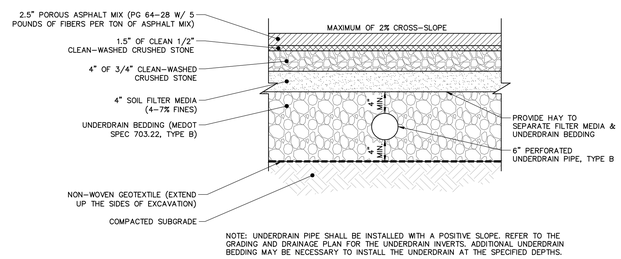


NOTE:
1. REFER TO GEOTECHNICAL REPORT FOR SUBGRADE PREPARATION REQUIREMENTS.
2. MAXIMUM OF 2% CROSS-SLOPE FOR SIDEWALKS, CROSSWALKS, AND CROSSWALK PORTIONS OF DRIVEWAYS AND MAINTENANCE ENTRANCES.

BITUMINOUS CONCRETE PAVEMENT SECTION
N.T.S.

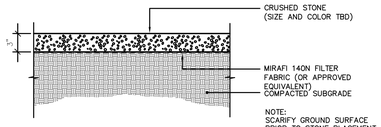


BITUMINOUS CONCRETE PAVEMENT BUTT JOINT
N.T.S.

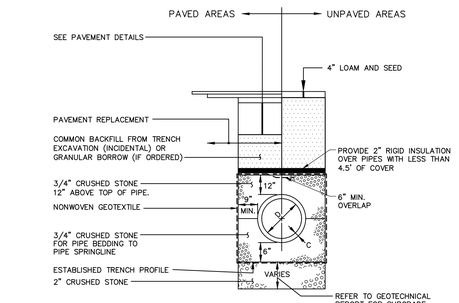


NOTE: UNDERDRAIN PIPE SHALL BE INSTALLED WITH A POSITIVE SLOPE. REFER TO THE GRADING AND DRAINAGE PLAN FOR THE UNDERDRAIN INVERTS. ADDITIONAL UNDERDRAIN BEDDING MAY BE NECESSARY TO INSTALL THE UNDERDRAIN AT THE SPECIFIED DEPTHS.

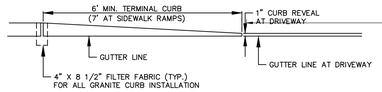
POROUS ASPHALT PAVEMENT
N.T.S.



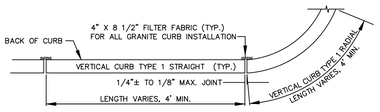
CRUSHED STONE AREA
N.T.S.



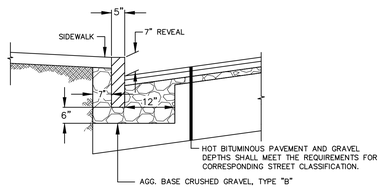
TYPICAL STORMDRAIN PIPE TRENCH INSTALLATION
N.T.S.



TERMINAL CURB PROFILE

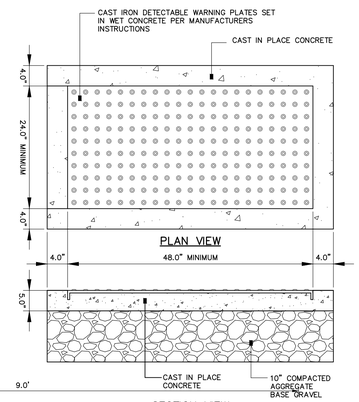


VERTICAL GRANITE CURB PLAN VIEW



VERTICAL GRANITE CURB CROSS SECTION

VERTICAL GRANITE CURB
N.T.S.

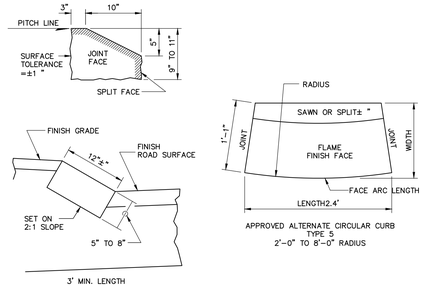


PLAN VIEW

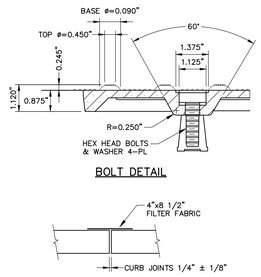
SECTION VIEW

SIDEWALK RAMP DETECTABLE WARNING
N.T.S.

NOTES:
1. ALL DETECTABLE WARNING PLATES SHALL BE UNCOATED CAST IRON. FOLLOW MANUFACTURER'S INSTRUCTIONS FOR INSTALLATION.
2. CAST IN PLACE CONCRETE SHALL MEET SPECIFICATIONS FOR MAINE D.O.T. CLASS A STRUCTURAL CONCRETE, MINIMUM COMPRESSIVE STRENGTH 4,000 PSI. THE EXPOSED CONCRETE BORDER SHALL RECEIVE A UNIFORM BROOM FINISH PERPENDICULAR TO THE FLOW OF PEDESTRIAN TRAFFIC.
3. TRUNCATED DOMES SHALL BE ALIGNED IN ROWS, PARALLEL AND PERPENDICULAR TO THE PREDOMINANT DIRECTION OF TRAVEL. TRUNCATED DOME BRICKS AND GRANITE PAVERS ARE NOT ALLOWED.
4. SIZE: THE DETECTABLE WARNING PLATES SHALL EXTEND 24 INCHES MINIMUM IN THE DIRECTION OF TRAVEL AND THE PLATE WIDTH AND CONCRETE SHALL EXTEND THE WIDTH OF THE CURB RAMP, LANDING, OR BLENDING TRANSITION TO THE STREET.
5. ORIENTATION: THE DETECTABLE WARNING PANEL SHALL BE LOCATED SO THAT THE EDGE NEAREST THE CURB LINE IS 8 INCHES MINIMUM AND 8 INCHES MAXIMUM FROM THE CURB LINE. THE PANEL SHALL BE ORIENTED TO THE DIRECTION OF TRAVEL AS IDENTIFIED BY THE POINT OF EGRESS.

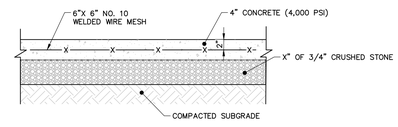


TYPICAL TYPE 5 SLOPED GRANITE CURB INSTALLATION
N.T.S.



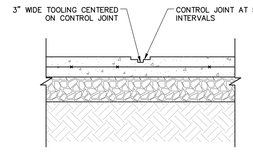
BOLT DETAIL

PLAN

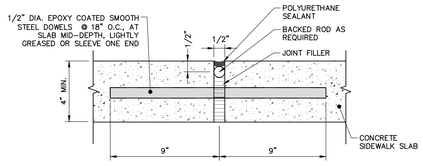


NOTES:
1. PROVIDE 1/2-INCH PREMOLDED BITUMINOUS EXPANSION JOINTS AT 20 FT. INTERVALS.
2. PROVIDE CONTROL JOINTS AT 5-FEET INTERVALS.
3. PROVIDE LIGHT BROOM FINISH WITH 3-INCH EDGE.

CAST-IN-PLACE CONCRETE SIDEWALK
NOT TO SCALE

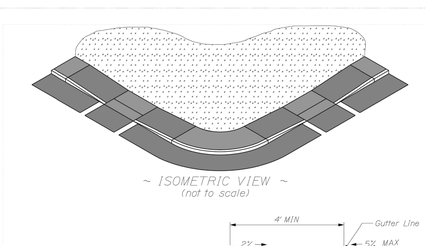


SIDEWALK CONTROL JOINT
NOT TO SCALE



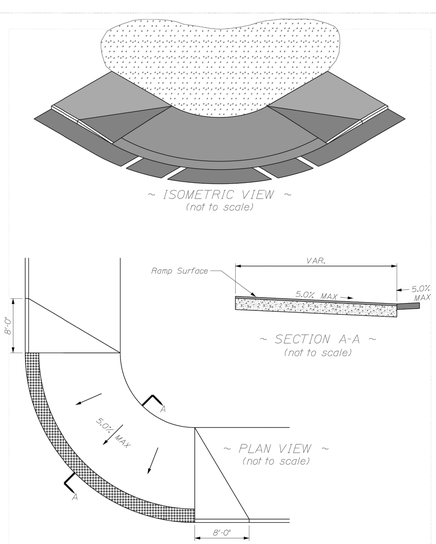
NOTES:
1. EXPANSION JOINTS SHALL BE 60' O.C.
2. DISCONTINUE REINFORCING AT EACH SIDE OF JOINT.
3. DOWELS SHALL BE CUT STRAIGHT AND DEBURRED.

CONCRETE SIDEWALK EXPANSION JOINT
NOT TO SCALE



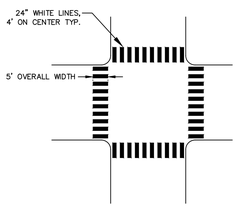
Note:
- This desirable design is the prefered option. Use other options only when required by design constraints.

PARALLEL PEDESTRIAN RAMP - OPTION I
801(14)

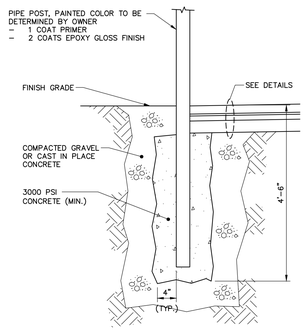


Note:
This option should only be used after all other options have been considered and deemed infeasible.

BLENDED TRANSITION
801(26)



CROSSWALK MARKINGS
N.T.S.



POST SPECIFICATION			
TYPE	HEIGHT ABOVE FIN. GRADE	POST DIAMATER	POST MATERIAL
STREET SIGNAGE	7'-0"	2 3/8" (I.D.)	GALV. STEEL

TYPICAL POST DETAIL
N.T.S.

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25 Bedford Street, Portland, ME 04104
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PROJECT TEAM:

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LANDSCAPE ARCHITECT
MICHAEL BOUCHER LANDSCAPE ARCHITECTURE
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COST ESTIMATOR
PREFERRED CONSTRUCTION MGMT
94 AUBURN ST,
PORTLAND, ME 04103

SEAL / SIGNATURE

STATE OF MAINE · ASHLEY FLETCHER No. 13750 · LICENSED PROFESSIONAL ENGINEER

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2021

PROJECT:

USM - Structured Parking Garage

Address

44 Bedford Street,
Portland ME 04104

REVISIONS:

No.	Date	Description

SUBMISSIONS:

Date	Issued For:
07/30/21	Site Plan Submittal

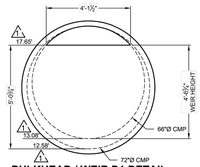
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DATE ISSUED	**7/30/2021**
PROJECT NO	**20-20145.00-1**
DRAWN BY	**B.C.M.**
CHECKED BY	**A.E.F.**

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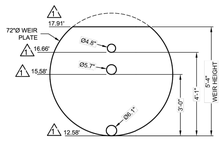
CIVIL DETAILS - 3

D-202

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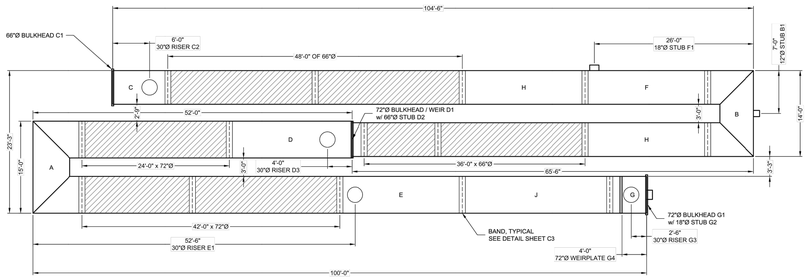
BULKHEAD / WEIR D1 DETAIL
NOT TO SCALE



WEIR PLATE G4 DETAIL
NOT TO SCALE

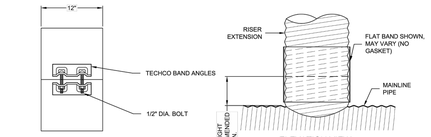
RISER INFORMATION		
PIECE	RIM ELEV.	SYSTEM INVERT
30"Ø RISER C2	20.38	13.08
30"Ø RISER D3	20.60	12.58
30"Ø RISER E1	20.39	12.58
30"Ø RISER G3	21.27	12.58

STUB INFORMATION		
PIECE	STUB INVERT	SYSTEM INVERT
12"Ø STUB B1	13.58	13.08
66"Ø STUB D2	13.08	12.58
18"Ø STUB F1	13.58	13.08
18"Ø STUB G2	12.58	12.58



⚠1 CMP STORAGE SYSTEM HAS BEEN PREVIOUSLY PROCURED, BUT WILL NEED TO BE MODIFIED AND SUPPLEMENTED WITH ADDITIONAL MATERIALS AS SHOWN.

ASSEMBLY ⚠1
SCALE: 1" = 10'
PIPE STORAGE: 8492.5 CF
LOADING: H20
66" PIPE INV. = 13.08±
72" PIPE INV. = 12.58±

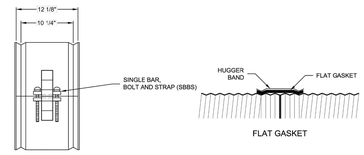


PLAIN END CMP RISER PIPE

GENERAL NOTES:

1. **DELIVERED BAND STYLE AND FASTENER TYPE MAY VARY BY FABRICATION PLANT.**
2. JOINT IS TO BE ASSEMBLED PER AASHTO BRIDGE CONSTRUCTION SPECIFICATION SEC 26.4.2.4.
3. BAND MATERIAL AND GAGE TO BE SAME AS RISER MATERIAL.
4. IF RISER HAS A HEIGHT OF COVER OF 10' OR MORE, USE A SLIP JOINT.
5. BANDS ARE NORMALLY FURNISHED AS FOLLOWS:
   - 12" THRU 48" 1-PIECE
   - 54" 2-PIECES
6. ALL RISER JOINT COMPONENTS WILL BE FIELD ASSEMBLED.
7. MANHOLE RISERS IN APPLICATIONS WHERE TRAFFIC LOADS ARE IMPOSED REQUIRE SPECIAL DESIGN CONSIDERATIONS.
8. DIMENSIONS SUBJECT TO MANUFACTURING TOLERANCES.

12" RISER BAND DETAIL
NOT TO SCALE

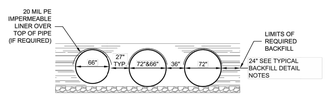


2 2/3"x1/2" RE-ROLLED END HEL-COR PIPE

GENERAL NOTES:

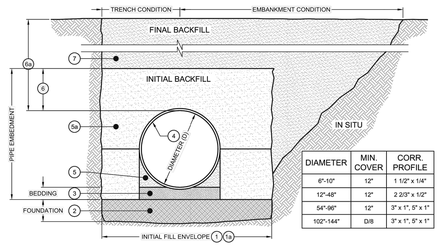
1. JOINT IS TO BE ASSEMBLED PER AASHTO BRIDGE CONSTRUCTION SPECIFICATION SEC 26.4.2.4.
2. BAND MATERIALS AND/OR COATING CAN VARY BY LOCATION. CONTACT YOUR CONTECH REPRESENTATIVE FOR AVAILABILITY.
3. BANDS ARE SHAPED TO MATCH THE PIPE-ARCH WHEN APPLICABLE.
4. BANDS ARE NORMALLY FURNISHED AS FOLLOWS:
   - 12" THRU 48" 1-PIECE
   - 54" THRU 96" 2-PIECES
   - 102" THRU 144" 3-PIECES
5. BAND FASTENERS ARE ATTACHED WITH SPOT WELDS, RIVETS OR HAND WELDS.
6. ALL CMP IS REROLLED TO HAVE ANNULAR END CORRUGATIONS OF 2 2/3"x1/2"
7. DIMENSIONS ARE SUBJECT TO MANUFACTURING TOLERANCES.
8. ORDER SHALL DESIGNATE GASKET OPTION, IF REQUIRED (SEE DETAILS ABOVE).

H-12 HUGGER BAND DETAIL
NOT TO SCALE



TYPICAL SECTION VIEW
NOT TO SCALE

NOTE: IF SALTING AGENTS FOR SNOW AND ICE REMOVAL ARE USED ON OR NEAR THE PROJECT, A GEOMEMBRANE BARRIER IS RECOMMENDED WITH THE SYSTEM. THE GEOMEMBRANE LINER IS INTENDED TO HELP PROTECT THE SYSTEM FROM THE POTENTIAL ADVERSE EFFECTS THAT MAY RESULT FROM A CHANGE IN THE SURROUNDING ENVIRONMENT OVER A PERIOD OF TIME. PLEASE REFER TO THE CORRUGATED METAL PIPE DETENTION DESIGN GUIDE FOR ADDITIONAL INFORMATION.



DIAMETER	MIN. COVER	CORR. PROFILE
6"-10"	12"	1 1/2" x 1/4"
12"-48"	12"	2 2/3" x 1/2"
54"-96"	12"	3" x 1", 5" x 1"
102"-144"	D/8	3" x 1", 5" x 1"

BACKFILL REQUIREMENTS FOLLOW THE GUIDELINES OF AASHTO LRFD BRIDGE DESIGN (SEC 12) AND CONSTRUCTION (SEC 26)

1 MINIMUM TRENCH WIDTH MUST ALLOW ROOM FOR PROPER COMPACTION OF HAUNCH MATERIALS UNDER THE PIPE.
THE MINIMUM TRENCH WIDTH (12.6.6.1):
PIPE ≤ 12": D + 16"
PIPE > 12": 1.5D + 12"

1a MINIMUM EMBANKMENT WIDTH (IN FEET) FOR INITIAL FILL ENVELOPE (12.6.6.2):
PIPE < 24": 3.0D
PIPE 24" - 144": D + 4'0"
PIPE > 144": D + 10'0"

2 THE FOUNDATION UNDER THE PIPE AND SIDE BACKFILL SHALL BE ADEQUATE TO SUPPORT THE LOADS ACTING UPON IT (26.5.2).

3 ENGINEER TO DETERMINE IF BEDDING IS REQUIRED. BEDDING MATERIAL SHALL BE A RELATIVELY LOOSE MATERIAL THAT IS ROUGHLY SHAPED TO FIT THE BOTTOM OF THE PIPE, AND A MINIMUM OF TWICE THE CORRUGATION DEPTH IN THICKNESS, WITH THE MAXIMUM PARTICLE SIZE OF ONE-HALF OF THE CORRUGATION DEPTH (26.3.6.1, 26.5.3).

4 CORRUGATED STEEL PIPE (CSP / HEL-COR).

5 HAUNCH ZONE MATERIAL SHALL BE HAND SHOVELED OR SHOVEL SLICED INTO PLACE TO ALLOW FOR PROPER COMPACTION (26.5.4).

5a INITIAL BACKFILL FOR PIPE EMBEDMENT TO MEET AASHTO A-1, A-2 OR A-3 CLASSIFICATION, OR APPROVED EQUAL, COMPACTED TO 90% STANDARD PROCTOR (T 99). MAXIMUM PARTICLE SIZE NOT TO EXCEED 3" (12.4.1.2). ALL LIFTS PLACED IN A CONTROLLED MANNER. IT IS RECOMMENDED THAT LIFTS NOT EXCEED AN 8" UNCOMPACTED LIFT HEIGHT TO PREVENT UNEVEN LOADING, AND THE LESSER OF 1/3 THE DIAMETER OR 24" AS THE MAXIMUM DIFFERENTIAL SIDE-TO-SIDE (26.5.4).

6 INITIAL BACKFILL ABOVE PIPE MAY INCLUDE ROAD BASE MATERIAL (AND RIGID PAVEMENT IF APPLICABLE). SEE TABLE ABOVE.

6a TOTAL HEIGHT OF COMPACTED COVER FOR CONVENTIONAL HIGHWAY LOADS IS MEASURED FROM TOP OF PIPE TO BOTTOM OF FLEXIBLE PAVEMENT OR TOP OF RIGID PAVEMENT (12.6.6.3).

7 FINAL BACKFILL MATERIAL SELECTION AND COMPACTION REQUIREMENTS SHALL FOLLOW THE PROJECT PLANS AND SPECIFICATIONS PER THE ENGINEER OF RECORD (26.5.4.1).

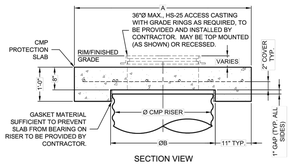
NOTES:
- ENGINEER TO DETERMINE IF GEOTEXTILE SHOULD BE USED TO PREVENT SOIL MIGRATION INTO VARYING SOIL TYPES (PROJECT ENGINEER).
- FOR MULTIPLE BARREL INSTALLATIONS THE RECOMMENDED STANDARD SPACING BETWEEN PARALLEL PIPE RUNS SHALL BE PIPE DIA./2 BUT NO LESS THAN 12", OR 36" FOR PIPE DIAMETERS 72" AND LARGER.
- CONTACT YOUR CONTECH REPRESENTATIVE FOR NONSTANDARD SPACING (TABLE C12.6.7-1).

TYPICAL BACKFILL DETAIL
NOT TO SCALE

NOTE: CONTRACTOR SHALL SUBMIT BUOYANCY CALCULATIONS FOR ALL STRUCTURES AND SHALL DESIGN AND PROVIDE ANTI-FLOATATION MEASURE AS NEEDED.

CMP STORAGE SYSTEM DETAILS

N.T.S.

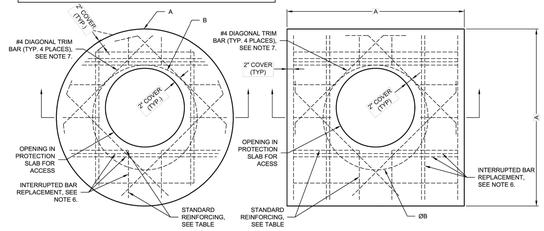


SECTION VIEW

REINFORCING TABLE				
Ø CMP RISER	A	B Ø	REINFORCING	**BEARING PRESSURE (PSF)
24"	4'Ø 4'x4'	28"	#5 @ 10" OCEW #5 @ 10" OCEW	2,540 1,900
30"	4'-6"Ø 4'-6"x 4'-6"	32"	#5 @ 10" OCEW #5 @ 9" OCEW	2,260 1,670
36"	5'Ø 5' x 5'	38"	#5 @ 9" OCEW #5 @ 8" OCEW	2,060 1,500
42"	5'-6"Ø 5'-6" x 5'-6"	44"	#5 @ 8" OCEW #5 @ 6" OCEW	1,490 1,370
48"	6'Ø 6' x 6'	50"	#5 @ 7" OCEW #5 @ 7" OCEW	1,210 1,270

** ASSUMED SOIL BEARING CAPACITY

ACCESS CASTING NOT SUPPLIED BY CONTECH



NOTES:

1. DESIGN IN ACCORDANCE WITH AASHTO, 17th EDITION AND ACI 350.
2. DESIGN LOAD HS25.
3. EARTH COVER = 1' MAX.
4. CONCRETE STRENGTH = 4,000 psi
5. REINFORCING STEEL = ASTM A615, GRADE 60.
6. PROVIDE ADDITIONAL REINFORCING AROUND OPENINGS EQUAL TO THE BARS INTERRUPTED, HALF EACH SIDE. ADDITIONAL BARS TO BE IN THE SAME PLANE.
7. TRIM OPENING WITH DIAGONAL #4 BARS, EXTEND BARS A MINIMUM OF 12" BEYOND OPENING, BEND BARS AS REQUIRED TO MAINTAIN BAR COVER.
8. PROTECTION SLAB AND ALL MATERIALS TO BE PROVIDED AND INSTALLED BY CONTRACTOR.
9. DETAIL DESIGN BY DELTA ENGINEERS, ARCHITECTS AND LAND SURVEYORS, ENDWELL, NY.

MANHOLE CAP DETAIL
NOT TO SCALE

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PROJECT TEAM:

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PORTLAND, ME 04101

CIVIL ENGINEER
WOODARD & CURRAN
41 HUTCHINS DRIVE
PORTLAND, ME 04102

LANDSCAPE ARCHITECT
MICHAEL BOUCHER LANDSCAPE ARCHITECTURE
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FREEPORT, ME 04032

MEP/FP ENGINEER
ALLIED ENGINEERING
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GEOTECHNICAL ENGINEER
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286 PORTLAND ROAD
GREY, ME 04039

TRAFFIC ENGINEER
VANASSE HANGEN BRUSTLIN INC
40 IDX DR 100 #200, SOUTH
BURLINGTON, VT 05403

COST ESTIMATOR
PREFERRED CONSTRUCTION MGMT
94 AUBURN ST,
PORTLAND, ME 04103

SEAL / SIGNATURE

STATE OF MAINE ASHLEY FLETCHER No. 13750 LICENSED PROFESSIONAL ENGINEER

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2021

PROJECT:

USM - Structured Parking Garage

Address

44 Bedford Street,
Portland ME 04104

REVISIONS:

No.	Date	Description

SUBMISSIONS:

Date	Issued For:
07/30/21	Site Plan Submittal

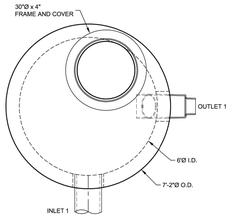
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DATE ISSUED	**7/30/2021**
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DRAWN BY	**B.C.M.**
CHECKED BY	**A.E.F.**

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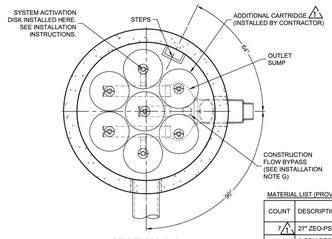
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D-203

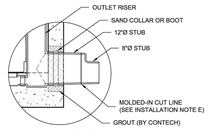
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PLAN VIEW
CARTRIDGES AND FLOW KIT NOT SHOWN

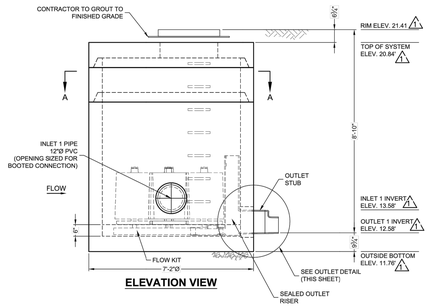


SECTION A-A



OUTLET DETAIL
(ILLUSTRATION ONLY)

• INLET PIPE CONNECTION SHALL HAVE A BOOTED CONNECTOR



ELEVATION VIEW

COUNT	DESCRIPTION	INSTALLED BY
7 ⚠1	27" ZEO-PSORB CARTRIDGE	CONTECH
7	2 GPM RESTRICTOR DISK (BLK)	CONTECH
0 ⚠1	3" PVC SLIP PLUG	CONTECH
1	42A FLOWKIT	CONTECH
1	SF ACTIVATION DISK	CONTECH
1	SEALED OUTLET RISER	CONTECH
7	STEPS, P10CTS, LANE LADDER, OR EQUIV.	CONTECH
1	GENERIC PIPE BOOT	CONTECH
1	SEALANT FOR JOINTS	CONTRACTOR
1	30"Ø x 4" FRAME & COVER, EJ8416004B4, OR EQUIV.	CONTRACTOR

PERFORMANCE SPECIFICATION
FILTER CARTRIDGES SHALL BE MEDIA-FILLED, PASSIVE, SIPHON ACTUATED, RADIAL FLOW, AND SELF CLEANING. RADIAL MEDIA DEPTH SHALL BE 7-INCHES. FILTER MEDIA CONTACT TIME SHALL BE AT LEAST 38 SECONDS.
SPECIFIC FLOW RATE SHALL BE 0 GPM/SF (MAXIMUM). SPECIFIC FLOW RATE IS THE MEASURE OF THE FLOW (GPM) DIVIDED BY THE MEDIA SURFACE CONTACT AREA (SF). MEDIA VOLUMETRIC FLOW RATE SHALL BE 6 GPM/CF OF MEDIA (MAXIMUM).

GENERAL NOTES
1. CONTECH TO PROVIDE ALL MATERIALS UNLESS NOTED OTHERWISE.
2. FOR FABRICATION DRAWINGS WITH DETAILED STRUCTURE DIMENSIONS AND WEIGHT, PLEASE CONTACT YOUR CONTECH ENGINEERED SOLUTIONS LLC REPRESENTATIVE. www.ContechES.com
3. STORMFILTER WATER QUALITY STRUCTURE SHALL BE IN ACCORDANCE WITH ALL DESIGN DATA AND INFORMATION CONTAINED IN THIS DRAWING. CONTRACTOR TO CONFIRM STRUCTURE MEETS REQUIREMENTS OF PROJECT.
4. STRUCTURE SHALL MEET AASHTO HS-20 LOAD RATING, ASSUMING EARTH COVER OF 0' - 5', AND GROUNDWATER ELEVATION AT, OR BELOW, THE OUTLET PIPE INVERT ELEVATION. CASTINGS SHALL MEET AASHTO M306 LOAD RATING AND BE CAST WITH THE CONTECH LOGO.
5. STORMFILTER STRUCTURE SHALL BE PRECAST CONCRETE CONFORMING TO ASTM C-478 AND AASHTO LOAD FACTOR DESIGN METHOD.

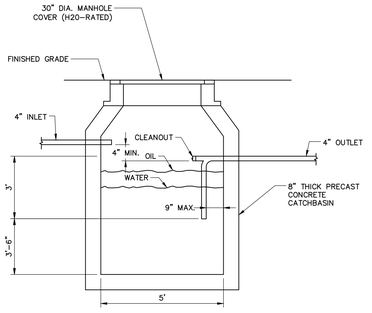
INSTALLATION NOTES
A. ANTI-FLOTATION PROVISIONS SHALL BE DESIGNED AND PROVIDED BY CONTRACTOR.
B. CONTRACTOR TO PROVIDE EQUIPMENT WITH SUFFICIENT LIFTING AND REACH CAPACITY TO LIFT AND SET THE STORMFILTER STRUCTURE.
C. CONTRACTOR TO INSTALL JOINT SEALANT BETWEEN ALL STRUCTURE SECTIONS AND ASSEMBLE STRUCTURE.
D. CONTRACTOR TO PROVIDE, INSTALL, AND GROUT INLET PIPE(S). ALL PIPE CENTERLINES TO MATCH PIPE OPENING CENTERLINES.
E. CONTRACTOR TO PROVIDE AND INSTALL CONNECTOR TO THE OUTLET RISER STUB. STORMFILTER EQUIPPED WITH A DUAL DIAMETER HDPE OUTLET STUB. IF OUTLET PIPE IS LARGER THAN 8 INCHES, CONTRACTOR TO REMOVE THE 8 INCH OUTLET STUB AT MOLDED IN CUT LINE. COUPLING BY FERNCO OR EQUAL AND PROVIDED BY CONTRACTOR.
F. CONTRACTOR TO TAKE APPROPRIATE MEASURES TO PROTECT CARTRIDGES FROM CONSTRUCTION-RELATED EROSION RUNOFF.
G. CONTRACTOR TO INSTALL SUPPLIED PLUG IN CONSTRUCTION FLOW BYPASS WHEN SYSTEM IS BROUGHT ON LINE (PRESSURE FIT ONLY, DO NOT GLUE).

STRUCTURE WEIGHT
APPROXIMATE HEAVIEST PICK = 18,000 LBS. OF 3 PIECES
BASE SECTION SHIPPED WITH CARTRIDGES INSTALLED
MAX FOOTPRINT = 07'-2"

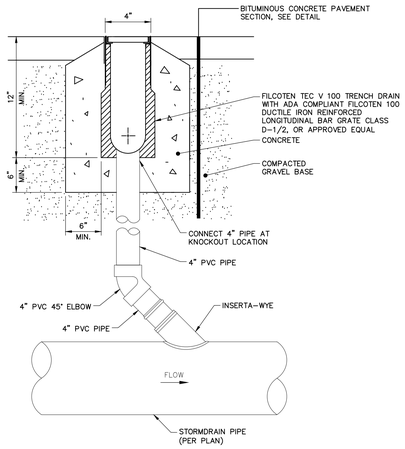
⚠1 STORMFILTER STRUCTURE HAS BEEN PREVIOUSLY PROCURED, BUT WILL NEED TO BE MODIFIED AND SUPPLEMENTED WITH ADDITIONAL CARTRIDGE AS SHOWN.

NOTE: CONTRACTOR SHALL SUBMIT BUOYANCY CALCULATIONS FOR ALL STRUCTURES AND SHALL DESIGN AND PROVIDE ANTI-FLOATATION MEASURE AS NEEDED.

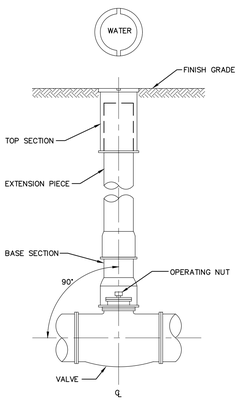
STORMFILTER DETAIL
N.T.S.



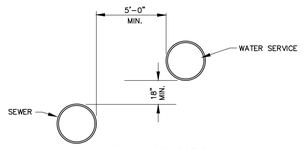
OIL WATER SEPARATOR
N.T.S.



TRENCH DRAIN DETAIL
N.T.S.



VALVE WITH VALVE BOX, 18" AND SMALLER
N.T.S.



UNUSUAL CONDITION PARALLEL INSTALLATION

NOTES:

THE SEPARATION OF WATER MAINS AND SEWERS SHALL COMPLY WITH THE FOLLOWING GENERAL REQUIREMENTS.

A. PARALLEL INSTALLATION:

1. NORMAL CONDITIONS: THE INSIDE EDGE OF A WATER MAIN SHALL BE LAID AT LEAST 10 FEET HORIZONTALLY FROM THE INSIDE EDGE OF ANY SANITARY SEWER, STORM SEWER OR SEWER MANHOLE.
2. UNUSUAL CONDITIONS: WHEN LOCAL CONDITIONS PREVENT A HORIZONTAL SEPARATION OF 10 FEET, THE INSIDE EDGE OF A WATER MAIN MAY BE LAID A MINIMUM OF 5 FEET FROM THE INSIDE EDGE OF A SEWER PROVIDED THAT THE BOTTOM OF THE WATER MAIN IS AT LEAST 18 INCHES HIGHER THAN THE TOP OF THE SEWER (SEE DETAIL).

B. CROSSINGS:

1. NORMAL CONDITIONS: WHENEVER POSSIBLE, THE BOTTOM OF THE WATER MAIN SHALL BE AT LEAST 18 INCHES HIGHER THAN THE TOP OF THE SEWER.
2. UNUSUAL CONDITIONS: IF A WATER MAIN MUST CROSS UNDER A SEWER, THE TOP OF THE WATER MAIN SHALL BE AT LEAST 18 INCHES LOWER THAN THE BOTTOM OF THE SEWER, THE WATER MAIN PIPE SHALL BE CENTERED AT THE CROSSING SO THAT THE JOINTS ARE EQUIDISTANT AND AS FAR AS POSSIBLE FROM THE SEWER, AND ADEQUATE STRUCTURAL SUPPORT SHALL BE PROVIDED FOR THE SEWER TO PREVENT EXCESSIVE DEFLECTION OF THE SEWER AT THE CROSSING.

MINIMUM WATER AND SEWER PIPE SEPARATION DETAIL
NTS

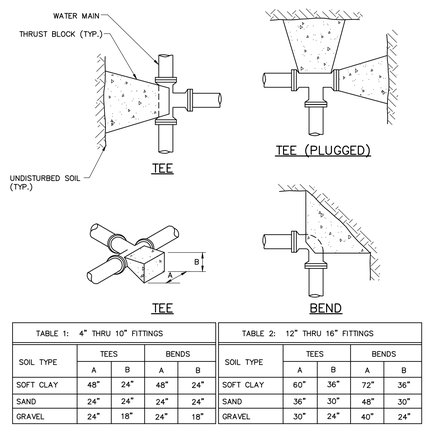


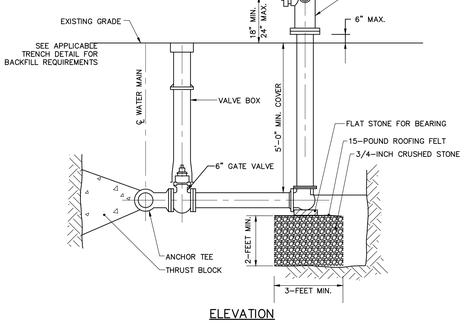
TABLE 1: 4" THRU 10" FITTINGS				
SOIL TYPE	TEES		BENDS	
	A	B	A	B
SOFT CLAY	48"	24"	48"	24"
SAND	24"	24"	24"	24"
GRAVEL	24"	18"	24"	18"

TABLE 2: 12" THRU 16" FITTINGS				
SOIL TYPE	TEES		BENDS	
	A	B	A	B
SOFT CLAY	60"	36"	72"	36"
SAND	36"	30"	48"	30"
GRAVEL	30"	24"	40"	24"

NOTES:

1. CONCRETE FOR ALL THRUST BLOCKS TO BE MINIMUM 3,000 PSI., 28 DAY STRENGTH, TYPE I CEMENT, 3/4" STONE.
2. WHERE POSSIBLE, CONSTRUCT THRUST BLOCKS AGAINST UNDISTURBED SOIL. WHERE NOT POSSIBLE, PLACE FILL BETWEEN THE THRUST BLOCK AND THE UNDISTURBED SOIL COMPACTED TO 95% STANDARD PROCTOR DENSITY.
3. WRAP FITTINGS WITH POLYETHYLENE PRIOR TO CONSTRUCTING THRUST BLOCKS. NO JOINTS SHALL BE COVERED WITH CONCRETE.
4. THRUST BLOCK DIMENSIONS ARE BASED ON A MAXIMUM WATER MAIN PRESSURE OF 150 PSI.

TYPICAL THRUST BLOCK DETAIL
N.T.S.

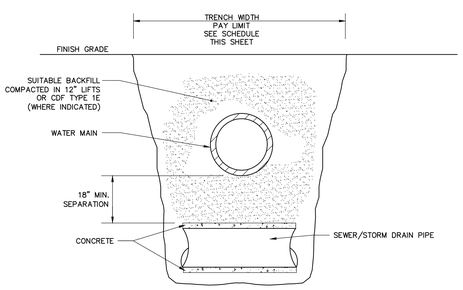


ELEVATION

HYDRANT DETAIL
N.T.S.

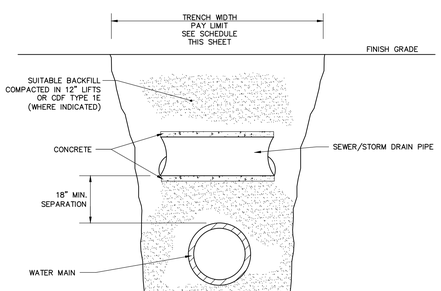
NOTES:

- ALL JOINTS FOR HYDRANT INSTALLATION SHALL BE APPROVED RETAINER GLANDS.
- HYDRANT LATERALS SHALL BE CONSTRUCTED FROM ONE CONTINUOUS PIPE LENGTH. HYDRANT LATERALS WITH BELL JOINTS AND COUPLINGS SHALL NOT BE ACCEPTED.
- CONTRACTOR SHALL CONSTRUCT A HYDRANT DRAINING SUMP TO EITHER SIDE OF THE HYDRANT. THE HYDRANT DRAINING SUMP SHALL BE 3-FEET WIDE BY 2-FEET IN DEPTH. THE SUMP SHALL CONSIST OF 3/4-INCH GRAVEL STONE WITH 15-POUND ROOFING FELT LAID OVER THE 3/4-INCH GRAVEL STONE.



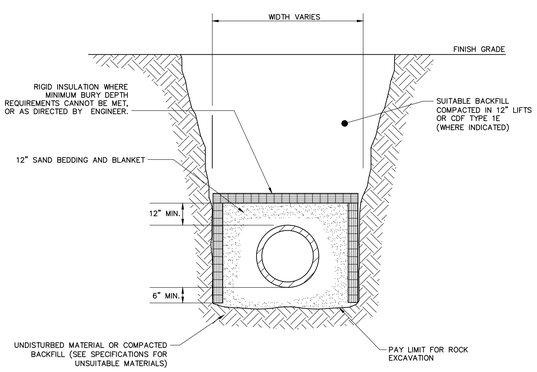
NOTE:
SEE ADDITIONAL REQUIREMENTS AS SPECIFIED IN SECTION 33 10 00, ARTICLE 3.030.

TYPICAL UTILITY CROSSING TRENCH DETAIL 1
N.T.S.

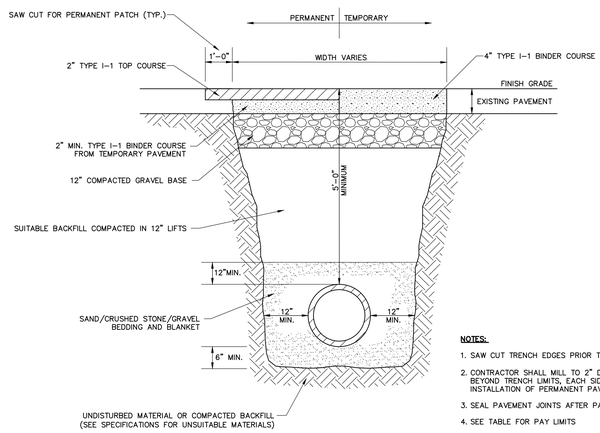


NOTE:
SEE ADDITIONAL REQUIREMENTS AS SPECIFIED IN SECTION 33 10 00, ARTICLE 3.030.

TYPICAL UTILITY CROSSING TRENCH DETAIL 2
N.T.S.



TYPICAL TRENCH DETAIL FOR PIPE INSULATION
N.T.S.



NOTES:

1. SAW CUT TRENCH EDGES PRIOR TO EXCAVATING.
2. CONTRACTOR SHALL MILL TO 2" DEPTH, 1'-0" BEYOND TRENCH LIMITS, EACH SIDE, PRIOR TO INSTALLATION OF PERMANENT PAVEMENT.
3. SEAL PAVEMENT JOINTS AFTER PAVING.
4. SEE TABLE FOR PAY LIMITS

TYPICAL WATER TRENCH DETAIL
N.T.S.

UNIVERSITY OF SOUTHERN MAINE
25 Bedford Street, Portland, ME 04104
207.712.5183 | USM.MAINE.EDU

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COST ESTIMATOR
PREFERRED CONSTRUCTION MGMT
94 AUBURN ST,
PORTLAND, ME 04103

SEAL / SIGNATURE

STATE OF MAINE · ASHLEY FLETCHER No. 13750 · LICENSED PROFESSIONAL ENGINEER

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PROJECT:

USM - Structured Parking Garage

Address

44 Bedford Street,
Portland ME 04104

REVISIONS:

No.	Date	Description

SUBMISSIONS:

Date	Issued For:
07/30/21	Site Plan Submittal

SCALE	**AS NOTED**
DATE ISSUED	**7/30/2021**
PROJECT NO	**20-20145.00-1**
DRAWN BY	**B.C.M.**
CHECKED BY	**A.E.F.**

SHEET TITLE:

CIVIL DETAILS - 5

D-204

\\woodardcurran.net\shared\Projects\20233035.00 usm - falmouth street garage\wip\Drawings\Civil\233035.00 C20X.dwg, Jul 29, 2021 - 2:52pm BMCDEVITT

A	AMPERE	MLO	MAIN LUG ONLY
AC	ALTERNATING CURRENT	MT	MOUNT
AFF	ABOVE FINISHED FLOOR	MTS	MANUAL TRANSFER SWITCH
AFG	ABOVE FINISHED GRADE	MCP	MOTOR CONTROL PANEL
AHU	AIR HANDLING UNIT	MH	METAL HALIDE
AIC	AMPERES INTERRUPTING CAPACITY	MDP	MAIN DISTRIBUTION PANEL
		MIN	MINIMUM
ATS	AUTOMATIC TRANSFER SWITCH	N	NEUTRAL
AWG	AMERICAN WIRE GAUGE	NC	NORMALLY CLOSED
BAS	BUILDING AUTOMATION SYSTEM	NEC	NATIONAL ELECTRICAL CODE
BKBD	BACKBOARD	NEMA	NATIONAL ELECTRICAL MANUFACTURERS ASSOCIATION
C	CONDUIT		
CAT	CATALOG, CATEGORY	NFPA	NATIONAL FIRE PROTECTION ASSOCIATION
CATV	CABLE TV		
CB	CIRCUIT BREAKER	NIC	NOT IN CONTRACT
CCTV	CLOSED CIRCUIT TELEVISION	NF	NON-FUSED
CM	CIRCULAR MILS	NO	NORMALLY OPEN
COMM	COMMUNICATIONS	NO., #	NUMBER
CU	MECH CONDENSING UNIT	NTS	NOT TO SCALE
CU	COPPER	OC	ON CENTER
CUH	CABINET UNIT HEATER	OCC	OCCUPANCY
DC	DIRECT CURRENT	OH	OVERHEAD
DDC	DIGITAL DIRECT CONTROL	P	POLE
DN	DOWN	PA	PUBLIC ADDRESS
DW	DISHWASHER	PB	PULLBOX
DWG	DRAWING	PH,	PHASE
EF	EXHAUST FAN	PIR	PASSIVE INFRARED
ELEV	ELEVATOR	PNL	PANELBOARD
EMT	ELECTRICAL METALLIC TUBING	P/O	PART OF
EP	EXPLOSION PROOF	PV	PHOTOVOLTAIC
ERU	ENERGY RECOVERY UNIT	PVC	POLY-VINYL CHLORIDE
EWC	ELECTRIC WATER COOLER	REC RECEPT	RECEPTACLE
FACP	FIRE ALARM CONTROL PANEL	REF	REFRIGERATOR
FB	FLOOR BOX	RF	RETURN FAN
FLA	FULL LOAD AMPS	RGS	RIGID GALVANIZED STEEL
FWE	FURNISHED WITH EQUIPMENT	RM	ROOM
G, GND	GROUND	RMC	RIGID METAL CONDUIT
GFCI	GROUND FAULT CIRCUIT INTERRUPTER	RTU	ROOFTOP UNIT
GFP	GROUND FAULT PROTECTION	REF	REFRIGERATOR
HID	HIGH INTENSITY DISCHARGE	SF	SUPPLY FAN
HOA	HAND-OFF-AUTO SELECTOR SWITCH	ST	SHUNT TRIP
		SPDT	SINGLE POLE, DOUBLE THROW
HP	HORSEPOWER		
HVAC	HEATING, VENTILATION AND COOLING UNIT	SQ	SQUARE
		TEL	TELEPHONE
IDS	INTRUSION DETECTION SYSTEM	TVSS	TRANSIENT VOLTAGE SURGE SUPPRESSOR
IG	ISOLATED GROUND		
IMC	INTERMEDIATE METAL CONDUIT	TYP	TYPICAL
IR	INFRARED	UF	UNDER FLOOR
K	KILO	UG	UNDERGROUND
KCMIL	KILO CIRCULAR MILS	UH	UNIT HEATER
KW	KILOWATT	UL	UNDERWRITER'S LABORATORY
KVA	KILO VOLT-AMPS		
LAN	LOCAL AREA NETWORK	UNO	UNLESS NOTED OTHERWISE
LC	LIGHTING CONTACTOR	UPS	UNINTERRUPTIBLE POWER SUPPLY
LF	LINEAR FEET		
LC	LOADCENTER	V	VOLTS
LCP	LIGHTING CONTROL PANEL	VFD	VARIABLE FREQUENCY DRIVE
LED	LIGHT EMITTING DIODE	W	WATT
LTG	LIGHTING	WP	WEATHERPROOF
LTS	LIGHTS	WG	WIREGUARD
MAX	MAXIMUM	XFMR	TRANSFORMER
MCB	MAIN CIRCUIT BREAKER		
MECH	MECHANICAL	(E)	EXISTING ITEM TO REMAIN
MH	MOUNTING HEIGHT	(R)	REMOVE ITEM AND DISPOSE OF PROPERLY
MC	MICROPHONE	(ER)	RELOCATED ITEM AT NEW LOCATION
MW	MICROWAVE	(RL)	REMOVE AND RELOCATE

NOTE

SYMBOLS AND ABBREVIATIONS SHOWN ON THIS SHEET ARE FOR REFERENCE ONLY AND DO NOT NECESSARILY INDICATE THEIR INCORPORATION INTO THE DESIGN

A1 ABBREVIATIONS

- FACP — FIRE ALARM CONTROL PANEL, MOUNT WITH TOP OF PANEL NOT MORE THAN 72"AFF
- FAA — FIRE ALARM ANNUNCIATOR, MOUNT WITH TOP OF PANEL NOT MORE THAN 72"AFF, WIRED TO FACP
- SMOKE DETECTOR, WIRED TO FACP
- E — SMOKE DETECTOR, "E" INDICATES CONNECTION FOR ELEVATOR RECALL, WIRED TO FACP
- SS — SINGLE STATION SMOKE DETECTOR WITH AUDIBLE INDICATING APPLIANCE, WALL MOUNTED
- SS AV — SINGLE STATION SMOKE DETECTOR WITH AUDIBLE/VISUAL INDICATING APPLIANCE, CEILING MOUNTED
- SS CO — SINGLE/MULTI-STATION SMOKE/CARBON MONOXIDE DETECTOR WITH AUDIBLE/VISIBLE INDICATING APPLIANCE, CEILING MOUNTED
- SS CO — SINGLE/MULTI-STATION SMOKE/CARBON MONOXIDE DETECTOR WITH AUDIBLE INDICATING APPLIANCE, WALL MOUNTED
- HEAT DETECTOR, WIRED TO FACP ~ COMBINATION 135° FIXED TEMPERATURE AND RATE-OF-RISE U.N.O.
- E — HEAT DETECTOR, "E" INDICATES CONNECTION FOR ELEVATOR RECALL, WIRED TO FACP
- DUCT SMOKE DETECTOR, WIRED TO FACP
- GAS — GAS DETECTOR, WIRED TO FACP
- GAS VALVE, WIRED TO FACP
- FLAME DETECTOR, WIRED TO FACP
- RTS RTS — REMOTE TEST/INDICATOR FOR DUCT SMOKES, MOUNT ON CEILING BENEATH UNIT, OR WALL MOUNT WHERE INDICATED ON PLANS
- F — MANUAL PULL STATION, MOUNT 48" AFF
- F — HORN/STROBE, WALL MOUNTED CANDELA AS NOTED ON PLANS, WIRED TO FACP
- F — HORN/STROBE, CEILING MOUNTED, CANDELA AS NOTED ON PLANS, WIRED TO FACP
- STROBE ONLY INDICATING APPLIANCE, WALL MOUNTED, CANDELA AS NOTED ON PLANS, WIRED TO FACP
- STROBE ONLY INDICATING APPLIANCE, CEILING MOUNTED, CANDELA AS NOTED ON PLANS, WIRED TO FACP
- R — STROBE ONLY INDICATING APPLIANCE, CEILING MOUNTED, CANDELA AS NOTED ON PLANS, 120V, CONNECT TO OPERATE UPON ACTIVATION OF ROOM SMOKE DETECTOR
- R — STROBE ONLY INDICATING APPLIANCE, WALL MOUNTED, CANDELA AS NOTED ON PLANS, 120V, CONNECT TO OPERATE UPON ACTIVATION OF ROOM SMOKE DETECTOR
- MH — MINI HORN, WALL MOUNTED, WIRED TO FACP
- MH — MINI HORN, CEILING MOUNTED, WIRED TO FACP
- F F — HORN/STROBE WITH PULL STATION DIRECTLY BELOW
- FIRE ALARM BEACON
- MAGNETIC DOOR HOLD OPEN DEVICE, WIRED TO FACP
- T — TRANSFORMER
- SPRINKLER SYSTEM WATER FLOW SWITCH, PROVIDED UNDER DIVISION 23, WIRED TO FACP UNDER DIVISION 26
- SPRINKLER SYSTEM TAMPER SWITCH, PROVIDED UNDER DIVISION 23, WIRED TO FACP UNDER DIVISION 26
- SPRINKLER SYSTEM CHECK VALVE PRESSURE SWITCH, FURNISHED AND INSTALLED UNDER DIVISION 23, WIRED TO FACP UNDER DIVISION 26
- SPRINKLER SYSTEM PRE-ACTION VALVE, FURNISHED AND INSTALLED UNDER DIVISION 21, WIRED TO FACP UNDER DIVISION 26
- K — KNOX BOX, MOUNT 60" AFF
- SD — SMOKE DAMPER, WIRED TO FACP
- FSD — FIRE AND SMOKE DAMPER, WIRED TO FACP HORN/STROBE, CANDELA AS NOTED ON PLANS, WIRED TO FACP
- S — SPEAKER/STROBE, WALL MOUNTED, CANDELA AS NOTED ON PLANS, WIRED TO FACP
- S — SPEAKER/STROBE, CEILING MOUNTED, CANDELA AS NOTED ON PLANS, WIRED TO FACP
- M — MASTER BOX

A3 FIRE ALARM

- SEC — SECURITY PANEL, MOUNT WITH TOP OF PANEL NOT MORE THAN 72"AFF
- ANN — ANNUNCIATOR, MOUNT WITH TOP OF PANEL NOT MORE THAN 72"AFF
- KP — KEYPAD, MOUNT 48"AFF
- MSP — MOTION SENSOR, PASSIVE INFRARED (PIR), WALL MOUNTED 96"AFF
- MSP — MOTION SENSOR, PASSIVE INFRARED (PIR), CEILING MOUNTED
- MSM — MOTION SENSOR, MICROWAVE, WALL MOUNTED
- MSM — MOTION SENSOR, MICROWAVE, CEILING MOUNTED
- MS — MOTION SENSOR, DUAL TECHNOLOGY, PIR/MICROWAVE, WALL MOUNTED
- MS — MOTION SENSOR, DUAL TECHNOLOGY, PIR/MICROWAVE, CEILING MOUNTED
- T — TRANSFORMER
- C — CAMERA
- CA — CARD ACCESS, PROVIDE 3/4" CONDUIT FROM 48" AFF/AFG TO ABOVE CEILING
- DC — DOOR CONTACT
- DL — MAGNETIC DOOR LOCK
- DR — DOOR RELEASE BUTTON
- DS — DOOR SWITCH
- C — CHIME
- SS — STROBE
- SH — HORN
- B — BELL
- D — JUNCTION BOX WITH 120V POWER FOR DOORS
- REX — REQUEST-TO-EXIT MOTION SENSOR

B5 SECURITY

- PANELBOARD ~ SURFACE MOUNTED
- PANELBOARD ~ FLUSH MOUNTED
- FUSED DISCONNECT SWITCH
- NON-FUSED DISCONNECT SWITCH
- 00 — MOTOR STARTER ~ NUMBER INDICATES NEMA SIZE
- 00 — COMBINATION MOTOR STARTER/FUSED DISCONNECT
- MOTOR OR FAN
- M — METER AND CABINET
- J — JUNCTION BOX ~ CEILING MOUNTED
- J — JUNCTION BOX ~ WALL MOUNTED
- J — JUNCTION BOX ~ FLUSH FLOOR MOUNTED
- P J — JUNCTION BOX ~ PEDESTAL MOUNTED
- T# — TRANSFORMER ~ NUMBER INDICATES DESIGNATION SEE TRANSFORMER SCHEDULE
- VFD — VARIABLE FREQUENCY DRIVE
- TVSS — TRANSIENT VOLTAGE SURGE SUPPRESSOR
- E — EMERGENCY SHUTOFF SWITCH ~ WALL MOUNTED 48" TO CENTERLINE ~ PROVIDE TAMPER-PROOF COVER
- S — SHUT-OFF SWITCH
- CONDUIT TURNING UP
- CONDUIT TURNING DOWN
- WIRING UNDERGROUND OR UNDERSLAB
- HOMERUN ~ (2)#12+(1)#12G UNO (EXCEPT LIGHTING CIRCUITS: (1)#12+(1)#10N+(1)#12G UNO)
- SINGLE-PHASE HOMERUN OR MULTIPLE HOMERUN UTILIZING THE SAME CONDUIT
- 3-PHASE HOMERUN OR MULTIPLE HOMERUN UTILIZING THE SAME CONDUIT
- FLEXIBLE CONNECTION
- GROUNDING SYSTEM
- P — POWER POLE
- PUSHBUTTON
- C — DOORBELL CHIME
- F — SYSTEMS FURNITURE WHIP, DUAL SERVICE, WALL MOUNTED
- P — MOTORIZED DOOR OPERATOR AND PUSH PADDLE ~ DEVICES FURNISHED BY DIV 08, POWER WIRING, BOXES, AND CONDUIT BY DIV 26
- CB — ENCLOSED CIRCUIT BREAKER
- ATS — AUTOMATIC TRANSFER SWITCH
- H — HAND DRYER, COORDINATE HEIGHT WITH ARCHITECTURAL PLANS
- SF — SYSTEMS FURNITURE FEED

A5 POWER DISTRIBUTION

- PS — PAY STATION KIOSK ~ SEE INSTALLATION DETAIL D3 ON DRAWING E501.
- EC — EMERGENCY CALL BOX LOCATION WITH BLUE LIGHT BEACON ~ SEE DETAIL B4 ON DRAWING E501.
- EVSE — ELECTRIC VEHICLE SUPPLY EQUIPMENT (VEHICLE CHARGING STATION). DUAL SERVICE UNIT. SEE DETAIL C4 ON DRAWING E501.

B7 SPECIALTY EQUIPMENT

SINGLE RECEPTACLES

- 20A, 125V, 2P, 3W, NEMA 5-20R
- 20A, 125V, 2P, 3W, NEMA L5-20R (TWISTLOCK)
- 30A DRYER RECEPTACLE ~ 125/250V, 3P, 4W, GROUNDING, NEMA 14-30R, (3)#10+(1)#10G TO 30A, 2P CIRCUIT BREAKER
- 30A, 250V, 2P, 3W, NEMA 6-30R
- 50A RANGE RECEPTACLE ~ 125/250V, 3P, 4W, GROUNDING, NEMA 14-50R, (3)#6+(1)#10 TO 50A, 2P CIRCUIT BREAKER
- 20A, 250V, 2P, 3W, NEMA 6-20R

NOTE:

PROVIDE MATCHING CORD AND PLUG FOR SINGLE RECEPTACLES

FLOOR AND CEILING DEVICES

- F — DUPLEX RECEPTACLE, 20A, 125V, 2P, 3W, NEMA 5-20R, MOUNT IN FLUSH FLOOR BOX
- F — DOUBLE DUPLEX RECEPTACLE, 20A, 125V, 2P, 3W, NEMA 5-20R, MOUNT IN FLUSH FLOOR BOX
- P — DUPLEX RECEPTACLE, PEDESTAL MOUNTED
- P — SINGLE RECEPTACLE, PEDESTAL MOUNTED
- C — DUPLEX RECEPTACLE, FLUSH MOUNTED IN CEILING
- C — DOUBLE DUPLEX RECEPTACLE, FLUSH MOUNTED IN CEILING
- C — DUPLEX GFCI RECEPTACLE, FLUSH MOUNTED IN CEILING
- C — DOUBLE DUPLEX GFCI RECEPTACLE, FLUSH MOUNTED IN CEILING
- OVERHEAD RECEPTACLE DROP, DUPLEX
- OVERHEAD RECEPTACLE DROP, DOUBLE DUPLEX
- OVERHEAD RECEPTACLE DROP, GFCI
- PT-1 — 4" POKE-THRU DEVICE, DUAL SERVICE FURNITURE FEED. BASIS OF DESIGN: WIREMOLD AFFATC
- PT-2 — 6" POKE-THRU DEVICE, WITH (2) DUPLEX RECEPTACLES AND TEL/DATA AS INDICATED ON PLANS. BASIS OF DESIGN: LEGRAND 6AT SERIES.
- F — MULTI-SERVICE FLUSH FLOOR BOX ~ WIREMOLD EFB45 SERIES OR APPROVED EQUAL. COVER SHALL BE FLUSH STYLE WITH FLOOR INSERT. COVER FINISH COLOR SHALL BE SELECTED BY ARCHITECT FROM MANUFACTURER'S STANDARD FINISHES.

RECEPTACLES

- DUPLEX RECEPTACLE ~ 20A, 125V, 2P, 3W, NEMA 5-20R
- DOUBLE DUPLEX RECEPTACLE
- DUPLEX RECEPTACLE, HATCH INDICATES AFCI PROTECTION AND TAMPERPROOF
- T — TAMPERPROOF DUPLEX RECEPTACLE
- GFCI DUPLEX RECEPTACLE, MOUNT 44" AFF UNO
- GFCI DOUBLE DUPLEX RECEPTACLE, MOUNT 44" AFF UNO
- EWC — GFCI RECEPTACLE FOR ELECTRIC WATER COOLER - COORDINATE LOCATION WITH DIVISION 22.
- WP — GFCI RECEPTACLE WITH WEATHERPROOF COVER
- WP — GFCI RECEPTACLE IN WP ENCLOSURE ON ROOF
- MULTI-OUTLET STRIP, PROVIDE OUTLETS 24" OC UNO, MOUNT 48" AFF UNO
- SURFACE RACEWAY WITH DIVIDER, MOUNT 44" AFF UNO. PROVIDE NEMA 5-20 RECEPTACLES AND TECHNOLOGY OUTLETS AS SHOWN ON PLAN

NOTES:

1. MOUNT RECEPTACLES WITH CENTERLINE 18" AFF UNO
2. MOUNT EXTERIOR RECEPTACLES WITH CENTERLINE 24" AFG UNO

A7 RECEPTACLES

LIGHTING SWITCHES

- $a — LIGHT SWITCH, 20A,125/277V
- $3 — THREE-WAY LIGHT SWITCH
- $4 — FOUR-WAY LIGHT SWITCH
- $2 — TWO-POLE SWITCH
- $K — KEY OPERATED SWITCH
- $M — MOTOR RATED SWITCH
- $P — SINGLE POLE SWITCH WITH RED PILOT LIGHT ~ RED LIGHT SHALL GLOW WHEN CIRCUIT IS ENERGIZED
- $a $b — MULTI-GANGED SWITCHES, GANG UNDER ONE PLATE, LETTER INDICATES SWITCHING
- $OS — OCCUPANCY SENSOR SWITCH, WALL MOUNTED
- $OS2 — 2-BUTTON OCCUPANCY SENSOR SWITCH
- $OS3 — OCCUPANCY SENSOR SWITCH WIRED FOR 3-WAY OPERATION
- $OSD — OCCUPANCY SENSOR SWITCH WITH DIMMING ~ COORDINATE DIMMING TECHNOLOGY WITH LOAD TO BE DIMMED
- OS — OCCUPANCY SENSOR, CEILING MOUNTED
- OS — OCCUPANCY SENSOR, WALL MOUNTED
- $D — DIMMER SWITCH ~ COORDINATE DIMMING TECHNOLOGY WITH LOAD TO BE DIMMED
- $F $L — HANDICAP SWITCHES FOR HOOD LIGHT AND FAN
- $T — TIMER SWITCH
- $LV — LOW VOLTAGE LIGHT SWITCH, MOMENTARY CONTACT
- LTC — LIGHTING TIME CLOCK
- LC — LIGHTING CONTACTOR
- LCP — LIGHTING CONTROL PANEL
- PC — OUTDOOR PHOTOELECTRIC SWITCH
- DS — DAYLIGHT HARVESTING SENSOR

NOTES:

1. MOUNT LIGHT SWITCHES WITH CENTERLINE 48" AFF, UNO
2. LOWER CASE LETTER AT SWITCH INDICATES SWITCHING

EMERGENCY LIGHTING

- WHERE NOTED ON PLANS FIXTURE CONNECTED TO CENTRAL INVERTER. CONTROL AS INDICATED ON PLANS.
- EM — "EM" INDICATES EMERGENCY WHERE SYMBOL HATCHING IS UNCLEAR
- BP# — EMER BATTERY UNIT WITH NO HEADS, MT 7'-6"AFF BP# INDICATES BATTERY UNIT DESIGNATION, CONNECT TO UNSWITCHED PORTION OF AREA LIGHTING BRANCH CIRCUIT, U.N.O.
- BP# — EMER BATTERY UNIT WITH INTEGRAL HEADS, MT 7'-6"AFF BP# INDICATES BATTERY UNIT DESIGNATION, CONNECT TO UNSWITCHED PORTION OF AREA LIGHTING BRANCH CIRCUIT, U.N.O.
- BP# — SINGLE REMOTE EMERGENCY LIGHT HEAD, MOUNT 7'-6"AFF BP# INDICATES BATTERY UNIT CONNECTED TO
- BP# — DOUBLE REMOTE EMERGENCY LIGHT HEAD, MOUNT 7'-6"AFF BP# INDICATES BATTERY UNIT CONNECTED TO
- BP# — DOUBLE REMOTE EMERGENCY LIGHT HEAD, CEILING MOUNTED BP# INDICATES BATTERY UNIT CONNECTED TO
- EXIT SIGN, CEILING MOUNTED, SHADING INDICATES FACE(S) ARROWHEAD INDICATES CHEVRON(S) REQUIRED, CONNECT TO UNSWITCHED PORTION OF AREA LIGHTING BRANCH CIRCUIT, U.N.O.
- EXIT SIGN, WALL MOUNTED, SHADING INDICATES FACE(S) MOUNT AT 7'-6"AFF OR OVER DOOR, CONNECT TO UNSWITCHED PORTION OF AREA LIGHTING BRANCH CIRCUIT, U.N.O.
- INV — CENTRAL LIGHTING INVERTER

REFER TO LUMINAIRE SCHEDULE FOR FIXTURE LEGEND

TYPICAL FOR ALL FIXTURE TYPES:

R1 a # — R1: INDICATES LUMINAIRE TYPE ON SCHEDULE; a: LOWER CASE LETTER INDICATES SWITCHING; #: INDICATES CIRCUIT NUMBER

A9 LUMINAIRES

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Address

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REVISIONS:

No.	Date	Description

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Date	Issued For:
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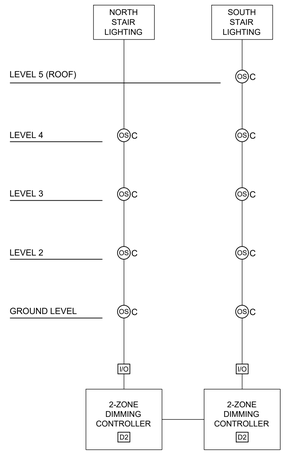
SHEET TITLE:

ELECTRICAL LEGEND AND ABBREVIATIONS

E-000

LIGHTING CONTROL DIAGRAM LEGEND & NOTES:

- D2 — 2-ZONE DIMMER CONTROLLER (WATTSTOPPER #LMRC-212)
- I/O — INPUT/OUTPUT INTERFACE MODULE (WATTSTOPPER #LMIO)
- QTD — EMERGENCY LIGHTING CONTROL UNIT (WATTSTOPPER #ELCU-200). PROVIDE (1) UNIT FOR EACH EMERGENCY CIRCUIT
- OSC — COLD TEMPERATURE WEATHERPROOF PASSIVE INFRARED OCCUPANCY SENSOR WITH MIDDLE AREA COVERAGE (WATTSTOPPER #FS-L3W)

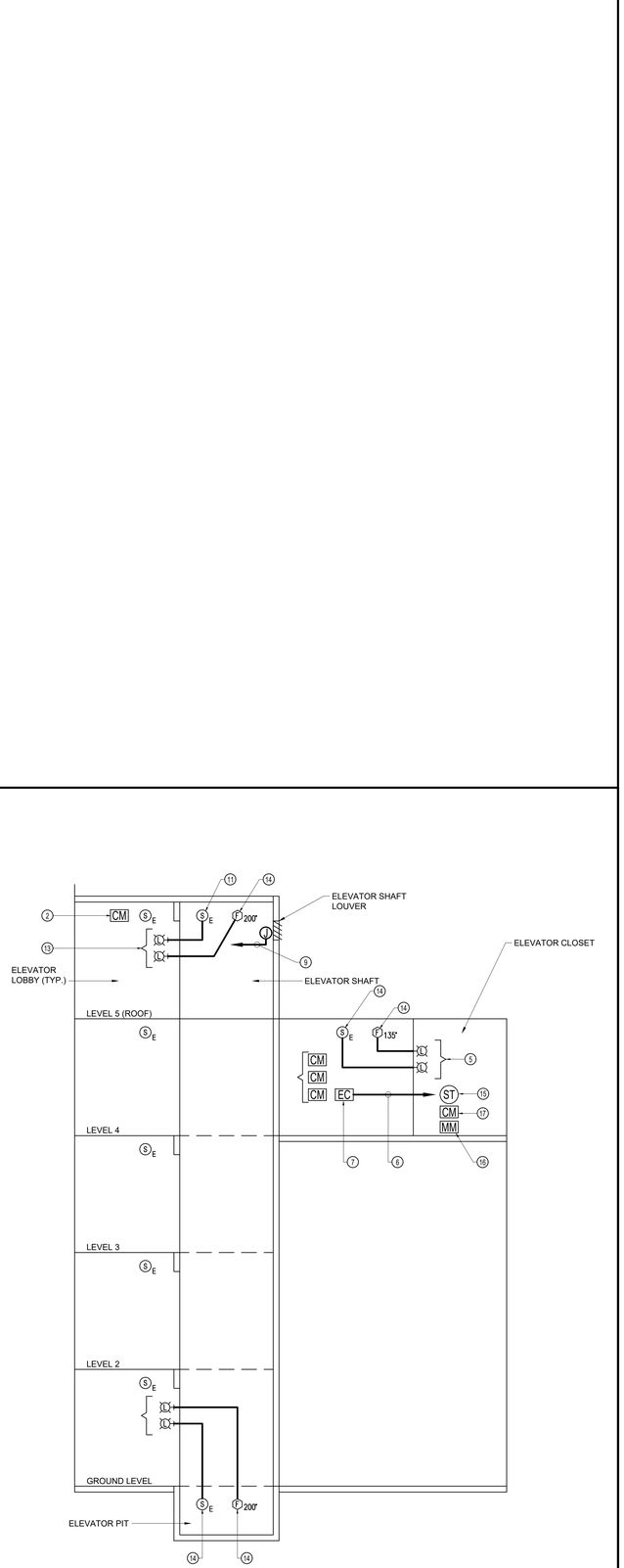


A2 — STAIR LIGHTING CONTROL DETAIL

DO NOT SCALE

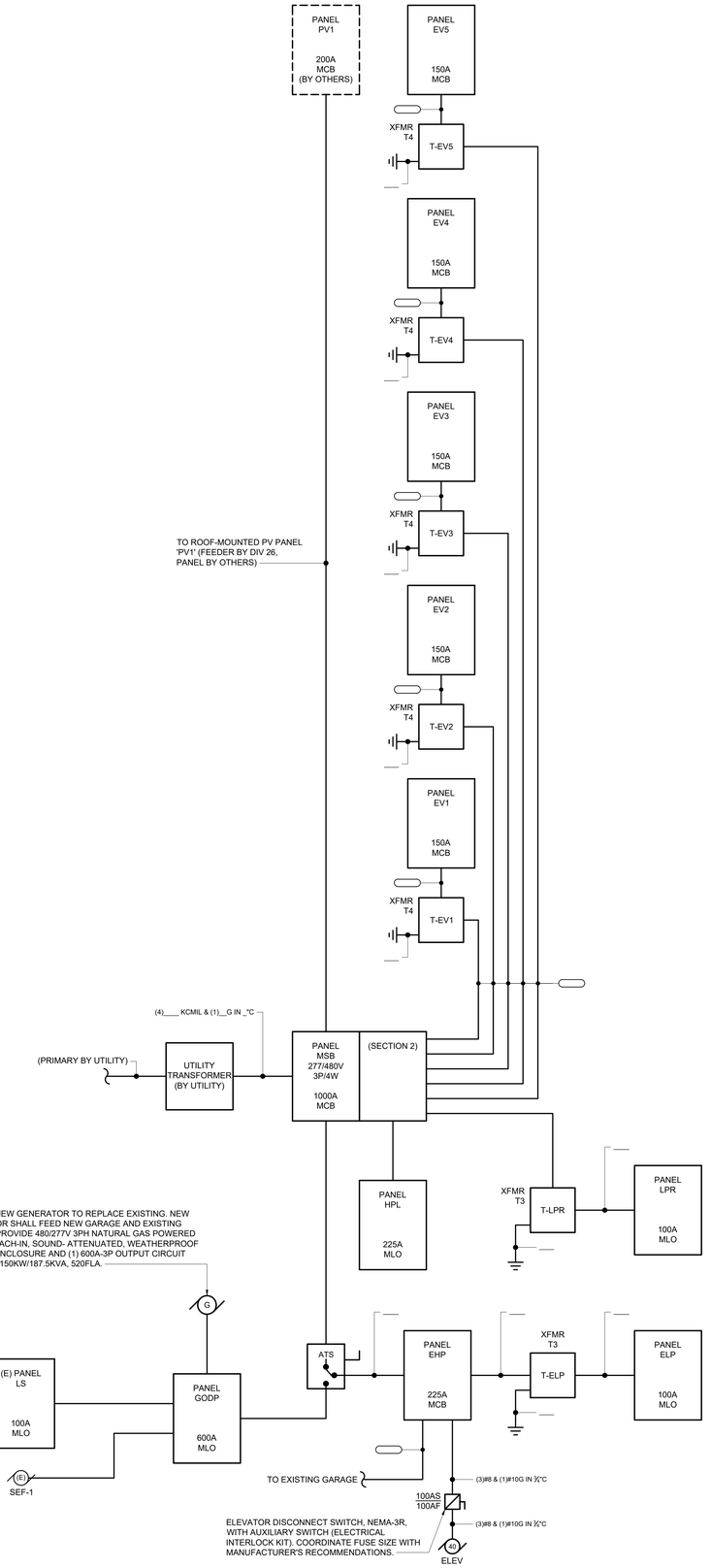
NOTES:

1. ELEVATOR MACHINE ROOM; REFER TO FLOOR PLANS FOR EXACT FLOOR LOCATION AND ADJACENCY (EG TOP FLOOR, PENTHOUSE, FIRST FLOOR, BASEMENT)
2. FIRE ALARM CONTROL MODULE, RELAY AND WIRING PROVIDED FOR SENDING FIRE ALARM SYSTEM CONTROL SIGNAL TO OPEN ELEVATOR SHAFT LOUVER DURING A FIRE EVENT; REFER TO MECHANICAL PLANS FOR EXACT LOCATION AND CONTROL CIRCUIT INTEGRATION POINT. THE CONTROL MODULE SHALL BE LOCATED ABOVE CLOSEST ACCESSIBLE CEILING TO THE LOUVER CONTROL CIRCUIT INTEGRATION POINT. THE CONTROL WIRING FROM THE CONTROL MODULE TO THE LOUVER OPERATOR SHALL BE PERFORMED BY THE CONTRACTOR RESPONSIBLE FOR DIVISION 23 SCOPE. THE CONTROL MODULE SHALL BE PROGRAMMED TO RECEIVE A SIGNAL UPON ACTIVATION OF ANY FIRE ALARM DETECTION DEVICE WITHIN THE RESPECTIVE BUILDING.
3. SMOKE DETECTOR LOCATED WITHIN 21 FEET OF THE CENTERLINE OF EACH ELEVATOR DOOR (FOR LOBBY CEILINGS 15'-0" AFF OR LESS); REFER TO FLOOR PLAN FOR PROPOSED LOCATION AND QUANTITY OF DETECTORS IN RESPECTIVE ELEVATOR LOBBY.
4. "E" ON DETECTORS DENOTES THAT THE RESPECTIVE FIRE ALARM SYSTEM DETECTOR (UPON ACTIVATION) SHALL BE PROGRAMMED TO INITIATE THE REQUIRED ELEVATOR RECALL SEQUENCE.
5. REMOTE INDICATOR LIGHT(S) LOCATED OUTSIDE AND ABOVE THE RESPECTIVE ELEVATOR MACHINE ROOM DOOR. THE INDICATOR LIGHT SHALL BE ACTIVATED WHEN THE ASSOCIATED DETECTOR WITHIN THE ELEVATOR MACHINE ROOM ENTERS AN ALARM CONDITION.
6. POWER FEEDER TO ELEVATOR CONTROLLER (REFER TO POWER PLANS FOR SOURCE AND FEEDER SIZE)
7. ELEVATOR CONTROLLER; FURNISHED AND INSTALLED BY THE CONTRACTOR RESPONSIBLE FOR DIVISION 14 SCOPE.
8. PROVIDE THREE FIRE ALARM CONTROL MODULES, RELAYS AND WIRING FOR SENDING FIRE ALARM SYSTEM CONTROL SIGNAL TO THE ELEVATOR CONTROLLER; ONE TO ACTIVATE THE ELEVATOR RECALL SEQUENCE (PRIMARY LEVEL), THE SECOND TO ACTIVATE THE ELEVATOR RECALL SEQUENCE (ALTERNATE LEVEL), AND THE THIRD TO ACTIVATE THE ELEVATOR CAB WARNING SEQUENCE (FIREMAN'S HAT) . THE CONTROL WIRING FROM EACH MODULE TO THE ELEVATOR CONTROLLER SHALL BE PERFORMED BY THE CONTRACTOR RESPONSIBLE FOR DIVISION 14 SCOPE.
9. POWER BRANCH CIRCUIT TO ELEVATOR SHAFT LOUVER OPERATOR (REFER TO PLAN FOR SOURCE AND BRANCH CIRCUIT SIZE).
10. REFER TO POWER PLANS FOR REQUIRED ELEVATOR EQUIPMENT POWER AND MAINTENANCE POWER PROVISIONS.
11. SMOKE DETECTOR LOCATED AT THE TOP OF THE ELEVATOR SHAFT (EXACT LOCATION PER NFPA 72 STANDARDS).
12. SMOKE DETECTOR LOCATED AT THE ELEVATOR PIT (EXACT LOCATION PER NFPA 72 STANDARDS).
13. REMOTE INDICATOR LIGHT(S) LOCATED OUTSIDE AND ABOVE THE RESPECTIVE FLOOR ELEVATOR CAB DOOR. THE INDICATOR LIGHT SHALL BE ACTIVATED WHEN THE ASSOCIATED DETECTOR ENTERS AN ALARM CONDITION.
14. WHEN SPRINKLER HEADS ARE PRESENT IN THE ELEVATOR SHAFT, ELEVATOR PIT OR ELEVATOR MACHINE ROOM, LOCATE THE FIRE ALARM SYSTEM DETECTOR(S) WITHIN (2) FEET OF THE RESPECTIVE SPRINKLER HEAD.
15. SHUNT TRIP MODULE PROVIDED WITH THE RESPECTIVE ELEVATOR FEEDER CIRCUIT BREAKER FOR SHUTTING DOWN ELEVATOR POWER.
16. FIRE ALARM MONITOR MODULE, RELAY AND WIRING PROVIDED FOR RECEIVING FIRE ALARM SYSTEM MONITOR SIGNAL FROM THE ELEVATOR FEEDER SHUNT TRIP MODULE FOR VERIFYING THE SHUNT TRIP CONTROL POWER CIRCUIT IS FUNCTIONING PROPERLY. THE MONITOR MODULE SHALL BE PROGRAMMED TO SEND A SIGNAL (SUPERVISORY) IF THE CONTROL POWER CIRCUIT IS DE-ENERGIZED.
17. FIRE ALARM CONTROL MODULE, RELAY AND WIRING PROVIDED FOR SENDING FIRE ALARM SYSTEM CONTROL SIGNAL TO INITIATE THE ELEVATOR POWER SHUNT TRIP SEQUENCE. THE CONTROL MODULE SHALL BE PROGRAMMED TO RECEIVE A SIGNAL UPON ACTIVATION OF ANY HEAT DETECTOR LOCATED WITHIN THE ELEVATOR SHAFT, ELEVATOR PIT OR ELEVATOR MACHINE ROOM.
18. FIXED TEMPERATURE (135 DEGREE F) HEAT DETECTOR LOCATED IN THE ELEVATOR MACHINE ROOM.
19. FIXED TEMPERATURE (135 DEGREE F) HEAT DETECTOR LOCATED AT THE ELEVATOR PIT.
20. FIXED TEMPERATURE (190 DEGREE F) HEAT DETECTOR LOCATED AT THE TOP OF THE ELEVATOR SHAFT.
21. ALL HEAT DETECTORS WITHIN ELEVATOR SHAFT/PIT/MACHINE ROOM SHALL BE PROVIDED WITH TEMPERATURE AND RTI RATINGS THAT ARE LOWER THAN THE ASSOCIATED SPRINKLER HEAD.



A1 — FIRE ALARM CONTROL DIAGRAM FOR ELEVATOR WITH SHAFT/ MACHINE ROOM PROTECTION SPRINKLERS

DO NOT SCALE



A3 — POWER RISER DIAGRAM

DO NOT SCALE

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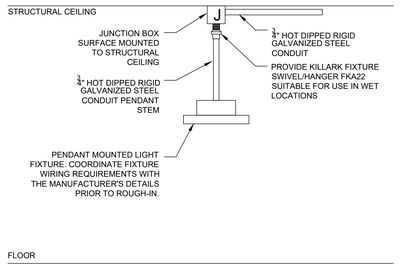
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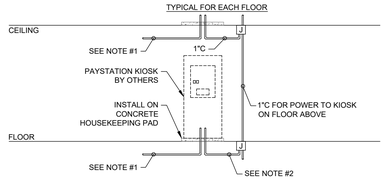
SHEET TITLE:

ELECTRICAL DETAILS

E-500



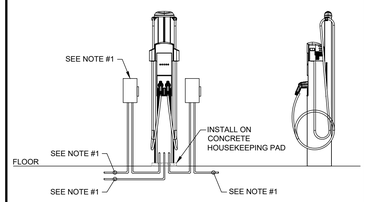
D2	CEILING MOUNTED GARAGE FIXTURE DETAIL
DO NOT SCALE	



NOTES:

1. PROVIDE (1) 1"C EMPTY CONDUIT WITH NYLON PULLSTRING BACK TO THE MAIN ELECTRICAL ROOM FOR EACH PAYSTATION KIOSK. TELECOMMUNICATIONS CABLING BY OTHERS. STUB CONDUIT UP TO 6" ABOVE FINISHED FLOOR AND CAP FOR FUTURE.
2. PROVIDE (1) 1"C EMPTY CONDUIT WITH NYLON PULLSTRING AND JUNCTION BOX AT EACH LEVEL FOR FUTURE POWER BRANCH CIRCUIT WIRING. STUB CONDUIT UP TO 6" ABOVE FINISHED FLOOR AND CAP FOR FUTURE. AT THE LOWER LEVEL, CONDUIT SHALL BE ROUTED BACK TO THE MAIN ELECTRICAL ROOM AND TERMINATED IN PANELBOARD 'RP2G'. CONDUITS SHALL BE MARKED FOR FUTURE PAYSTATION KIOSK.

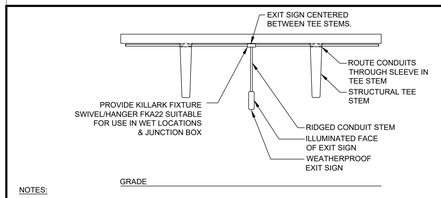
D3	PAYSTATION KIOSK DETAIL
DO NOT SCALE	



NOTES:

1. ELECTRICAL VEHICLE CHARGING SYSTEM SHALL BE INSTALLED IN ACCORDANCE WITH NEC 625. THE ELECTRICAL CONTRACTOR SHALL MEET ALL INSTALLATION REQUIREMENTS WHETHER INCORPORATED INTO THE MANUFACTURED ELECTRIC VEHICLE SUPPLY EQUIPMENT (EVSE) OR PROVIDED SEPARATELY.
2. PROVIDE DISCONNECT IN A READILY ACCESSIBLE LOCATION FOR ELECTRIC VEHICLE CHARGING STATIONS 480/277V ONLY. DISCONNECT SHALL BE LOCKABLE OPEN TYPE IN ACCORDANCE WITH NEC 110.25. WHERE 208/120V (EVSE) IS UTILIZED, DISCONNECTING MEANS IS NOT REQUIRED.
3. PROVIDE (2) 1" HOT-DIPPED GALVANIZED RIGID STEEL POWER CONDUITS STUBBED UP 12"AFF AND TERMINATED IN WEATHERPROOF CAST JUNCTION BOX WITHIN THE (EVSE). PROVIDE LFMC WHIP CONNECTION TO EQUIPMENT TERMINATION POINT.
4. PROVIDE (1) 1" HOT-DIPPED GALVANIZED RIGID STEEL TELECOMMUNICATIONS CONDUITS STUBBED UP 12" AFF FOR COMMUNICATION CABLING FOR RFID OR CREDIT CARD EQUIPMENT. ROUTE CONDUIT TO TELECOMMUNICATIONS BACKBOARD/SERVER EQUIPMENT.

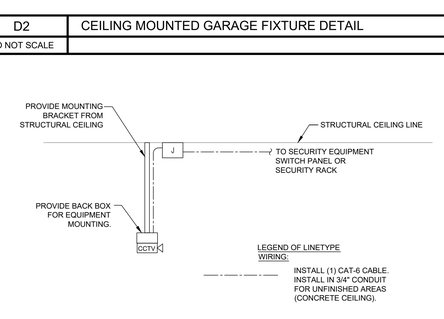
C4	ELECTRIC VEHICLE CHARGING SYSTEM
DO NOT SCALE	



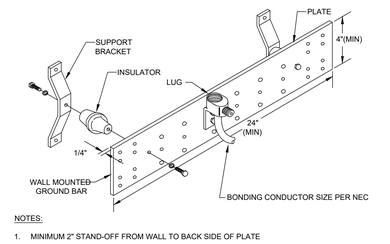
NOTES:

1. EXIT SIGNS SHALL BE INSTALLED SUCH THAT THE FACE OF THE EXIT SIGN IN THE PRIMARY DIRECTION OF EGRESS (SHORTEST PATH TO EGRESS DOOR) IS FACING OUT AND AWAY FROM THE STRUCTURAL TEE STEM.
2. EXIT SIGN SHALL BE INSTALLED SUCH THAT THE BOTTOM OF THE EXIT SIGN IS A MINIMUM OF 7'-2" ABOVE FINISHED FLOOR WHERE LOCATED IN THE GARAGE DRIVE LANE OR PARKING STALL.
3. WHERE EXIT SIGNS ARE PROTECTED FROM VEHICULAR DAMAGE VIA BOLLARDS, PARKING STOPPERS, STRUCTURAL MEMBERS, ETC. THE SIGNAGE SHALL BE PENDANT MOUNTED TO TOP OF EXIT SIGN FLUSH WITH THE BOTTOM OF THE TEE STEM (I.E. ELEVATOR LOBBY, STAIR LOBBY, ETC.)

C1	EXIT SIGN GARAGE AREA MOUNTING DETAIL
DO NOT SCALE	



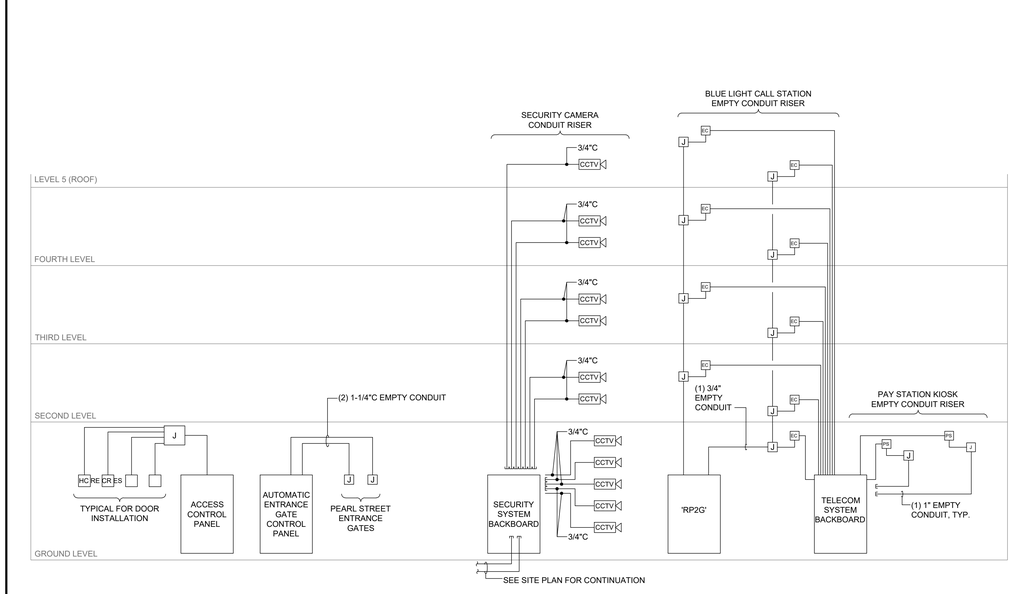
C2	CAMERA MOUNTING DETAIL
DO NOT SCALE	



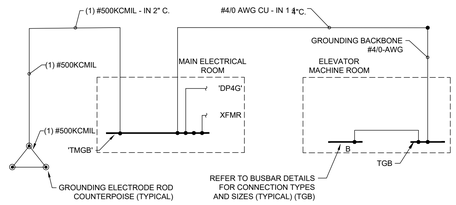
NOTES:

1. MINIMUM 2" STAND-OFF FROM WALL TO BACK SIDE OF PLATE

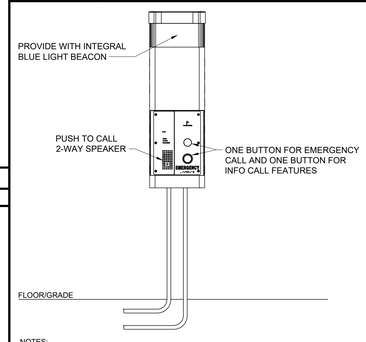
C3	GROUND BAR DETAIL
DO NOT SCALE	



A1	CONDUIT RISER DIAGRAM
DO NOT SCALE	



B3	GROUNDING RISER DIAGRAM
DO NOT SCALE	



NOTES:

1. COORDINATE INSTALLATION DETAILS WITH MANUFACTURER'S INSTRUCTIONS.
2. PROVIDE (1) 3/4"C EMPTY CONDUIT WITH NYLON PULLSTRING BACK TO THE MAIN ELECTRICAL ROOM FOR EACH EMERGENCY PHONE STATION. TELECOMMUNICATIONS CABLING BY OTHERS.

B4	CALLSTATION WITH BLUE LIGHT
DO NOT SCALE	

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BURLINGTON, VT 05403

COST ESTIMATOR
PREFERRED CONSTRUCTION MGMT
94 AUBURN ST,
PORTLAND, ME 04103

SEAL / SIGNATURE

© DESMAN, Inc.
2021

PROJECT:

USM - Structured Parking Garage

Address

44 Bedford Street,
Portland ME 04104

REVISIONS:

No.	Date	Description

SUBMISSIONS:

Date	Issued For:
07/30/21	Site Plan Submittal

SCALE	**AS NOTED**
DATE ISSUED	**07/30/2021**
PROJECT NO	**20-20145.00-1**
DRAWN BY	**GMC**
CHECKED BY	**BTG**

SHEET TITLE:

ELECTRICAL DETAILS

E-501

LUMINAIRE SCHEDULE

TYPE	DESCRIPTION	MFR	CATALOG SERIES NUMBER SEE NOTE 1	MOUNTING, U.N.O.	VOLTS	LAMP				KEY NOTES
						QTY PER FIXTURE	WATTS	LUMENS	TYPE	
G	LED PARKING GARAGE LIGHT	LITHONIA	VCPG-LED-V4-P4-40K-70CRI-___-MVOLT-PM	PENDANT	UNV	1	56	____	LED ARRAY ~ 4000K	
B	LED STRIP LIGHT	LITHONIA	FEM-L48-4000LM-LPPFL-WD-MVOLT-GZ10-40K-80CRI	SURFACE	UNV	1	30	4,257	LED ARRAY ~ 4000K	
GP	GARAGE ROOF LED LIGHT AND POLE	LITHONIA	LIGHT: RSX1-LED-P3-40K-R5-MVOLT-SPA POLE: SSS-14-4C-DM19AS	SURFACE	UNV	1	109	14,397	LED ARRAY ~ 4000K	
EXIT	EXIT SIGN, AC ONLY	LITHONIA	LV-S-W-*-R	SEE PLAN	UNV	1		PER CODE	LED ARRAY	3,6
P1	SITE LIGHT AND POLE, "ICE CREAM CONE" SHAPE	SEE NOTE 8		14' POLE	277	1	24	3,330	LED ARRAY ~ 4000K	8,9
P2	SITE LIGHT AND POLE, "SHOEBOX" SHAPE	SEE NOTE 8		14' POLE	277	1	18	2,160	LED ARRAY ~ 4000K	8,10
SW1	WALL MOUNTED EXTERIOR LIGHT	LITHONIA	KAXW-LED-P1-40K-R4-MVOLT	KEYNOTE 5	UNV	1	29	3,643	LED ARRAY ~ 4000K	5
SR1	RECESSED CANOPY LIGHT	LITHONIA	LDN4SQ-40-07-LS4-AR-LSS-MVOLT	RECESSED CANOPY	UNV	1	8.6	620	LED ARRAY ~ 4000K	

	NOTES
1	**NOTE THAT THESE NUMBERS ARE NOT COMPLETE CATALOG NUMBERS. PROVIDE ALL REQUIREMENTS ON SCHEDULE, NOTES, SPECS, AND DRAWINGS COMBINED.**
2	**CATALOG SERIES NUMBERS ARE USED TO ESTABLISH A LEVEL OF QUALITY AND NOT INTENDED TO LIMIT COMPETITION. SERIES NUMBERS ARE NOT COMPLETE CATALOG NUMBERS. COMPLY WITH ADDITIONAL REQUIREMENTS IN SPECIFICATIONS AND DRAWINGS.**
3	PROVIDE WALL,CEILING, OR PENDANT MOUNTING AS INDICATED ON PLANS. PROVIDE NUMBER OF FACES AND ARROWS AS INDICATED.
4	VERIFY CEILING STRUCTURE AND MOUNTING HEIGHT PRIOR TO ORDERING ANY LIGHT FIXTURES.
5	COORDINATE MOUNTING HEIGHT WITH STRUCTURAL AND ARCHITECTURAL DRAWINGS.
6	PROVIDE COLD WEATHER OPTION.
7	CONFIRM EXACT FIXTURE CONFIGURATION AND OPTIONS WITH MUNICIPALITY PRIOR TO ORDERING FIXTURE.
8	FIXTURE AND POLE SHALL BE PROVIDED BY OWNER FROM EXISTING OWNER'S STOCK.
9	PROVIDE SCREW-IN LED RETROFIT LAMP. BASIS OF DESIGN IS MFG. BY LIGHT EFFICIENT DESIGN, PART NO. LED-8029E345-A.
10	PROVIDE SCREW-IN LED RETROFIT LAMP. BASIS OF DESIGN IS MFG. BY LIGHT EFFICIENT DESIGN, PART NO. LED-8039E40-A.

UNIVERSITY OF SOUTHERN MAINE

25 Bedford Street, Portland, ME 04104
207.712.5183 | USM.MAINE.EDU

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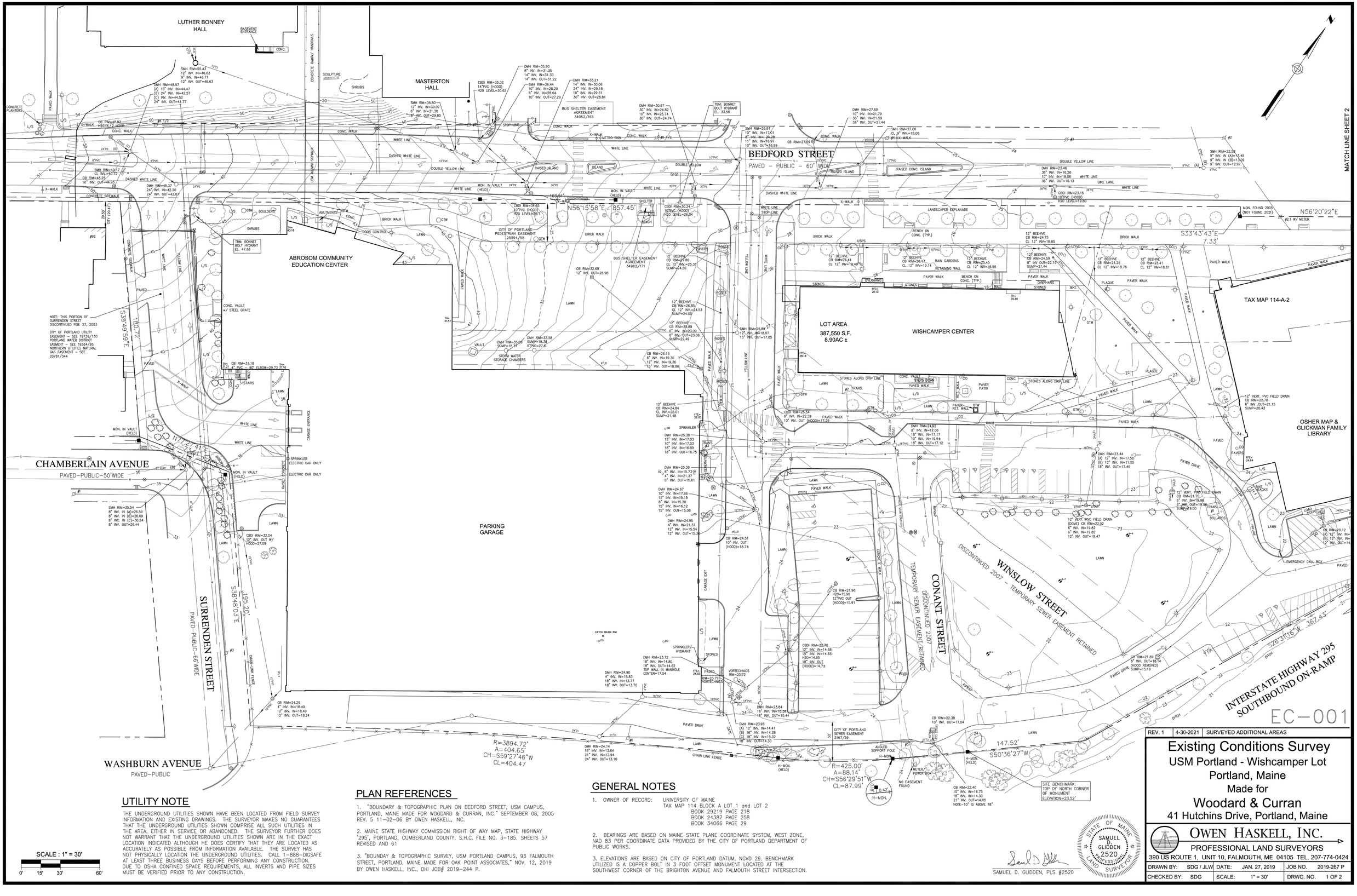
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SHEET TITLE:

ELECTRICAL SCHEDULES

E-600

7/2/2021 3:16:33 PM



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 SURVEY HAS NOT PHYSICALLY LOCATION 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.

SCALE : 1" = 30'

0' 15' 30' 60'

PLAN REFERENCES

1. "BOUNDARY & TOPOGRAPHIC PLAN ON BEDFORD STREET, USM CAMPUS, PORTLAND, MAINE MADE FOR WOODARD & CURRAN, INC." SEPTEMBER 08, 2005 REV. 5 11-02-06 BY OWEN HASKELL, INC.

2. MAINE STATE HIGHWAY COMMISSION RIGHT OF WAY MAP, STATE HIGHWAY '295', PORTLAND, CUMBERLAND COUNTY, S.H.C. FILE NO. 3-185. SHEETS 57 REVISED AND 61

3. "BOUNDAY & TOPOGRAPHIC SURVEY, USM PORTLAND CAMPUS, 96 FALMOUTH STREET, PORTLAND, MAINE MADE FOR OAK POINT ASSOCIATES," NOV. 12, 2019 BY OWEN HASKELL, INC., OHI JOB# 2019-244 P.

GENERAL NOTES

1. OWNER OF RECORD: UNIVERSITY OF MAINE
TAX MAP 114 BLOCK A LOT 1 and LOT 2
BOOK 29219 PAGE 218
BOOK 24387 PAGE 258
BOOK 34066 PAGE 29

2. BEARINGS ARE BASED ON MAINE STATE PLANE COORDINATE SYSTEM, WEST ZONE, NAD 83 PER COORDINATE DATA PROVIDED BY THE CITY OF PORTLAND DEPARTMENT OF PUBLIC WORKS.

3. ELEVATIONS ARE BASED ON CITY OF PORTLAND DATUM, NGVD 29. BENCHMARK UTILIZED IS A COPPER BOLT IN 3 FOOT OFFSET MONUMENT LOCATED AT THE SOUTHWEST CORNER OF THE BRIGHTON AVENUE AND FALMOUTH STREET INTERSECTION.

SAMUEL D. GLIDDEN, PLS #2520

STATE OF MAINE — SAMUEL D GLIDDEN — 2520 — PROFESSIONAL LAND SURVEYOR

EC–001

REV.	DATE	DESCRIPTION
1	4-30-2021	SURVEYED ADDITIONAL AREAS

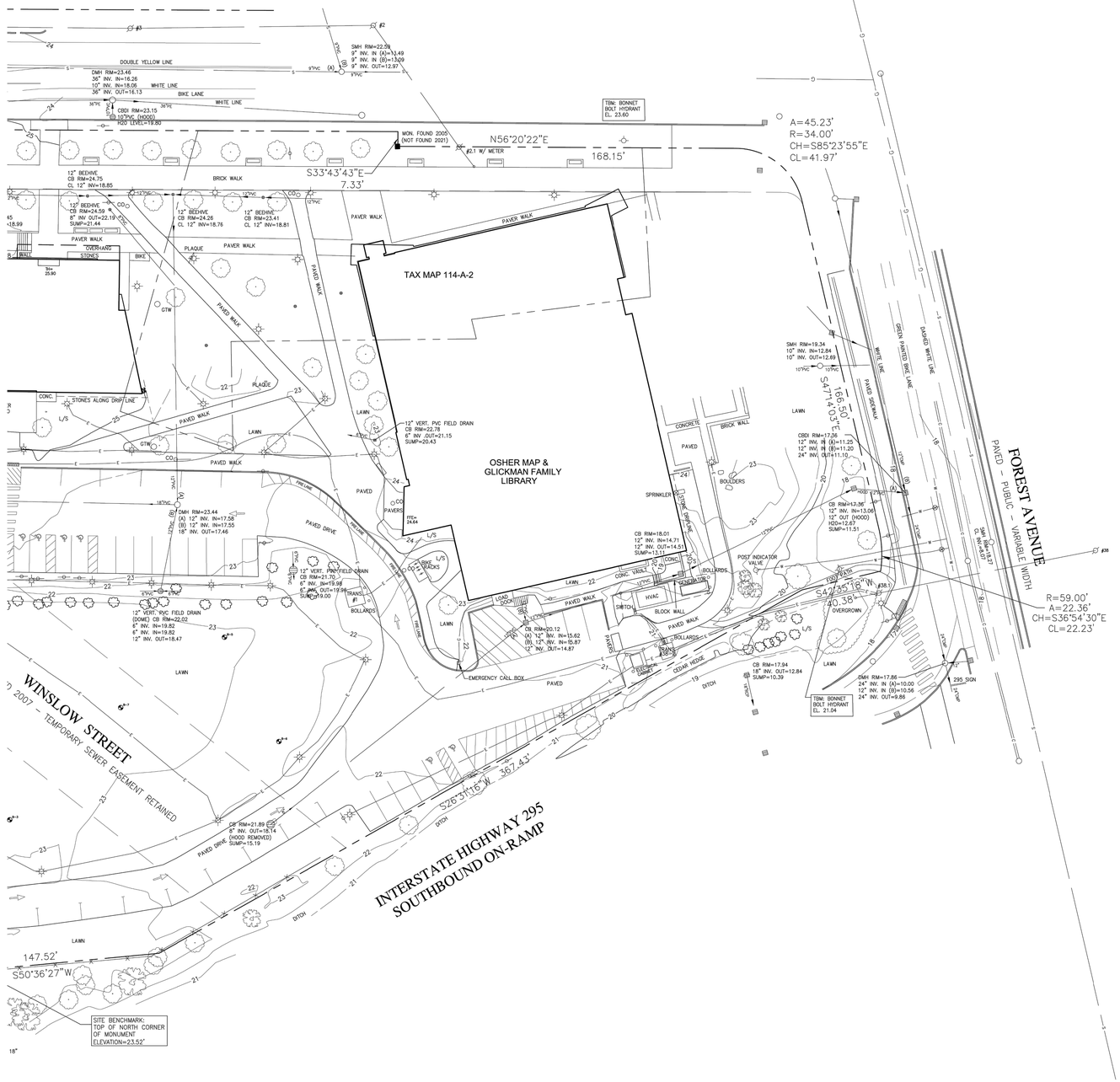
Existing Conditions Survey

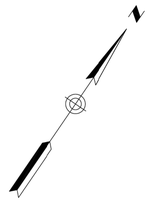
USM Portland - Wishcamper Lot
Portland, Maine
Made for
Woodard & Curran
41 Hutchins Drive, Portland, Maine

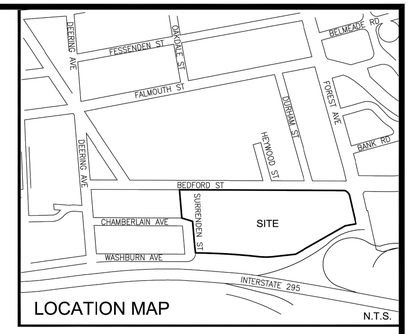
OWEN HASKELL, INC.
PROFESSIONAL LAND SURVEYORS
390 US ROUTE 1, UNIT 10, FALMOUTH, ME 04105 TEL. 207-774-0424

DRAWN BY:	SDG / JLW	DATE:	JAN. 27, 2019	JOB NO.	2019-267 P
CHECKED BY:	SDG	SCALE:	1" = 30'	DRWG. NO.	1 OF 2

MATCH LINE SHEET 1







LOCATION MAP N.T.S.

LEGEND

- IRON PIPE OR ROD FOUND
- MONUMENT FOUND
- UTILITY POLE
- MANHOLE
- ELECTRIC/GAS METER
- SIGN
- CATCH BASIN
- HYDRANT
- WATER VALVE OR SHUTOFF
- GAS VALVE
- LIGHT POLE
- DECIDUOUS TREE
- CONIFEROUS TREE
- SHRUB / BUSH
- GTW GEOTHERMAL WELL
- ELECTRICAL JUNCT. BOX
- FENCE
- CURB
- OVERHEAD WIRES
- E UNDERGROUND POWER
- C COMMUNICATION
- W WATER LINE
- G GAS LINE
- T TELEPHONE
- SD STORM DRAIN
- SS SANITARY SEWER
- STM STEAM LINE

IPF/IRF	IRON PIPE OR ROD FOUND
L/S	LANDSCAPED AREA
CONC.	CONCRETE
FFE	FINISHED FLOOR ELEVATION
THRES.	THRESHOLD
N/F	NOW OR FORMERLY
000/000	DEED BOOK / PAGE

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GENERAL NOTES

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SAMUEL D. GLIDDEN, PLS #2520

STATE OF MAINE · SAMUEL D GLIDDEN · 2520 · PROFESSIONAL LAND SURVEYOR

EC-002

REV.	DATE	DESCRIPTION
1	4-30-2021	SURVEYED ADDITIONAL AREAS

Existing Conditions Survey

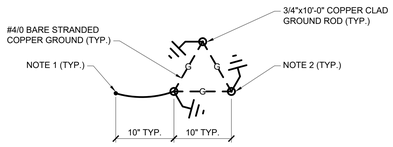
USM Portland - Wishcamper Lot
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DRAWN BY:	SDG / JLW	DATE: JAN 27, 2019	JOB NO. 2019-267 P
CHECKED BY:	SDG	SCALE: 1" = 30'	DRWG. NO. 2 OF 2

OH	OVERHEAD WIRING, TYPE AS INDICATED
	UNDERGROUND OR UNDERSLAB WIRING, TYPE AS INDICATED
	UTILITY POLE
	FUSED DISCONNECT SWITCH
	NON-FUSED DISCONNECT SWITCH
	MOTOR
	GROUNDING SYSTEM
J	JUNCTION BOX, WALL MOUNTED
J	JUNCTION BOX, IN-GROUND
M	ELECTRICAL MANHOLE, COORDINATE LOCATION WITH OTHER UNDERGROUND UTILITIES
T	COMMUNICATIONS MANHOLE, COORDINATE LOCATION WITH OTHER UNDERGROUND UTILITIES
T / P S / F	PADMOUNT TRANSFORMER ~ F= FRONT
PB	4'X6' PULL BOX WITH 32" COVER PLATE IN ACCORDANCE WITH UTILITY STANDARDS
P	PEDESTAL LOCATION, PEDESTAL BY SERVICE PROVIDER, STUB UP (2) 2" CONDUITS WITH CONNECTORS AND BUSHINGS FROM HANDHOLE
H	HANDHOLE, MINIMUM 18"x36"x24", SIZE PER NEC FOR NUMBER OF CONDUITS INSTALLED
M	METER & CT CABINET, PEDESTAL MOUNTED
	SINGLE POLE MOUNTED LIGHT
	DOUBLE POLE MOUNTED LIGHT
	WALL MOUNTED LIGHT FIXTURE
	SINGLE POLE HOMERUN: (2)#12+(1)#12G UNO, CONNECT TO PANEL INDICATED
	SINGLE-PHASE HOMERUN OR MULTIPLE HOMERUN UTILIZING THE SAME CONDUIT, CONNECT TO PANEL INDICATED
	3-PHASE HOMERUN OR MULTIPLE HOMERUN UTILIZING THE SAME CONDUIT, CONNECT TO PANEL INDICATED
A1 / ES-000	DETAIL CALL-OUT
A1 / ES-000	SECTION/ELEVATION CALL-OUT

B1 ELECTRICAL SITE LEGEND

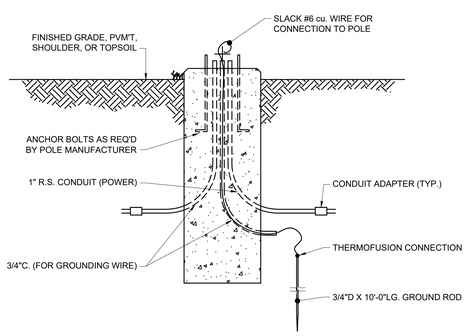


NOTES:

1. RUN #4/0 BARE STRANDED CU GROUND CABLE DOWN IN 1" PVC CONCEALED UNDER ROOF, CEILING AND WALLS. TYPICAL FOR ALL DOWNERS OUT TO GROUNDING COUNTERPOISE.
2. COPPER CLAD STEEL GROUND RODS 3/4"x10'-0", TOP OF RODS BURIED 2'-0" BELOW TOP OF FINISHED GRADE.

A3 GROUNDING ROD DETAILS

DO NOT SCALE

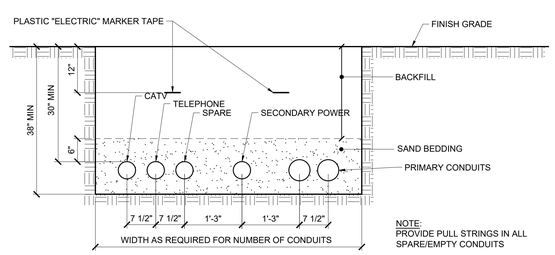


NOTES:

1. LIGHT POLE FOUNDATION SHALL BE PROVIDED BY DIVISION 2. ELECTRICAL SUBCONTRACTOR SHALL FURNISH CONDUITS, AND ANCHOR BOLTS TO CIVIL CONTRACTOR FOR CASTING INTO POLE BASE. THIS DETAIL REFERS TO SITE PARKING LOT AND ROAD LIGHTING FIXTURES ONLY. SEE CIVIL DRAWINGS FOR CONSTRUCTION INFORMATION.
2. ELECTRICAL CONTRACTOR SHALL INSTALL GROUND ROD AND PULL GROUNDING WIRE.

A2 SITE LIGHTING POLE BASE DETAIL

DO NOT SCALE

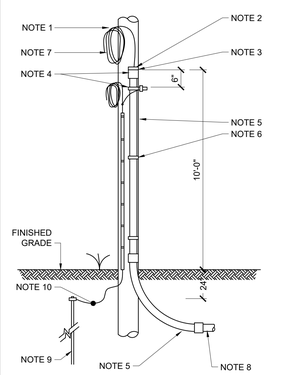


NOTE:
PROVIDE PULL STRINGS IN ALL SPARE/EMPTY CONDUITS

DETAIL INDICATES TYPICAL SPACING BETWEEN CONDUITS OF VARIOUS SYSTEMS, REFER TO SITE PLAN FOR SIZES AND NUMBER OF CONDUITS

A1 TYPICAL SEPARATION OF UTILITIES

DO NOT SCALE



NOTES:

1. PRIMARY CABLES TO BE INSTALLED BY UTILITY COMPANY.
2. CONDUIT SEAL BY CONTRACTOR.
3. INSULATING BUSHING.
4. GALVANIZED STEEL CONDUIT AND BEND SHALL BE GROUNDED BY BONDING TO APPROVED GROUND CLAMP 6" FROM TOP OF THE CONDUIT. A CONDUCTOR OF SUFFICIENT LENGTH SHALL BE PROVIDED TO EXTEND TO UTILITY COMPANY SECONDARY NEUTRAL.
5. PROVIDE 2-4" GALVANIZED STEEL CONDUITS. 2 TOTAL 10 FEET CONDUITS SHALL RISE ON THE SIDE OF THE POLE AWAY FROM THE ROAD, AND SPARE CONDUITS SHALL BE CAPPED 6" ABOVE GRADE.
6. PIPE STRAPS, INSTALL AT NOT MORE THAN 30" INTERVALS.
7. CONTRACTOR TO SEAL CABLE ENDS TO PREVENT ENTRANCE OF MOISTURE.
8. ADAPTER COUPLING STEEL TO PVC.
9. GROUND ROD - 3/4"D.x10'-0" LONG. INSTALL MINIMUM 3 FEET FROM THE POLE.
10. PROVIDE #4cu. GROUND WIRE.

B1 RISER POLE CONDUIT DETAIL

DO NOT SCALE

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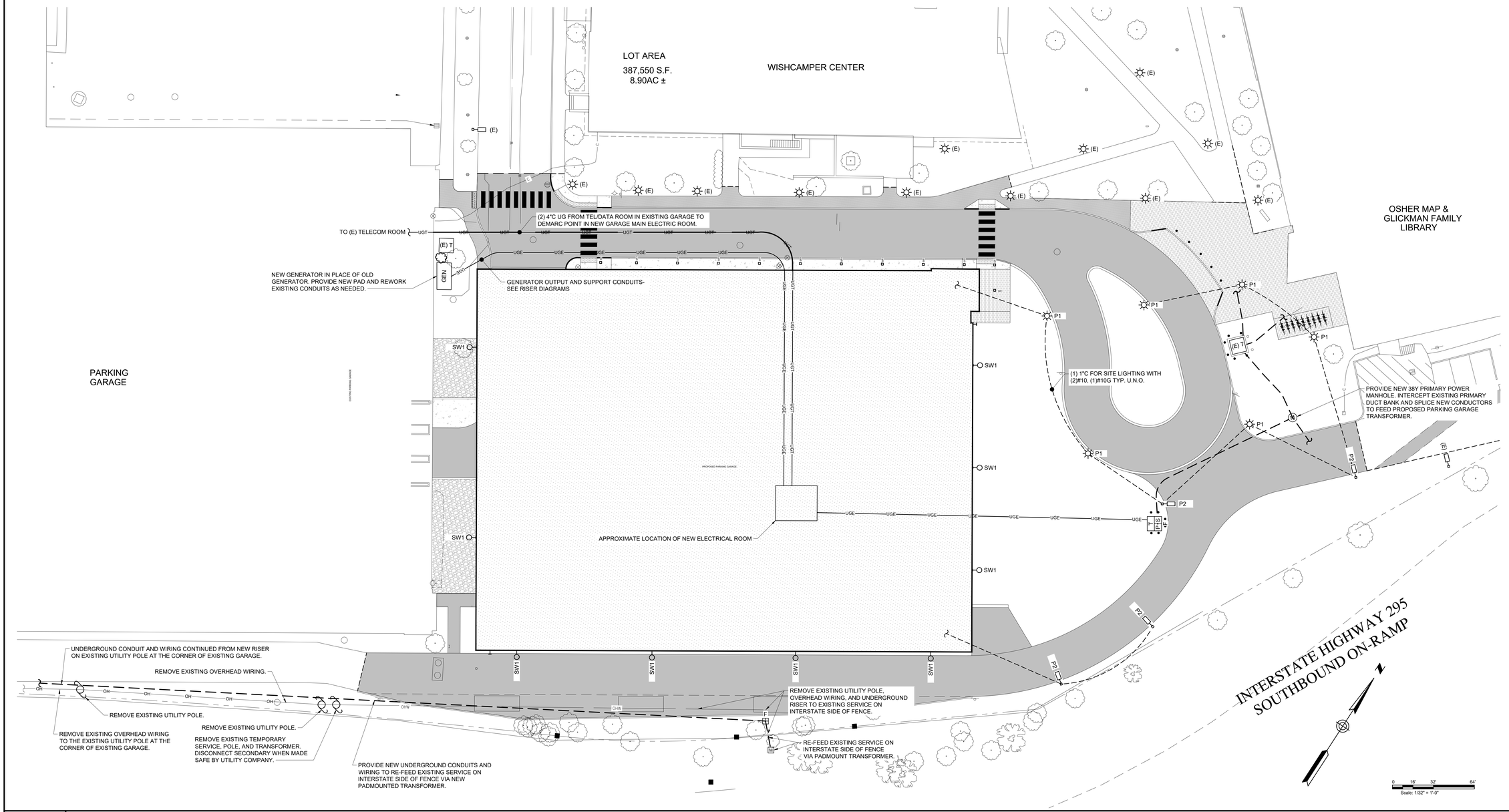
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SHEET TITLE:

ELECTRICAL SITE LEGEND, DETAILS, AND NOTES

ES-000



A1	ELECTRICAL SITE PLAN
SCALE: 1"=20'-0"	

7/2/2021 3:16:33 PM

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ELECTRICAL SITE PLAN AND NOTES

ES-100

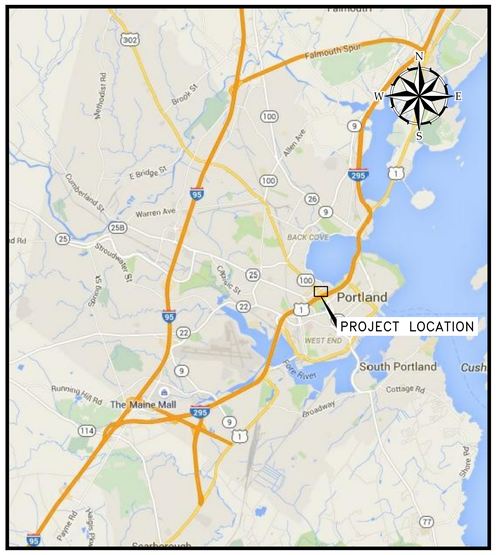
UNIVERSITY OF SOUTHERN MAINE
PORTLAND, MAINE

USM STRUCTURED PARKING GARAGE

PROJECT NO.
0233035.00

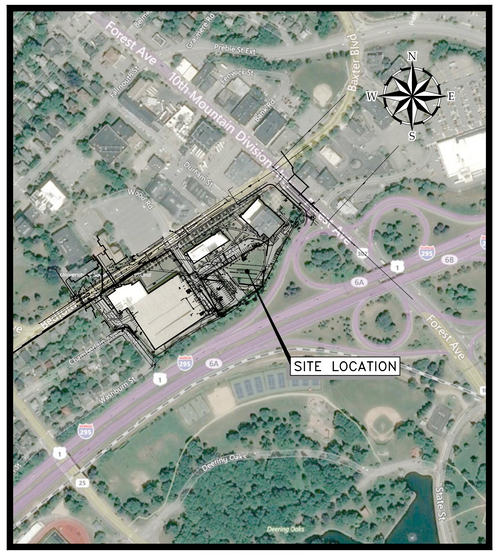
7/30/2021

SHEET INDEX		
Sheet Number	Sheet Title	Sheet Description
COVER	G-000	
1	G-001	GENERAL NOTES & LEGEND
2	EC-001	EXISTING CONDITIONS SURVEY -1
3	EC-002	EXISTING CONDISITONS SURVEY - 2
4	C-001	DEMOLITION & EROSION & SEDIMENT CONTROL PLAN
5	C-100	SITE LAYOUT & MATERIALS PLAN
6	C-101	UTILITY & GRADING PLAN
7	D-200	CIVIL DETAILS - 1
8	D-201	CIVIL DETAILS - 2
9	D-202	CIVIL DETAILS - 3
10	D-203	CIVIL DETAILS - 4
11	D-204	CIVIL DETAILS - 5



PROJECT LOCATION MAP

1 0 1 2
scale mile



SOURCE: BING MAPS

SITE LOCATION MAP

600 0 300 600
scale feet

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

COMMITMENT & INTEGRITY DRIVE RESULTS

\\woodardcurran.net\shared\Projects\0233035.00 usm - falmouth street garage\wip\Drawings\General\0233035.00 G000.dwg, Jul 29, 2021 - 2:58pm BMCDEVITT

GENERAL NOTES:

1. EXISTING CONDITIONS SHOWN HEREON HAVE BEEN PROVIDED FROM A FIELD SURVEY PREPARED BY OWEN HASKELL, INC TITLED "EXISTING CONDITIONS SURVEY – USM PORTLAND – WISHCAMPER LOT – PORTLAND MAINE", DATED JANUARY 27, 2019 AND REVISED WITH ADDITIONAL SURVEY ON APRIL 30, 2021.
2. ELEVATIONS ARE BASED ON CITY OF PORTLAND DATUM, NGVD 29.
3. BEARING ARE BASED ON MAINE STATE PLANE COORDINATE SYSTEM, WEST ZONE, NAD 83 PER COORDINATE DATA PROVIDED BY THE CITY OF PORTLAND DEPARTMENT OF PUBLIC WORKS..
4. EXISTING UTILITIES SHOWN ON THESE PLANS WERE COMPILED FROM A FIELD SURVEY PREPARED BY OWEN HASKELL, INC. THESE PLANS DO NOT NECESSARILY DEPICT THE EXACT LOCATIONS OF ALL UTILITIES, WHICH MAY EXIST AT THIS TIME WITHIN THE SURVEY LIMITS. THERE MAY BE EXISTING LINES OTHER THAN THOSE INDICATED. THE LOCATIONS AND ELEVATIONS OF ALL EXISTING UTILITIES SHALL BE CONSIDERED APPROXIMATE AND MUST BE VERIFIED BY THE CONTRACTOR PRIOR TO ANY UTILITY CONNECTIONS OR CROSSINGS OF PROPOSED OR EXISTING UTILITIES. THE CONTRACTOR SHALL REPORT ANY DISCREPANCIES TO THE ENGINEER IN WRITING. THE CONTRACTOR SHALL CONTACT THE RESPECTIVE UTILITY COMPANIES RELATIVE TO THE LOCATIONS AND ELEVATIONS OF THESE LINES. NO SEPARATE OR ADDITIONAL COMPENSATION WILL BE ALLOWED TO THE CONTRACTOR DUE TO ANY VARIANCE BETWEEN THE DATA SHOWN ON THE PLANS AND ACTUAL FIELD CONDITIONS ENCOUNTERED. THE CONTRACTOR IS RESPONSIBLE FOR HIS/HER OWN DETERMINATION AS TO THE TYPE AND LOCATION OF THE EXISTING UTILITIES AS MAY BE NECESSARY TO AVOID DAMAGE AND TO FACILITATE THE PROPOSED CONNECTION(S).
5. CONTRACTOR SHALL BE RESPONSIBLE FOR ALL RELOCATIONS THAT CONFLICT WITH THE PROPOSED IMPROVEMENTS SHOWN ON THE SITE DRAWINGS, INCLUDING BUT NOT LIMITED TO ALL UTILITIES, STORM INFRASTRUCTURE, SIGNS, UTILITY POLES, FENCES, ETC. AS REQUIRED. ALL WORK SHALL BE IN ACCORDANCE WITH THE GOVERNING AUTHORITY'S SPECIFICATIONS AND SHALL BE APPROVED BY SUCH. ALL COSTS SHALL BE INCURRED BY THE CONTRACTOR.
6. THE CONTRACTOR SHALL CALL "DIG SAFE" (811) AT LEAST 72 HOURS PRIOR TO EXCAVATION IN ACCORDANCE WITH LOCAL, STATE AND FEDERAL SAFETY CODES.
7. LAND OUTSIDE THE PROPOSED LIMIT OF WORK SHALL NOT BE DISTURBED BY THE CONTRACTOR.
8. PRIOR TO CONSTRUCTION, THE ENGINEER AND CONTRACTOR WILL REVIEW THE PERMITTED LIMITS OF WORK.
9. THE CONTRACTOR SHALL BE RESPONSIBLE FOR ESTABLISHING AND MAINTAINING ALL CONTROL POINTS AND BENCH MARKS NECESSARY FOR THE WORK.
10. THE CONTRACTOR SHALL COMPLY WITH ALL APPLICABLE LOCAL, STATE AND FEDERAL SAFETY CODES, REGULATIONS, LEGAL REQUIREMENTS, PERMIT CONDITIONS, ETC.
11. THE CONTRACTOR SHALL TAKE ADEQUATE PRECAUTIONS TO PROTECT ALL WALKS, STREETS, PAVEMENTS, CURBING, TREES, PLANTINGS, LAWN, FENCING TO REMAIN ON OR OFF THE PREMISES, AND SHALL REPAIR AND REPLACE AT HIS/HER OWN EXPENSE, AS DIRECTED BY THE ENGINEER, ANY ITEMS DAMAGED AS A RESULT OF THE CONTRACTOR'S WORK.
12. THE CONTRACTOR SHALL PROVIDE ADEQUATE BRACING AND SHORING OF ALL EXCAVATIONS IN ACCORDANCE WITH THE REQUIREMENTS OF ALL GOVERNING CODES AND REGULATIONS.
13. WORK WITHIN PUBLIC RIGHT–OF–WAY SHALL COMPLY WITH APPLICABLE MUNICIPAL AND STATE REQUIREMENTS.
14. IF ANY EXISTING STRUCTURES TO REMAIN ARE DAMAGED DURING CONSTRUCTION IT SHALL BE THE CONTRACTOR'S RESPONSIBILITY TO REPAIR AND/OR REPLACE THE EXISTING STRUCTURE AS NECESSARY.
15. IF IMPORTED FILL MATERIAL IS REQUIRED, IT SHALL BE CERTIFIED IN WRITING BY A STATE LICENSED PROFESSIONAL ENGINEER AS NON–CONTAMINATED, CLEAN FILL SUITABLE FOR THE INTENDED USE. THE CONTRACTOR SHALL BE RESPONSIBLE FOR ALL TESTING OF ENVIRONMENTAL PARAMETERS AS OUTLINED IN THE PROJECT SPECIFICATIONS.
16. RESTORE ALL AREAS DISTURBED BY CONTRACTOR'S OPERATIONS TO ORIGINAL FINISH (GRAVEL, PAVEMENT, RIPRAP, GRASS, ETC.) UNLESS OTHERWISE NOTED ON PLANS. RESTORATION OF ALL AREAS DAMAGED BY CONTRACTOR SHALL BE INCIDENTAL TO THE PROJECT.
17. ALL CURB DAMAGED DURING CONSTRUCTION SHALL BE REPLACED IN KIND AND SHALL CONFORM TO SPECIFICATIONS. COST IS INCIDENTAL TO CONTRACT.
18. PROPERLY PROTECT AND DO NOT DISTURB PROPERTY IRONS, MONITORING WELLS, AND MONUMENTS. IF DISTURBED, THE PROPERTY MONUMENT WILL BE RESET AT THE CONTRACTOR'S EXPENSE BY A REGISTERED LAND SURVEYOR APPROVED BY THE ENGINEER.
19. ALL MATERIAL SHALL BE FURNISHED BY CONTRACTOR UNLESS OTHERWISE NOTED.
20. CONTRACTOR IS RESPONSIBLE FOR FIELD VERIFICATION OF ALL DIMENSIONS PRIOR TO START OF CONSTRUCTION.
21. CONTRACTOR IS RESPONSIBLE FOR OBTAINING ALL NECESSARY CONSTRUCTION PERMITS SO AS NOT TO DELAY CONSTRUCTION.
22. ALL SIGNAGE SHALL CONFORM WITH THE MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES (MUTCD).
23. THE CONTRACTOR SHALL BE RESPONSIBLE FOR COMPLYING WITH ALL CONDITIONS OF THE LOCAL/ STATE/ FEDERAL PERMITS.
24. THE ENTIRE SITE SHALL BE DEVELOPED AND/OR MAINTAINED AS DEPICTED ON THE SITE PLAN. APPROVAL OF THE PLANNING AUTHORITY OR PLANNING BOARD SHALL BE REQUIRED FOR ANY ALTERATION TO OR DEVIATION FROM THE APPROVED SITE PLAN, INCLUDING, WITHOUT LIMITATION: TOPOGRAPHY, DRAINAGE, LANDSCAPING, RETENTION OF WOODED OR LAWN AREAS, ACCESS, SIZE, LOCATION, AND SURFACING OF PARKING AREAS.
25. DO NOT PARK, IMPEDE ACCESS TO, OR STORE EQUIPMENT ON ADJACENT CITY OR PRIVATELY OWNED LOTS, UNLESS PERMISSION HAS BEEN GRANTED IN ADVANCE IN WRITING BY CITY AND/OR LAND OWNER
26. PRIOR TO CONSTRUCTION, A PRECONSTRUCTION MEETING SHALL BE HELD AT THE PROJECT SITE WITH THE CONTRACTOR, ENGINEER, CITY OF PORTLAND DEVELOPMENT REVIEW COORDINATOR, CITY OF PORTLAND DEPARTMENT OF PUBLIC WORKS REPRESENTATIVE, AND OWNER TO REVIEW THE CONSTRUCTION SCHEDULE AND CRITICAL ASPECTS OF THE SITE WORK. AT THAT TIME, THE SITE/BUILDING CONTRACTOR SHALL PROVIDE THREE (3) COPIES OF A DETAILED CONSTRUCTION SCHEDULE TO THE ATTENDING CITY REPRESENTATIVE. IT SHALL BE THE CONTRACTOR'S RESPONSIBILITY TO ARRANGE A MUTUALLY AGREEABLE TIME FOR THE PRECONSTRUCTION MEETING.
27. CONTRACTOR SHALL PROVIDE AND MAINTAIN EROSION AND SEDIMENTATION CONTROL MEASURES IN ACCORDANCE WITH THESE PLANS AND THE LATEST EDITION OF THE MAINE DEPARTMENT OF ENVIRONMENTAL PROTECTION'S BEST MANAGEMENT PRACTICES MANUAL. KEEP ALL STREETS FREE OF DUST, MUD, AND DEBRIS. STREETS AND WALKWAYS SHALL BE SWEPT REGULARLY, AND TEMPORARY CONSTRUCTION ENTRANCES SHALL BE UTILIZED DURING CONSTRUCTION.
28. CONTRACTOR IS REQUIRED TO PERFORM ALL WORK IN ACCORDANCE WITH REQUIREMENTS OUTLINED WITHIN THE MAINE CONSTRUCTION GENERAL PERMIT. CONTRACTOR SHALL FILE A NOTICE OF TERMINATION WITH PHOTOGRAPHS AND REQUIRED ATTACHMENTS TO THE MAINE DEPARTMENT OF ENVIRONMENTAL PROTECTION UPON COMPLETION OF THE PROJECT. A DRAFT OF THE NOTICE WILL BE PROVIDED TO THE OWNER AND THE OWNER'S REPRESENTATIVE FOR REVIEW PRIOR TO SUBMISSION. A COPY OF THE NOTICE CAN BE OBTAINED AT WWW.MAINE.GOV/DEP/LAND/STORMWATER/CONSTRUCTION.HTML
29. CONTRACTOR SHALL MAINTAIN EROSION CONTROL AND STORMWATER POLLUTION PREVENTION SYSTEMS IN COMPLIANCE WITH THE REQUIREMENTS OF THE MAINE CONSTRUCTION GENERAL PERMIT (MCGP). CONTRACTOR SHALL CONDUCT AND MAINTAIN RECORDS OF EROSION CONTROL INSPECTIONS PER THE NOTICE OF INTENT TO COMPLY WITH THE MAINE CONSTRUCTION GENERAL PERMIT. SUBMIT A COPY OF THE INSPECTION RECORDS TO THE OWNER AND ENGINEER.
30. A COMPLETE SET OF "RECORD" DRAWINGS THAT REFLECT ANY AND ALL MODIFICATIONS TO THE STORM SEWER SYSTEM AND ANY OTHER UTILITY INSTALLATIONS OR ALTERATIONS WITHIN THE PROJECT LIMITS SHALL BE SUBMITTED TO THE OWNER AND ENGINEER.
31. ACTIVITIES THAT HAVE THE POTENTIAL TO DISTURB SOIL SUCH AS UTILITY AND SUBSURFACE STRUCTURE INSTALLATION/RELOCATION WORK, GRADING, PAVING, AND LANDSCAPING SHALL BE CONDUCTED IN ACCORDANCE WITH THE SOIL MANAGEMENT PLAN. APPLICABLE SOIL MANAGEMENT PROCEDURES INCLUDE SITE CONTROLS AND CONSTRUCTION MEASURES TO REDUCE EXPOSURE TO SOIL DURING CONSTRUCTION, AS WELL AS TO FACILITATE THE PROPER HANDLING, STORAGE, CHARACTERIZATION, TRANSPORT, ONSITE REUSE, AND/OR OFFSITE REUSE, OR DISPOSAL, OF EXCESS SOIL THAT MAY BE GENERATED DURING CONSTRUCTION.
32. PRIOR TO CONSTRUCTION, THE CONTRACTOR SHALL PROVIDE A MAINTENANCE AND PROTECTION OF TRAFFIC (MPT) PLAN IN ACCORDANCE WITH ALL LOCAL, STATE AND FEDERAL REQUIREMENTS.

DEMOLITION NOTES:

1. PRIOR TO THE START OF DEMOLITION, THE CONTRACTOR SHALL OBTAIN ALL NECESSARY PERMITS AND/OR APPROVALS FROM THE CITY OF PORTLAND, AND ALL OTHER AUTHORITIES HAVING JURISDICTION.
2. CONSTRUCTION/DEMOLITION DEBRIS NOT APPROVED FOR REUSE ON–SITE, SHALL BE REMOVED AND DISPOSED OFF SITE IN ACCORDANCE WITH THE REQUIREMENTS OF ALL AUTHORITIES HAVING JURISDICTION. WASTE MANIFEST FORMS DOCUMENTING PROPER OFF–SITE DISPOSAL SHALL BE PROVIDED TO THE SITE/CIVIL ENGINEER AND THE CITY OF PORTLAND.
3. PRIOR TO THE START OF DEMOLITION, THE CONTRACTOR SHALL VERIFY THE LOCATION OF EXISTING UTILITIES TO BE DEMOLISHED OR TO REMAIN PROTECTED DURING CONSTRUCTION. IF ANY DISCREPANCIES ARE FOUND, THE CONTRACTOR SHALL NOTIFY THE OWNER AND ENGINEER IN WRITING OF THE CONFLICT.
4. THE CONTRACTOR SHALL PROTECT ALL EXISTING UTILITIES TO REMAIN. ANY TEMPORARY SHUT DOWNS REQUIRED TO FACILITATE THE PROPOSED CONSTRUCTION, WHICH MAY AFFECT USES ON ADJACENT PROPERTIES SHALL BE COORDINATED BY THE CONTRACTOR AND THE APPROPRIATE UTILITY.
5. CONTRACTOR SHALL REPAIR OR REPLACE ANY STRUCTURES OR UTILITIES DAMAGED DURING CONSTRUCTION. THE CONTRACTOR SHALL PROCEED WITH CAUTION WITHIN THE PROPOSED WORK AREA TO PREVENT ANY INTERRUPTION TO EXISTING UTILITY SERVICE.
6. CONTRACTOR SHALL COVER CONSTRUCTION DUMPSTERS AND ROLL–OFF CONTAINERS, AND STORE ALL CONSTRUCTION CHEMICALS INSIDE THE CONSTRUCTION TRAILER OR UNDER A COVERED AREA DURING PERIODS WHEN CONSTRUCTION CEASES.
7. SAWCUTS IN EXISTING PAVEMENT SHALL BE SMOOTH AND STRAIGHT.
8. EXISTING FACILITIES (I.E. SIGNS, POLES, CURB, ETC.) SHALL BE REMOVED AND PROTECTED DURING CONSTRUCTION. OWNER RETAINS RIGHT TO KEEP ANY AND ALL REMOVED FACILITIES. CONTRACTOR SHALL DISPOSE OF ANY REMOVED FACILITY AT THE REQUEST OF THE OWNER AT CONTRACTOR'S EXPENSE.

LAYOUT AND MATERIALS NOTES:

1. ALL DIMENSIONS AND RADII ARE TO THE FACE OF CURB UNLESS OTHERWISE NOTED.

GRADING AND DRAINAGE NOTES:

1. CASTINGS FOR EXISTING STRUCTURES TO REMAIN AND PROPOSED STRUCTURES SHALL BE SET TO THE PROPOSED ELEVATIONS SHOWN ON THE DRAWINGS.
2. THE FILLING OF SOIL OVER THE ROOTS OF TREES TO BE PRESERVED IS PROHIBITED.
3. CLEAN AND/OR FLUSH ALL MANHOLES AND SITE PIPING AFTER THE WORK HAS BEEN COMPLETED. NO SEPARATE PAYMENT WILL BE MADE FOR THIS WORK.
4. PROVIDE END CAPS ON ALL UNDERDRAIN PIPING EXCEPT WHERE DAYLIGHTED, UNLESS OTHERWISE NOTED.

UTILITIES NOTES:

1. ALL PROPOSED UTILITIES (WATER, ELECTRIC, SANITARY, STORM SEWER, ETC.) AND THEIR CONNECTIONS, DISCONNECTION AND RELOCATION OF EXISTING UTILITIES SHALL BE COMPLETED IN ACCORDANCE WITH THE REQUIREMENTS OF THE UTILITY COMPANY HAVING JURISDICTION. ANY COORDINATION WITH THE MUNICIPALITY AND/OR UTILITY COMPANY, PERMITS OR APPROVALS REQUIRED SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR.

CONSTRUCTION PHASING:

CONSTRUCTION SHALL BE PHASED SUCH THAT ALL DISTURBED AREAS SHALL FIRST BE PROTECTED WITH EROSION AND SEDIMENT CONTROLS AS INDICATED ON THE PLANS PRIOR TO THE START OF ANY GROUND DISTURBING ACTIVITIES. THE CONSTRUCTION PHASING DESCRIBED BELOW IS FOR GENERAL PURPOSES ONLY, AND WILL BE DETERMINED BY THE CONTRACTOR. THE CONTRACTOR IS SOLELY RESPONSIBLE FOR HIS/HER MEANS AND METHODS OF CONSTRUCTION. GENERAL CONSTRUCTION SEQUENCING IS AS FOLLOWS:

1. INSTALLATION OF EROSION AND SEDIMENT CONTROL PRACTICES AS INDICATED ON THE PLANS.
2. DEMOLITION AND REMOVAL OF EXISTING PAVEMENT, CURB, TREES, UTILITIES, ETC.
3. STRIP AND STOCKPILE TOPSOIL AT DESIGNATED STORAGE AREA.
4. BEGIN ROUGH GRADING AND EARTHWORK ACTIVITIES (EXCAVATION OPERATIONS).
5. INSTALL STORM SEWER SYSTEM (BEGINNING AT FURTHEST DOWNSTREAM STRUCTURE).
6. PLACE INLET PROTECTION ON PROPOSED CATCH BASINS AS SHOWN ON THE DRAWINGS.
7. INSTALL ELECTRICAL UTILITIES.
8. INSTALL BITUMINOUS CONCRETE PAVEMENT SUBBASE AND BITUMINOUS CONCRETE BINDER COURSES AS SPECIFIED ON PLANS.
9. FINISH GRADING, REDISTRIBUTE STOCKPILED TOPSOIL AND ESTABLISH VEGETATION ON ALL DISTURBED AND NEW PERVIOUS AREAS.
10. CLEAN BITUMINOUS CONCRETE PAVEMENT AND STORM SEWER OF ALL DEBRIS AND SEDIMENT.
11. COMPLETE SITE CONSTRUCTION.
12. INSTALLATION OF BITUMINOUS PAVEMENT CONCRETE TOP COURSE (THIS WEARING COURSE SHALL BE INSTALLED NEAR COMPLETION OF PROJECT).
13. ACHIEVE PERMANENT AND FINAL STABILIZATION OF AREAS DISTURBED DURING CONSTRUCTION.
14. REMOVE ALL TEMPORARY EROSION AND SEDIMENT CONTROL PRACTICES FROM THE SITE.

LEGEND

EXISTING		PROPOSED
122	CONTOUR (1' INTERVAL)	122
120	CONTOUR (INDEX)	120
S	SANITARY SEWER	S
FM	FORCE MAIN	
SD	STORM DRAIN	SD
UD	UNDERDRAIN	UD
W	WATER MAIN	
E	UNDERGROUND ELECTRIC	E
T	UNDERGROUND TELEPHONE	
G	GAS LINE	G
OE	OVERHEAD ELECTRIC	
P	PROPERTY LINE	
R/W	RIGHT OF WAY	
	EASEMENT	
X X	FENCE	
	VERTICAL CURB	
	SLOPED GRANITE CURB	
	TIPDOWN CURB	
	EDGE OF PAVEMENT	
	EDGE OF GRAVEL	
	GUARDRAIL	
	STORM DRAIN PIPE & CATCH BASIN	
	SEDIMENT BARRIER	
	LIMIT OF WORK	LW
	SANITARY SEWER MANHOLE	
	CLEAN OUT	CO
	DRAINAGE MANHOLE	DMH
	CATCH BASIN	
	SEWER MANHOLE	SMH
	GAS METER BOX	
	GAS VENT	
	GATE GATE	
	TRANSFORMER	
	UTILITY POLE	
	UTILITY PILE WITH GUY	
	LIGHTPOST	
	WATER GATE	
	CURB STOP	
	HYDRANT	
	PROPERTY MONUMENT	
	STREET AND MISCELLANEOUS SIGNS	
XXX.XX	SPOT ELEVATION	XXX.XX
	DECIDUOUS TREE	
	CONIFEROUS TREE	
	SHRUB	
	BITUMINOUS PAVEMENT	
	POROUS PAVEMENT	
	CONCRETE SIDEWALK	
	PAVER AREA, SEE LANDSCAPING PLANS	
	STONE AREA, SEE LANDSCAPING PLANS	

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PREFERRED CONSTRUCTION MGMT
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PORTLAND, ME 04103

SEAL / SIGNATURE

STATE OF MAINE
ASHLEY FLETCHER
No. 13750
LICENSED PROFESSIONAL ENGINEER

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PROJECT:

USM - Structured Parking Garage

Address

44 Bedford Street,
Portland ME 04104

REVISIONS:

No.	Date	Description

SUBMISSIONS:

Date	Issued For:
07/30/21	Site Plan Submittal

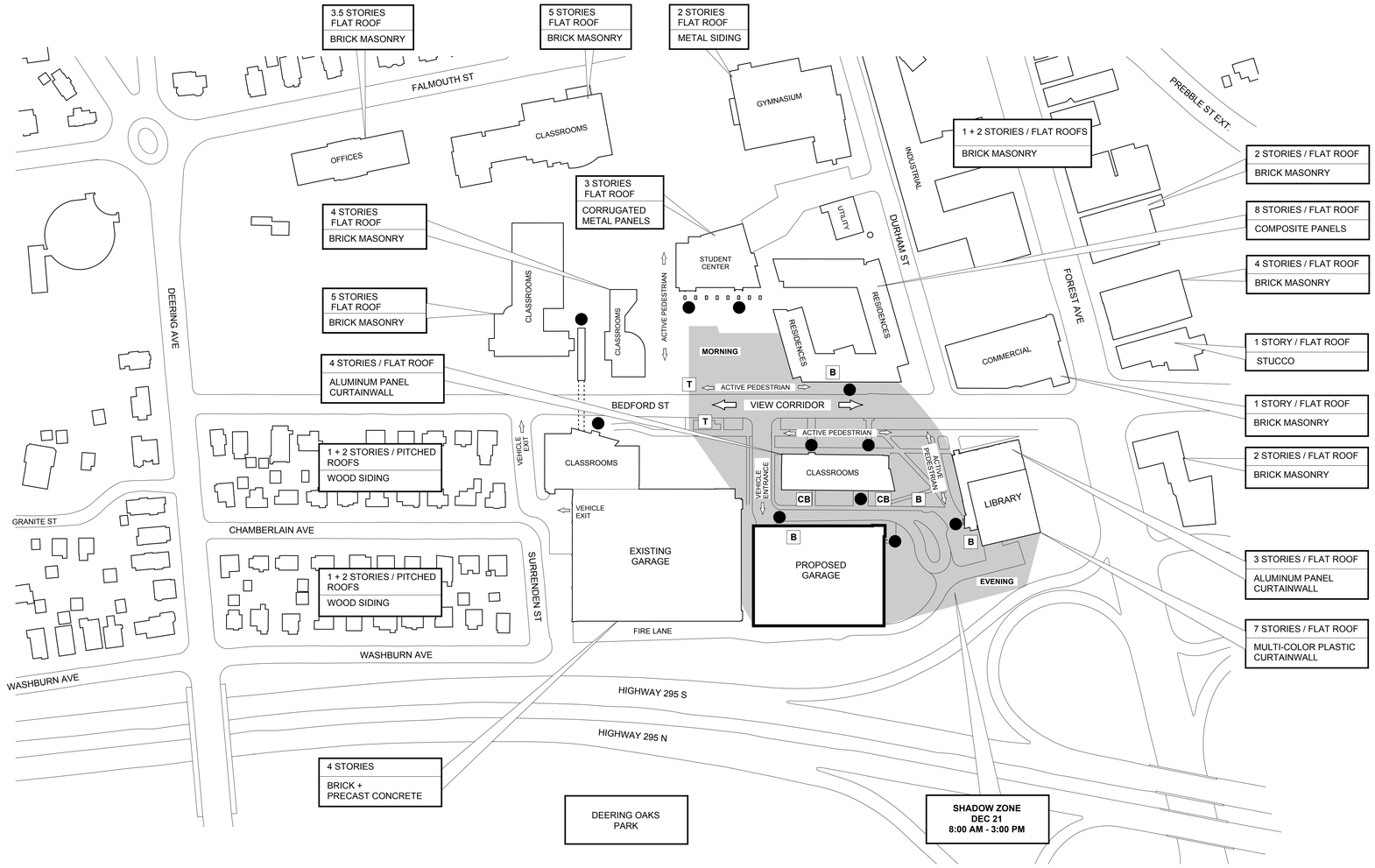
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DATE ISSUED	**7/30/2021**
PROJECT NO	**20-20145.00-1**
DRAWN BY	**B.C.M.**
CHECKED BY	**A.E.F.**

SHEET TITLE:

GENERAL NOTES & LEGEND

G-001

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G: 25.0 T: 74.0 H: 49	G: 23.0 T: 72.0 H: 49
G: 25.0 T: 74.0 H: 49	G: 23.0 T: 72.0 H: 49

PROPOSED GARAGE HEIGHT DIAGRAM

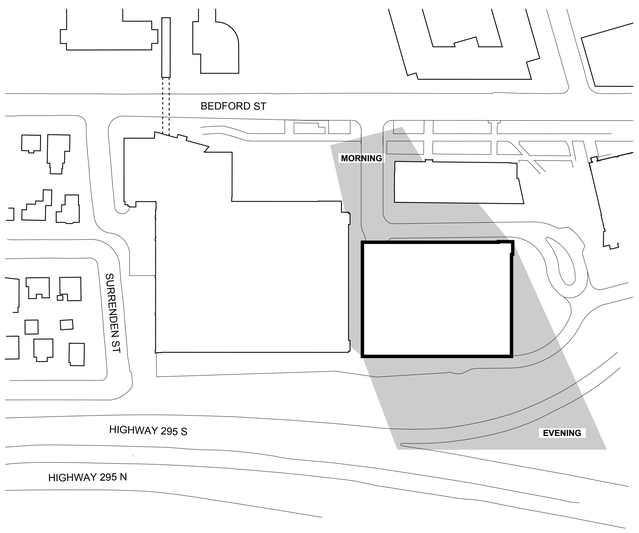
G - ELEVATION OF GRADE AT CORNER
T - ELEVATION OF TOP OF ROOF LEVEL SPANDREL BEAM
H - HEIGHT OF BUILDING AT CORNER

AVERAGE HEIGHT = 49'

USM OVERLAY ZONE ALLOWS 85'

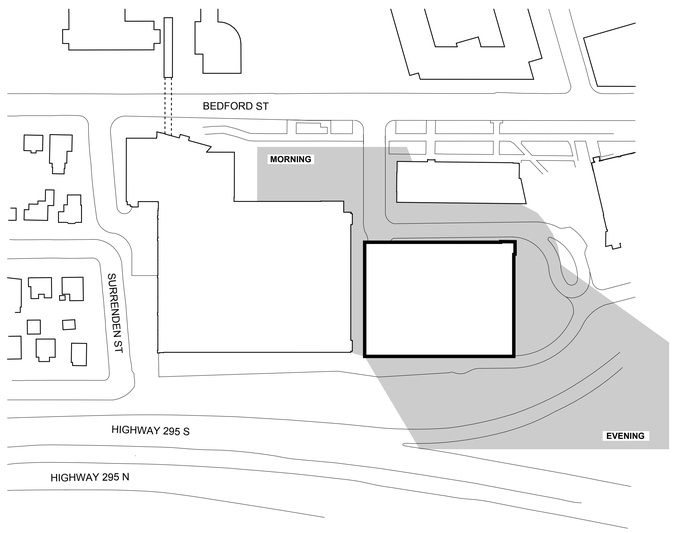
LEGEND

- AREA SUBJECT TO SHADOW CAST BY PROPOSED GARAGE ON WINTER SOLSTICE BETWEEN 1 HOUR AFTER SUNRISE TO 1 HOUR BEFORE SUNSET
- MAJOR PEDESTRIAN ARRIVAL POINTS
- B — BICYCLE RACK OR STORAGE ROOM
- CB — FUTURE CITIBIKE STATION
- T — BUS STOP



SHADOWS CAST MARCH + SEPTEMBER 21ST

6:46 AM TO 4:50 PM



SHADOWS CAST JUNE 21ST

5:05 AM TO 6:20 PM

NORTH

100 0 100 200

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

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2021

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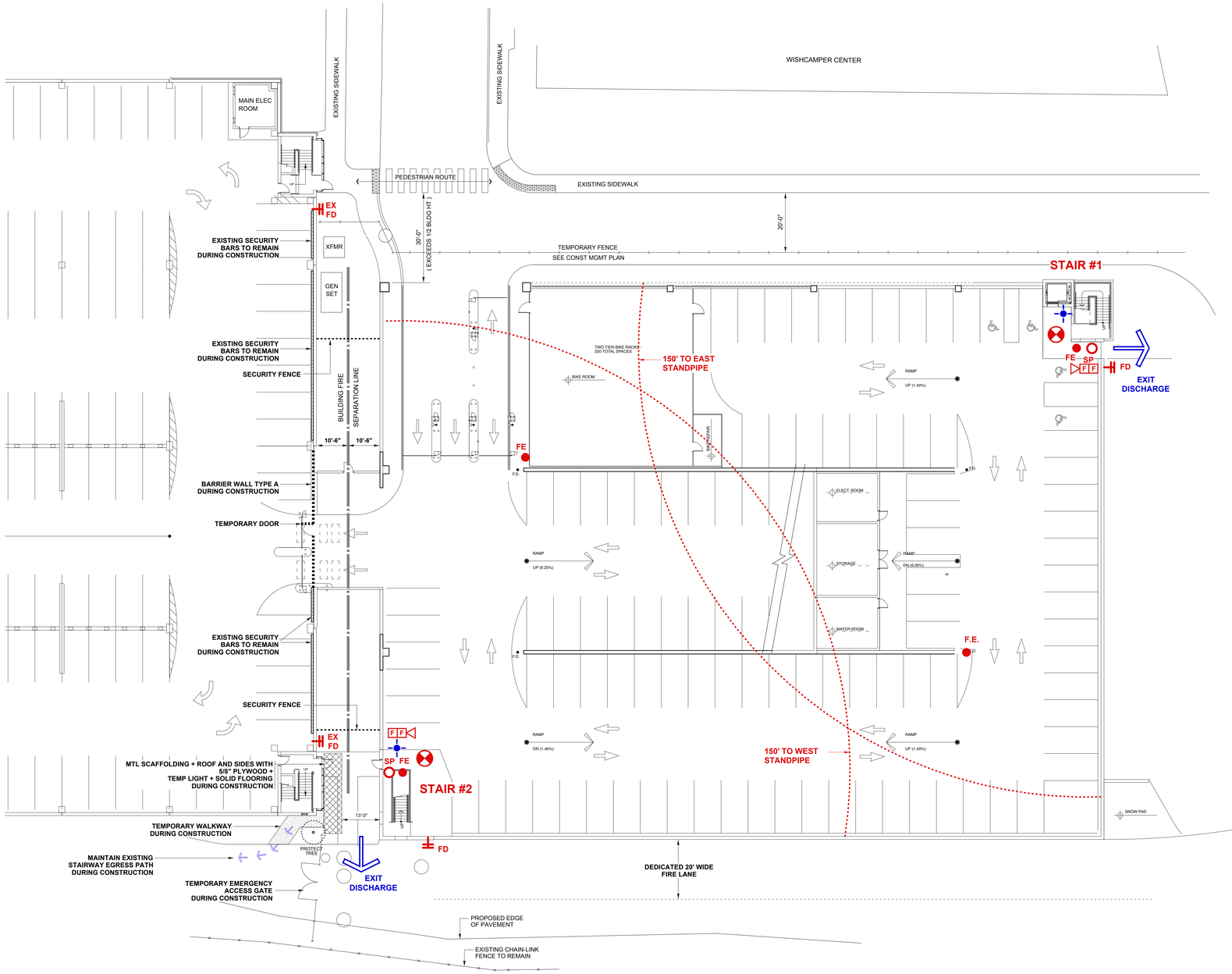
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Context +

Shadow Plans

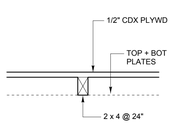
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GROUND LEVEL LAYOUT PLAN

1" = 16' - 0"



BARRIER WALL TYPE A

INFILL OPENING IN EXISTING PRECAST CONC WALL

TEMPORARY BARRIER WALL TYPES

1" = 1' - 0"

Legend

- EXIT
- SP — DRY STANDPIPE
- EX FD — EXISTING STANDPIPE HOSE CONNECTION
- FD — STANDPIPE HOSE CONNECTION
- FE — FIRE EXTINGUISHER
- SECURITY CALL BOX
- F F — FIRE ALARM PULL STATION + ANNUNCIATOR

NORTH

16 0 16 32

BAR SCALE

1" = 16'

CHECK GRAPHIC SCALE BEFORE USING

BUILDING CODE SUMMARY

University of Southern Maine Parking Garage
Building Address: Portland, ME

APPLICABLE CODES (Per MUBEC: Maine Uniform Building and Energy Code)

Building	IBC 2015 (International Building Code)
	IEBC 201 (International Existing Building Code)
Electrical	National Electrical Code 2009
Fire Protection	NFPA Life Safety Code 2015 and NFPA 1 Uniform Fire Code
Mechanical	International Mechanical Code 2015
Plumbing	Maine State Internal Plumbing Code (UPC 2015)
Energy	IECC 2015 (International Energy Conservation Code)
Accessibility	ADA 2010 (Americans With Disabilities Act)

PROJECT DESCRIPTION:
New Construction - Parking Garage

Open or Closed	**Open**
Proposed Construction Type :	Type II B / NFPA II (000)
Gross Area Per Tier:	45,050 +/- Per Tier
Height :	Grade + 4 Tiers / 49'-9" (Top of Roof Spandrel Beams)
Use Group IBC :	Open Parking Garage Section 406
Use Group NFPA :	Open Parking Garage Chapter 42.8
High Rise Requirements	Not Applicable
Automatic Suppression System	No
Dry Standpipe System	Yes
Multiple Occupancies	No

BUILDING CODE REQUIREMENTS (IBC 2015)

Height and Area Summary (Table 406.5.4)

Allowable Height :	8 Tiers
Allowable Area	50,000 SF/Tier

REQUIRED FIRE RESISTANCE RATINGS

ELEMENT (IBC Table 601/NFPA 101 Table A8.2.1.2)	RATING (In Hours)
Primary Structural Frame	**0**
Bearing Walls:	
Exterior	**0**
Interior	**0**
Non-Bearing Walls & Partitions	
Exterior	**0**
Interior	**0**
Floor Construction & Secondary Members	**0 (1 Hour Provided)**
Roof Construction & Secondary Members	**0 (1 Hour Provided)**

SPECIFIC ROOM RATINGS	RATING (In Hours)
Stairs and Floor Openings	**0**
Parking Open Ramps	**0**
Offices + Break Room	**0**
Electrical	**0**
Elevator Shaftway	**2**

EXTERIOR WALL PROTECTION

Wall Fire Resistance Rating (Table 602)	**0** (No rating for 10' or greater per Note c.)
Openings Rating (Table 705.8)	**0** (No rating for 10' or greater per Note g.)

OCCUPANCY LOADS

NFPA Per Chapter 42.8.1.7 :	None
IBC Per Table 1004.1.2 :	1 Per 200 GSF / 226 Per Tier
Egress Width Required : Stairs @ 0.3" Per Person	68"
Egress Width Provided :	96"' / (2) 48" Wide Stairs
Stair Exit Door Width Required: 0.2" Per Person	46"
Stair Exit Door Width Provided:	32" Clear Door @ Each Stair

NOTES

1. THE CONSTRUCTION MANAGER SHALL PROVIDE A CONSTRUCTION PHASING PLAN OUTLINING WORK ZONES AND PROTECTION AND SEPARATION FEATURES.
2. CONSTRUCTION MANAGER SHALL OBTAIN APPROVAL OF PROTECTION AND SEPARATION PROVISIONS PRIOR TO EACH PHASE FROM THE CITY CODES ENFORCEMENT OFFICE.

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PORTLAND, ME 04101

CIVIL ENGINEER
WOODARD & CURRAN
41 HUTCHINS DRIVE
PORTLAND, ME 04102

LANDSCAPE ARCHITECT
MICHAEL BOUCHER
LANDSCAPE ARCHITECTURE
457 US ROUTE 1 SUITE 2
FREEPORT, ME 04032

MEP/FP ENGINEER
ALLIED ENGINEERING
160 VERANDA STREET
PORTLAND, ME 04103

GEOTECHNICAL ENGINEER
S.W. COLE
286 PORTLAND ROAD
GREY, ME 04039

TRAFFIC ENGINEER
VANASSE HANGEN BRUSTLIN INC
40 IDX DR 100 #200, SOUTH
BURLINGTON, VT 05403

COST ESTIMATOR
PREFERRED CONSTRUCTION MGMT
94 AUBURN ST,
PORTLAND, ME 04103

SEAL / SIGNATURE

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PROJECT:

USM - Structured Parking Garage

Address
44 Bedford Street,
Portland ME 04104

REVISIONS:

No.	Date	Description

SUBMISSIONS:

Date	Issued For:
07/30/21	Site Plan Submittal

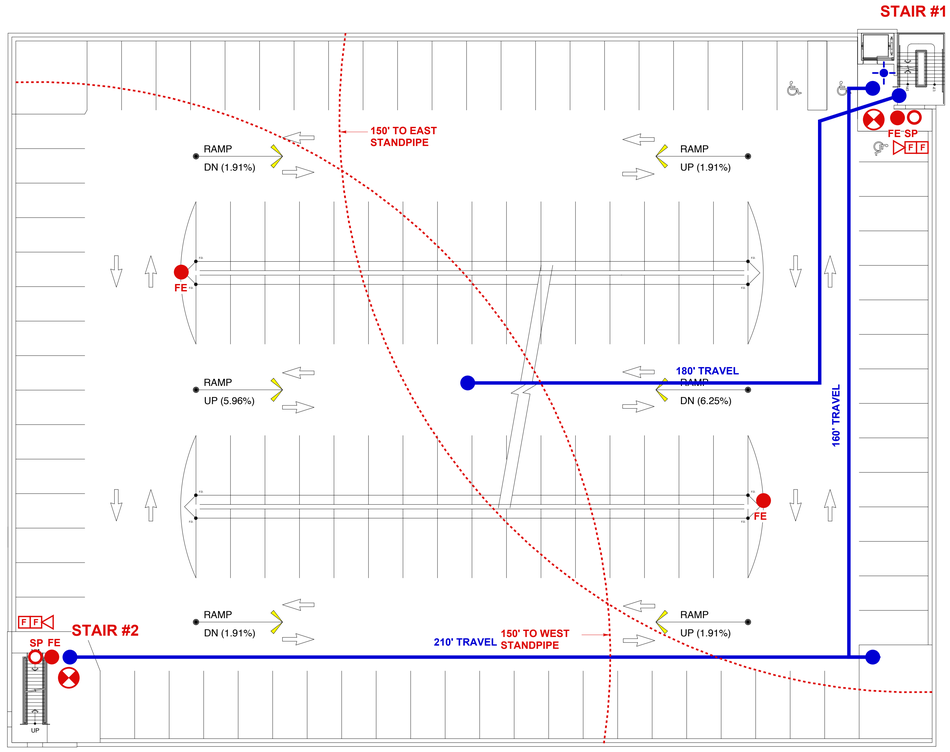
SCALE	1/16" = 1'-0"
DATE ISSUED	07/30/2021
PROJECT NO	20-20145.00-1
DRAWN BY	
CHECKED BY	

SHEET TITLE:

Ground Level Code Information Plan

G - 101

7/2/2021 3:16:33 PM



TYPICAL FLOOR LAYOUT PLAN

1" = 16' - 0"

Legend

- EXIT
- SP — DRY STANDPIPE
- EX FD — EXISTING STANDPIPE HOSE CONNECTION
- FD — STANDPIPE HOSE CONNECTION
- FE — FIRE EXTINGUISHER
- SECURITY CALL BOX
- F F — FIRE ALARM PULL STATION + ANNUNCIATOR

NORTH

16 0 16 32

BAR SCALE

1" = 16'

CHECK GRAPHIC SCALE BEFORE USING

UNIVERSITY OF SOUTHERN MAINE

25 Bedford Street, Portland, ME 04104
207.712.5183 | USM.MAINE.EDU

PROJECT TEAM:

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UNIVERSITY OF SOUTHERN MAINE

PRIME CONSULTANT
& STRUCTURAL ENGINEER

DESMAN Design Management

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ARCHITECT
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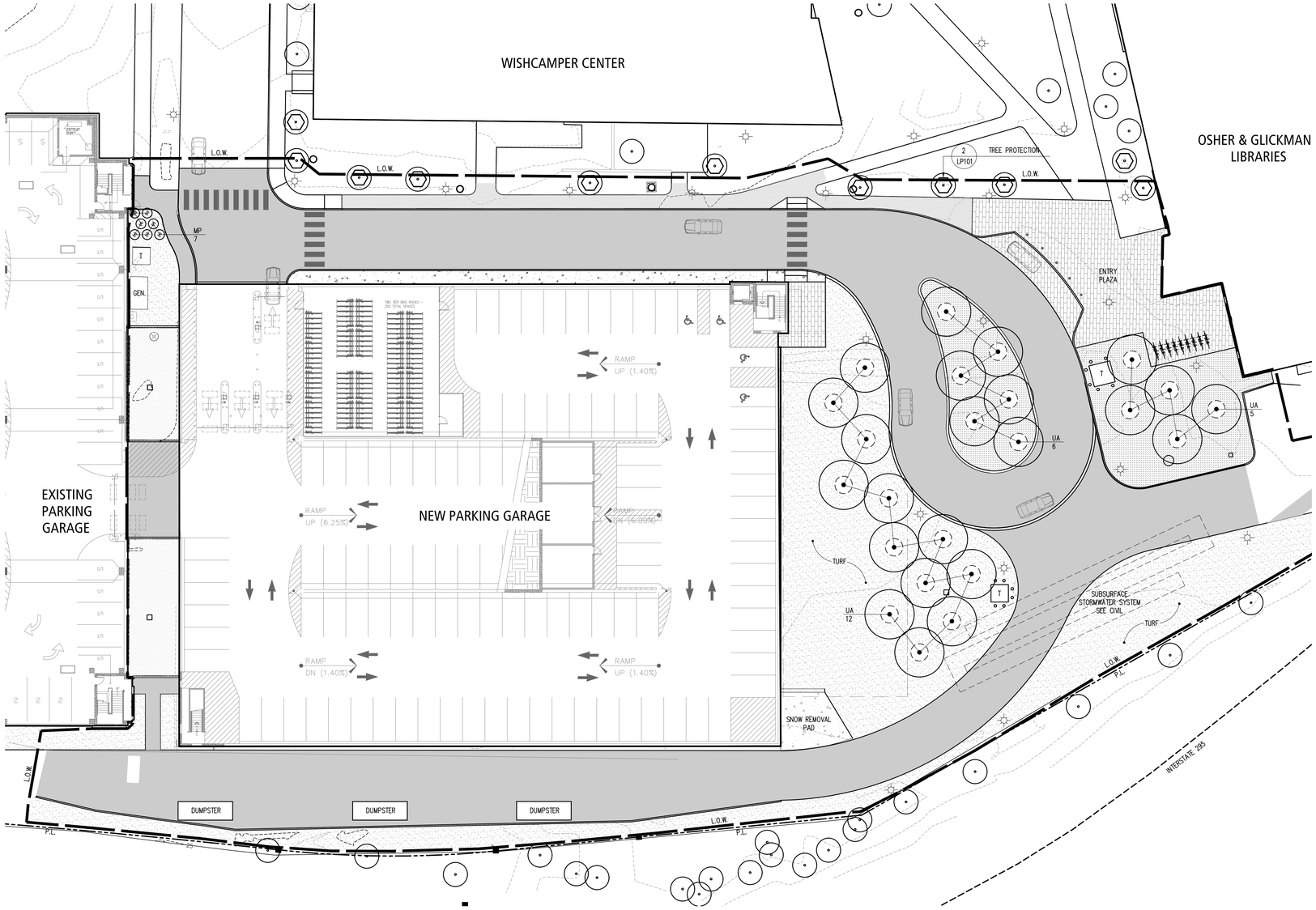
Upper Levels Code Information Plan

Levels 1 / 2 / 3 + ROOF

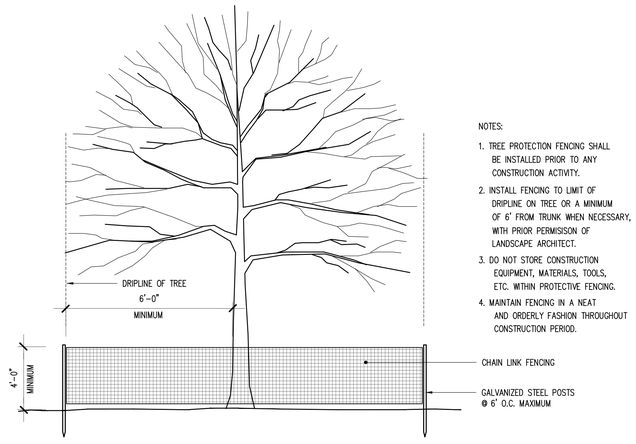
G - 102

7/2/2021 3:16:33 PM

NOT FOR CONSTRUCTION



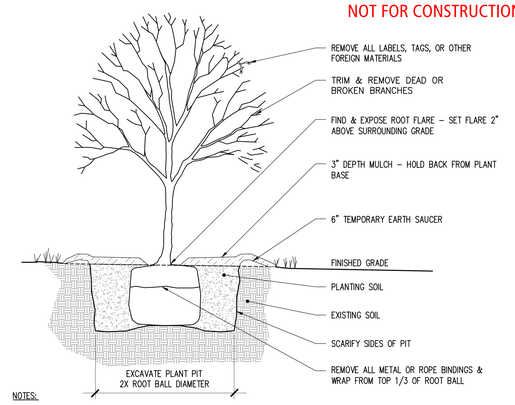
1 PLANTING PLAN
1" = 20'-0"



NOTES:

1. TREE PROTECTION FENCING SHALL BE INSTALLED PRIOR TO ANY CONSTRUCTION ACTIVITY.
2. INSTALL FENCING TO LIMIT OF DRIPLINE ON TREE OR A MINIMUM OF 6' FROM TRUNK WHEN NECESSARY, WITH PRIOR PERMISISON OF LANDSCAPE ARCHITECT.
3. DO NOT STORE CONSTRUCTION EQUIPMENT, MATERIALS, TOOLS, ETC. WITHIN PROTECTIVE FENCING.
4. MAINTAIN FENCING IN A NEAT AND ORDERLY FASHION THROUGHOUT CONSTRUCTION PERIOD.

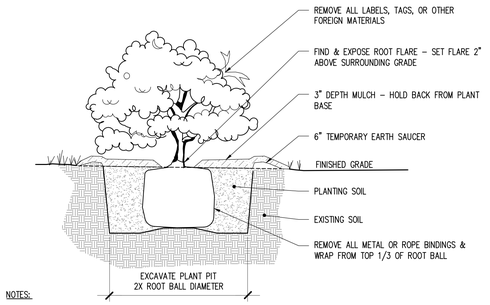
2 TREE PROTECTION DETAIL
N.T.S.



NOTES:

1. TREE TO BE SET PLUMB.
2. SECURE TREE AS MAY BE REQUIRED ACCORDING TO TREE SIZE, LOCATION, & WIND/WEATHER CONDITIONS.
3. IF USING ROOTBALL STABILIZATION, FOLLOW MANUFACTURER'S RECOMMENDATIONS.

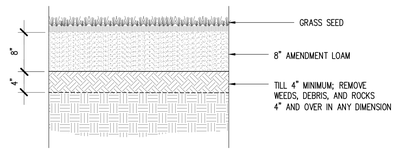
3 TREE PLANTING DETAIL
1/2" = 1'-0"



NOTES:

1. SHRUB TO BE SET PLUMB.
2. SECURE SHRUB AS MAY BE REQUIRED ACCORDING TO SIZE, LOCATION, & WIND/WEATHER CONDITIONS.
3. IF USING ROOTBALL STABILIZATION, FOLLOW MANUFACTURER'S RECOMMENDATIONS.

4 SHRUB / GROUNDCOVER PLANTING DETAIL
1/2" = 1'-0"



5 TURF PLANTING DETAIL
1" = 1'-0"

PLANT LIST

KEY	QTY	AREA	BOTANICAL NAME	COMMON NAME	SIZE	ROOT	COMMENT
TREES							
UA	23		ULMUS AMERICANA 'PRINCETON'	PRINCETON ELM	4" CAL.	B&B	REC. TREE LIST
SHRUBS							
MP	7		MYRICA PENNSYLVANICA	BAYBERRY	#3	POT	
GROUNDCOVER							
	GC	4,760 SF	--	NATIVE GROUNDCOVER	--	--	
	TURF	17,990 SF	--	TURF GRASS	--	SEED	COMPLIANT WITH CITY OF PORTAND PESTICIDE ORDINANCE

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2021

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Address

44 Bedford Street,
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REVISIONS:

No.	Date	Description

SUBMISSIONS:

Date	Issued For:
07/30/21	Major Site Plan Submittal

SCALE	**AS NOTED**
DATE ISSUED	**07/30/2021**
PROJECT NO	**20-20145.00-1**
DRAWN BY	**G.G.**
CHECKED BY	**-**

SHEET TITLE:

Planting and Landscape Plan

LP-101



University of Southern Maine Parking Garage

Overview From North

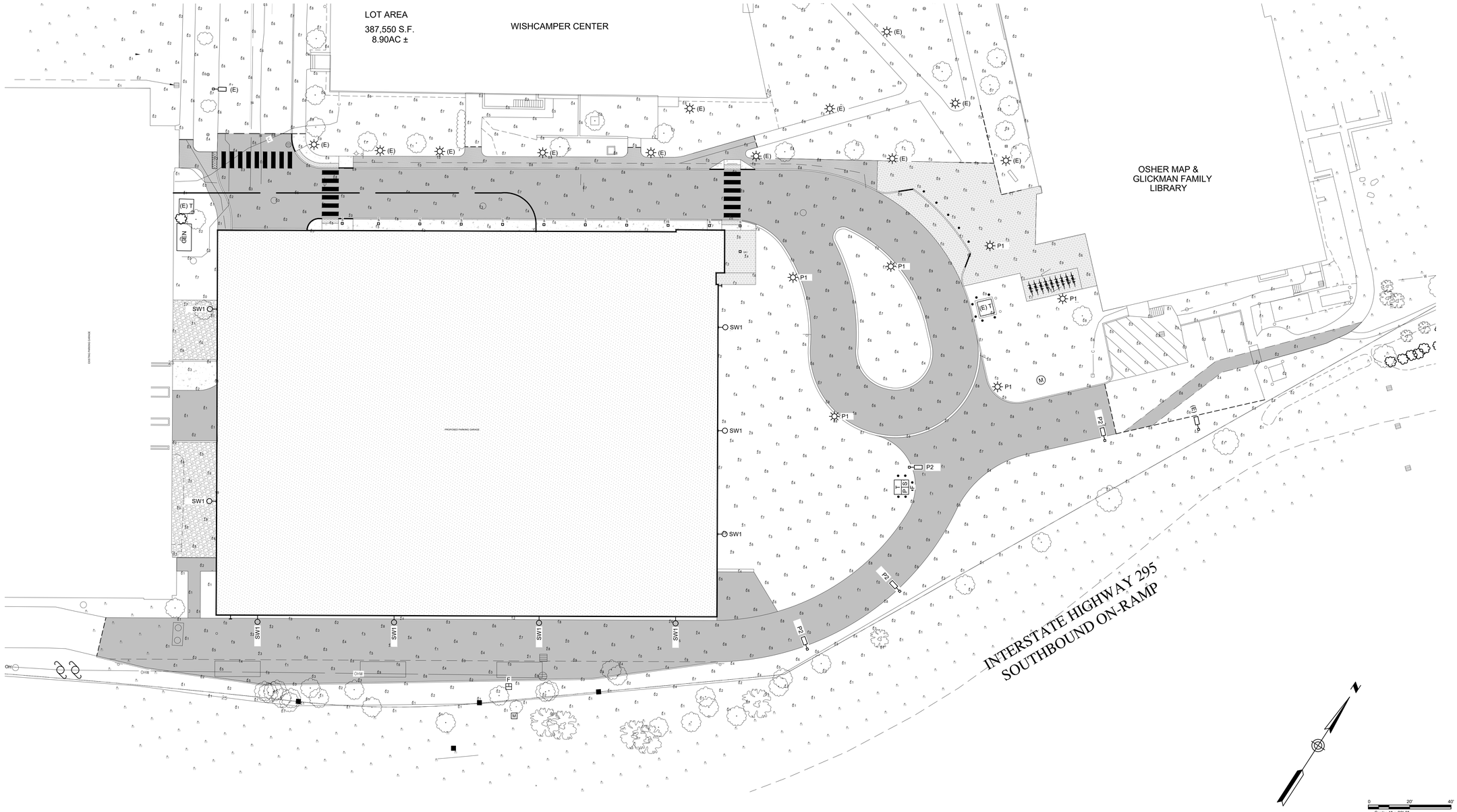
LUMINAIRE SCHEDULE ~ SITE

TYPE	DESCRIPTION	MFR	CATALOG SERIES NUMBER SEE NOTE 1	MOUNTING, U.N.O.	VOLTS	LAMP				KEY NOTES
						QTY PER FIXTURE	WATTS	LUMENS	TYPE	
P1	SITE LIGHT AND POLE, "ICE CREAM CONE" SHAPE	SEE NOTE 8		14' POLE	277	1	24	3,330	LED ARRAY ~ 4000K	8,9
P2	SITE LIGHT AND POLE, "SHOEBOX" SHAPE	SEE NOTE 8		14' POLE	277	1	18	2,160	LED ARRAY ~ 4000K	8,10
SW1	WALL MOUNTED EXTERIOR LIGHT	LITHONIA	KAXW-LED-P1-40K-R4-MVOLT	KEYNOTE 5	UNV	1	29	3,643	LED ARRAY ~ 4000K	5
SR1	RECESSED CANOPY LIGHT	LITHONIA	LDN4SQ-40-07-LS4-AR-LSS-MVOLT	RECESSED CANOPY	UNV	1	8.6	620	LED ARRAY ~ 4000K	

	NOTES
1	**NOTE THAT THESE NUMBERS ARE NOT COMPLETE CATALOG NUMBERS. PROVIDE ALL REQUIREMENTS ON SCHEDULE, NOTES, SPECS, AND DRAWINGS COMBINED.**
2	**CATALOG SERIES NUMBERS ARE USED TO ESTABLISH A LEVEL OF QUALITY AND NOT INTENDED TO LIMIT COMPETITION. SERIES NUMBERS ARE NOT COMPLETE CATALOG NUMBERS. COMPLY WITH ADDITIONAL REQUIREMENTS IN SPECIFICATIONS AND DRAWINGS.**
3	PROVIDE WALL,CEILING, OR PENDANT MOUNTING AS INDICATED ON PLANS. PROVIDE NUMBER OF FACES AND ARROWS AS INDICATED.
4	VERIFY CEILING STRUCTURE AND MOUNTING HEIGHT PRIOR TO ORDERING ANY LIGHT FIXTURES.
5	COORDINATE MOUNTING HEIGHT WITH STRUCTURAL AND ARCHITECTURAL DRAWINGS.
6	PROVIDE COLD WEATHER OPTION.
7	CONFIRM EXACT FIXTURE CONFIGURATION AND OPTIONS WITH MUNICIPALITY PRIOR TO ORDERING FIXTURE.
8	FIXTURE AND POLE SHALL BE PROVIDED BY OWNER FROM EXISTING OWNER'S STOCK.
9	PROVIDE SCREW-IN LED RETROFIT LAMP. BASIS OF DESIGN IS MFG. BY LIGHT EFFICIENT DESIGN, PART NO. LED-8029E345-A.
10	PROVIDE SCREW-IN LED RETROFIT LAMP. BASIS OF DESIGN IS MFG. BY LIGHT EFFICIENT DESIGN, PART NO. LED-8039E40-A.

Calculation Summary

Label	CalcType	Units	Avg	Max	Min	Avg/Min	Max/Min
DRIVES	Illuminance	Fc	0.99	3.5	0.2	4.95	17.50
WALKWAY- GLICKMAN	Illuminance	Fc	1.00	1.3	0.5	2.00	2.60
WALKWAY- NEW GARAGE	Illuminance	Fc	1.46	1.7	1.2	1.22	1.42



A1	PHOTOMETRIC SITE PLAN
SCALE: 1"=20'-0"	

7/2/2021 3:16:33 PM

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2021

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07/30/21	Site Plan Submittal

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DATE ISSUED	**07/30/2021**
PROJECT NO	**20-20145.00-1**
DRAWN BY	**GMC**
CHECKED BY	**BTG**

SHEET TITLE:

SITE PHOTOMETRIC PLAN AND SCHEDULES

SL-100



University of Southern Maine Parking Garage

Stairway Entrance



University of Southern Maine Parking Garage

Garage Entrance

NOTICE FROM CITY OF PORTLAND PLANNING DIVISION

IN THE VICINITY OF 50 BEDFORD ST

To residents and property owners: The University of Southern Maine has submitted a Major Site Plan application to facilitate the development of a five-level, 632 space parking garage with a footprint of 45,100 square feet, along with associated site improvements, at 50 (44) Bedford Street. The subject property is 8.1 acres in size and is located in the R-5 Residential and B-2 Community Business zones as well as in the USM Overlay Zone.

In accordance with the Portland Land Use Ordinance, notices of receipt of a Major Site Plan application must be sent to property owners within 500 ft. of the subject property (or 1,000 ft. if the project is a subdivision or map amendment for a site located within an Industrial Zone). You will be notified of future Planning Board meetings by receiving notices from the Planning Division prior to any workshops or public hearings.

A project and plan summary is available for viewing on the Citizen Self Service Portal (https://css.portlandmaine.gov/), by referencing Plan Number PL-001729-2021. Written comments should be submitted to planningboard@portlandmaine.gov. If you have any questions regarding the proposal, please contact James Dealaman, Planner, by phone at (207)874-8718 or e-mail at jdealaman@portlandmaine.gov.

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Att. 3

Portland Maine Yes. Google's good here.

Jimmy Dealaman <jdealaman@portlandmaine.gov>

USM Bedford Street Parking Garage - Draft Traffic Comments

Tom Errico <thomas.errico@tylin.com> Thu, Dec 9, 2021 at 3:01 PM
To: Jimmy Dealaman <jdealaman@portlandmaine.gov>

Hi Jimmy – the following are revised draft of mitigation requirements related to the TMP and other comments that will need to be addressed before the review can be finalized.

1. The applicant shall provide conceptual design plans, preliminary and final plans and specifications for Bedford Street Improvements as detailed on the plan prepared by VHB dated xxxx (Plans continue to be reviewed and approval is pending). Said improvements shall be constructed by the applicant prior to completion of a parking garage structure and Final design plans will need to be stamped by a professional engineer. *These improvements are being required to facilitate access and egress movements to the garage and providing safe pedestrian and bicycle movements.*

2. The applicant shall provide conceptual design plans, preliminary and final plans and specifications for Traffic calming / pedestrian improvements at the Falmouth Street / Oakdale Street intersection for review and approval by the Department of Public Works and Planning Authority. Said improvements shall be constructed by the applicant prior to completion of a parking garage structure or five years from TMP approval, whichever is sooner. *This improvement is required to address safety concerns as it relates to vehicles speeds and general neighborhood impacts on Falmouth Street.*

3. The applicant shall be responsible for the implementation of do not block driveway pavement markings and signage on Forest Avenue at the Oakhurst driveway. The applicant shall provide conceptual design plans, preliminary and final plans and specifications to the City for review and approval. Final design plans will need to be stamped by a professional engineer and implementation prior to completion of a parking garage structure. *This improvement is required due to vehicle blockage and impacts at Oakhurst's driveway as traffic queues extend from the Bedford/Baxter intersection.*

4. The applicant shall be responsible for implementing traffic signal equipment improvements at the Forest Avenue/Bedford Street intersection. This upgrade shall include all equipment necessary for a traffic signal system that is fully active and functioning within the Surtrac Adaptive network. The proposed system shall be coordinated with Rapidflow Technologies and shall be field tested and verified before being accepted by the City. Said improvements shall be constructed by the applicant prior to completion of a parking garage structure. *This improvement is to address congestion issues documented at the subject intersection.*

5. The applicant shall provide conceptual design plans, preliminary and final plans and specifications for improvements at the Forest Avenue/Bedford Street/Baxter Boulevard intersection based on the Smart Corridor Study recommendations for review and approval by the Department of Public Works and Planning Authority. These shall include geometric modifications to the corners on the Baxter Boulevard approach and upgrades to pedestrian traffic signal equipment. The applicant shall construct the said improvements prior Certificate of Occupancy, with all work complying with ADA standards. *This improvement is to address pedestrian safety concerns at the subject intersection.*

6. The applicant shall be responsible for implementing traffic signal equipment improvement on the I-295 Southbound Off-Ramp. The improvements shall include all equipment necessary for installing a vehicle queue detection system that is compatible with the RapidFlow signal system at Forest/Bedford/Baxter intersection. The proposed system shall be field tested and verified before being accepted by the City. Said improvements shall be constructed by the

applicant prior to completion of a parking garage structure. *This improvement is being required to address long vehicle queues on the ramp with the goal of avoiding any backups onto I-295.*

Status Comments

- The applicant shall conduct traffic modeling that evaluates bus stop configuration on Bedford Street to help inform the design of roadway improvements.

Status: The applicant has conducted the requested modeling and significant vehicle queueing at the bus stops is not expected. I have no further comment.

- I continue to review the construction management plan, but the applicant should also provide construction management plans for the Bedford Street improvements.

Status: I continue to work with City staff on this item.

- The City finds the revised garage entry/exit plan to be acceptable based on the results of the traffic modeling. The final acceptance of this change will be pending the review of revised materials including an updated Section 7 Traffic Study and Bedford Street improvement plan.

Status: The revised Section 7 Study was transmitted this week and review is on-going.

- The applicant shall provide details on how traffic will be managed on Surrenden Street under a reversible garage gate scenario. This is related to traffic control entering and exiting the garage (signage, pavement markings, etc.).

Status: The applicant has provided a revised plan and my initial review indicates a need for changes to pavement markings in the area of the reversible lane. The diagonal markings seem confusing and not appropriate for the intended purpose.

- There are safety concerns for pedestrians crossing Surrenden Street near the Garage entry under a two-lane entry scenario (pedestrians having to navigate through two lanes of queued vehicles). The applicant shall develop a concept plan for a sidewalk to be located on the east side of Surrenden Street.

Status: This continues to be a concern given the proposed garage access/egress plan. Specifically, I am concerned about two lanes of entry vehicles at the curve and how unsafe this condition may be for pedestrian crossings. We recommended that a sidewalk concept be developed for consideration.

- The applicant shall provide a revised Section 7 Traffic Study. The Study shall include LOS/Delay/Queue information from SimTraffic for No-Build (not the Falmouth site) and Build conditions for easy comparison of project impacts.

Status: The revised Section 7 Study was transmitted this week and review is on-going.

If you have any questions, please contact me.

Best regards,

Thomas A. Errico, PE
Senior Associate
Traffic Engineering Director

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Visit us online at www.tylin.com
Twitter | Facebook | LinkedIn | Instagram

WRIGHT-PIERCE
Engineering a Better Environment

MEMORANDUM

TO:	Jimmy Dealaman, Planner	**DATE:**	9/24/2021
FROM:	Michael Guethle, PE	**PROJECT NO.:**	20309C
SUBJECT:	50 Bedford Street – Level III Site Plan, PL - 001729-2021		

Wright-Pierce has reviewed the initial Level III Site Plan Application information provided for the redevelopment at 50 Bedford Street, as defined in the above subject line. The proposed project is located on a 2.4 +/- acre site of land at the USM campus. The proposed project includes redevelopment of existing parking area with a new parking garage facility.

Documents Reviewed by Wright-Pierce:

- Level III Site Plan application, dated (most recent) September 17, 2021
- Engineering Permitting Plans, uploaded (most recent) September 13, 2021
- Comment Response Letter, dated September 17, 2021

Comments:

For stormwater treatment, Level III Site Plan applications with the City of Portland must submit a stormwater plan pursuant to the regulations of MaineDEP Chapter 500 Stormwater Management Rules. This includes conformance with the Basic, General, and Flooding Standards (Ref: Technical Manual, Section 5. II. Applicability in Portland. C. a.; and Ref: City of Portland Code of Ordinances, former code Sec. 14-526. Site Plan Standards, (b). 3. b.)

1) Basic Standard: Per the City's Technical Manual *Portland Stormwater Management Standards And Maine Dep Chapter 500 Stormwater Management*, an Erosion & Sediment Control management plan, notes, and details per the Chapter 500 Rules must be provided to meet the Basic Standard.
    a. Erosion and Sedimentation Control best management practices were observed on the Erosion and Sediment Control Plan and associated Details. An Inspection, Maintenance, and Housekeeping Plan has been provided with the erosion details and notes.

b. In general, application of erosion and sedimentation control devices is appropriate.
    i. Applicant has confirmed the oil/water separator is part of the wastewater services for the project and is separate to the stormwater management system;
    ii. Inspection and Maintenance Log has been updated to incorporate modifications to the project plans as requested. No further action necessary.

2) General Standard: The applicant has provided information regarding the size and scope of the project, and has indicated the project is subject to the General Standard under the requirements of the Site Location of Development Act (SLODA). The project is being reviewed under the redevelopment guidelines and requirements.
    a. The applicant has provided an impact analysis to compare pre-development and post-development land use pollutant rankings under MaineDEP redevelopment guidelines. The written analysis indicated that the proposed development had a higher pollutant ranking than the existing site by a magnitude between 0 and 1, and is therefore required to treat 60% of the proposed site's disturbed surface area.
        i. Applicant has provided updated information confirming the pollutant rankings meet the required standard for surface runoff treatment. No further action necessary.
    b. An executed maintenance contract for the BMP systems is required. Applicant has acknowledged maintenance agreements may be provided as a condition of approval.
3) Porous Pavement, Stormfilter, and Subsurface Storage Design:
    a. Porous pavement design is for repair work and excluded from treatment quantities. No further action necessary.
4) Flooding Standard: The applicant has submitted HydroCAD files indicating the pre-development runoff rates do not exceed the post-development runoff rates for the combined flow rates from the two study points at the facility.
    a. It is understood that these two study points are located in separate watersheds for the proposed project, with one study point leading towards a combined sewer

system, and the other conveying flows towards a separated sewer system. As such, the reviewer does not necessarily agree with the statement that the proposed flow rates have the represented net change in the Peak Runoff Rates table as these flow rates are not necessarily additive.

i. The City of Portland Department of Public Works is responsible for issuing certification of any connection to Existing Stormwater Systems. E-mail, or otherwise written, confirmation from the Department of Public Works accepting this connection is requested to confirm that this connection is appropriate under Land Use section (prior number) 14-526 (b) 3 a. (iv); and 14-526 (c) 3 a., as well as adherence to MaineDEP Chapter 500.
    1. It is understood the connection to the combined sewer system has not been approved by Public Works at this time.

ii. It is appreciated there are two competing design requirements; to both remove stormwater flows to the combined sewer system, and to also meet the requirement to reduce flow rates to each study point. In many ways, these requirements work in opposition to achieve a common goal.

iii. There is a potential ability to waive the requirements of the Flooding Standard, governing flow rates to each study point, within the existing codes. This would require the following information:
    1. The applicant indicating the storm drainage system ultimately discharges to tidal waterways;
    2. The applicant indicating through calculations, or receiving confirmation from the Department of Public Works, to allow an increase for surface water flows to the drainage system in interval rain events as noted in the Land Use Code;
    3. The applicant requesting this waiver to discharge to tidal waterways, and having such waiver approved by the City Planning authority.

iv. Connection to the existing combined sewer must be coordinated with the Department of Public Works.

5) Utility Connections
    a. Ability to serve letters have not been provided for utilities impacted by the proposed project, but have been requested by the applicant for applicable utilities. Applicant has indicated they will forward these letters to the planning authority upon receipt.
    b. Standard design for the electrical utility has been provided. Additional clarity confirming coordination with MaineDOT at the fence line has been provided. No further action necessary.

CITY OF PORTLAND, MAINE

PLANNING BOARD

Brandon Mazer, Chair
Maggie Stanley, Vice Chair
Marpheen Chann
Sean Dundon
Bob Dunfey
David Silk
Austin Smith

11/18/2020

Alec Porteous
University of Southern Maine
P.O. Box 9300
Portland, Maine 04101

Darrin Stairs
Woodard & Curran
41 Hutchins Drive
Portland, ME 04102

Project Name:	Student Center, Dorm, & Quad	**Project ID:**	PL-001040-2020
Address:	25 Bedford Street	**CBL:**	114A G009
Applicant:	University of Southern Maine		
Planner:	Christian Roadman		

Mr. Porteous,

On November 10, the Planning Board approved your application to construct a 218,612 square foot student housing facility, a 41,249 square foot student center, and associated open space at 25 Bedford Street in the B-2 and R-5 zones and the University of Southern Maine overlay zone.

The Planning Board reviewed the proposal for conformance with the site plan and site location of development standards of Portland's Land Use Code. The Planning Board voted 7-0 to approve the application with the following waivers and conditions as presented below.

Waivers

1. The Planning Board voted unanimously (7-0) based upon the submitted materials, that extraordinary conditions exist or undue hardship may result from strict compliance with the Design Manual standard (e) University of Southern Maine Overlay Zone, Appendix 3 Standard D-7 Materials which prohibits use of fiber cement panels. The Planning Board waived the Design Manual standard (e) University of Southern Maine Overlay Zone, Appendix 3 Standard D-7 Materials to allow use of fiber cement panel.

Site Plan and Site Location of Development Review

The Planning Board voted unanimously (7-0) that the plan is in conformance with the site plan standards of the Land Use Code and the Site Location of Development Act standards subject to the following conditions of approval:

PRIOR TO APPLYING FOR A BUILDING PERMIT

1. The applicant shall submit an ability to serve letter from the Portland Water District.

2. The applicant shall submit confirmation of adequate wastewater capacity from the Department of Public Works.

3. The applicant shall submit a dewatering plan for review and approval by the Department of Public Works.

4. The applicant shall submit an updated construction management plan for review and approval by the Department of Public Works.

5. The applicant shall submit a request to connect to the municipal storm drain system with updated calculations for review and approval by the Department of Public Works.

6. The applicant shall submit an updated stormwater management report, including calculations and updated stormwater infrastructure designs and details, for review and approval by the Planning Authority and consulting civil engineer.

7. If modifications to the stormwater management design impact design plans, then the applicant shall submit an updated grading and drainage plan for review and approval by the Planning Authority and consulting civil engineer.

SIX MONTHS AFTER ISSUANCE OF A BUILDING PERMIT

8. The applicant shall provide proof of parking commitments sufficient to provide the 396 parking spaces required by the proposed development, or shall submit a site plan application for a parking garage providing these spaces, for review and approval by the Planning Authority.

PRIOR TO CERTIFICATE OF OCCUPANCY

9. The applicant shall obtain a certificate of occupancy for a parking garage providing the 396 parking spaces required by the proposed development, or shall provide a final parking management plan and executed leases providing these spaces, for review and approval by the Planning Authority.

Traffic Movement Permit

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 November 10, 2020 for application PL-001040-2020 relevant to Portland's technical and design standards and other regulations; and the testimony presented at the Planning Board hearing, the Planning Board voted unanimously (7-0) to find that the plan is in conformance with 23 MRSA 704-A and Chapter 305 Rules and Regulations pertaining to Traffic Movement Permits, subject to the following conditions of approval:

1) The applicant shall provide conceptual design plans, preliminary and final plans and specifications for Traffic calming / pedestrian improvements at the Falmouth Street / Oakdale Street intersection for review and approval by the Department of Public Works and Planning Authority. Said improvements shall be constructed by the applicant prior to completion of a parking garage structure or five years from TMP approval, whichever is sooner.

PRIOR TO CERTIFICATE OF OCCUPANCY

2) The applicant shall provide a $10,000 contribution to the City towards Forest Avenue traffic signal optimization at the Forest Avenue / Bedford Street / Baxter Boulevard and Forest Avenue / Falmouth Street / Preble Street Extension intersections with the intent of improving mobility efficiencies.

3) The applicant shall provide conceptual design plans, preliminary and final plans and specifications for improvements at the Forest Avenue/Bedford Street/Baxter Boulevard intersection based on the Smart Corridor Study recommendations for review and approval by the Department of Public Works and Planning Authority. These shall include geometric modifications to the corners on the Baxter Boulevard approach and upgrades to pedestrian traffic signal equipment on those corners. The applicant shall construct the said improvements prior to Certificate of Occupancy, with all work complying with ADA standards.

4) The applicant shall provide conceptual design plans, preliminary and final plans and specifications for improvements at the Forest Avenue/Falmouth Street/Preble Street Extension intersection based on the Smart Corridor Study recommendations for review and approval by the Department of Public Works and Planning Authority. These shall include geometric modifications to the southeast corner, a crosswalk on the southerly Forest Avenue approach, and upgraded pedestrian traffic signal equipment. It should be noted that the new crosswalk will require installation of a new sidewalk ramp on the westerly side of Forest Avenue. Thus, improvements are proposed on the southeast and southwest corners of the intersection as a part of this condition. The applicant shall construct the said improvements prior to Certificate of Occupancy, with all work complying with ADA standards.

The approval is based on the submitted plans and findings related to site plan review, site location of development review, and traffic movement permit review as contained in the Planning Board report dated 11/106/2020 for application PL-001040-2020 which is attached.

Standard Procedures

Please Note: The following standard procedures apply to all approved site plans:

1. Stormwater Management Agreement The developer / contractor / subcontractor must comply with the 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.

2. Site Plan Expiration Site plan approval will be deemed to have expired unless work has commenced within one (1) year of the approval or within a time period up to three (3) years from the approval date as agreed upon in writing by the City and the applicant. Requests to extend approvals must be received before the one (1) year expiration date.

3. Separate Building Permits Are Required This approval does not constitute approval of building plans, which must be reviewed and approved by the City of Portland's Permitting and Inspections Department.

4. Performance Guarantee and Inspection Fees A performance guarantee covering the site improvements and an inspection fee payment of 2.0% of the guarantee amount must be submitted to and approved by the Planning and Urban Development Department and Public Works Department prior to the release of a building permit, street opening permit or certificate of occupancy for site plans.

5. Construction Management Plans The applicant, contractor and subcontractors are required to conform to the approved Construction Management Plan, and all conditions contained within the project's approval, for the entire duration of the project. Any amendments to the approved Construction Management Plan shall be reviewed and approved by the Department of Public Works prior to the execution. The Planning Authority and the Department of Public Works have the right to seek revisions to an approved Construction Management Plan. The applicant shall coordinate the project's construction schedule with the timing of nearby construction activities to avoid cumulative impacts on a neighborhood and prevent unsafe vehicle and pedestrian movements. Accordingly, nearby construction activities could involve a delay in the commencement of construction.

6. Preconstruction Meeting A pre-construction meeting shall be held at the project site with the contractor, Development Review Coordinator, Public Works representative and owner to review the construction schedule and critical aspects of the site work. At that time, the Development Review Coordinator will confirm that the contractor is working from the approved site plan and the approved Construction Management Plan. It shall be the contractor's responsibility to arrange a mutually agreeable time for the pre-construction meeting.

7. Department of Public Works Permits If work or obstructions will occur within the public right-of-way, such as utilities, curb, sidewalk, driveway construction, site deliveries and equipment siting, a Street Opening and/or Occupancy Permits are required for your site. Please contact the Department of Public Works Permit Clerk at 874-8300, ext. 8828. (Only excavators licensed by the City of Portland are eligible.)

8. Develop Site According to Plan The site shall be developed and maintained as depicted on the site plan and in the written submission of the applicant. Any modifications of an approved site

plan or alteration of a parcel, or of approved exterior elevations, which was the subject of site plan approval after May 20, 1974, shall require the prior approval of an amended site plan by the Planning Board or Planning Authority pursuant to the terms of Chapter 14, Land Use, of the Portland City Code.

9. Design Review of Exterior Elevations If the project is subject to design review, then the exterior elevations shall be constructed and maintained as depicted on the approved elevation drawings and in the written submission of the applicant. Modification of any approved exterior elevations shall require the approval of the revised plans by the Planning Board or Planning Authority pursuant to the terms of Chapter 14, Land Use of the Portland City Code.

10. Defect Guarantee A defect guarantee, consisting of 10% of the performance guarantee, must be posted before the performance guarantee will be released.

11. As-Built Final Plans Final sets of as-built plans shall be submitted digitally to the Planning and Urban Development Department, on a CD or DVD, in AutoCAD format (.dwg), release AutoCAD 2005 or greater.

12. Impact Fees New development or changes of use that result in net new residential dwelling units, non-residential building square footage, or water meters are subject to the City of Portland's impact fee ordinance (Chapter 14, Article XVII). Impact fees are calculated at the time of building permit and must be paid prior to the certificate of occupancy. For more information, visit https://www.portlandmaine.gov/2409/Impact-Fees

The Development Review Coordinator must be notified five (5) working days prior to the date required for final site inspection. The Development Review Coordinator can be reached at the Planning and Urban Development Department at (207) 874-8632. All site plan requirements must be completed and approved by the Development Review Coordinator prior to issuance of a Certificate of Occupancy. Please schedule any property closing with these requirements in mind.

If there are any questions, please contact Christian Roadman at (207) 874-8984.

Sincerely,

Brandon Mazer
Chair, Portland Planning Board

Attachments:
1. Planning Board Report for Application PL-001040-2020
2. Draft Stormwater Maintenance Agreement
3. Performance Guarantee Packet

PLANNING BOARD REPORT
PORTLAND, MAINE

Student Center, Dormitory, & Quad
25 Bedford Street
Level III Site Plan and Site Location of Development Review
PL-001040-2020
University of Southern Maine, Applicant

Submitted to: Portland Planning Board **Public Hearing Date:** 11/10/2020	**Prepared by:** Christian Roadman, Planner **Date Prepared:** 11/6/2020

I. INTRODUCTION / PROPOSED DEVELOPMENT

The University of Southern Maine (USM) seeks to redevelop a portion of their campus, replacing two existing buildings and a parking lot with a 42,000 square foot student center, a 580 bed dormitory, and one-acre quad.

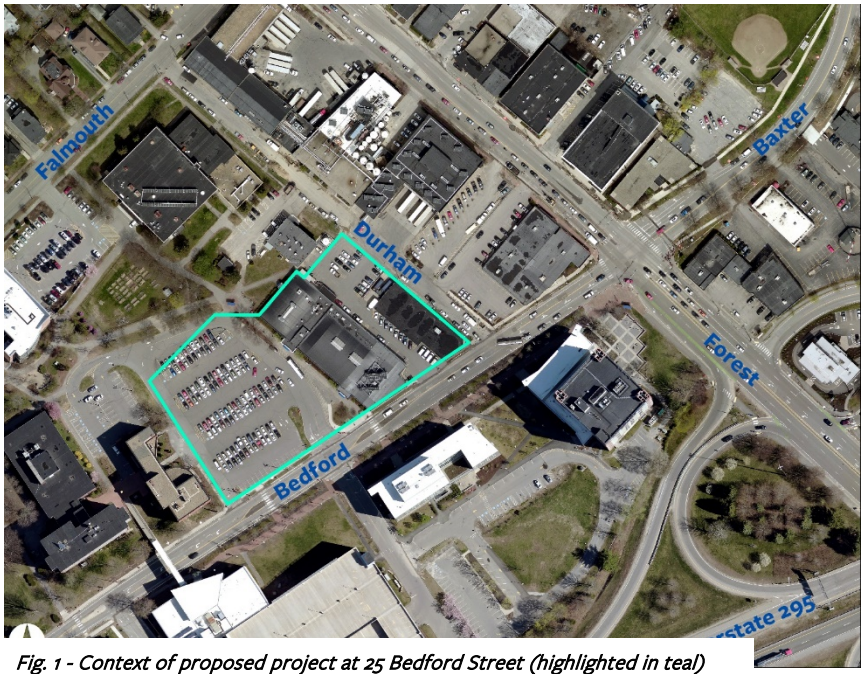


Fig. 1 - Context of proposed project at 25 Bedford Street (highlighted in teal)

The proposed project is located mostly within the R-5 Residential Zone, with a portion at the easternmost edge of the site in the B-2 Community Business Zone. USM's entire Portland campus also lies within the USM overlay zone, created to allow the University the flexibility to operate uses typical of an institution of higher education.

In addition to the City's site plan review requirements, this development is subject to a Site Location of Development (SLODA) review and requires a Maine DOT Traffic Movement Permit (TMP). The City of Portland is the delegated review authority for both.

Between removal of an existing 171 space parking lot and the new buildings, the development as currently proposed would result in a deficit of approximately 400 parking spaces. The University plans to construct a parking garage prior to completing this project; however, the Planning Board cannot assume that an appropriate facility would be planned, reviewed, permitted, and constructed within the necessary time frame. Because of this, USM developed a contingency plan (**Attachment D**) involving remote parking at offsite lots along METRO routes (or utilizing shuttles) and potential changes to existing parking operations to increase efficiency. Progress towards, and then provision of, adequate parking is suggested as a **condition of approval**.

Notices have been sent to 190 property owners and a legal advertisement was published in the October 30 and October 31 editions of the *Portland Press Herald*.



Fig. 2 - Rendering of proposed project at 25 Bedford Street in context viewed from the southwest (image: Applicant)

Applicant: University of Southern Maine
Consultants: Woodard & Curran, Inc. (civil engineering); SMRT Architects & Elkus Manfredi Architects (building design) Capstone Development Partners (student housing developer)

II. REQUIRED REVIEWS

Waiver Requests	Applicable Standards
Use of materials (fiber cement panel) identified as 'low quality' Staff support this waiver based on improved quality of fiber cement paneling	City of Portland Design Manual – (e) University of Southern Maine Overlay Zone, Appendix 3 Standard D-7 Materials
Review	**Applicable Standards**
Site Plan	Section 14-526
Site Location of Development	Technical Manual Section 14
Traffic Movement Permit	Delegated Review from Maine DOT

III. PROJECT DATA

Existing Zoning	R-5 Residential, B-2 Community Business, USM Overlay Zone
Existing Use	Student center, university facilities building, parking
Proposed Use	Student center, dormitory, quad
Property Size (sf.)	~673,000 (~144, 600 disturbed)

	Existing	Proposed	Net Change
Building Footprint (sf.)	36,906	48,477	+8,571
Building Floor Area (sf.)	36,906	259,861	+222,955
Impervious Surface Area (sf.)	123,178	70,334	-52,844
Parking Spaces	~171	0 (offsite spaces plan intended to offset need)	-171
Bicycle Parking Spaces	14	~36	+22



Fig. 3 - Rendering of the proposed project Bedford Street; the proposed dorm is to the right, partially visible. (image: applicant)

IV. EXISTING CONDITIONS

The University of Southern Maine's Portland Campus occupies more than 15 acres of land just outside of Portland's peninsula in the Oakdale neighborhood, and is bounded by Forest Avenue and Durham Street to the East, Falmouth Street to the North, Exeter Street to the West and I-295 and Chamberlain Street to the South. The campus operates in conjunction with USM's two other campuses located in Gorham and Lewiston, and at present, largely serves a commuter student population, with residence halls housed on the university's Gorham campus. The campus consists of 34 buildings ranging from repurposed single-family homes to large academic buildings, ten surface parking lots, one parking garage, and pathways across campus.

The buildings proposed for demolition as part of the redevelopment house campus services and facilities management.

V. PUBLIC COMMENT AND NEIGHBORHOOD MEETING

The applicant held a required neighborhood meeting virtually via Zoom on July 15, 2020. 21 members of the public attended. Those who spoke commented their appreciation for the architecture of the new buildings and overall design. The neighborhood meeting notification, sign-in sheet and minutes are included as **Attachment B**.

As of this writing, public comment received (**PC1 – PC7**) generally expresses neighborhood concern regarding potential traffic and parking impacts on the nearby residential neighborhood and also the business operations of Oakhurst Dairy. One "comment" is a neighborhood petition supported by approximately 44 neighbors which expresses particular concern regarding the applicant's intended parking garage and how it is not included in this application.

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

The applicant provided four deeds (**Attachment F**) to evidence ownership of the property.

The applicant provided a letter listing voter-approved general obligation debt, philanthropic contributions, and revenue bonds as financial resources facilitating the proposed project (**Attachment F**).

The applicant cited consultant experience and expertise as evidence of technical capacity (**Attachment F**).

VII. ZONING ANALYSIS

The development site is located within the R-5 Residential Zone, the B-2 Community Business Zone, and the USM Overlay Zone. The purpose of the USM Overlay Zone is to allow the University's existing campus to "be continued and reasonably expanded within defined boundaries" while recognizing "the unique qualities of a university campus while at the same time protecting the value and integrity of established neighborhoods."

University buildings and structures are subject to the requirements of the underlying zoning districts, except as modified by the USM Overlay Zone. The Overlay Zone allows for an 85 foot building height in the area of the campus where this development is to occur, with required setbacks of 10 feet along Bedford Street, 0 feet along Durham Street, and 20 feet along Falmouth Street.

The uses proposed for this project, which are classified as 'university uses', are permitted within the USM Overlay Zone. These include classrooms, student unions, dining halls, bookstores, auditoriums, outdoor use areas, student housing and offices.

The proposed buildings conform to height restrictions in the zone – a portion of one building exceeding the height limit (**Attachment P17**) is for a stair tower and elevator overrun, which is allowable.

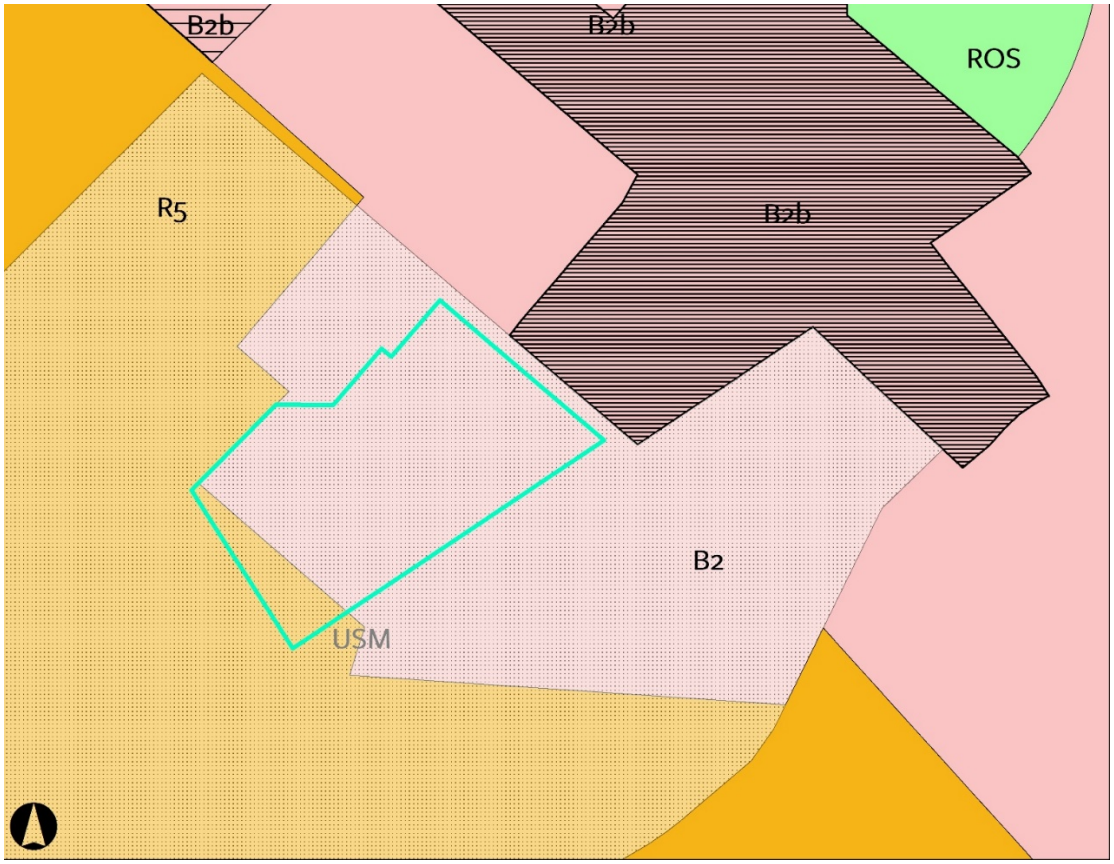


Fig. 4 - Zoning context of the proposed project at 25 Bedford Street (highlighted in teal). The stippled portion of the map represents the USM overlay zone.

VIII. DEVELOPMENT REVIEW

A. SITE PLAN STANDARDS (Section 14-526)

Staff reviewed the proposed development for conformance with the relevant review standards of Portland's site plan ordinance and applicable regulations, and staff comments relative to each standard are below:

a) Transportation Standards

Impact on Surrounding Street Systems and Access and Circulation; Access and Circulation; Public Transit Access; Parking; Transportation Demand Management

The proposed development is not expected to significantly impact the surrounding street system as the proposed uses are not expected to generate more traffic than current uses; the residence hall may reduce traffic demand on campus. Two curb cuts along Bedford Street would be eliminated, which should improve traffic flow on campus. Prior to the completion of this development, a new roundabout will be built at the intersection of Brighton Avenue and Deering Avenue, which at present is the most deficient intersection in the vicinity of the university. The roundabout is anticipated to improve traffic flow through that intersection and is currently under construction.

The University is located along the 2, 4, and Husky METRO (the latter connects its Gorham and Portland campuses). On campus, proposed pedestrian infrastructure connections are intended to improve pedestrian mobility.

In the short term, this development is expected to result in an overall decrease in the supply of off-street parking, as 171 surface spaces are being eliminated. As noted above, the University plans to construct a parking garage prior to completing this project; however, the Planning Board cannot assume that an appropriate facility would be planned, reviewed, permitted, and constructed within the necessary time frame.

Because of this, USM developed a contingency plan (**Attachment D**) involving remote parking at offsite lots along METRO routes or shuttle service, and potential changes to existing parking operations; utilizing parking attendants would allow cars to be "parked in" to maximize efficiency, and then be retrieved when needed by attendants. Additionally, USM proposed leasing parking spaces at one of two locations in Westbrook: Rock Row or 183 County Road in Westbrook. At the former, the existing Husky Line would allow students to then take the bus to campus and back. At the latter, the University would need to coordinate additional bus service or institute a shuttle service to that lot.

Progress towards, and then provision of, adequate parking is suggested as a **condition of approval**.

The University provided a Transportation Demand Management (TDM) plan (**Attachment C**) including a trip reduction goal of between 3% and 6%, and a parking reduction of between 10% and 14 % by the year 2025 (after presumed completion of the student center, residence hall and desired garage). The plan was reviewed and approved by the City's Transportation Programs Manager (**Attachment 1**), who noted that previous staff comments based on commitment to core strategies, development of greenhouse gas and mode split targets, expansion of monitoring / reporting on trip and parking reductions were addressed substantively to the satisfaction of staff.

The Department of Public Works senior engineer (**Attachment 3**) and consulting traffic engineer (**Attachment 2**) also participated in review of the project. Both are generally satisfied with the current application, but request specific conditions of approval tied to the applicant's Traffic Movement Permit (addressed below) and improvements to the applicant's construction management plan.

b) Environmental Quality Standards

Preservation of Significant Natural Features; Landscaping & Landscape Preservation; Water Quality, Storm Water Management and Erosion Control

The proposed project site is entirely developed, and as such, contains no significant natural features. The project introduces two new major green spaces: a one-acre campus quadrangle and a semi-private half-acre courtyard partially surrounded by the residence hall.

The proposed redevelopment will reduce the amount of impervious surface for this site but still must treat at least 50% of impervious area. To meet this threshold, the applicant proposes grassed underdrained soil filters and bioretention cell soil filters. The City's consulting civil engineer reviewed the applicant's proposal (**Attachment 4**) and requested updates and clarifications to several stormwater calculations and details. Revisions are anticipated prior to the Planning Board's public hearing on Tuesday. Otherwise, additional conditions of approval may be necessary.

The Department of Public Works requires (**Attachment 5**) a dewatering plan from the applicant. This is suggested as a **condition of approval**.

c) Public Infrastructure and Community Safety Standards

a. Consistency with related Master Plans; Public Safety and Fire Prevention; Availability and Capacity of Public Utilities

The project as shown appears consistent with master plans adopted by the City. The application was reviewed for compliance with relevant life/safety requirements and deemed satisfactory in this regard. The project proposes new utility connections for water, gas, electric and sewer. Confirmation of adequate wastewater capacity by the Department of Public Works and confirmation of ability to serve by the Portland Water District are suggested as **conditions of approval**.

d) Site Design Standards

1. Massing, Ventilation and Wind Impact; Shadows; Snow and Ice Loading; View Corridors; Historic Resources; Exterior Lighting; Noise and Vibration; Signage and Wayfinding

   The proposed building massing complements the existing campus environment, and promotes an improved pedestrian experience along Bedford Street with a more uniform street wall. The development is not anticipated to have adverse impacts related to either ventilation or wind, nor adverse impacts related to building shadows or snow and ice loading.

   There are no designated view corridors within the project vicinity, and lighting proposed (**Attachments G and P11**) meets City standards for light trespass and full cutoff fixtures. Lighting consists of bollard, wall pack and pole mounted fixtures that are concentrated along walkways, at building entrances and within the residence hall courtyard.

   No adverse impacts related to noise and vibration are anticipated as mechanical equipment is to be roof-mounted and away from public open spaces and other residential areas.

2. Zoning Related Design Standards

   The City's Urban Designer reviewed the proposed project (**Attachment 6**) against the USM Campus Design Principles and Standards (Appendix 3 of the Design Manual), and generally supported the proposed project design.

B. COMPREHENSIVE PLAN

Portland's Plan 2030 identifies a vision statement and policy goals for the City. Several of these are applicable to the proposed project and are reproduced below.

Vision statement:

- Equitable:
  "We will incorporate the needs of all our residents in planning for our future."

- Sustainable*:*

  "Portland will grow in order to sustain our community, infrastructure, and economy."

- Dynamic:

  "We will welcome new residents into our community because they enrich and sustain our community."

- Secure:
  "We will be committed to accessible housing and healthy food for all our residents."

- Authentic:
  "We will invest in and support our local economy.

  Policy goals:

- Environment:

  "Adopt sustainable land use and transportation policies that support connectivity, walkable neighborhoods, and multi-modal transportation."

- Economy:

  "Support sustainable growth in our educational, medical, and cultural institutions."

- Housing:
  "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."

- Transportation:
  "Promote multi-modal accessibility, enabling residents and visitors of all ages and abilities to participate fully in the social and economic life of the community."

C. SITE LOCATION OF DEVELOPMENT

The City of Portland has delegated review authority from the Maine DEP for large projects that trigger Site Location of Development Act (SLODA) review. The standards for this review include the items below, which largely dovetail with Portland's existing site plan review standards:

- *Financial & Technical Capacity*: see section VI, above.
- *Traffic Movement*: see site plan standards, a, above, and Traffic Movement Permit, below.
- *No Adverse Effect on the Natural Environment, Ground Water, Flooding, Storm Water Management & Erosion and Sedimentation Control*: see site plan standards, b, above. The development is not located within a flood hazard zone, as shown on the FEMA Flood Insurance Rate Map provided in this application. The proposed development is not anticipated to cause or increase flooding or cause an unreasonable hazard to any adjacent structures.
- *Soil Types:* The applicant provided a draft geotechnical report and information regarding strategies to appropriately stabilize the building (**Attachment X**).
- *Infrastructure*: see site plan standards, c, above.

D. TRAFFIC MOVEMENT PERMIT

As defined under Maine state statute 704—A, a traffic movement permit is required of any project that generates 100 or more passenger car equivalents at peak hour. Any project surpassing this threshold is required to make adequate provision for traffic movement of all types into and out of the project area such that any traffic increase that is attributable to the project will not result in unreasonable congestion or unsafe conditions within the vicinity of the development.

Per the applicant's TMP materials (**Attachment U**) The proposed development is expected to generate 160 new morning peak hour trips am peak hour trips, and 160 new evening peak hour trips. Based on staff and

reviewer feedback, the applicant agreed to help fund and implement, in coordination with the City, physical infrastructure and signal timing improvements intended to mitigate traffic impacts and increase pedestrian safety in the area of the USM campus. Specifically, the applicant is required as a condition of approval, to:

1) Implement improvements at the Forest Avenue/Bedford Street/Baxter Boulevard intersection based on the Smart Corridor Study recommendations. This shall include geometric modifications to the corners on the Baxter Boulevard approach, upgrading pedestrian traffic signal equipment with all work complying with ADA standards.

2) Implement improvements at the Forest Avenue/Falmouth Street/Preble Street Extension intersection based on the Smart Corridor Study recommendations. This shall include geometric modifications to the southeast corner, implementing a crosswalk on the southerly Forest Avenue approach, upgrading pedestrian traffic signal equipment with all work complying with ADA requirements. It should be noted that the new crosswalk will require installation of a new sidewalk ramp on the westerly side of Forest Avenue.

3) Contribute $10,000 towards Forest Avenue Traffic Signal Optimization at the Forest Avenue/Bedford Street/Baxter Boulevard and Forest Avenue/Falmouth Street/Preble Street Extension intersections with the intent of improving mobility efficiencies.

4) Implement traffic calming / pedestrian improvements at the Falmouth Street / Oakdale Street intersection (including a raised intersection with supporting features for review and design by the Portland Department of Public Works) before completion of a parking garage structure or five years from TMP approval, whichever is sooner.

IX. PROPOSED MOTIONS

A. WAIVERS

On the basis of the application, plans, reports and other information submitted by the applicant, findings and recommendations contained in the Planning Board report for the public hearing on November 10, 2020 for application PL-001040-2020 relevant to Portland's technical and design standards and other regulations; and the testimony presented at the Planning Board hearing:

1. The Planning Board **[finds / does not find]** based upon the submitted materials, that extraordinary conditions exist or undue hardship may result from strict compliance with the Design Manual standard (e) University of Southern Maine Overlay Zone, Appendix 3 Standard D-7 Materials which prohibits use of fiber cement panels. The Planning Board **[waives / does not waive]** the Design Manual standard ((e) University of Southern Maine Overlay Zone, Appendix 3 Standard D-7 Materials) to allow use of fiber cement panel.

B. SITE PLAN REVIEW & SITE LOCATION OF DEVELOPMENT

On the basis of the application, plans, reports, and other information submitted by the applicant; findings and recommendations contained in the Planning Board report for the public hearing on November 10, 2020 for application PL-001040-2020 relevant to the site plan and Site Location of Development Act regulations; and the testimony presented at the Planning Board hearing, the Planning Board finds that the plan **[is / is not]** in conformance with the site plan standards of the land use code and the Site Location of Development Act standards, subject to the following conditions of approval:

PRIOR TO APPLYING FOR A BUILDING PERMIT

1. The applicant shall submit an ability to serve letter from the Portland Water District.

2. The applicant shall submit confirmation of adequate wastewater capacity from the Department of Public Works.

3. The applicant shall submit a dewatering plan for review and approval by the Department of Public Works.

SIX MONTHS AFTER ISSUANCE OF A BUILDING PERMIT

4. The applicant shall provide proof of parking commitments sufficient to provide the 396 parking spaces required by the proposed development, or shall submit a site plan application for a parking garage providing these spaces, for review and approval by the Planning Authority.

PRIOR TO CERTIFICATE OF OCCUPANCY

5. The applicant shall obtain a certificate of occupancy for a parking garage providing the 396 parking spaces required by the proposed development, or shall provide a final management plan and executed leases providing these spaces, for review and approval by the Planning Authority.

C. TRAFFIC MOVEMENT PERMIT

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 November 10, 2020 for application PL-001040-2020 relevant to Portland's technical and design standards and other regulations; and the testimony presented at the Planning Board hearing, the Planning Board finds that the plan [is / is not] in conformance with 23 MRSA 704-A and Chapter 305 Rules and Regulations pertaining to Traffic Movement Permits, subject to the following conditions of approval:

1. The applicant shall provide conceptual design plans, preliminary and final plans and specifications (for review and approval by the Department of Public Works and Planning Authority) and then implementation of Traffic calming / pedestrian improvements at the Falmouth Street / Oakdale Street intersection (including a raised intersection with supporting features for review and design by the Portland Department of Public Works) before completion of a parking garage structure or five years from TMP approval, whichever is sooner.

PRIOR TO CERTIFICATE OF OCCUPANCY

2. The applicant shall provide a $10,000 contribution to the City towards Forest Avenue traffic signal optimization at the Forest Avenue / Bedford Street / Baxter Boulevard and Forest Avenue / Falmouth Street / Preble Street Extension intersections with the intent of improving mobility efficiencies.

3. The applicant shall provide conceptual design plans, preliminary and final plans and specifications (for review and approval by the Department of Public Works and Planning Authority) and then implementation of the following:

    - Improvements at the Forest Avenue/Bedford Street/Baxter Boulevard intersection based on the Smart Corridor Study recommendations. This shall include geometric modifications to the corners on the Baxter Boulevard approach, upgrading pedestrian traffic signal equipment with all work complying with ADA standards.

- Improvements at the Forest Avenue/Falmouth Street/Preble Street Extension intersection based on the Smart Corridor Study recommendations. This shall include geometric modifications to the southeast corner, implementing a crosswalk on the southerly Forest Avenue approach, upgrading pedestrian traffic signal equipment with all work complying with ADA requirements. It should be noted that the new crosswalk will require installation of a new sidewalk ramp on the westerly side of Forest Avenue.

XI. ATTACHMENTS

Report Attachments

1. Transportation Programs Manager TDM Memo
2. Consulting Transportation Engineer TMP Comments
3. Department of Public Works Senior Engineer CM Plan Memo
4. Consulting Civil Engineer Comments Memo
5. Department of Public Works Water Resources Comments
6. Urban Designer Review Memo

Public Comment

PC1 - PC 7.

Applicant's Submittals

A. Cover Letter and Project Summary
B. Neighborhood Meeting Materials
C. Transportation Demand Management
D. Interim Parking Management Plan Memo
E. Site Location of Development Application
F. Site Plan Requirements Narratives
G. Lighting Cut Sheets
H. Stormwater Report
I. USM Facilities Master Plan
J. Traffic Memo
K. Street Parking Memo
L. Design Narrative
M. Response to Comments Letters
N. Portland Commons Window to Wall Ratio
O. Landscape Design Concept Memo
P. Housing Survey Market Analysis
Q. Parking Analysis
R. Parking Garage Feasibility Study
S. Preliminary Plan for Move-In
T. Sightline Diagrams
U. TMP Section 7

Plans

P1. Cover Sheet
P2. Site Notes & Legends

P3. Existing Conditions & Removals Plan
P4. Building Demolition Plan
P5. Site Layout
P6. Utilities
P7. Planting & Landscape
P8. Grading & Drainage
P9. Erosion & Sedimentation Controls
P10. Steam Line
P11. Photometric
P12. Post Development Watershed Plan
P13. Post Development Water Quality Plan
P14. Construction Management
P15. USM Survey
P16. Floor Plans
P17. Elevations
P18. Renderings

CITY OF PORTLAND

Planning & Urban Development

Performance Guarantee, Inspection Fee, and Infrastructure Financial Contribution Packet

A. Site Plan/Subdivision Performance Guarantees Required

Portland's Land Use Code requires all developers with approved site plan and/or subdivision applications to submit a performance guarantee to the City prior to the start of any construction or site improvements. The performance guarantee represents 100% of the total cost of site improvements, as determined by the City.

The code further requires developers to pay an inspection fee of 2% of the performance guarantee amount to the City for the administrative costs associated with inspecting construction activity to ensure that it conforms with plans and specifications.

(Portland's Land Use Code, Sections 14-501 and 14-530)

B. Cost Estimate Form and Inspection Fee

The performance guarantee covers major site improvements related to site plan and subdivision review, such as paving, roadway, utility connections, drainage, landscaping, lighting, etc. Please submit an itemized cost estimate form to determine the detailed costs of both public and private site improvements to the Planning Division for review and approval. The cost estimate form (excel format) can be downloaded from the city's website here: http://portlandmaine.gov/costestimate The approved amount on the Cost Estimate form is the amount to be covered by the performance guarantee and is the basis for calculating the 2% inspection fee.

C. Acceptable Types of Performance Guarantees

The accepted forms of a performance guarantee, covering the amount approved on the Cost Estimate form, must be one of the following options consistent with the attached templates, with **NO** exceptions. The templates and instructions be located on our website at: https://www.portlandmaine.gov/2157/Performance-Guarantee

1. A letter of credit from a bank/credit union
2. A deposit into a bank-held escrow account
3. A deposit into a City-held escrow account

NOTE: No land use application of any kind shall be processed, reviewed or issued, no signed subdivision plat shall be released or recorded, and no building permit of any kind shall be issued unless all fees have been paid and every aspect of the proposed development is in compliance with City Codes as determined by the Development Review Coordinator in the Planning Division.

The developer is eligible to receive up to three reductions from the performance guarantee in a calendar year equal to the estimated cost of the completed improvements. In no case, however, shall any performance guarantee be reduced 1) in any line item where improvements remain to be completed; or 2) to a value which is less than the estimated cost of completing all remaining required improvements; or 3) to a value less than 10% of the Performance Guarantee. *(The Cost Estimate Form can also be used during the construction phase to submit reductions of fully completed site work items)*

At the conclusion of the project, the City will release 90% of the performance guarantee after the Development Review Coordinator determines that site improvements have been satisfactorily completed at the time of the final inspection. The City will then retain a 10% defect guarantee to cover the workmanship and durability of materials used in construction. The defect guarantee will be released one
(1) year from date of acceptance, subject to the Development Review Coordinator inspecting the site and finding it in compliance with the approved site plan.

D. Housing Replacement Performance Guarantees

For those projects that are subject to Portland's Housing Preservation and Replacement Ordinance (Section 24-
483) and have an approved plan, then a performance guarantee is required for housing replacement. An owner or developer must post a performance guarantee in the form of a letter of credit in the amount equivalent to the amount the applicant would have been required to contribute to the City's Housing Fund, if the applicant had chosen that option. The guarantee shall be valid for no more than three years, after which the full amount shall be provided to the City's Housing Trust Fund, if replacement units meeting the code do not have certificates of occupancy. The guarantee can be released upon the issuance of a certificate of occupancy for the replacement units. A suggested template for a Housing Replacement Performance Guarantee is included as Attachment 4.

E. Infrastructure Accounts

Contributions to infrastructure accounts may be required as part of the conditions of site plan approval. The contributions must be submitted prior to the issuance of any permits, unless stated otherwise in the approval. The form for submitted required contributions is included as Attachment 5.

F. Administrative Process for Submitting Performance Guarantee

- **Step 1 – Submit a Cost Estimate for Review**

  Submit completed cost estimate form to the Planning Division for review and approval. Once approved, use this total amount as the performance guarantee amount in Step 2.

- **Step 2 – Drafting a Performance Guarantee**

  Complete a draft of 1 of the 3 attached performance guarantee templates, inputting project specific information (Reference Guide for Drafting for help) into blank and bracketed areas, and submit to the Planning Division for final approval. Submit a draft to **planning@portlandmaine.gov** to

ensure fields are correctly entered. Once staff approved the draft, the applicant shall submit the official signed original performance guarantee document, which for option 1) or 2) must be on Bank/Credit Union letterhead with original signatures.

- **Step 3 - Submit Performance Guarantee, Inspection Fee, and Infrastructure Contributions** Submit the final original Performance Guarantee, the required inspection fee, and any infrastructure contributions (Include Attachment 6 form) to the Planning Division. The Planning Division will confirm that the final documents are accurate and acceptable.

- **Step 4 - Release of Recording Plat and Permits**
  Only after the performance guarantee is issued, fees paid, and all other conditions of site plan approval and compliance are met, will the recording plat be released for recording at the Cumberland County Registry of Deeds and/or City permits issued.

Contact: Please email the Cost Estimate Form to Jodie Keene at **jkeene@portlandmaine.gov** After the cost estimate is approved, all Performance Guarantees and Infrastructure Contributions can be submitted by mail to: **City of Portland Planning Division, 389 Congress Street, 4th Floor, Portland, ME 04101**. Please call our office with any questions: 207-874-8632

STORMWATER DRAINAGE SYSTEM
MAINTENANCE AGREEMENT

For SITE PLANS (THAT ARE NOT SUBDIVISIONS)

IN CONSIDERATION OF the site plan approval granted by the Planning Board/Planning Authority of the City of Portland to the proposed _____ (*name of development and project number)*), and the associated Grading, Drainage & Erosion Control Plan (*insert correct name of plan)* (Exhibit A) submitted by_____, prepared by _____ (*engineer/agent*) of _____(address) dated _____, and pursuant to a condition thereof, _____ (*name of owner*) a Maine limited liability company with a principal place of business in Portland, Maine, and having a mailing address of _____, the owner of the subject premises, does hereby agree, for itself, its successors and assigns (the "Owner"), as follows:

Maintenance Agreement

That it, its successors and assigns, will, at its own cost and expense and at all times in perpetuity, maintain in good repair and in proper working order the _____ (*details of the system such as underdrained subsurface sand filter BMP system, rain gardens, storm drain pipes, underdrain pipes, catch basins*), (hereinafter collectively referred to as the "stormwater system"), as shown on the _____Plan in Exhibit A and in strict compliance with the approved Stormwater Maintenance and Inspection Agreement (*insert correct name of document)* prepared for the Owner by _____ (copy attached at Exhibit B) and Chapter 32 of the Portland City Code.

Owner of the subject premises further agrees, at its own cost, to keep a Stormwater Maintenance Log. Such log shall be made available for inspection by the City of Portland upon reasonable notice and request.

Said agreement is for the benefit of the said City of Portland and all persons in lawful possession of said premises and abutters thereto; further, that the said City of Portland and said persons in lawful possession may enforce this Agreement by an action at law or in equity in any court of competent jurisdiction; further, that after giving the Owner written notice and a stated time to perform, the said City of Portland, by its authorized agents or representatives, may, but is not obligated to, enter upon said premises to maintain, repair, or replace said stormwater system in the event of any failure or neglect thereof, the cost and expense thereof to be reimbursed in full to the said City of Portland by the Owner upon written demand. Any funds owed to the City under this paragraph shall be secured by a lien on the property.

This Agreement shall also not be construed to allow any change or deviation from the requirements of the site plan most recently and formally approved by the Planning Board/Planning Authority of the City of Portland.

This agreement shall bind the undersigned only so long as it retains any interest in said premises, and shall run with the land and be binding upon the Owner's successors and assigns as their interests may from time to time appear.

The Owner agrees to record a copy of this Agreement in the Cumberland County Registry of Deeds within thirty (30) days of final execution of this Agreement. The Owner further agrees to provide a copy of this Agreement to any Condominium Association or management company, and to any successor or assign and to forward to the City an Addendum signed by any successor or assign in which the successor or assign states that the successor or assign has read the Agreement, agrees to all its terms and conditions and the successor or assign will obtain and forward to the City's Department of Public Services and Department of Planning and Urban Development a similar Addendum from any other successor or assign.

For the purpose of this agreement and release "Owner" is any person or entity who is a successor or assign and has a legal interest in part, or all, of the real estate and any building. The real estate shown by chart, block and lot number in the records on file in the City Assessor's office shall constitute "the property" that may be entered by the City and liened if the City is not paid all of its costs and charges following the mailing of a written demand for payment to the owner pursuant to the process and with the same force and effect as that established by 36 M.R.S.A. §§ 942 and 943 for real estate tax liens.

Any written notices or demands required by the agreement shall be complete on the date the notice is attached to one or more doors providing entry to any buildings and mailed by certified mail, return receipt requested or ordinary mail or both to the owner of record as shown on the tax roles on file in the City Assessor's Office.

If the property has more than one owner on the tax rolls, service shall be complete by mailing it to only the first listed owner. The failure to receive any written notice required by this agreement shall not prevent the City from entering the property and performing maintenance or repairs on the stormwater system, or any component thereof, or liening it or create a cause of action against the City.

Dated at Portland, Maine this _____ day of _____, 2014.

_____
(*name of company*)

_____
(*representative of owner, name and title*)

STATE OF MAINE
CUMBERLAND, ss. Date: _____

Personally appeared the above-named _____(*name and title*), and acknowledged the foregoing instrument to be his free act and deed in his said capacity.

Before me,

_____
Notary Public/Attorney at Law

Print name: _____

Exhibit A: Approved Grading and Drainage Plan *(name of the plan showing the Stormwater System in detail)*

Exhibit B: Approved Stormwater Maintenance and Inspection Agreement

CITY OF PORTLAND, MAINE

PLANNING BOARD

Brandon Mazer, Chair
Maggie Stanley, Vice-Chair
Marpheen Chann
David Silk
Austin Smith
Bob Dunfey
Sean Dundon

June 15, 2020

Joe Gallant
University of Southern Maine
25 Bedford Street
Portland, ME, 04101

Ashley Fletcher
Woodard & Curran
41 Hutchins Drive
Portland, ME, 04102

Project Name:	Wishcamper Parking Lot Expansion	**Project ID:**	PL-000974-2020
Address:	44 Bedford Street	**CBL:**	114 A001
Applicant:	University of Southern Maine		
Planner:	Andrew Tufts		

Dear Mr. Gallant:

On May 26, 2020, the Planning Board considered the University of Southern Maine's Level III Site Plan application for the proposed Wishcamper parking expansion and associated site improvements at 44 Bedford Street. The Planning Board reviewed the proposal for conformance with the site plan standards of the City of Portland Land Use Code and with the Site Location of Development Act permit requirements. The Planning Board voted (6-1, Silk opposed) to approve the application with the following conditions as presented below.

The approval is based on the submitted plans and findings, as contained in the attached Planning Report (5-26-2020) for application PL-000974-2020.

Site Plan Review

The Planning Board voted (6-1, Silk opposed) that the plan is in conformance with the site plan standards of the Land Use Code and the *Site Location of Development Act*, subject to the following conditions of approval:

PRIOR TO ISSUANCE OF A BUILDING PERMIT

1. The applicant shall submit a revised final plan set to include the addition of landscape islands for the interior of the parking lot and proposed bicycle parking spaces to be reviewed and approved by the Planning Authority.

Standard Procedures

Note: The following standard procedures and requirements apply to all approved site plans:

1. Site Plan Expiration The site plan approval will be deemed to have expired unless work has commenced within one (1) year of the approval or within a time period up to three (3) years from the approval date as agreed upon in writing by the City and the applicant. Requests to extend approvals must be received before the one (1) year expiration date.

2. Separate Building Permits Are Required This approval does not constitute approval of building plans, which must be reviewed and approved by the City of Portland's Permitting and Inspections Department.

3. Performance Guarantee and Inspection Fees A performance guarantee covering the site improvements and an inspection fee payment of 2.0% of the guarantee amount and three (3) final sets of plans must be submitted to and approved by the Planning and Urban Development Department and Public Works Department prior to the release of a building permit, street opening permit or certificate of occupancy for site plans.

7. Construction Management Plans The applicant, contractor and subcontractors are required to conform to the approved Construction Management Plan, and all conditions contained within the project's approval, for the entire duration of the project. Any amendments to the approved Construction Management Plan shall be reviewed and approved by the Department of Public Works prior to the execution. The Planning Authority and the Department of Public Works have the right to seek revisions to an approved Construction Management Plan. The applicant shall coordinate the project's construction schedule with the timing of nearby construction activities to avoid cumulative impacts on a neighborhood and prevent unsafe vehicle and pedestrian movements. Accordingly, nearby construction activities could involve a delay in the commencement of construction.

8. Preconstruction Meeting Prior to the release of a building permit and scheduling of a preconstruction meeting, a hard copy set of approved plans shall be submitted to the Development Review Coordinator. A pre-construction meeting shall be held at the project site with the contractor, Development Review Coordinator, Public Works representative, and owner to review the construction schedule and critical aspects of the site work. At that time, the Development Review Coordinator will confirm that the contractor is working from the approved site plan and the approved Construction Management Plan. The site/building contractor shall provide one (1) copy of a detailed construction schedule to the attending City representative. It shall be the contractor's

responsibility to arrange a mutually agreeable time for the pre-construction meeting.

9. Department of Public Works Permits If work or obstructions will occur within the public right-of-way, such as utilities, curb, sidewalk, driveway construction, site deliveries and equipment siting, a Street Opening and/or Occupancy Permits are required for your site. Please contact the Department of Public Works Permit Clerk at (207) 874-8300, ext. 8828. (Only excavators licensed by the City of Portland are eligible.)

10. Develop Site According to Plan The site shall be developed and maintained as depicted on the site plan and in the written submission of the applicant. Any modifications of an approved site plan or alteration of a parcel, or of any approved exterior elevations, which were the subject of site plan approval after May 20, 1974, shall require the prior approval of an amended site plan by the Planning Board or Planning Authority pursuant to the terms of Chapter 14, Land Use, of the Portland City Code.

11. Stormwater Management The owner/operator of an 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. Final copies shall be submitted to both the Department of Planning and Urban Development and the Department of Public Works.

12. Defect Guarantee A defect guarantee, consisting of 10% of the performance guarantee, must be posted before the performance guarantee will be released.

13. As-Built Final Plans Final sets of as-built plans shall be submitted digitally to the Planning and Urban Development Department, on a CD or DVD, in AutoCAD format (.dwg), release AutoCAD 2005 or greater.

14. Mylar Copies Mylar copies of the as-built drawings for the public streets and other public infrastructure in the subdivision must be submitted to Public Works prior to the issuance of a certificate of occupancy.

The Development Review Coordinator must be notified five (5) working days prior to the date required for final site inspection. The Development Review Coordinator can be reached at the Planning and Urban Development Department at (207) 874-8632. All site plan requirements must be completed and approved by the Development Review Coordinator prior to issuance of a Certificate of Occupancy. Please schedule any property closing with these requirements in mind.

If there are any questions, please contact Andrew Tufts at (207) 874-8724.

Sincerely,



Brandon Mazer, Chair
Portland Planning Board

ATTACHMENTS

PLANNING BOARD REPORT

PLANNING BOARD REPORT
PORTLAND, MAINE

44 Bedford Street Development
Level III Site Plan Review
University of Southern Maine, Applicant
PL-000974-2020 CBL: 114 A001

Submitted to: Portland Planning Board Public Hearing Date: May 26, 2020	Prepared by: Andrew Tufts, Planner Date: May 22, 2020



Figure 1: Parcel outline - Source: City of Portland Maine Parcel Viewer

I. INTRODUCTION

The University of Southern Maine has submitted a Level III Site Plan application for the expansion of the Wishcamper parking lot located at 44 Bedford Street. The proposed project would create 122 additional parking spaces. The site is located in the R-5 and B-2 Zones, as well as the University of Southern Maine Overlay Zone. The proposed activity will not result in any change to the site's existing use.

The Planning Department sent 41 notices advertising this meeting to property owners within 500 feet of the site. Legal advertisements ran in the May 15th & May 16th editions of the Portland Press Herald.

Applicant: University of Southern Maine

Consultants: Ashley Fletcher (Woodard & Curran) John Schwanda (Owen Haskell Inc (Surveying)) Joe Gallant (University of Southern Maine)

II. REQUIRED REVIEWS

Waiver Requests	*Applicable Standards*
Review	*Applicable Standards*
Site Plan	*Section 14-526*

III. PROJECT DATA

Existing Zoning	R-5, B-2 Zones, USM Overlay
Existing Use	*Parking Lot*
Proposed Use	*Parking Lot*
Parcel Size	63,200 SF

	Existing	*Proposed*	*Net Change*
Building Footprint	NA	NA	NA
Building Floor Area	NA	NA	NA
Impervious Surface Area	27,900 SF	52,300 SF	+ 24,400 SF
Parking Spaces	82	214	+ 132
Bicycle Parking Spaces	0	0	0



Figure 2: Existing Conditions - Source: Google Maps

IV. EXISTING CONDITIONS

The proposed development site is located on 44 Bedford Street which extends between Forest Avenue and Deering Avenue. The parcel is approximately 63,200 SF in size. The site is part of the University of Southern Maine Portland campus, and is surrounded by Hannaford Hall Parking Garage to the west, the Muskie School's Wishcamper Building to the north, Osher Library to the east, and Interstate 295 to the south. The existing grassed area interior to the site that will be converted to parking is not considered open space used for recreation; it is currently used for overflow parking and storage.

The applicant and owner of the parcel is the University of Southern Maine. The site is currently developed as an 82-space surface parking lot with landscaped islands. Owen Haskell, Inc. completed a boundary and topographic survey of the site. There were no existing or proposed easements identified.

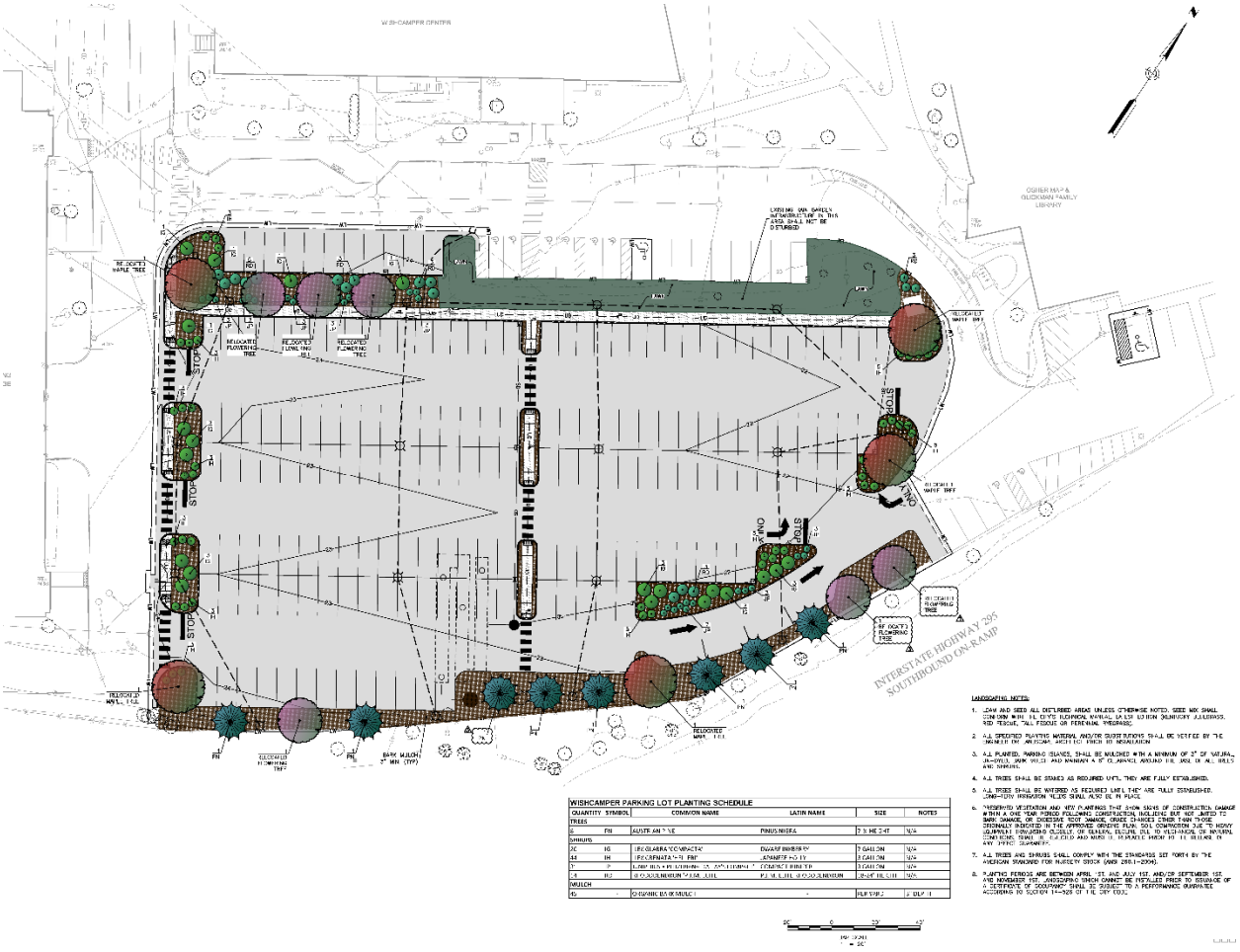


Figure 3: Proposed Landscape Plan - Source: Woodard & Curran

V. PROPOSED DEVELOPMENT

The proposed development includes the creation of an additional 122 parking spaces resulting in a total of 214 surface parking spaces (82 existing + 122 additional). The proposed project is intended to enable the University to replace some of the parking that will be displaced by the planned future development of a new Student Center and Student Residential Building (to be submitted under a separate application). The proposed parking lot will include the necessary ADA accessible parking spaces as well as compact spaces. The proposed stormwater management plan will consist of porous pavement walkways, similar to existing walkways throughout the University, and a subsurface detention and proprietary treatment device. The parking field consists of 166 standard spaces, 38 compact spaces and 10 handicap accessible spaces comprising 52,300 square feet of impervious paving. The total area of the project is 63,200 square feet.

VI. PUBLIC COMMENT AND NEIGHBORHOOD MEETING

The applicant team held a neighborhood meeting on the evening of March 4, 2020 from 5:30 PM at the Talbot Lecture Hall within Luther Bonney Hall on Bedford Street in Portland, ME. The meeting was attended by two abutters and one individual who did not sign in, along with members of the project team. Attending on behalf of the development team were Ashley Fletcher and Darrin Stairs of Woodard & Curran, and Alec Porteous of USM. A presentation was provided by Darrin Stairs & Alec Porteous. Comments

included questions regarding associated traffic from the project, as well as specifics on overall campus parking plans. **(See Attachment Q)**

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

The owner of the property is The University of Southern Maine Foundation. The applicant provided a copy of the warranty deed, recorded at the Cumberland County Registry of Deeds in CCRD Book 29219 page 218, which demonstrates their right, title and interest in the property. The applicant team cited their experience and qualifications to demonstrate capacity to design and construct the project. The anticipated total cost of the project is projected to be $1,710,000. **(See Attachments D & E)**

VIII. ZONING ANALYSIS

Dimensional requirements for this project are dictated by the R-5, B-2, & USM Overlay Zones.

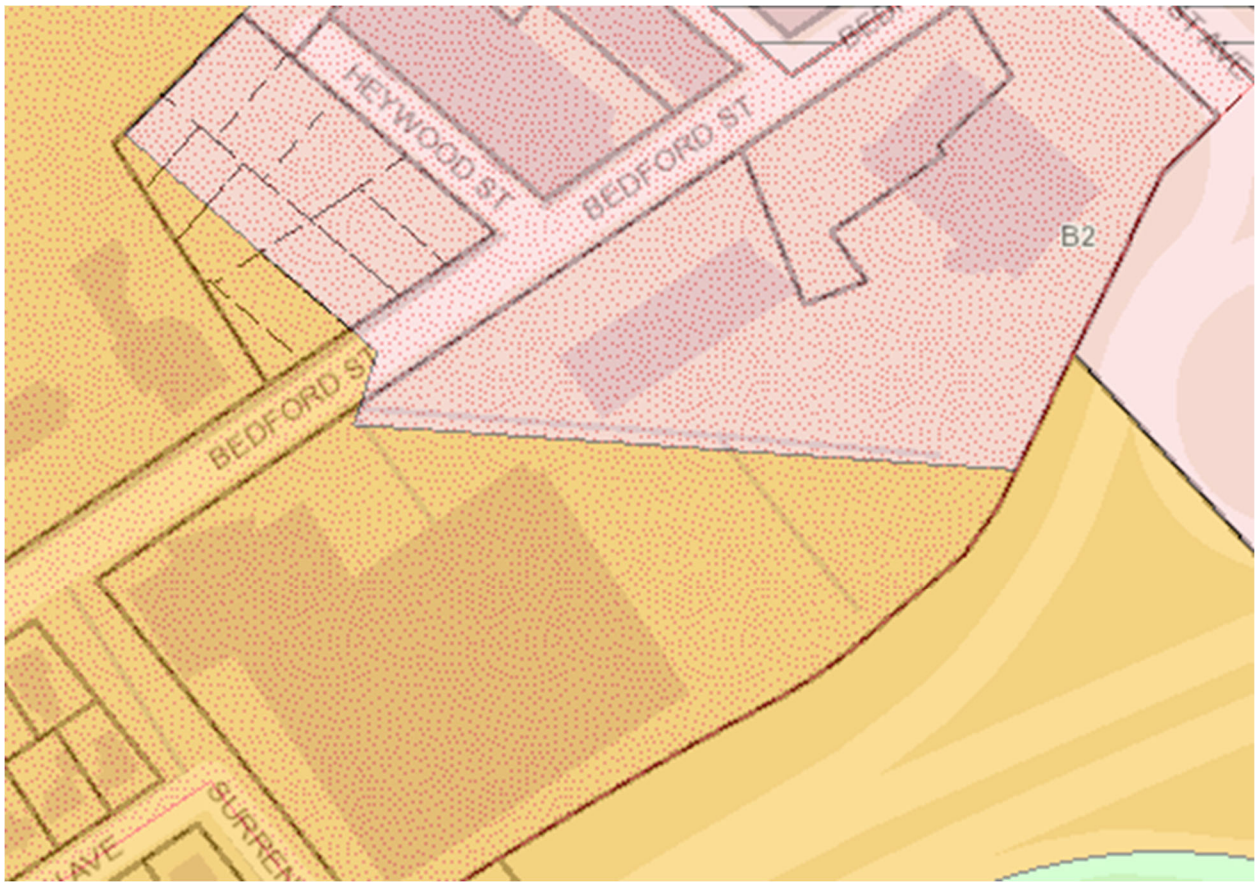


Figure 4: Zoning Map

Zoning Requirements	I-M	Provided	+/-
Minimum Lot Size	None	62,300 SF	N/A
Minimum Street Frontage	NA	NA	
Maximum Lot Coverage	66%	55%	-11%
Parking	NA	214	NA
Bicycle Parking	NA	NA	NA

IX. DEVELOPMENT REVIEW

A. SITE PLAN SUBMISSION REQUIREMENTS (Section 14-527)

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

The proposed parking lot will include the construction of ADA accessible parking and pedestrian walkways. Traffic signage and pavement markings will be provided to circulate pedestrian and vehicular traffic throughout the Site. The proposed project will maintain Site's existing access and traffic patterns.

b. Sidewalks

Internal sidewalks and ADA ramps will be provided, as shown and detailed on the design drawings. The proposed project will not include any work along street frontages or in the public Right-of-Way.

c. Public Transit Access

No changes to public transit access are proposed as part of this project.

d. Parking

The purpose of the proposed parking lot is to replace parking that will be displaced by the University's future developments; the intent is to construct the proposed parking lot in advance of future developments in order to satisfy the University's existing parking demands. The University is currently conducting a campus-wide parking study that will be submitted as part of future applications. The proposed project will create 122 additional off-street parking spaces, including required ADA parking; a parking summary is provided on the Site Plan. The proposed parking lot has been designed in accordance with the

dimensional standards of Section 1 of the City's Technical Design Manual, as shown on the design drawings.

e. Bicycle Parking

The University does not currently anticipate an increase in the demand for bicycle parking; additional bicycle parking may be provided as part of future developments. In response to comments from planning staff, 10 bike spaces will be added to the site plan.

2. Environmental Quality Standards

a. Preservation of Significant Natural Features

The Site has been previously developed and there are no known areas of significant natural features, including rare or endangered botanical features, significant wildlife habitats, or wetland areas.

b. Landscaping and Landscape Preservation

Landscaping Plans are included in the drawings referenced in Section 3 of this Report. These Plans show proposed landscaped islands within the proposed parking area, as well as screening of the Site; plant sizes are specified in the planting schedule provided on the Plans. A Tree Preservation & Removals Plan is included in the design drawings; this Plan shows what existing trees will be preserved and specifies protection measures.

c. Water Quality, Storm Water Management and Erosion Control

The project must comply with the water quality, stormwater management, and erosion control standards identified by the City of Portland in the Land Use Chapter of the Code of Ordinances and Section 5 of the City's Technical Manual, as well as the Maine DEP Chapter 500 Stormwater Standards associated with Site Location of Development Act Permit requirements. The Stormwater Management Plan included with the application demonstrates that the proposed development meets the applicable standards. Stormwater treatment will be provided by porous pavement walkways and a Storm Filter system. Erosion and sediment control measures are shown and detailed on the drawings.

The Stormwater Management Plan was reviewed by consulting civil engineer Wright-Pierce and found to be in conformance with City standards and Chapter 500.

3. Public Infrastructure and Community Safety Standards

a. Public Safety and Fire Prevention

Overhead lighting will be provided to promote public safety and emergency vehicle access to the Site will be maintained. No new structures requiring Fire Department review are proposed as part of this project.

b. Availability and Adequate Capacity of Public Utilities

Proposed lighting will connect to an existing underground electric conduit, as shown on the drawings, and will be served by an existing electrical panel in Wishcamper Center. Water and sewer utilities are not included in the proposed work. The proposed project will also generate construction waste and demolition debris (CDD). The contractor will be responsible for hauling the CDD or contracting with a waste management service to haul the CDD from the project site.

4. Site Design Standards

a. Snow and Ice Loading

Proposed snow storage areas are indicated on the drawings. The proposed landscaped areas will be the primary source for snow storage. Parking demands are lower during the winter months, so some of the proposed parking along the southern perimeter of the site may be utilized for additional snow storage. Snow that exceeds the available space on-site will be hauled off-site.

b. View Corridors

N/A

c. Historic Resources

N/A

d. Exterior Lighting

Overhead lighting is proposed in accordance with Section 12 of the City's Technical Manual. A Photometric Plan and details for the proposed lighting fixtures are included in the drawings; cut sheets of the proposed lighting fixtures are also attached to this Section for your reference. It should be noted that the project abuts the I-295 corridor; according to Section 12 of the Technical Manual, public rights-of-way is considered a non-sensitive use and, as such, illumination at the property boundary must not exceed 1.0 foot-candles; the lighting plan has been designed in accordance with these standards.

e. Noise and Vibration

The proposed project will not result in any increase in noise or vibration on the Site.

f. Signage and Wayfinding

Existing signage will be maintained, and new traffic signage will be provided as shown on the drawings.

g. Zoning Related Design Standards

According to the City's Land Use Ordinance, Chapter 14 of the Code of Ordinances, the proposed work is subject to a maximum impervious surface ratio of 66% of the total land

area within the University of Southern Maine overlay zone exclusive of public streets. Based on available data from the City of Portland's Online Stormwater Fee Lookup service, the University currently has an impervious surface ratio of approximately 54%; the proposed parking lot will result in an impervious surface ratio of approximately 55%.

h. Construction Management Plan

The construction management plan was reviewed and approved by city staff. **(See Attachment P16. CONSTRUCTION MANAGEMENT PLAN)**

X. SITE LOCATION OF DEVELOPMENT REVIEW

The City of Portland has delegated review authority from the Maine DEP for large projects that trigger Site Location of Development Act (SLODA) review; this project meets the threshold requiring SLODA review. The standards for this review generally dovetail with Portland's existing site plan and subdivision standards:

- Financial & Technical Capacity: see section VII, above.
- Traffic Movement: see site plan standards, a, above.
- No Adverse Effect on the Natural Environment: see site plan standards, b, above.
- Soil Types: see site plan standards, b, above.
- Ground Water: see site plan standards, 2, above.
- Infrastructure: see site plan 2, 3, and 4, above.
- Flooding: see site plan, 2, above.
- Storm Water Management & Erosion and Sedimentation Control: see site plan 2, above.

Staff finds that the project meets SLODA standards.

XI. STAFF RECOMMENDATION

Subject to the proposed motions and conditions of approval listed below, Planning Division staff recommends that the Planning Board find that the 44 Bedford Street development project meets the applicable standards of Portland's Land Use Code.

XII. PROPOSED MOTIONS FOR THE BOARD TO CONSIDER

A. SITE PLAN REVIEW & SITE LOCATION OF DEVELOPMENT

On the basis of the application, plans, reports and other information submitted by the applicant; findings and recommendations contained in the Planning Board Report for the public hearing on May 26, 2020, for application #PL-000974-2020, 44 Bedford Street relevant to the site plan and Site Location of Development Act regulations; and the testimony presented at the Planning Board hearing, the Planning Board [finds/does not find] that the plan is in conformance with the site plan standards of the Land Use Code.

XIII. ATTACHMENTS
PLANNING BOARD REPORT ATTACHMENTS

1. COMMENT RESPONSE LETTER
2. WRIGHT PIERCE STORMWATER COMMENTS
3. WISHCAMPER PARKING LOT STORMWATER CONNECTION
4. JEFF TARLING LANDSCAPE COMMENTS

APPLICANT'S SUBMITTALS

A - COVER
B – SUBMISSION CHECKLIST
C – PROJECT DESCRIPTION
D – RIGHT, TITLE & INTEREST
E – FINANCIAL CAPACITY
F – STATE & FEDERAL APPROVALS
G – APPLICATION FEES
H - ZONING
I - EASEMENTS
J – SURVEY
K – CONSTRUCTION MANAGEMENT PLAN
L – SLOD
M – COMPLIANCE WITH SITE PLAN STANDARDS
N – STORMWATER REPORT
O – REVISED STORMWATER INSPECTION CHECKLIST
P – REQUEST FOR SD CONNECTION
Q - NEIGHBORHOOD MEETING
R - MHPC REVIEW LETTER
S - MNAP REVIEW LETTER
T - MDIFW REVIEW LETTER
U - 3.25 RESPONSE TO COMMENTS LETTER
V - 5.07 RESPONSE TO COMMENTS LETTER

PLANS

P1. COVER SHEET
P2. SITE PLAN
P3. EXISTING CONDITIONS
P4. LANDSCAPE PLAN
P5. LANDSCAPE DETAILS
P6. TREE PRESERVATION & REMOVALS PLAN
P7. GRADING & DRAINAGE PLAN
P8. MATERIALS & LAYOUT
P9. EROSION & SEDIMENT CONTROL PLAN
P10. CIVIL DETAILS
P11. ELECTRICAL & PHOTOMETRICS
P12. GENERAL NOTES & LEGEND

Portland Maine Yes. Google's good here.

Jimmy Dealaman <jdealaman@portlandmaine.gov>

USM Garage - Comments for PB Workshop?

Jeff Tarling <jst@portlandmaine.gov> Fri, Sep 17, 2021 at 2:05 PM
To: Jimmy Dealaman <jdealaman@portlandmaine.gov>

Hi Jimmy -

Sorry for the delay, was in the field most of the day.

In review of the USM parking garage landscape, the tree numbers look good.

The tree species, 'Princeton' American Elm, which we like but... we maintain dozens of these
in various parks and public grounds and while resistant to Dutch Elm Disease, they do
get this once and awhile. Our recommendation would be to diversify the planting with one or
two others, either break up the large planting of 12, creating 5 & 7 or change the center trees
or the 6 on the right side. Other tree types might include:

'Street-Keeper' Honeylocust
'Regal Prince' (upright) Oak
'Bowhall' Red Maple.

The proposed caliper size of 4" is above the required 2.5"-3" caliper and maybe easier to source.

Overall the plan looks good, it might be best to mix up the tree types to prevent future decline.
Dutch Elm Disease can spread by rootgraft making a large planting somewhat iffy.

Thanks,

Jeff

Jeff Tarling
City Arborist - City of Portland Maine
Parks, Recreation & Facilities

Forestry, Parks & Horticulture
212 Canco Road - Suite A
Portland, ME. 04103
(207) 808-5400
jst@portlandmaine.gov

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University of Southern Maine
Campus Design Principles and Standards

Adopted May 23, 2006

1. PURPOSE

The *University of Southern Maine Campus Design Principles and Standards* have been created in recognition of the need of the university to grow in a vibrant, aesthetic, and sustainable manner that provides a strong sense of place, and conveys an identity as a high-quality institution of learning.

All new buildings shall be designed to create a visual connection with existing campus buildings with a goal of achieving a cohesive campus appearance. New development shall be characterized by excellence in architectural design, craftsmanship, materials, streetscape and landscape improvements, signage and lighting appropriate for a university in an urban setting in the Northeast.

These principles and standards are intended to regulate the future build out of the institution while ensuring that new development is sensitive to adjacent residential neighborhoods and commercial areas, and is successfully integrated with the City as a whole.

2. APPLICABILITY

The following principles and standards shall apply to all development on the University of Southern Maine Portland campus.

3. PRINCIPLES AND STANDARDS

PRINCIPLE A Campus Design

The campus design shall create a strong identity and sense of place. New development may be contemporary in architectural style, but shall be organized according to time-tested and traditional principles of urban and landscape design in order to integrate these buildings into a coherent whole. These principles shall serve to strengthen the overall image of the campus, establish defined boundaries, ensure a sensitive interface with surrounding neighborhoods and the city, enhance the physical amenities of the campus, create a pedestrian oriented environment with safe and vital streets, and provide a series of significant open spaces.

STANDARD A-1: **Campus Edges.** New development along the edges of the campus shall be designed to coordinate with the surrounding neighborhood, and provide a transition between institutional and smaller-scale uses through mitigation of height, stepbacks and materials. Parking lots and structures, blank walls, or backs of buildings shall not be sited in a manner that forms a boundary to neighborhoods and the city. Dormitories shall be sited in a manner that is sensitive to private residential neighborhoods. Campus facilities that are available for use by the public shall be sited so that they are accessible to the surrounding neighborhoods.

STANDARD A-2: **Building Orientation**. Development shall be oriented to streets, major pedestrian access routes, and large scale open spaces in order to create a cohesive pedestrian-oriented environment. Buildings shall not be oriented toward parking lots. Large-scale open spaces shall be partially bordered by buildings in order to form defined courtyards or quadrangles. Structures shall be sited to create safe pedestrian spaces that maximize exposure to sun and block winds.

STANDARD A-3: **Pedestrian Environment.** Development along public streets shall be designed to enhance the pedestrian environment through such means as fully-functioning building entries oriented to the street; traffic calming, visible crosswalks and adequately sized sidewalks; pedestrian scaled street lights; exterior gathering spaces; trees and landscaping; street furniture; and public art and other visual amenities. To the extent that the campus includes a mix of campus-related uses that serve students and neighborhood residents (*e.g.*, cafes, bookstores, day care facilities, health facilities, libraries, and meeting spaces), the University shall endeavor to locate such uses at the public street level in order to enhance the neighborhood and create a vital pedestrian environment.

STANDARD A-4: **Gateways.** Gateways to the campus shall be designed to signify the arrival to a distinct place and shall be clearly articulated through the use of elements such as distinguishing architecture, landscaping, signage, lighting, and other amenities. The key campus gateways are at Deering Avenue and Falmouth Street, Deering Avenue and Bedford Street, Durham Street and Falmouth Street, and Forest Avenue and Bedford Street.

STANDARD A-5: **Views and Landmarks.** View corridors and terminations to landmarks such as campus buildings, city buildings and natural resources, shall be highlighted with design elements such as significant architectural features, quality materials, landscaping, public art or other visual amenities. View corridors and termination points shall include the view up Bedford Street and west across Deering Ave., and other important views as may be identified during campus planning and the City's development review process.

PRINCIPLE B Access and Circulation

Campus streets and sidewalks shall be scaled for expected traffic; encourage pedestrian, bicycle, and transit activity; and connect to neighborhood streets and sidewalks.

STANDARD B-1: **Connectivity.** An internal campus circulation system shall coordinate and intersect with neighborhood streets and sidewalks at multiple access points.

STANDARD B-2: **Circulation.** A primary circulation system shall be developed through the creation of streets, sidewalks and walkways at ground level. A secondary circulation system shall be provided internally within non-residential buildings through the use of fully functioning entrances on every side of a building, and internal corridors that permeate through buildings unless the building program precludes such design for security reasons (See Standard D-5). Skywalks shall be utilized only when a compelling case can be made for the need from a pedestrian safety or traffic management perspective.

STANDARD B-3: **Multi-modality.** New development shall relate to a campus circulation system that serves pedestrians/bicyclists, autos, public transportation, service vehicles, and emergency vehicles. New development along transit corridors shall provide convenient and accessible routes from the building to the nearest transit stop.

STANDARD B-4: **Traffic-calming.** Circulation improvements internal to the campus shall be designed to create a pedestrian-oriented environment and to discourage speed. Appropriate traffic calming measures may include gateway treatments that signal arrival in to the campus environment, corner neck-downs, narrowed travel lanes, roundabouts, speed tables, and other devices. Development along public streets shall be designed with traffic calming measures to the extent allowed by City and State policies and requirements at a minimum.

STANDARD B-5: **Sidewalks.** Clay brick sidewalks shall be provided on both sides of all public streets. New sidewalks along public streets shall be at least 8 feet wide, except where it can be demonstrated that site constraints preclude such width.

STANDARD B-6: **Street lights.** Streetlights along public streets shall be pedestrian in scale and distinctive in design in order to help establish an identity for the neighborhood.

PRINCIPLE C Parking, Loading and Service Areas

Parking structures shall be designed and located so as to present an attractive façade to neighboring uses in order to minimize the impact along streets and residential areas. Surface parking lots shall be sited and designed to minimize their visual presence on the campus.

STANDARDS C-1: **Structures**. Parking structures shall be compatible with adjacent uses and architecture in form, bulk, massing, articulation, and materials. Parking structures shall incorporate architectural design elements in order to achieve visual interest on street frontage facades, and along major pedestrian ways, for the full height of the structure, that serve to enhance the pedestrian experience.

STANDARD C-2: **Active Uses:** Parking structures shall incorporate liner buildings or enclosed active uses on the first floor along all primary frontages (excluding frontage dedicated to entrances, lobbies, and stair towers). Such space shall be provided with a minimum of 9 foot floor to ceiling clearance height and a 25 foot depth (measured from the exterior building wall). Alternatively, the parking structures may be set back at least 35 feet from the primary street right of way and that space shall not be occupied by surface parking or access lanes, and shall be designated for future development. The set back space shall be provided with all stubbed utilities and other provisions needed to accommodate further development.

STANDARD C-3: **Decks and Ramps.** Parking structures shall have horizontal decks on all levels where the decks are visible from the public rights of way. Ramps and non-horizontal parking decks shall be screened from all visible angles and shall not be permitted

on facades located along or within 45 feet of a public street (Note: such space would allow for the construction of a liner building and a ten foot separation).

STANDARD C-4: **Surface Lots**. Parking lots shall be located behind buildings or to the side of existing or future buildings, but shall not occupy more than 64 feet of public street frontage within 45 feet of the street right of way (to allow for a future building). The areas devoted to surface parking shall be screened from streets, walkways, and significant views through the use of design elements such as plantings, fencing, grade changes, and/or walls.

STANDARD C-5: **Loading and Service Areas.** Wherever possible, loading ramps and service entrances shall be located near industrial uses, such as along Durham Street. Loading ramps and service entrances shall be located at the rear or side of structures. If visible from the public right of way, the garage doors shall be minimized and the loading shall be screened from view and with materials, colors and finishes that are consistent with the exterior elevations of the overall building. Buildings that face more than one public street shall have loading and service entrances oriented to the more secondary street.

STANDARD C-6: **Utility Services.** Service and utility infrastructure such as power generators, HVAC, fuel tanks and similar campus or building services shall be located unobtrusively and shall be visually screened from adjacent residences and shall not result in adverse visual and audible or other impacts on adjacent residential properties.

PRINCIPLE D Architectural Design

All new buildings shall be designed to create a visual connection with existing campus buildings with a goal of achieving a cohesive campus appearance. Buildings shall be characterized by excellence in architectural design, craftsmanship, materials, signage and lighting appropriate for a university in an urban setting in the Northeast.

STANDARD D-1: **Height**. Building heights along campus edges shall transition to the scale of adjacent off campus development through design elements such as stepbacks, variations in massing, and through the use of design details and materials.

STANDARD D-2: **Setbacks**. Buildings along public streets shall have a front yard setback that does not exceed ten (10) feet from the street right of way, except where existing campus buildings create a consistent street wall, in which instance the setback may conform to that existing street wall. An alternative would be to create a landscaped design feature such as a boulevard for vehicles, or a promenade for pedestrian access, and to set the building back along the line of this feature.

STANDARD D-3: **Stepbacks.** The street wall heights of campus buildings on Falmouth Street shall be stepped back 15 feet minimum once they exceed 50% more height than the average height of the buildings in close proximity, across the street.

STANDARD D-4: **Massing**. Facades visible from public streets shall incorporate design elements that break the facades into components scaled to the context of buildings on

the street. Buildings shall include features such as expression of the building's base, middle and top, vertical fenestration, variation in the planes of the façade, and architectural details such as trim, entries, balconies, cornices, etc. No more than 20 consecutive linear feet of blank wall shall be allowed at the first floor level along public streets. Windows and functional doors shall be used to break up blank walls. Design elements such as pilasters, materials, permanent artwork, distinctive lighting and/or landscaping may be used to mitigate blank walls if it can be demonstrated that the purposes of the building interior preclude the use of windows or functional doors every 20 feet at the first floor level.

STANDARD D-5: **Entrances.** Buildings along public streets shall have the primary entrances oriented to the street. Buildings that are internal to the campus shall have primary entrances oriented to major pedestrian corridors. Primary entrances may not be oriented to a parking lot. Academic buildings shall be permeable and accessible on all sides unless the building program precludes such design for reasonably necessary security purposes. Dormitory buildings are only required to have one entrance for security purposes. All building entrances should be fully functional in design and use and shall provide access to lobbies, elevators, stairs and common areas. Primary entrances shall be emphasized and integrated into the design of the building through features such as expressed or recessed entries, trim detailing, lighting, and landscaping. Entrances shall be scaled to the overall massing of the building.

STANDARD D-6: **Windows**. Windows with a visible transmittance of .7 or greater shall be located on all facades visible from public ways in order to provide light and views internally, and to provide security and vitality to external spaces. Window style shall be appropriate to the overall building style and scaled to the overall massing. The first floor transparency along public streets shall be equal to at least 50% of the wall area between the height of 2 and 9 feet. Upper floors of all new buildings shall have at least 15% to 40% transparency of wall surface along public street facades, with the range depending on program requirements. If it can be demonstrated that the building program precludes transparent windows along first floor street frontages, then other surface details shall be used (See Standard D-4).

STANDARD D-7: **Materials**. Facades visible from public rights of way shall use natural building materials that are considered to be permanent for 100 years. Predominant materials shall be brick, stone, precast concrete and other masonry products, wood, glass and high quality metals such as titanium and copper. Renewable and recyclable materials approved for use by LEED Standards (Leadership in Environmental Design) may be used. Low grade materials such as enamel metal panels and exterior insulation and finish systems (EIFS), panelized "thin brick", fiber-cement or cementitious panel siding, vinyl siding or vinyl dimensional stock, or stucco shall not be used on facades visible from public rights of way. Fiber-cement clapboard and shingles may be used but shall be installed with a reveal commonly found on the street.

First floor windows shall use untinted or lightly tinted glass, or the minimum tint needed to meet LEED Standards. Upper windows shall use untinted, lightly tinted, or the minimum tint needed to meet LEED Standards, or spandrel glass. Heavily tinted or reflective glass shall

not be allowed on facades that are visible from public rights of way. The selection of façade materials shall be consistent with the façade design (e.g. brick facing should not appear to be thin layers on the façade, or to overhang without apparent support). Loading and service areas and rooftop appurtenances that are visible from public rights of way shall be screened with materials, colors and finishes that are consistent with the overall building. Public spaces shall be constructed of permanent, durable materials such as concrete, brick or stone.

STANDARD D-8: **Signage.** New buildings shall have a building name and street address mounted in a location that is highly visible from public rights of way by both pedestrians and motorists. The size of the lettering shall be proportional to the size of the building. Building signage shall be made of high-quality permanent materials such as fabricated dimensional lettering or cut or cast metal lettering that is pinned to the building, carved stone or concrete, or painted wood or glass. Internally illuminated or screen printed plastic signage shall not be allowed on facades visible from public rights of way.

STANDARD D-9: **Historic Structures**. Historic structures shall be rehabilitated in a way that is consistent with their original architectural intent. New additions to historic buildings shall be designed to be compatible with the original structure in size, style, and material, and should result in the minimum necessary loss of original architectural material.

STANDARD D-10: **Original Residential Structures** The architectural and structural integrity of buildings that were originally residential uses shall be preserved when such buildings are renovated or enlarged. If a common treatment is utilized (i.e. the same siding is used for all university structures that were originally residential structures), the treatment must reflect the original residential character of the building and of other buildings on the street (e.g. contrasting paint between the trim and body of the structure, and building details which are expressed). Original siding shall be preserved, repaired or replaced with like material as needed. Vinyl siding and vinyl dimensional stock shall not be allowed. Fiber-cement clapboard and shingles may be used but shall be installed with a reveal commonly found on the street. Windows, doors and other features shall be preserved, repaired or replaced in a manner consistent with the original residential character of the building. Signage on buildings that were originally residential structures shall be subdued, and in scale with the building. This Standard D-10 does not apply to replacement buildings.

GLOSSARY [To be defined]

Active uses
Auto-oriented
Building Orientation
Campus Edges
Circulation system
Cohesive
Connectivity
Contemporary
Contextual
Defensible Space
Gateways
Institutional
Landmarks
Liner Buildings
Massing
Multi-modality
Pedestrian oriented environment
Proportion
Scale
Setbacks
Stepbacks
Traffic calming
View Corridors
View Terminations

Portland Maine Yes. Google's good here.

Jimmy Dealaman <jdealaman@portlandmaine.gov>

Proposed USM Garage

John Peverada <jbp@portlandmaine.gov> Wed, Dec 1, 2021 at 10:40 AM
To: Jimmy Dealaman <jdealaman@portlandmaine.gov>
Cc: Anne McGuire <amcguire@portlandmaine.gov>, Errico Thomas <thomas.errico@tylin.com>, James Rather <jrather@portlandmaine.gov>, Jeremiah Bartlett <jbartlett@portlandmaine.gov>, Kevin Kraft <kkraft@portlandmaine.gov>

Jimmy,
To follow up on our discussion concerning the proposed USM parking garage, I just want to reiterate my thoughts as to why I think it is shortsighted for the size of the garage to be reduced from what was originally proposed.

I was on the building committee for the original garage, and at that time it was decided to build additional spaces for future demand, which worked out well. It is my understanding that prior to the pandemic the garage was at capacity. I should also point out that prior to the construction of that garage we were receiving a lot of parking complaints from the neighborhood about the negative impact on their streets. After the garage opened most of those complaints went away.

I do not think the size of the proposed garage should be reduced for the following reasons.
1. Students living in the dorms will be storing their cars in the garage.
2. It appears that USM is anticipating continued expansions at the Portland campus over the next several years, and a larger garage will accommodate some of that demand.
3. The cost of a future expansion will be considerably more expensive and inconvenient than building the additional spaces now.
4. Since the pandemic mass transit numbers have been down.
5. If there is adequate off street parking for all USM uses, the complaints from the neighborhood will remain low, and there will be less “cruising” in the neighborhood.

Feel free to pass this along to USM and or the Planning Board.
Thanks
John

Att. 10

Portland Maine Yes. Google's good here.

Jimmy Dealaman <jdealaman@portlandmaine.gov>

Additional Response Needed - 50 Bedford Street

Jason Grant <jgrant@portlandmaine.gov> Thu, Dec 2, 2021 at 10:18 AM
To: Jimmy Dealaman <jdealaman@portlandmaine.gov>

Jimmy,

The Fire Department approves amended site plans for 50 Bedford Street parking garage with the new FDC locations.

Jason Grant
NFPA Certified Fire Inspector 2 & Fire Plans Examiner
Fire Marshal / Fire Prevention Coordinator
Portland Fire Department
Phone:(207) 756-8187

[Quoted text hidden]

Att. 11

Portland Maine Yes. Google's good here.

Jimmy Dealaman <jdealaman@portlandmaine.gov>

Addendum to USM's TDM Plan

Bruce Hyman <bhyman@portlandmaine.gov> Fri, Dec 3, 2021 at 8:55 AM
To: Jimmy Dealaman <jdealaman@portlandmaine.gov>

Good morning, Jimmy,

I have reviewed the revised USM TDM Plan Addendum, dated 11-22-21, and find it very responsive to the initial comments that were provided. I have no further comments. The Addendum will be appended to and are updates to particular sections based on updated data from the full TDM Plan dated November 11, 2020.

Please don't hesitate to contact me if you or the applicant have any questions.

Bruce
[Quoted text hidden]
--
Bruce Hyman
Transportation Program Manager

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
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Yes! Transportation's Good Here ....

41 Hutchins Drive
Portland, Maine 04102
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T 800.426.4262
T 207.774.2112
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July 26, 2021

James Rather
City of Portland Development Review Services Manager
389 Congress Street
Portland, ME 04101

Re: University of Southern Maine Structured Parking Garage
Major Site Plan Application & Site Location of Development Amendment

Dear James:

On behalf of the University of Southern Maine, Woodard & Curran is pleased to submit applications for a Major Site Plan Review and a Site Location of Development (SLOD) Amendment for a structured parking garage located at 44 Bedford Street. The proposed development includes a five-level structured parking garage, vehicle turnaround and drop-off area, fire access drive, pedestrian walkways, site landscaping, exterior lighting, and associated site improvements. The proposed parking garage will be approximately 45,100 square-feet in size and will create a total of 632 parking spaces, which includes 13 ADA accessible parking stalls, for a net increase in 425 additional off-street parking spaces for the University. The proposed garage will provide parking for the Portland Commons Residence Hall, which is currently under construction, and enable future developments at the University by replacing some of the parking that will be displaced by future developments (to be submitted under separate cover at a later date). The proposed stormwater management plan will consist of a subsurface detention and proprietary treatment device.

This application has been prepared in accordance with the City of Portland's Land Use Code of Ordinances and the applicable sections of the City of Portland Design and Technical Manuals. The SLOD Amendment has been prepared in accordance with Maine Department of Environmental Protection Chapter 500 Rules. It is our understanding that the City will be reviewing the SLOD Amendment under their Delegated Review Authority.

The application materials, supporting documents, and design drawings will be uploaded into the Eplan folder when it is available for the project. Thank you for coordinating the review of this project. If you have any questions regarding this application, please feel free to contact me at (207) 558-3665 or by email at aefletcher@woodardcurran.com.

Sincerely,

WOODARD & CURRAN INC.

Ashley Fletcher, PE
Technical Manager

cc: Ann Vashon, University of Southern Maine
Wes Wilson, Desman Design Management, Inc.

USM Structured Parking Garage

44 Bedford Street

Major Site Plan Application

41 Hutchins Drive
Portland, ME 04102
800-426-4262

0233035.00
University of Southern Maine
July 2021

woodardcurran.com
COMMITMENT & INTEGRITY DRIVE RESULTS

TABLE OF CONTENTS

SECTION **PAGE NO.**

1. APPLICATION CHECKLIST 1-1

2. APPLICATION FEES 2-1

3. PROJECT DESCRIPTION 3-1

3.1 Project Site & Background 3-1
3.2 Project Purpose and Need 3-1
3.3 Proposed Project 3-2
3.3.1 Civil Engineering Approach 3-2
3.3.2 Architectural Approach 3-2
3.3.2.1 Site Location Criteria 3-2
3.3.2.2 Overlay Zone Design Guidelines 3-2
3.3.2.3 Crime Prevention Through Environmental Design 3-3
3.3.3 Landscaping Approach 3-3
3.4 Attachments 3-4

4. RIGHT, TITLE, & INTEREST 4-1

4.1 Attachments 4-1

5. EVIDENCE OF STATE AND/OR FEDERAL APPROVALS 5-1

6. ZONING ASSESSMENT 6-1

6.1 Attachments 6-1

7. EASEMENTS & OTHER BURDENS 7-1

8. WAIVER REQUESTS 8-1

8.1 Waiver Request for Portland Technical Manual Section 1 – Transportation Systems – Subsection 1.17 Electric Vehicle Infrastructure 8-1
8.2 Attachments 8-3

9. FINANCIAL & TECHNICAL CAPABILITY 9-1

9.1 Financial Capability 9-1
9.2 Technical Capability 9-1
9.3 Attachments 9-1

10. COMPLIANCE WITH SITE PLAN STANDARDS 10-1

10.1 Transportation 10-1
10.1.1 Traffic Impact 10-1
10.1.2 Access & Circulation 10-2
10.1.3 Loading & Servicing 10-2
10.1.4 Sidewalks 10-2
10.1.5 Public Transit 10-2
10.1.6 Parking 10-2
10.1.7 Bicycle Parking 10-3
10.1.8 Snow Storage 10-3
10.1.9 Traffic Demand Management 10-3

10.2 Environmental & Landscape Features 10-3
10.2.1 Preservation of Significant Natural Features 10-3
10.2.2 Landscape Preservation 10-3
10.2.3 Site Landscaping 10-3
10.3 Environmental & Stormwater 10-3
10.3.1 Water Quality, Stormwater Management, & Erosion Control 10-3
10.4 Public Infrastructure & Safety 10-4
10.4.1 Consistency with City Master Plans 10-4
10.4.2 Public Safety & Fire Prevention 10-4
10.4.2.1 Natural Surveillance 10-4
10.4.2.2 Access Management 10-4
10.4.2.3 Territorial Reinforcement 10-4
10.4.2.4 Fire Department Access and Operations 10-4
10.4.3 Availability & Adequacy of Public Utilities 10-5
10.5 Site Design 10-5
10.5.1 Massing, Ventilation, & Wind Impact 10-5
10.5.2 Shadows 10-5
10.5.3 Snow & Ice Loading 10-6
10.5.4 View Corridors 10-6
10.5.5 Historic Resources 10-6
10.5.6 Exterior Lighting 10-6
10.5.7 Noise & Vibration 10-6
10.5.8 Signage & Wayfinding 10-6
10.5.9 Zoning Related Design Standards 10-6
10.6 Attachments 10-6

11. CONSISTENCY WITH USM DESIGN PRINCIPLES AND STANDARDS 11-1

11.1 Applicability 11-1
11.2 Principles and Standards 11-1

12. CONSTRUCTION MANAGEMENT PLAN 12-1

12.1 Attachments 12-1

13. BOUNDARY SURVEY 13-1

Construction Management Plan

Project: University of Southern Maine - Structured Parking Garage

The University of Southern Maine - Structured Parking Garage Construction Management Plan depicts the overall planning, coordination, and control of the proposed construction site, including sequential phasing, from beginning to completion.

The following construction management plan has been developed by the University's Design Team Members based on the components of the project and the City's goal for a 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. This plan minimizes construction impacts in their duration and magnitude to the surrounding area and provides a visual framework to convey and communication the process for addressing site logistics, minimizing conflicts and addressing access for university, construction and emergency vehicles and pedestrians.

Presently the University is soliciting proposals from qualified Construction Managers. It is the intent of the University to allocate the management of the Construction Management Plan to the selected Construction Manager.

The following construction management plan for the USM - Structured Parking Garage may be subject to adjustments based on coordination with the Construction Manager following selection. 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 purpose of this Construction Management Plan is to maintain a safe construction site and minimize impacts to adjacent buildings, university operations and surrounding neighborhood. The selected Construction Manager shall maintain open lines of communication between the University, City, Public and Consultants to mitigate concerns in the most effective manner during construction. This goal is to be attained by continued planning, review, update, communication and execution with all parties. The following sections further define this approach for the successful application of the Construction Management Plan.

B. Development Review of Construction Management Plan

The Construction Manager will continually maintain and update the Construction Management Plan for the duration of the project to augment and improve site safety measures. This is intended to be a live document that is updated as the project progresses

and site conditions change. The focus of each update will be to ensure the safety of the public, pro-active elimination of adverse situations and maintenance of accessibility for necessary services in and around the construction site. As a part of this plan development the initial Construction Management Phasing and Logistics Plans are included at the end of this document.

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

Prior to scheduling a preconstruction meeting and the issuance of any city required permits, the University of Southern Maine and their selected Construction Manager 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.

Anticipated permits, (if applicable) include:

1. **Street Opening and Street Occupancy Permits:** Construction activity in the public right-of-way shall be in accordance with Chapter 25. Sewer and stormwater system connections shall be in accordance with 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 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.

   Based on preliminary geotechnical findings and information it is not anticipated that blasting will be required.

3. **Building Code:** Employ the best practices, as applicable, of Chapter 33 Safeguards During Construction, from the 2015 International Building Code.

Vehicular access will be maintained around the construction site for the entirety of the project for emergency fire access to the rear of the existing parking garage and access to the Glickman Loading dock. Pedestrian access will remain to the Glickman and Wishcamper buildings. Work within Bedford Street may require the temporary closure of lanes.

D. Construction Administration and Communication

USM and the Construction Manager will work diligently to implement a communication strategy that is agreed upon by the City, Stakeholders and Neighbors. 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, nearby

construction sites, 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 USM staff and Construction Manager personnel that is available 24 hours.
2. Construction Signage posted on the site with Contact Information for Construction Manager.
3. Describe any additional communication strategies.
4. All construction and temporary site signage, including signage at cross walks, existing garage and main streets, shall be updated, adjusted and removed as project progresses through each construction phase and at project completion.

E. Construction Schedule

Construction of the garage is anticipated to commence in the winter/spring of 2022 and be substantially complete in April 2023. The initial phase of construction will include alterations to the parking access control equipment within the existing garage and closure of the east entry/exit. This schedule is in line with, and is in support of, the nearby construction of the Portland Commons & Student Success Center buildings.

Work hours to follow City of Portland regulations during the daytime hours as defined in Section 17-18 “Construction Activities for Building permit” and Section 25-129 “Noise, dust and debris” of the City’s Code of Ordinances. Any required off-hour work will be coordinated directly with the City.

Material Deliveries will be coordinated within normal work hours and be stored on-site as shown in the site logistics plans. Construction deliveries are expected to travel from 295 to Forrest Avenue to Bedford Street and then onto the project site.

F. Security & Public Safety

The construction site will be enclosed by temporary chain link fencing during construction. The fencing will be moved in a phased approach in coordination with the site logistics plan. Primary site access will be from Bedford Street to the garage access road and then into the construction site via a swinging site gate. Secondary gates will be provided for emergency access to the rear of the existing garage and the roadway will be maintained and open at all times for access. Gates will be locked during non-work hours and equipped with knox box for emergency access. Emergency Access and deliveries around the project site to the existing USM parking structure, Wishcamper building and Glickman will be maintained at all times. The construction site will follow all requirements of IBC Chapter 33 “Safeguards during Construction” and NFPA 241 “Standard for Safeguarding Construction, Alteration, and Demolition Operations" including construction and placement of necessary separation and safety barriers between the existing garage and construction site.

Structures undergoing construction, alteration, or demolition operations, including those in underground locations, shall comply with NFPA 1 Chapter 16. A complete fire safety and access plan will be developed in coordination with the City of Portland prior to project commencement.

G. Construction Permitting and Traffic Control Plans

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. The contractor will work to minimize impacts from construction and provide safe access around the site. The project shall follow City of Portland requirements for traffic control throughout the duration of the project. Construction activities and deliveries will not impact public access or streets unless directly coordinated and notified prior.

Sewer and Stormwater: Sewer and stormwater water system connections are controlled by Chapters 24 and 32 of the City Code of Ordinance. Tie-ins of the new connections will occur within the existing surface parking lot. All tie-in connections will obtain the appropriate permits and be coordinated with the DPW.

Traffic Control Plans: Construction activity that impacts the existing public street system will (where applicable) be controlled to protect the safety of the construction workers and all modes of the traveling public. Phased construction of the proposed ring road will include traffic control and safety measures. Traffic controls will include temporary signage and barriers where necessary to manage all modes of travel including, vehicle, pedestrian, and bicycle traffic. ADA compliance for affected public pathways will be maintained for the duration of the project.

H. Site Management and Controls

The Construction Manager will address maintaining the site in a safe condition and will include the following:

1. Regular trash and debris removal including the recycling of materials to meet USM's adopted ParkSmart Certification criteria. Trash dumpsters and areas around the dumpsters will be maintained in a clean and orderly manner.
2. Dust controls- The construction shall comply with Portland's requirements under Section 25-129 on Noise, dust and debris (below). Dust control will include street sweeping, water trucks, truck pads and similar measures to minimize dust from construction activities.

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.

3. Noise: The construction shall comply with the University's and Portland's requirements as defined under Section 17- 18 of the City Code (below) and Section 25-129 on Noise, dust and debris

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.

4. Rodent Control will be provided, if applicable, by a professional exterminator and

consistent with Chapter 22 of the City Code.

5. Snow Removal: Pursuant to Section 25-173 Contractors to ensure a safe means of travel within and areas affected by the work zone including:
    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
6. The construction manager shall ensure the site follows all requirements of IBC Chapter 33 “Safeguards during Construction” and NFPA 241 “Standard for Safeguarding Construction, Alteration, and Demolition Operations"

I. Erosion Control and Preservation of Trees

Prior to construction, erosion and sediment controls with be installed as shown on the design drawings. These shall be regularly inspected and maintained for the duration of the project. The preservation of trees and landscaping shall be as shown on the landscaping plans. Care will be taken to avoid damage to the trees and landscaping that is to remain. Landscape, soils and plantings damage during construction activities will be restored, replaced and re-planted to assimilate pre-existing conditions as cataloged by pre-construction photographic documentation, surveys and similar records.

J. Construction Staging Area

The site logistics plan shows planned locations for staging and laydown areas, onsite truck washing stations, materials storage and construction trailers.

Standard deliveries will be coordinated with the effort to minimize disruption to both the surrounding public spaces and the construction site as much as possible. Precast concrete piece deliveries will be continuous throughout the day during the superstructure erection. An off-site queuing yard will be coordinated to optimize deliveries in coordination with on-going erection activities and avoid queuing of vehicles.

K. Parking During Construction

For portions of the project, minimal on-site parking will be available for construction workers. It is anticipated during these times, that parking will be required off-site with transportation to the site. Parking for workers will be prohibited along nearby public roads.

Closure of a limited number of spaces within the existing garage will be required during construction. The CM will provide phasing documents showing the timeframe and quantity of required parking closures within the existing garage. Garage patrons will be provided advance

notification of proposed modifications to create awareness prior to application.

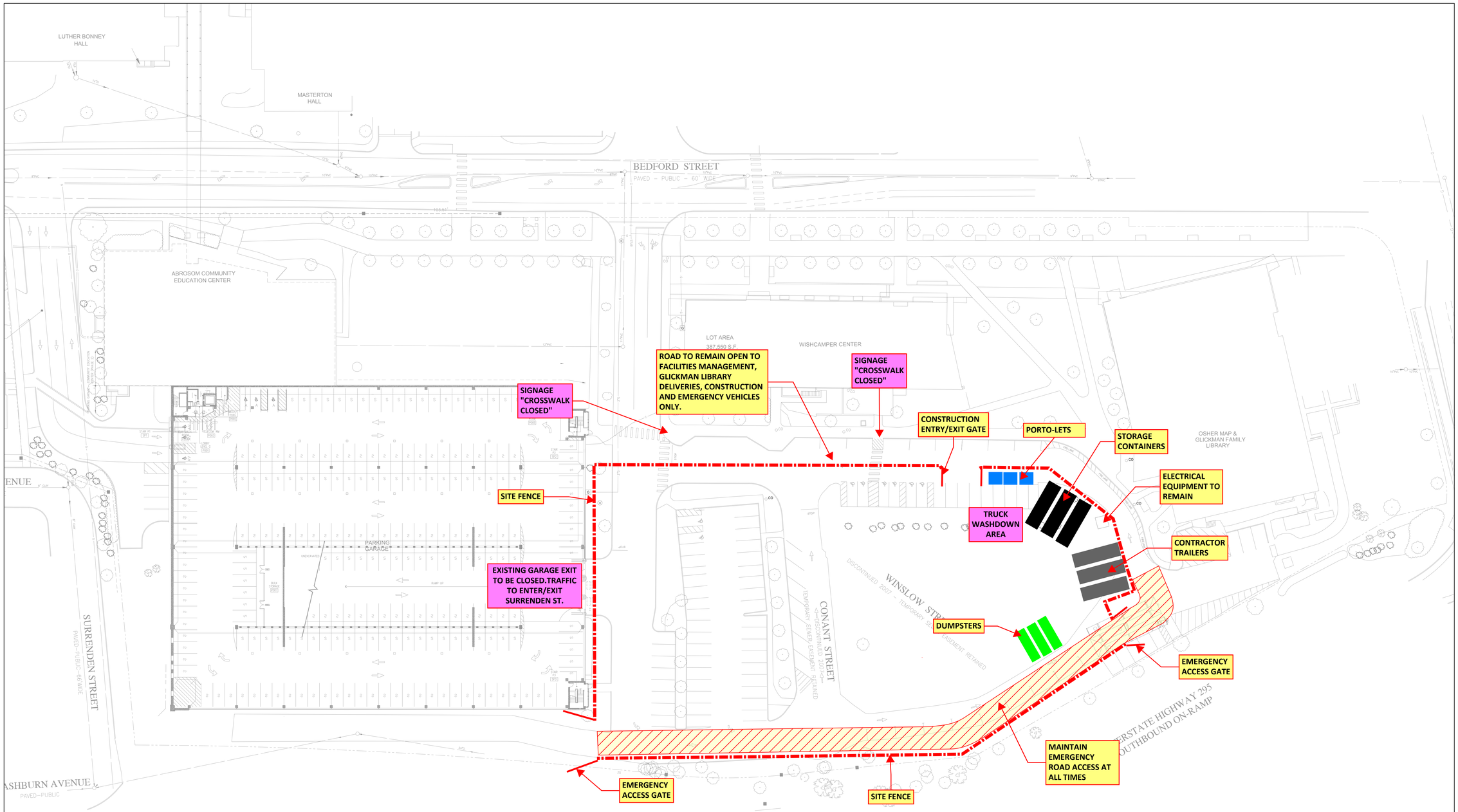
L. Dewatering Plans

A dewatering plan and recommendations will be developed as recommended by the geotechnical report prepared by S.W. Cole. The dewater plan will be submitted and coordinated with the City of Portland. Based on the preliminary geotechnical report it is anticipated that sumping and pumping of shallow excavation will be sufficient to control groundwater.

M. Special Measures as Necessary

The project is proposed to include deep pile-foundations which generally require pile-driving equipment. This technique typically results in ground vibrations in and around the immediate vicinity. To pro-actively mitigate the effects of this construction technique, pre-construction surveys and photographic documentation will be conducted on the surrounding facilities and buildings and, were necessary, vibration monitors installed to document the intensity of the vibrations. An action and monitoring plan along with a photographic catalog of surrounding structures will be will developed and shared with the City and USM in advance of this construction activity.

While is expected that this Construction Management Plan will be updated by the selected Construction Manager, the logistics, staging and control measures presented in this plan are expected in large part, to remain as presented herein. Any modifications, updates or changes in the plan will be submitted to the City of Portland for approval in advance of preceding with any work or portions of work affected by such updates.



UNIVERSITY OF SOUTHERN MAINE

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COST ESTIMATOR
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94 AUBURN ST,
PORTLAND, ME 04103

SEAL / SIGNATURE

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PROJECT:

USM - Structured Parking Garage Phasing Plan

Address

44 Bedford Street,
Portland ME 04104

REVISIONS:

No.	Date	Description

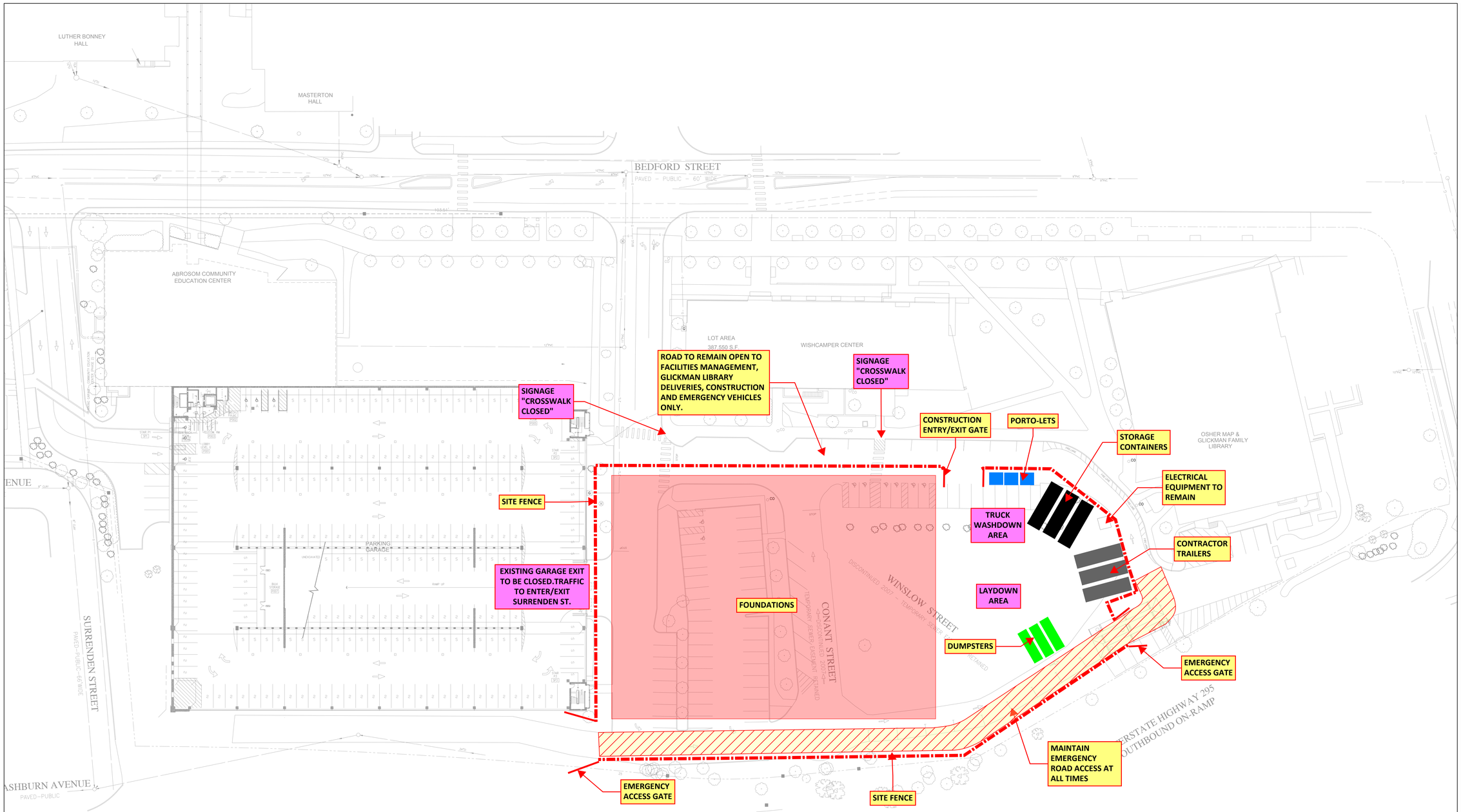
SUBMISSIONS:

Date	Issued For:
07/30/21	Site Plan Submittal

SCALE	**1/16" = 1'-0"**
DATE ISSUED	**07/12/2021**
PROJECT NO	**20-20145.00-1**
DRAWN BY	**C.M.**
CHECKED BY	**B.F.**

SHEET TITLE:

PHASE 1 - SITE PREPARATION



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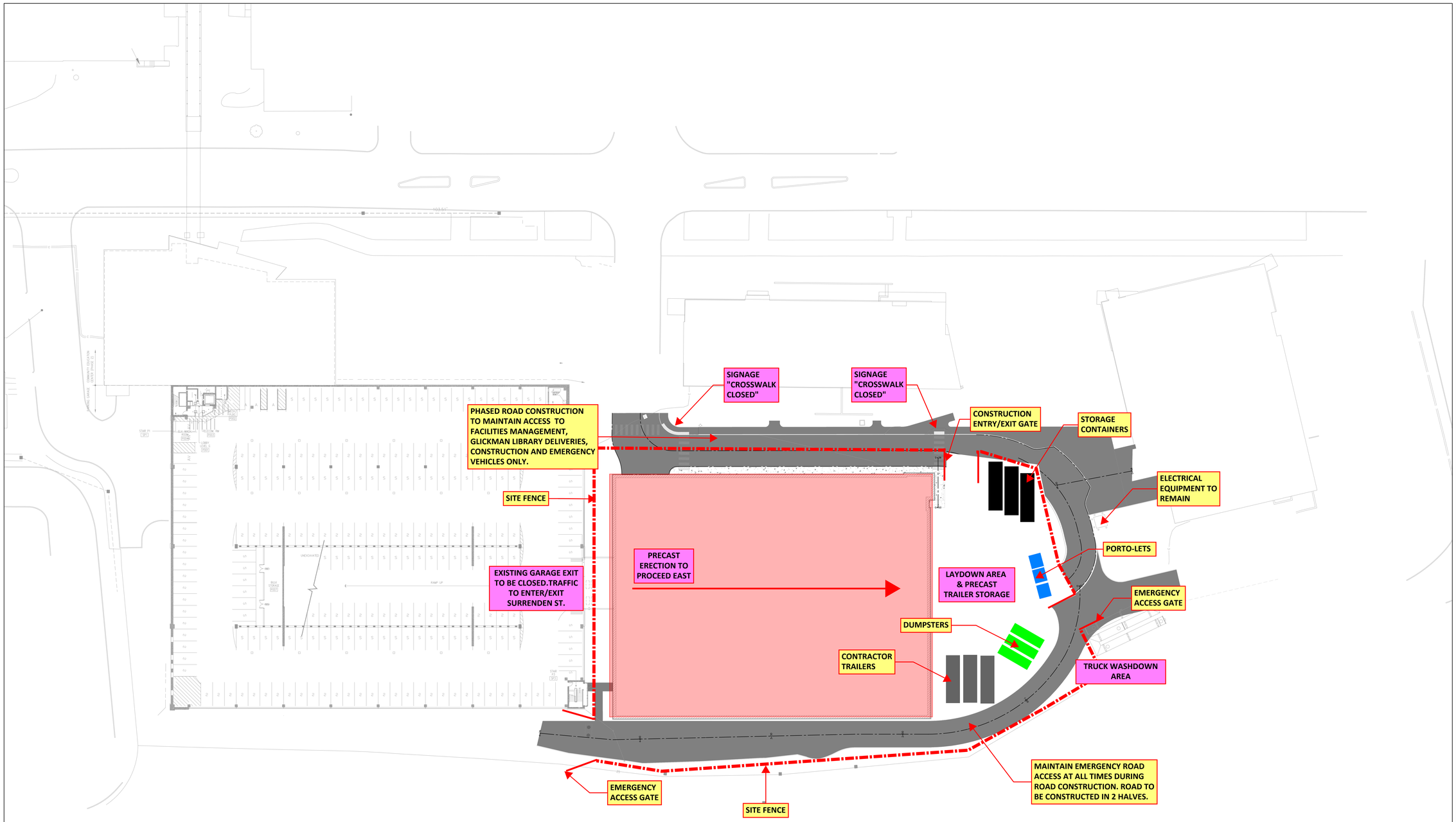
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CHECKED BY	**B.F.**

SHEET TITLE:

PHASE 2 - FOUNDATIONS



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2021

PROJECT:

USM - Structured Parking Garage Phasing Plan

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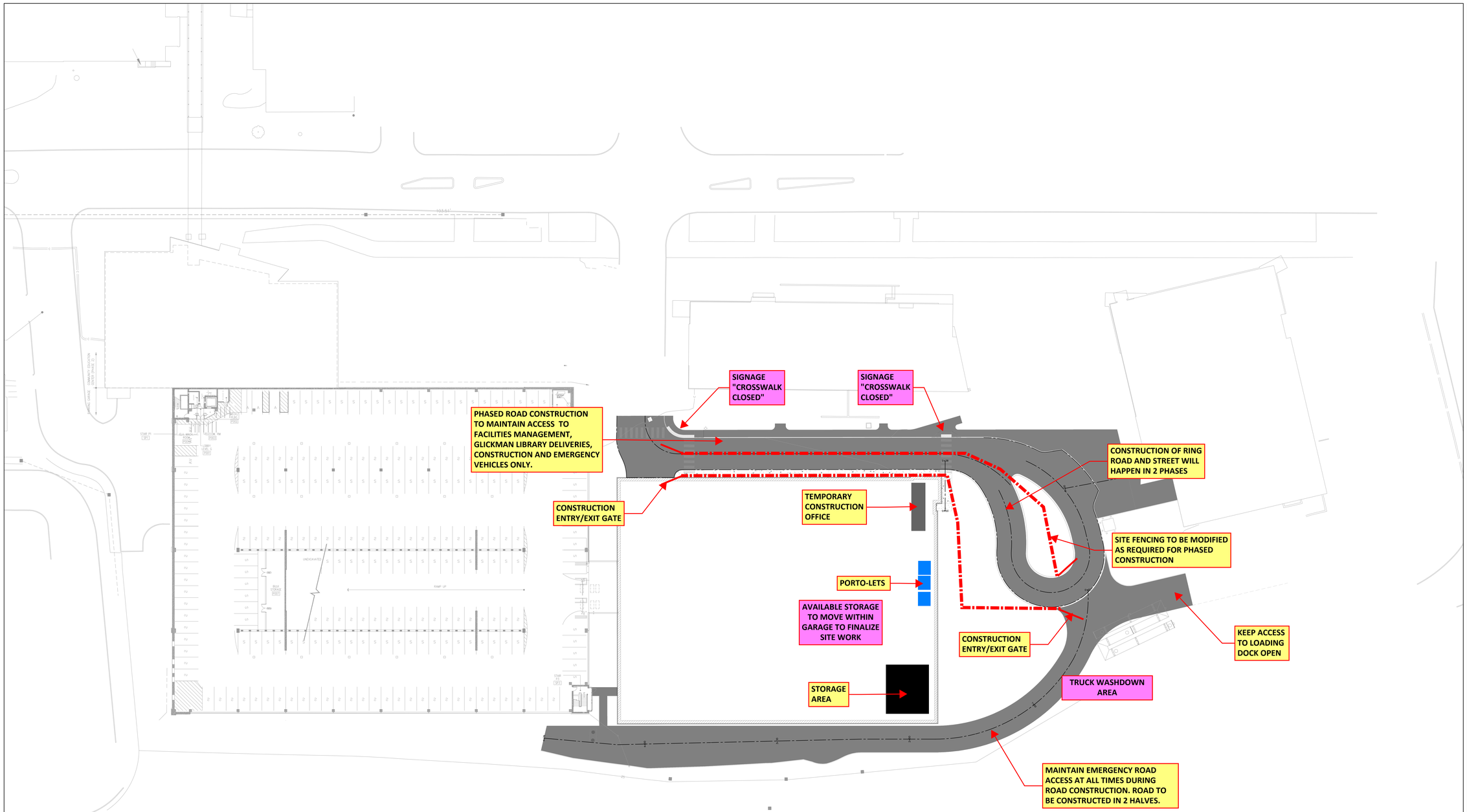
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07/30/21	Site Plan Submittal

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DATE ISSUED	**07/12/2021**
PROJECT NO	**20-20145.00-1**
DRAWN BY	**C.M.**
CHECKED BY	**B.F.**

SHEET TITLE:

PHASE 3 - STRUCTURE ERECTION



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PROJECT:

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CHECKED BY	**B.F.**

SHEET TITLE:

PHASE 4 -RING ROAD & LANDSCAPE

1. APPLICATION CHECKLIST

CITY OF PORTLAND
Planning & Urban Development Department

MAJOR SITE PLAN
GENERAL DOCUMENT AND DRAWINGS CHECKLIST
Please submit each document as a separate PDF file.
Please confirm by electronically checking the boxes in the left-hand column.

** PLEASE FILL OUT AND UPLOAD THE ZONING ASSESSMENT TABLE AND WAIVER TABLE SEPARATELY AS NOTED BELOW **

At the time of application submission, please contact the Department of Public Works regarding E-911 addressing for your project.

GENERAL APPLICATION DOCUMENTS	
Yes NA X	**Project Description** • Cover letter with detailed project description
Yes NA X	**Completed Checklist** (this document)
Yes NA X	**Evidence of Right, Title, and Interest** • Deeds, leases, or purchase and sales agreements
Yes NA X	**Evidence of State or Federal Approvals** • Permits or letters of non-jurisdiction, if applicable
Yes NA X	**Zoning Assessment** (see Zoning Assessment Table) Summary of compliance with use and dimensional standards of the land use code
Yes NA X	**Site Plan Standards Assessment** (see Section 14.6 of the land use code) • Summary of project compliance with site plan standards of the land use code
Yes NA X	**Summary of Existing and/or Proposed Easements or Covenants, applicable.** • Evidence of existing easements and any proposed easements, covenants, public or private rights-of-way
Yes NA X	**Waiver Requests** (see Waiver Table) • Written request for waiver describing request and compliance with applicable waiver standards
Yes NA X	**Financial Capability** • Letter or evidence from a financial institution or third party verifying financial capacity to undertake project
Yes NA X	**Technical Capability** • Evidence of technical capability of applicant and consultants – resumes and/or examples of past projects

MAJOR SITE PLAN
STANDARDS AND SUBMISSION CHECKLIST

Provide assessment of compliance with standards and include supplemental documentation, as applicable.
Please submit each document as a separate PDF file.

TRANSPORTATION		
Yes X	NA	**Impact on Surrounding Street Systems (14-14.6.1(A))** ● Describe incremental volume of traffic impacts and mitigation measures. If needed
Yes X	NA	**Access and Circulation (14-14.6.1(B))** Identify and describe the following: ● Site access and internal circulation, including ADA access ● Drive-up features, if applicable ● Loading and servicing needs, routes, and geometry, providing turning templates for delivery vehicles, if applicable ● Sidewalks and condition along street frontages and internal walkways ● Engineered details for ADA ramps and public sidewalks, meeting sidewalk material policy and construction requirements (Technical Manual, Section 1)
Yes X	NA	**Public Transit (14-14.6.1(C)), if applicable** Identify and describe the following: ● Existing available transit service and proposed transit improvements, including design details, such as easement, pad base, and shelter
Yes X	NA	**Off-Street Parking (14-14.6.1(D)), if applicable** Identify and describe the following: ● Proposed vehicular and bicycle parking supply (including ADA-compliant parking) in relation to applicable parking requirements in Article 19 of the land use code ● Curb cut separation and parking layout (Technical Manual, Section 1) ● Construction details for bicycle racks ● Management plan for snow storage and removal
Yes X	NA	**Transportation Demand Management (TDM) (14-14.6.1(E)), if applicable** ● Provide TDM plan drafted in accordance with Technical Manual Section 1 requirements

ENVIRONMENTAL	
Yes NA X	**Preservation of Significant Natural Features (14-14.6.2(A)), if applicable** Identify and describe the following: ● High and moderate value waterfowl and wading habitat ● Aquifers (for Casco Bay Islands) ● Waterbodies (including wetlands, watercourses, significant vernal pools and floodplains) ● Proposed preservation areas and protection measures ● Documentation from environmental compliance consultants and determinations from applicable state and federal agencies
Yes NA X	**Landscape Preservation (14-14.6.2(B))** Identify and describe the following: ● Measures to preserve trees, including within required zoning setbacks (Technical Manual, Section 4) ● Measures to protect existing vegetation during construction
Yes NA X	**Site Landscaping and Buffers (14-14.6.2(C))** Identify and describe the following: ● Overall landscaping approach and consistency with standards ● The use of screening and buffering of service areas and between non-residential and residential uses ● Existing Heritage or Feature Trees on site and measures to preserve ● Compliance with street tree requirements
Yes NA X	**Water Quality, Stormwater Management, and Erosion Control (14-14.6.2(D))** Identify and describe the following: ● Erosion and sedimentation control plan and measures ● Evidence of compliance with Urban Impaired Stream Standards pursuant to DEP Chapter 500 stormwater law, as applicable ● Subsurface sanitary sewage disposal and groundwater protection measures

PUBLIC INFRASTRUCTURE AND COMMUNITY SAFETY	
Yes NA X	**Consistency with City Master Plans (14-14.6.3(A))** ● Describe proposed easements, rights and improvements to connect or continue off-premises public infrastructure, as applicable
Yes NA X	**Public Safety and Fire Prevention (14-14.6.3(B))** Identify and describe the following: ● Compliance with Crime Prevention through Environmental Design (CPTED) requirements (Technical Manual, Section 3) ● Emergency vehicle access ● Consistency with public safety standards (Technical Manual, Section 3)
Yes NA X	**Availability and Adequacy of Public Utilities (14-14.6.3(C)) (Technical Manual, Sections 2 & 9)** Identify and describe the following: ● Electrical services, including providing underground services ● Existing and proposed connections for public utilities and required public utility upgrades ● Sewer line connections
SITE DESIGN	
Yes NA X	**Massing, Ventilations and Wind Impact (14-14.6.4(A))** Identify and describe the following: ● Wind and ventilation impacts on adjoining structures and/or adjacent public spaces, including wind study, if applicable ● Bulk, location, or height impacts on adjoining structures
Yes NA X	**Shadows (14-14.6.4(B)), if applicable** ● Provide shadow analysis of impacts on publicly accessible open space (Technical Manual, Section 11)
Yes NA X	**Snow and Ice Loading (14-14.6.4(C))** ● Describe building design measures to prevent snow and ice from loading or falling onto adjacent properties or public ways
Yes NA X	**View Corridors (14-14.6.4(D)), if applicable** ● Describe any protection of designated view corridors (Portland Design Manual, Appendix. 1)
Yes NA X	**Historic Resources (14-14.6.4(E)), if applicable** Identify and describe the following: ● The site's status as a designated landmark, within a historic district or historic landscape district, or within 100 feet of any designated landmark, historic district, or historic landscape district ● Compliance with standards for preservation and documentation of archaeological resources

Yes	NA	
X		Exterior Lighting (14-14.6.4(F)) ● Describe how the proposed site lighting will adhere to photometrics requirements as it relates to light trespass and full cutoff fixture design, pursuant to Technical Manual Section 12
Yes	NA	Noise and Vibration (14-14.6.4(G)) ● Provide data on noise levels for HVAC and other mechanical equipment, such as design specifications, to demonstrate consistency with state and federal noise emissions requirements as well as City code
Yes	NA	Signage and Wayfinding (14-14.6.4(H)), if applicable ● Provide signage plan showing the location, dimensions, height and setback of all existing and proposed signs ● Provide drawings of all commercial and directional signage on site
Yes	NA	Zone-Related Design Standards (14-14.6.4(I)) ● Address any applicable design review standards by zone, including compliance with Design Manual
X		

MAJOR SITE PLAN
DRAWINGS CHECKLIST

Please upload the following DRAWINGS with the listed details into e-Plan as separate pdfs.

All drawings must be submitted in a 24 x 36 sheet size.

BOUNDARY SURVEY (stamped by a Maine Licensed Surveyor and drawn as per Technical Manual Sec. 13)

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

All sheets – Include a title block with project title and the following information:

- Project street address
- Name and address of property owner & applicant
- Licensed design professional, incl firm that produced plans
- North arrow
- Date of preparation and revision history block
- Tax parcel (chart, block, and lot) number

Existing Conditions Plan with the following:

- Existing structures, with distance from primary building façade(s) to the property line
- Approximate location of structures on abutting properties
- All streets and intersections adjacent to the site
- Existing driveways, pedestrian ways, and bicycle infrastructure, including dimensions and materials
- Existing public transit infrastructure
- Existing vehicle & bicycle parking areas
- Existing utilities on site and within adjacent rights-of-way
- Existing grades (two-foot contours preferred)
- Location of water courses, wetlands, and vegetation, or other significant natural features
- Existing soil conditions and location of test pits and borings
- Zoning boundary lines, including overlays
- Location of all existing easements and rights-of-way

Proposed Site Plan with the following:

- Proposed structures, including distance from primary building façade(s) to property lines
- Ground floor area, and finished floor elevations for all buildings
- Any proposed geometric modifications to streets and intersections adjacent to site
- Location, dimensions and materials of all 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, including turning templates
- Proposed transit infrastructure with dimensions/ engineering specifications
- Location of vehicle and bicycle parking with dimensions and engineering specifications
- Location of all snow storage areas
- Exterior lighting (please see Technical Manual Sec. 12 for photometrics requirements)
- Location of fire hydrants

- Location of solid waste management receptacles
- Location of all proposed HVAC and mechanical equipment, including proposed screening, where applicable
- Location of proposed easements and rights-of-way, including dimensions
- Please utilize color-coding and/or hatches and shading to delineate changes between the pre and post development condition as needed

UTILITY PLAN including:

- Proposed electrical infrastructure
- Location, sizing and directional flows of all proposed sewer and stormwater infrastructure
- Location and dimensions of off-premises public or publicly accessible infrastructure adjacent to site
- Electric utility infrastructure

GRADING AND DRAINAGE PLAN including:

- Proposed grades
- Proposed stormwater management measures meeting Technical Manual (Section 5) standards
- Any proposed alteration of a watercourse or wetlands
- Any groundwater protection measures
- Proposed buffers and preservation measures for wetlands or significant natural features

LANDSCAPE PLAN including:

- Existing vegetation to be preserved and preservation measures
- Proposed landscaping, screening, and street trees, including caliper widths for trees
- Planting schedule, including street trees

ARCHITECTURAL PLANS AND RENDERINGS including:

- Exterior building elevations, color renderings, illustrations of all sides
- Axonometric and street-level views for structures greater than three stories in height
- Provide context drawings, if applicable (Design Manual, page 1)
- Floor plans

CONSTRUCTION MANAGEMENT PLAN including:

- Specifics on traffic control, sidewalk sheds, and pedestrian rerouting
- Include a drawing and written narrative

OTHER

- Details and cross-sections, as necessary

From: Robert Bartels <rbartels@pwd.org> on behalf of AMaP MEANS <means@pwd.org>
Sent: Friday, October 8, 2021 1:57 PM
To: Darrin Stairs
Cc: Amy LeBel; Adam Sellick
Subject: RE: 509089-44 Bedford Street, PO

Hello Darrin,

Based on the information provided, the existing **6-inch domestic service** with **2-inch meter** should be able to handle the water demand at the site. As part of this approval, and in accordance with PWD's Cross Connection Control Program, an approved **Reduced Pressure Zone Assembly (RPZ) backflow prevention device** must be installed on the new domestic service branch to the proposed parking garage directly after the service entrance prior to service activation. Please refer to the PWD website for more information on cross-connection control policies.

PLEASE NOTE: The following conditions apply to your project:

- One (1) private fire hydrant may be installed on the fire service on this site. Please refer to the PWD website for more information regarding private hydrant inspection policies. A service application will be required to take a deposit for the inspection of the private hydrant. PWD is currently only processing service applications via email, and accepting completed applications with payment by the drop box at our main office or through the mail at PO Box 3553, Portland, ME 04104-3553. To begin the service application process, please contact the MEANS department at MEANS@pwd.org or by phone at (207)774-5961 Ext. 3199.

Please feel free to reach out if you have any questions.

Thanks,

From: Darrin Stairs <DStairs@woodardcurran.com>
Sent: Wednesday, October 06, 2021 9:27 AM
To: Robert Bartels <rbartels@pwd.org>
Cc: Amy LeBel <alebel@woodardcurran.com>
Subject: RE: 509089-44 Bedford Street, PO

ATTENTION: This email did NOT originate from Portland Water District. This email is from an external source outside of the District. Exercise EXTREME caution when opening external attachments or links from unknown senders.

Robert – Here is the corrected plan. Thank you for pointing that out.

Thank you,

Darrin
Darrin B. Stairs, PE
Project Manager
Woodard & Curran
Direct: 207.558.3662
Cell: 207.405.4805

From: Robert Bartels <rbartels@pwd.org>
Sent: Thursday, September 23, 2021 4:09 PM
To: Darrin Stairs <DStairs@woodardcurran.com>
Cc: Amy LeBel <alebel@woodardcurran.com>
Subject: RE: 509089-44 Bedford Street, PO
Darrin,
You are showing the domestic service coming off the fire line and not the domestic service line. I know this is a small error but it should be shown accurately. Please revise and resubmit.
Thanks,

From: Darrin Stairs <DStairs@woodardcurran.com>
Sent: Wednesday, September 22, 2021 3:31 PM
To: Robert Bartels <rbartels@pwd.org>
Cc: Amy LeBel <alebel@woodardcurran.com>
Subject: RE: 509089-44 Bedford Street, PO
ATTENTION: This email did NOT originate from Portland Water District. This email is from an external source outside of the District. Exercise EXTREME caution when opening external attachments or links from unknown senders.
Robert – we have revised the plan to include the notes below. Please see attached.
Thank you and please let me know if you need anything futher.
--Darrin
Darrin B. Stairs, PE
Project Manager
Woodard & Curran
Direct: 207.558.3662
Cell: 207.405.4805

From: Robert Bartels <rbartels@pwd.org>
Sent: Thursday, September 9, 2021 2:08 PM
To: Darrin Stairs <DStairs@woodardcurran.com>
Subject: 509089-44 Bedford Street, PO [Filed 13 Sep 2021 12:39]
Darrin,
A couple things for you. There is a meter pit on the domestic service line. It is located about 6' from the street line gate valve (between the arrows and the gas line on your plan). You can see the meter pit in Google street view.
The hydrant will be private. Please indicate the hydrant is a private hydrant on the plans.
The garage service will require an RPZ backflow preventer at the service entrance (no meter is required on this service). Please add a callout on the plans for an RPZ backflow preventer.
Thanks,
Robert Bartels, PE

Robert Bartels

Senior Project Engineer

2. APPLICATION FEES

A check for the required application fee will be provided to the Planning Department. It is our understanding that the application fee includes:

- Major Site Plan – 200,000 to 300,000 sq. ft.: $5,000
- SLOD Review: $3,500
- Traffic Movement Permit Amendment: $1,500

University of Southern Maine (USM) Portland Campus

Transportation Demand Management (TDM) Plan

PREPARED FOR

University of Southern Maine
96 Falmouth Street
Portland, Maine 04103
(207) 228-8124

PREPARED BY

500 Southborough Drive, Suite 105B
South Portland, Maine 04106
207.889.3150

November 11, 2020

Table of Contents

1 Introduction 3

USM Portland 3
Commitment to TDM 4
Development Proposal: Facilities Master Plan Program Elements 5

2 Mobility Context 7

Walking and the Pedestrian Environment 7
Bicycling Environment and Infrastructure 9
Public Transit 12
Other Mobility 15
Parking Facilities and Policy 15
Regional TDM Program 17
TDM at USM 18

3 Existing Transportation Patterns 21

Transportation Survey: Mode Shares and Travel Behavior 21
Commute Trip Origins Based on Parking Permit Data 22
Alternative Mode Potential: Opportunities for TDM 26

4 TDM Coordinator (TC) 29

5 Transportation Demand Reduction Goals 30

6 Trip, Parking, Mode Split & GHG Reduction Strategies 33

7 Monitoring and Reporting Plan 41

List of Tables

Table No.	Description	Page
Table 1: Direct Transit Route Headways		14
Table 2: Suggested TDM Tactics from Sustainability Plan		19
Table 3: Overview of TDM Initiatives for USM		**Error! Bookmark not defined.**

List of Figures

Figure No.	Description	Page
Figure 1: 1-Mile Walkshed from USM Portland Campus		8
Figure 2: Portland Campus Map		9
Figure 3: Forest Avenue Bi-Passing I-295		10
Figure 4: Crosswalk Available on Forrest Avenue to Cut Across I-295		11
Figure 5: Bikeshed from USM		12
Figure 6: Transit Service at USM Portland		14
Figure 7: Parking Spaces at USM Portland		16
Figure 8: Distribution of Home (Commute Trip Origins) – Southern Maine Area		24
Figure 9: Distribution of Home (Commute Trip Origins) – Greater Portland Area		25
Figure 10: Walk Potential		26
Figure 11: Bike Potential		27
Figure 12: Transit Potential		28

1

Introduction

This Transportation Demand Management (TDM) plan provides a cohesive strategy for establishing and implementing a successful TDM program for the University of Southern Maine (USM) Portland campus. This plan seeks to enhance multimodal accessibility, ensure the use of non-vehicular modes, and discourage the use of driving through parking management, to achieve and build upon the parking demand reduction goals for the campus.

The TDM Plan expresses a TDM program of strategies and timeframe for when USM intends to implement the various strategies. The strategies aim at promoting walking and bicycling, improving transit service to promote ridership, promoting carpooling, changing time-of-day travel demands to eliminate or reduce vehicle trips, and managing parking demand via changes to USM's pricing and permit policies.

USM Portland

The University of Southern Maine (USM) Portland campus encompasses approximately 30 acres, with 27 buildings comprising 1,190,929 assignable square feet (ASF). Located less than one mile from the heart of downtown Portland, the Portland campus provides excellent access to social, cultural and internship opportunities. Linked to the Gorham campus ten miles to the west and the Portland city center via frequent bus service (METRO's Husky Line),

the Portland campus also has convenient access and visibility from Interstate Highway 295, with Forest Avenue serving as the primary roadway arrival point. A second important arrival point onto the campus is at the intersection of Deering Avenue, Brighton Avenue, and Falmouth Streets, soon to be transformed into a roundabout. Bedford Street bisects the campus providing access to most of the parking lots and garage for the campus.

The campus is in a completely developed urban neighborhood. The adjacent land consists of Interstate Highway 295 on the east, commercial uses on the north (along Forest Avenue), and residential uses on the west and south. The largest adjacent land use is the Oakhurst Dairy distribution center between the campus and Forest Avenue. The adjacent residential areas provide housing for some of USM's students but are generally a set of very solid and cohesive neighborhoods. Currently, no students reside on the Portland campus.

In 2017 and 2018, the University of Southern Maine undertook a process that resulted in a final *Facilities Master Plan* approval by the Board of Trustees in January 2019.[1] The process included information gathering via tours of all three campuses, extensive internal and external stakeholder interviews, and public input. The plan incorporates the visions, goals, facilities assessments, and the campus space needs assessments into a set of campus physical development recommendations. USM is now embarking in implementing specific capital projects identified in the plan.

Commitment to TDM

USM has a history of promoting Transportation Demand Management (TDM) strategies on its campuses. For starters, TDM clearly falls within two guiding principles of the University's Facilities Master Plan through its attempt to increase non-private vehicular transportation and reduce related transportation emissions:

- **Mobility**—the plan supports robust pedestrian, bicycle, shuttle bus, ride share and metropolitan and regional public transit systems that look beyond private vehicular parking to meet the transportation needs of the campus community.
- **Sustainability**—the plan supports all existing sustainability policies of the University.

TDM also indirectly relates to several other guiding principles as a result of potential outcomes from a TDM program:

- **Student Experience**—the process, plan and implementation focuses upon improving the students' academic, co-curricular and living experience on each of the campuses.
- **Public Safety**—the plan and subsequent implementation seeks to provide the safest campus environment possible through physical, programmatic and operational improvements, including those in response to public health threats like Covid-19.
- **Neighbors**—the plan seeks to establish campuses and campus communities that are positive members of the neighborhoods, mitigating negative impact and providing a beautiful and inviting campus landscape for all neighborhood members to enjoy.

[1] For more details, please visit *usm.maine.edu/president/master-plan*.

- **Aesthetics**—the visual quality of the campus facilities is important to creating an environment that meets the mission and goals of the University.

The implementation of TDM measures provides USM with the ability to make access to the campus more enjoyable and safer for affiliates (because of reduced traffic), improved relations with neighbors (because of decreased traffic and parking concerns), and decreased campus space dedicated to parking.

As a result, the University introduced TDM for the first time within its 2017 Sustainability Plan. The sustainability plan set a quantitative goal for sustainability efforts related to transportation and established a baseline of strategies to achieve that goal. Per the sustainability plan, the goal related to transportation was to reduce greenhouse gas emissions from transportation by 20 percent from a Fiscal Year (FY) 2006 baseline. TDM-related strategies suggested by the Sustainability Plan are presented in Chapter 3; one recommendation was to develop a TDM plan.

To further understand how TDM will play a role as the campus continues to transform, USM hired VHB to develop a comprehensive TDM Plan that will allow the University to meet their sustainability goals while responsibly meeting user parking demands (and limiting the additional parking supply requirements). To develop a strategic approach for USM transportation that leverages current realities in developing future outcomes, VHB and USM hosted a series of stakeholder meetings and interviews. These conversations helped inform the proposed strategies presented in this TDM plan.

Development Proposal: Facilities Master Plan Program Elements

Consistent with the USM *Facilities Master Plan* approved January 27, 2019, USM has several development program aspirations that have triggered the need to complete this TDM Plan. In the short-term, in the next three years, the University plans on embarking on building the new campus "heart", consisting of the following capital projects:

- **Career and Student Success Center**—This building will replace the dining and cocurricular activity space currently in the Woodbury Campus Center. In addition, the vision for this building is to provide a common place for programs and functions that support both the academic success and long-term professional success of the USM student. The building is anticipated to be approximately 41,000 square feet.
- **Student Housing**— This approximately 216,000 square-feet building will house upwards of 580 beds to accommodate upper class undergraduate students and graduate students.
- **"Quad"**—A key component of the transformation of the Portland Campus is a second campus open space, located adjacent to the residence halls and the Career and Student Success Center.

To accommodate parking needs for these uses, the master plan proposes increasing parking supply. (Actual proposed parking supply is based on a separate study produced in March of 2020 that shows the University will be short on parking supply at the opening of the new buildings even in a 0% enrollment increase scenario.)

The development noted above may be followed by additional capital projects on USM's Portland campus, including a Graduate Center for Professional Studies, housing The University of Maine School of Law, a University of Maine MBA Program, and the Muskie School of Public Service, and Center for the Arts serving as the new home for the USM School of Music.

2

Mobility Context

Understanding the transportation context that is available for students, faculty, staff, and visitors at USM Portland is important to be able to recommend targeted TDM program elements. This section discusses in detail all the different ways that one can access the USM campus as well as opportunities and challenges related to those options.

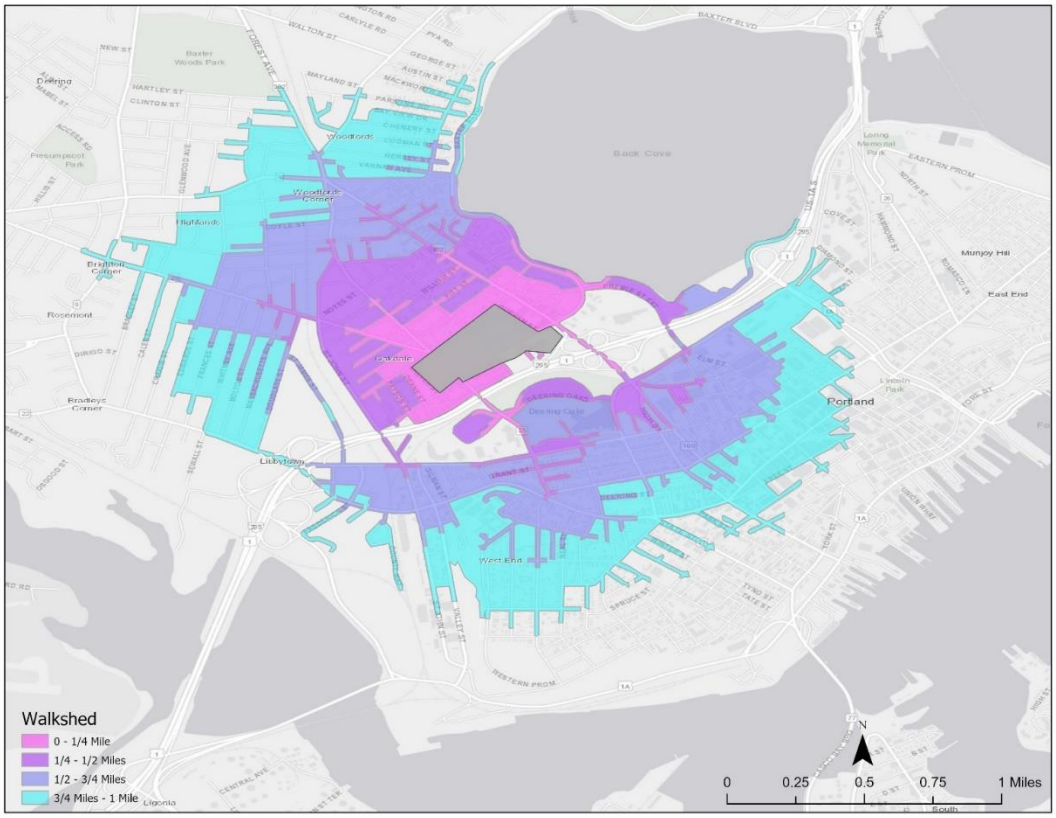
Walking and the Pedestrian Environment

USM's Portland campus is located on the edge of the Portland peninsula adjacent to the Oakdale residential neighborhood. Oakdale maintains a grid of streets, a majority with sidewalks, and low-volume, low-speed streets that make it generally comfortable and conducive for walking. The University is also adjacent to Forest Avenue, which offers local retail (including a grocery shop) within a short walk of the University. *Walkscore.com*, a real-estate site that evaluates walkability and transportation when choosing where to live, scores

USM a 78 out of 100 and considers it to be a "Very Walkable" location where most errands can be accomplished on foot.

Some built and natural barriers limit accessibility to areas on the south side because of the I-295 highway, to the west and southwest because of a below-grade railroad, and to the northeast because of the Back Cove. Although there is a comfortable shared use path under the interstate, I-295 can pose as a psychological barrier to some people for walking trips to downtown. Figure 1 shows the walkshed in quarter-mile increments out to a mile from the USM Portland campus.

Figure 1: 1-Mile Walkshed from USM Portland Campus



On campus, there is a robust network of pedestrian paths that connect all campus buildings (Figure 2). There are also information kiosks and wayfinding to assist pedestrians in their orientation around campus.

Figure 2: Portland Campus Map



In summary, walking is easy in and around USM; however, natural or human-made barriers may provide some real barriers and some psychological barriers. For example, the primary walk route to downtown from campus is on Forest Ave, which is a wide, fast street with large intersections and long wait times, despite the fact that there is a safe and comfortable shared used pathway crossing the on and off ramps of 295.

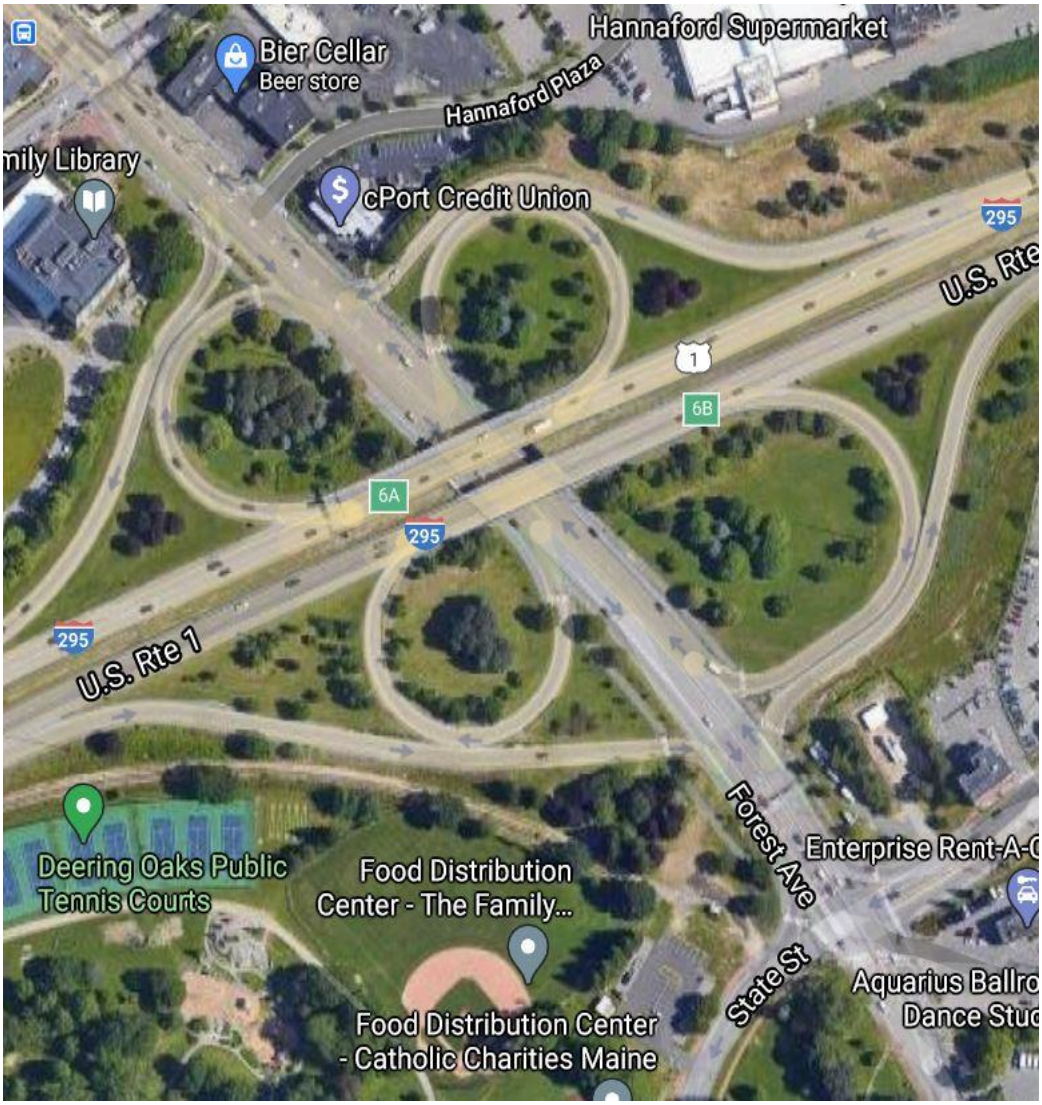
TDM strategies within this plan will seek to better connect the University despite these perceived or real barriers.

Bicycling Environment and Infrastructure

The *Walkscore.com* website lists USM at a Bikescore of 93 out of 100, the equivalent of a "Biker's Paradise." In fact, USM is located at the convergence of several key bike routes in the region that ultimately connect to the Portland Peninsula. Bike lanes around USM can be found along Brighton Avenue, Deering Avenue, Bedford Street, and Forest Avenue.

Some work is needed to teach the University community how to overcome certain psychological barriers. The best example, arose in stakeholder input sessions, was the perception that traveling on Forest Avenue to downtown is difficult. The root of the perception may be from the fact that there are six intersections, on ramps, or off ramps on each side of the road for a 1,200 foot-long stretch. See the aerial image in Figure 3 below:

Figure 3: Forest Avenue Bi-Secting I-295



The City has worked hard to increase the safety and comfort of this area by building and maintaining a shared used path on each side of Forest Avenue.

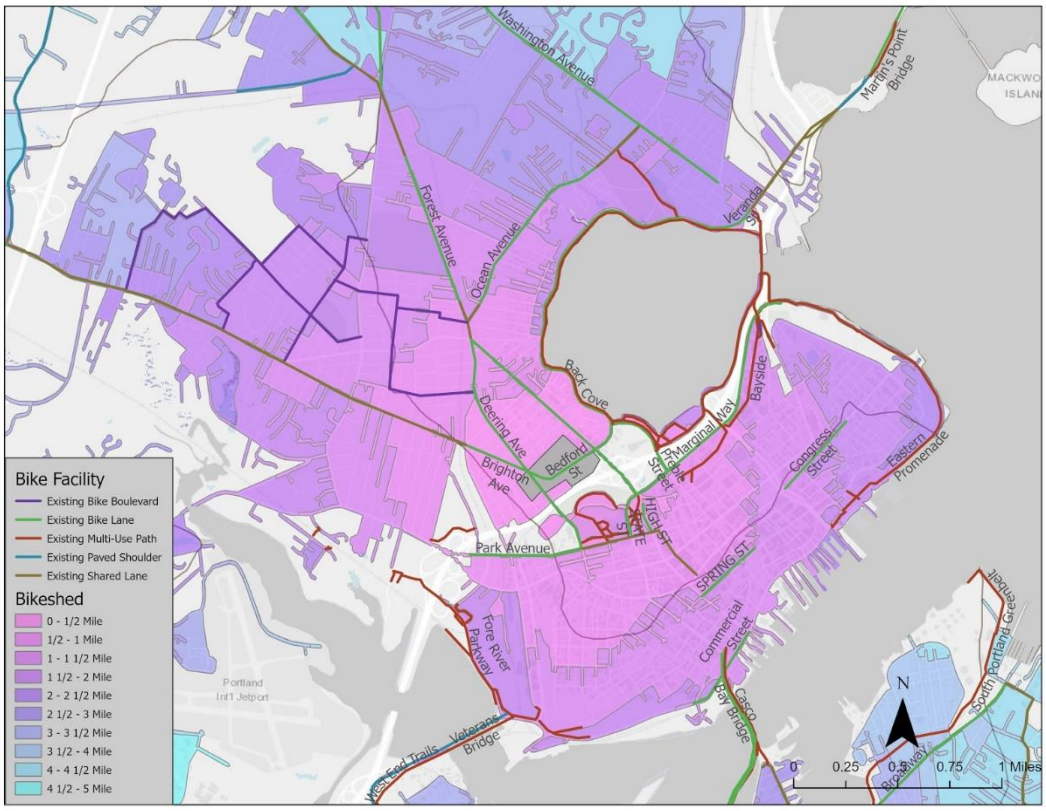
Figure 4: Shared Use Path Available on Forest Avenue Provides Access Under I-295



There is also a shared use path that runs parallel along the Back Cove. In addition to providing beautiful vistas of the downtown skyline, this path provides comfortable and safe bike/ped access to numerous Portland neighborhoods including the Back Cove, Woodfords, East Deering, and Bayside. Even the East End and the Old Port can be accessed this way, via the Eastern Prom Trail connected to the Back Cove path. Through the various shared use paths near the University, the entire Portland peninsula can be accessed within 2 miles of USM.

Within 5 Miles, one can also reach South Portland to the south, Westbrook to the west, and the border of Falmouth to the north. For the bike-to-transit trips, METRO buses serving the University are equipped with bike racks. The Husky line buses have slots for three bikes, and the other METRO buses serving the Portland campus have slots for two.

Figure 5: Bikeshed from USM



On-campus, there are 16 locations with bicycle racks and a bicycle repair stand adjacent to the Woodbury Campus Center. The locations of most of these racks are readily visible within the campus map (Figure 2) posted on kiosks throughout the campus and online. The majority of the racks are easily visible when on foot, except for the covered racks under Masterton's awning and in Abromson parking garage. The condition of the on-campus bicycle racks is fair; however, the Bike Fix-it Station needs repair: its tools have rusted and are bent and unusable. Shower access for campus affiliates is available at the Sullivan Gym. In order to gain access, they must show their campus ID.

In comparison to most places in the United States, the biking network in and around Portland and USM Portland campus is robust. On-campus, commuters have a place to store these bikes. TDM strategies related to biking should focus on marketing this commute option to overcome any fears about perceived barriers and thereby expand the potential pool of people that can bike. The University should also collaborate with the City as they seek to expand and improve the bicycle network.

Public Transit

USM affiliates are granted unlimited free METRO transit access as part of their enrollment and employment at USM. Transit access is paid by way of the student transportation fee and

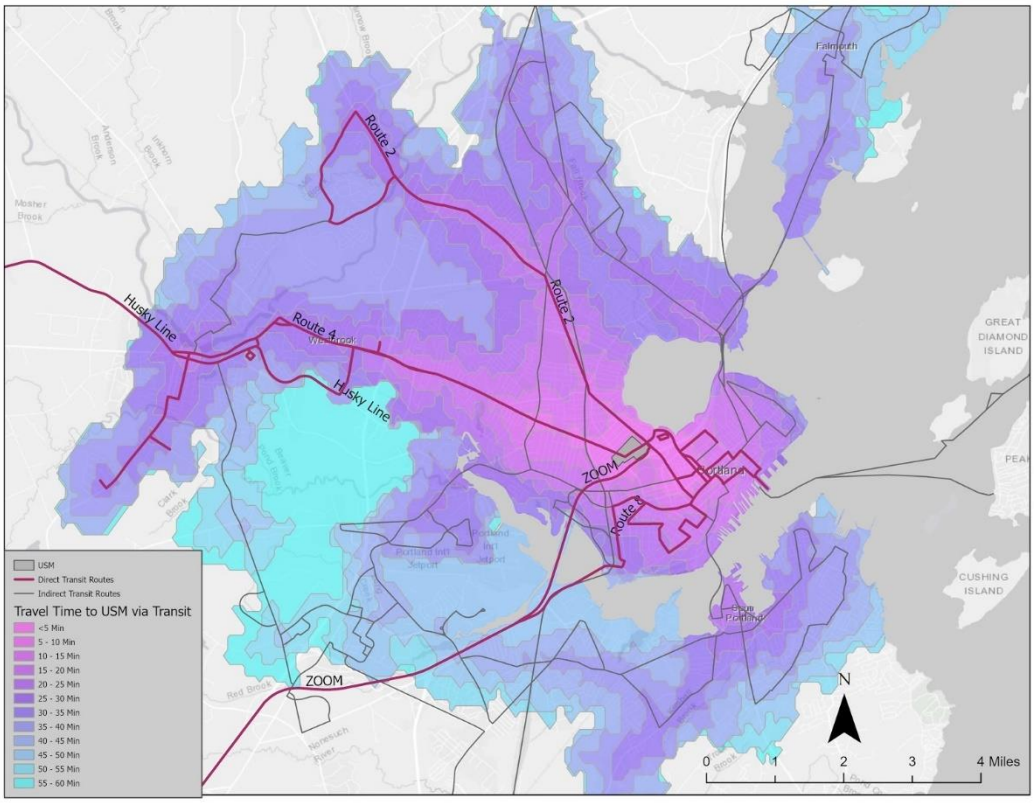
the employee parking permit fee. When boarding a METRO bus, USM affiliates must show their ID to the bus driver.

Four METRO bus routes serve the USM Portland campus: Route 4 and Husky Line serve the campus directly with a stop on Bedford Street, and within a quarter-mile, the Route 2 (via Forest Avenue) and Route 8 (at Hannaford Plaza). In addition to METRO service, the Lakes Region Explorer Bus ($2 one-way) is also nearby. Among the four, only the Husky Line has limited stop service all the way between the Portland and Gorham campuses.

On Bedford Street, at the heart of campus, there are shelters for Route 4 (Westbrook–Portland Pulse) and the Husky Line (USM Gorham via Westbrook–Portland Pulse). Route 2 (Forest Avenue) and Route 8 (Peninsula Loop) can be accessed at nearby Hannaford Plaza roughly a quarter-mile from campus. The Lakes Region Explorer (Windham Route), run by RTP, stops at the corner of Forest Avenue and Bedford Street.

Transit "accessibility" was determined by travel time, including time required to walk to the stop, wait for a transfer when applicable, ride the bus, and walk to the final destination. This differs from accessibility for walk and bike sheds where distance from campus generally determines accessibility. Expected transit travel time to the campus using the existing Portland transit network was mapped out in 5-minute increments (Figure 6). These increments include up to a maximum of a 15-minute walk for the total trip (to account for walk-access to transit).

Figure 6: Transit Service at USM Portland



Transit is not only a function of having a service route present nearby; other important pieces to consider are its span of service (i.e., is the service available at the times of day when needed) and service frequency (i.e., does the service operate at frequent intervals). Scheduled headways and service hours for direct services are included in Table 1 below.

Table 1: Direct Transit Route Headways

Route	Headways (minutes)							Span					
	Weekday			Saturday		Sunday		Weekday		Saturday		Sunday	
	Peak	Day	Evening	Day	Evening	Day	Evening	Start	End	Start	End	Start	End
Bedford St USM (0.0 Miles)													
Husky	30	30	50	45	45	45	45	6:30 AM	10:30 PM	8:30 AM	11:00 PM	8:00 AM	7:00 PM
4	30	30	60	30	60	45	-	5:30 AM	11:30 PM	6:00 AM	11:30 PM	8:30 AM	7:30 PM
Forest at Bedford St. (<0.25 Miles)													
2	20	30	60	60	60	60	-	6:00 AM	11:00 PM	6:30 AM	10:30 PM	8:30 AM	4:40 PM
Lakes Region Explorer	180	180	180	-	-	-	-	6:00 AM	10:30 PM	-	-	-	-
Hannaford Plaza (<0.25 Miles)													
8	30	30	-	60	-	60	-	7:00 AM	6:00 PM	8:00 AM	6:00 PM	9:00 AM	4:00 PM
?													
Zoom Turnpike Express	30	-	-	-	-	-	-	6:00 AM	6:40 PM	-	-	-	-

While all transit services adjacent to USM operate during the schedule of a normal business day and into the evening, the frequency can pose challenges to some of USM's population. As one can see above, the most frequent transit service (Route 2) runs every 20 minutes while the Husky Line, Route 4, and Route 8 run on 30-minute intervals. For many, these frequencies are satisfactory, especially given that the Husky Line is a limited stop service, cutting down on travel time. But, the frequencies don't yet meet the threshold for "transit

freedom" or the ability to travel without planning ("Transit freedom", per the definition by Jarrett Walker in *Human Transit*, is a frequency of at least 15 minutes all day[2]). People who are able to plan are facilitated by helpful resources like the Transit Tracker app and soon-to-be-installed transit screens at certain stops.

Other Mobility

In addition to walking, biking, and riding transit buses, USM affiliates can use ride-hailing services Uber, Lyft, or taxis, which are readily available in and around the peninsula. No carshare vehicles are located within a half-mile of USM. Also, no dedicated carpool parking spaces are designated on campus. Carshare and carpool are opportunities that the TDM Plan can leverage to reduce the number of people parking on campus.

Parking Facilities and Policy

Campus affiliates and visitors can park at 11 distinct parking lots (including one garage) across campus hosting a total of 1,701 spaces (Figure 7). By far, the largest parking facility on campus is the University Garage, which has a total of 1,155 parking spaces. Lots are designated by permit type and only users with that permit can park in that lot. Figure 7 identifies the location of these lots, permitted users, and the total number of spaces. The campus also has dedicated spaces for handicap, service vehicles, and an electric charging station.

[2] Source: humantransit.org/2011/12/how-frequent-is-freedom.html

Figure 7: Parking Spaces at USM Portland



Note: Although the 1,155-space Abromson Garage is primarily for student and visitor parking, faculty and staff may use the facility. The garage is access-controlled by a revenue control system.

All vehicles in University of Southern Maine (USM) parking lots on the Portland campus must display a valid USM parking permit, which comes in the form of a hang tag that must be hung from a vehicle's rear-view mirror. Permits may be obtained from the parking office or online through the University's parking web portal.

USM Portland has the following permit types:

- Student (Commuter, Gorham Residential) – All students are given the same parking privileges on the Portland Campus
- Employee (Faculty, Staff)

On the Portland campus, students may park at three different lots during the day (designated by a green sign) and at a fourth lot only after 4:30 PM. All students pay a transportation fee if registered for on-campus courses. The fee varies based on the number of credits for which they are registered: between $55 and $110 per semester. These payments are mandatory as part of enrollment and are made each semester: fall, spring, and summer.

On the Portland campus, employees are allowed to park in eight different lots on campus (designated by a blue sign). They pay $25 annually for their parking permit, which needs to be renewed each calendar year.

Short-term visitors to the campus may park in the parking garage for $2 an hour between the hours of 7 AM and 5 PM, Monday–Friday. Outside of these hours, visitor parking is free. There is a charge for overnight parking, except during snow bans. Prospective students and their families, campus guests, visitors, and volunteers receive free validation by the office or department they are visiting. To pay for parking, visitors must pay at the Parking Garage Office or use the pay-on-foot stations located by the doors to the parking garage on the first and second floors of Abromson Center and the ground floor of the parking garage by the vehicle exit.

A violation of parking guidelines may result in any number of consequences, including a parking ticket fine, towing of a vehicle (and responsibility of the owner/operator for payment of related towing and storage fees), or suspension of campus parking privileges. Parking tickets range from $25 to $200 depending on the infraction. Students and faculty must pay outstanding tickets before picking up a new permit.

Parking at USM is relatively unconstrained. Typical parking activity is accommodated with the present supply. Although on-street parking is also an option, many of the streets adjacent or near the campus are metered or have 1- or 2-hour parking limits during daytime hours. Recent observations conducted by VHB for USM found approximately one third of the on-street parking spaces available during peak parking periods.

Remote lots have been considered, but a large portion of USM students have one or more off-campus jobs, which require them to have ready access to their vehicles. To be more effective at discouraging parking on-campus, the University plans to make the transactional cost of parking more apparent for students.

The University reviewed parking rates around the City and around the New England market in general to see if there was room to use increased rates as a leverage point. This influenced the University to go from charging $0 for public parking to $2 per hour, which is still on the low to medium end of the market. The University is considering raising prices again to possibly $3-$4 per hour. However, the current plan is to keep it free for the early evening hours (5-11 pm), and to help out the neighborhood by allowing them to park for free during for snow bans from the hours of 5 pm to 8 am the following morning.

Regional TDM Program

At USM's disposal are several regional, state, and national-level TDM programs and services that are intended to support programs such as the one being reviewed by USM. Among these potential programs/services that could support USM include:

GO MAINE: Run by the Maine Turnpike Authority, this state-wide program serves as a rideshare matching service as well as a platform to log any kind of non-single occupancy trips, including non-motorized trips. The range of services include the following:

- ***Emergency Ride Home***- This program essentially serves as "insurance" to provide people an option to get home from work in case of an emergency. The rides are provided using a taxi or Enterprise rent-a-car. It is available to commuters who carpool, vanpool, take transit, bike or walk at least three days a week. The benefit may be used up to eight times per calendar year.
- ***Way 2 Go Maine***- *Way 2 Go Maine* is an annual commuter challenge in October that encourages employees of local businesses to use alternative transportation options through an inter-company competition. The competition recognizes companies for their successful participation and distributes prizes such as gift cards and swag to encourage participation.
- ***Vanpool Matching***- Vanpooling is a common, long-distance commute option for employees headed to the same general area consisting of between 5 to 15 commuters. GO MAINE assists to form these vanpools.
- ***Rewards Program***- GO MAINE has a rewards program for individuals who take greener trips, which include walking, biking, telecommuting, carpooling, vanpooling, or taking public transportation. Participants must sign-up and log their commutes daily. Rewards include gift cards and discounts to various local businesses.

Portland Slow Ride: To get people comfortable with biking, the Bicycle Coalition of Maine offers the "Portland First Friday Slow Ride". These rides are typically done at a relaxed pace and coincide with Portland's "First Friday" art walk event.

Smart Cycling Traffic Skills 101 and Educational Courses: Traffic Skills 101 is hosted by the Bicycle Coalition of Maine and is a course that teaches new and experienced cyclists how to ride in traffic. An individual or employer can specifically request a safety workshop.

Discounted Helmets: The Bicycle Coalition of Maine runs a helmet purchase discount program: when purchased in bulk (8-30 helmets) the cost is $7 per helmet.

Bicycle Benefit: As part of this national program, local businesses offer rewards to patrons who arrive at their establishments by bicycle.

Cycling Savvy: Is a program of the American Bicycling Education Association aimed at helping communities become more livable and sustainable by promoting a civil and cooperative environment on roads through complementary education and infrastructure design.

Best Employers for Commuters: This membership program provides qualified employers with national recognition and an elite designation for offering outstanding commuter benefits.

TDM at USM

TDM related to increasing multimodal transportation is not a new concept for USM. In 2017, the Office of Sustainability worked with various campus stakeholders to develop an eight-year sustainability plan that set a quantitative goal for sustainability efforts related to transportation and established a baseline of strategies to achieve that goal. Per the

sustainability plan, the goal related to transportation was to reduce greenhouse gas emissions from transportation by 20 percent from a FY 2006 baseline.

Table 2 below identifies the original strategies pursued by the sustainability plan as well as current strategies that came as a result of this original proposal:

Table 2: Suggested TDM Tactics from Sustainability Plan

Category	Original TDM Strategy	Present Day (Fall 2019) Response
Shuttle	Extend shuttle routes and improve shuttle footprint	USM has partnered with the Greater Portland bus system, METRO, allowing students, staff and faculty to ride anywhere in the METRO system for free and vastly expanding the reach of University affiliates.
Carsharing	Explore option of starting a carshare program on campus	USM has explored options with one company and discussed ways it could fit into the vehicle fleet.
Comprehensive TDM Strategy	Create a Comprehensive Transportation Demand Management (TDM) strategy	This document is a product of the development of a comprehensive TDM Plan.
Bicycle Infrastructure	Create adequate bicycle infrastructure & education on campus to support people who would consider biking including a bikeshare program.	To accommodate bicycles, USM provides bicycle racks around the campus (16 racks & 250 spaces total). The Portland campus also has a fix-it work stand which is the first of its kind in Portland and allows riders to make simple bike repairs on campus. The University transportation website also highlights the benefits of biking from a health and environmental perspective.
Carpooling	Create adequate carpooling infrastructure & education on campus to support people who would consider carpooling	USM researched different carpool apps and began interviewing stakeholders to create a plan.
Hybrid & EV Vehicle Discounts	Create modest incentives for hybrid or electric vehicles	An EV charging station is provided at the parking garage and is free to use. Additional charging stations are being considered for the garage, Wishcamper, and locations in Gorham.
Incentive Program	Explore a partnership with Rise-Up to award incentives for alternative transportation commuting	The Office of Sustainability has held brainstorming sessions with the Wellness Committee to determine what types of incentives would qualify for the health credit. The Wellness Committee has agreed to work on implementation.
Carbon On-Setting Project	Explore possibility of creating a carbon on-setting project with local low-income households	No transportation related actions were identified. The Office of Sustainability chose a home weatherization project instead.

Category	Original TDM Strategy	Present Day (Fall 2019) Response
Sustainable Business Travel	Develop mechanism for incentivizing more sustainable business travel	Measured carbon footprint of business travel in order to establish a baseline.
Parking Enforcement	Create a parking enforcement division of the University, separate from Public Safety, in order to maximize space utilization of existing lots	Division was created, staff were hired, and enforcement began.

The responsibilities for implementing these strategies have largely fallen on the Parking and Sustainability Offices. According to USM, approximately 0.1 FTE is spent currently implementing TDM strategies, not counting parking enforcement which exceed 1 FTE by itself

The Plan found that it would be useful to conduct a Transportation Survey of campus affiliates to understand transportation patterns, needs and barriers. USM most recently conducted a transportation survey effort in Spring 2019, yielding over 1,000 responses related to current commute patterns, inter-campus travel, and receptiveness of possible TDM strategies.

Not listed within the Sustainability Plan, but nevertheless worth mentioning as TDM measures that have been pursued by the University include:

- Establishing a new USM transportation website to communicate the availability of alternative modes of transportation.
- Charging USM employees, students, and visitors for parking.
- Having a University System-wide telecommuting policy, which allows for telecommuting in certain cases. In response to the global pandemic, this policy has been broadened to incorporate more people for longer periods of time. Post pandemic, the University could more heavily promote its pre-pandemic telecommuting policy.
- Having a larger portion of online classes in response to the global pandemic. Post pandemic, it is not yet known whether the University will continue offering such a high rate of online classes, as it will depend on long-term safety considerations and demand from students.

3

Existing Transportation Patterns

By exploring how USM students, faculty, and staff are currently traveling to campus we can identify which alternative modes may have the greatest potential to reduce drive alone commutes, and save on trips, parking and carbon emissions. This investigation allows for the development of targeted TDM strategies that offer a greater degree of changing commuter behavior.

VHB has reviewed USM affiliates' travel patterns using two data sources: a transportation survey and registered permit data. These data help identify how people are commuting to campus, what modes of transportation may interest commuters, and finally, what types of strategies would be most beneficial towards encouraging alternative commute modes.

Transportation Survey: Mode Shares and Travel Behavior

The Transportation survey conducted in Spring 2019 was done as part of the University's sustainability effort to chart emissions related to transportation. The online survey asked about current travel patterns between home and USM and about travel between the USM campuses. The survey also included questions about one's receptiveness to certain TDM strategies. About 1,000 USM affiliates participated.

Some key findings related to the survey (pulled from the "Final Survey Summary" prepared by USM) include:

- 78 percent of the USM population reported driving alone at least once a week to campus from home. About 72 percent of the population drives 2+ times per week to campus.
- 94 percent of USM employees park on campus; 81 percent of students park on campus.
- 25 percent of commuter students ride the METRO bus
- Dedicated, preferential carpool spots were the highest ranked activity to encourage students to use an alternative mode of transportation
- Per the survey, a new bike would be the best buyout reward for a parking cashout program, which may be a function of it being the highest value option ($500) compared to less valuable options of $100 cash, $200 discount on carshare/bikeshare, $200 discount on carshare/scootershare, $150 gift certificate to bookstore, and $150 gift certificate to dining services.

Additional conclusions from the survey data for the USM population who indicated making a trip to the Portland Campus include:

- 72 percent of USM Portland population reported having driven alone at least once a week to campus, 66 percent of the population drive 2+ times per week alone.
- 14 percent of the USM Portland population reported have taken transit at least once a week, 11.5 percent have taken transit at least twice per week.
- Considering only USM Portland commute trips (of employees and students), the Portland campus mode split is as follows: Drive Alone: 73 percent; Transit: 6 percent; Walk/Bike: 11 percent; Carpool: 8 percent; Motorcycle: 2 percent[3]
- USM's Walk/Bike mode split of 11% exceeds the typical average of 3% among Universities across the country, including those who have implemented TDM programs, according to VHB
- Average One-Way Commute Distance: 13.8 miles.
- 56 percent of the USM Portland population travels to other campuses
- For trips taken between the Portland and Gorham Campus, 40 percent take transit, 37 percent drive alone, 20 percent carpool, 3 percent bike, 1 percent use a motorcycle

Commute Trip Origins Based on Parking Permit Data

USM provided VHB with anonymized home address data for all their parking permit holders, which allows for an investigation of opportunities for providing incentives for reducing drive-alone trips to the campus. The following figures shows the distribution of commute trip origins based on the permit data. Major clusters of population are centered around the City of Portland, Westbrook, Gorham, Lewiston-Auburn, Brunswick, and Sanford (Figure 8). Figure

[3] It is important to note that this survey was taken before the Covid-19 pandemic. The next survey may show considerably different percentages for transit and carpooling.

9 shows a zoomed-in version of the same data, showing that major residential areas include: Portland, South Portland, Westbrook, Gorham, Biddeford, Scarborough, and Yarmouth.

Using the parking permit data, VHB calculated drive time for faculty and staff. About 50 percent live less than a 20-minute drive from the Portland campus and 94 percent live within a 60-minute drive of the campus.

Figure 8: Distribution of Home (Commute Trip Origins) – Southern Maine Area

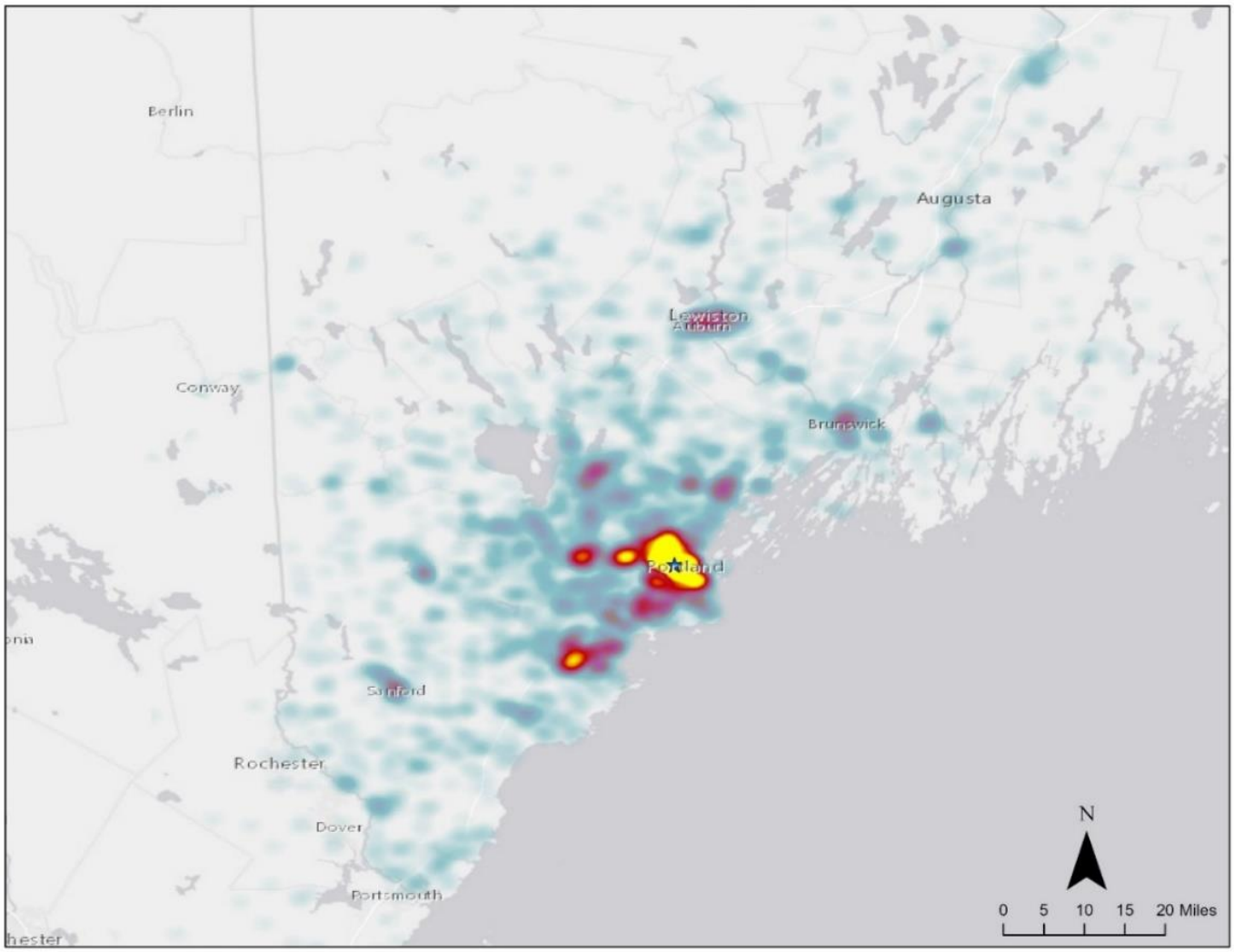
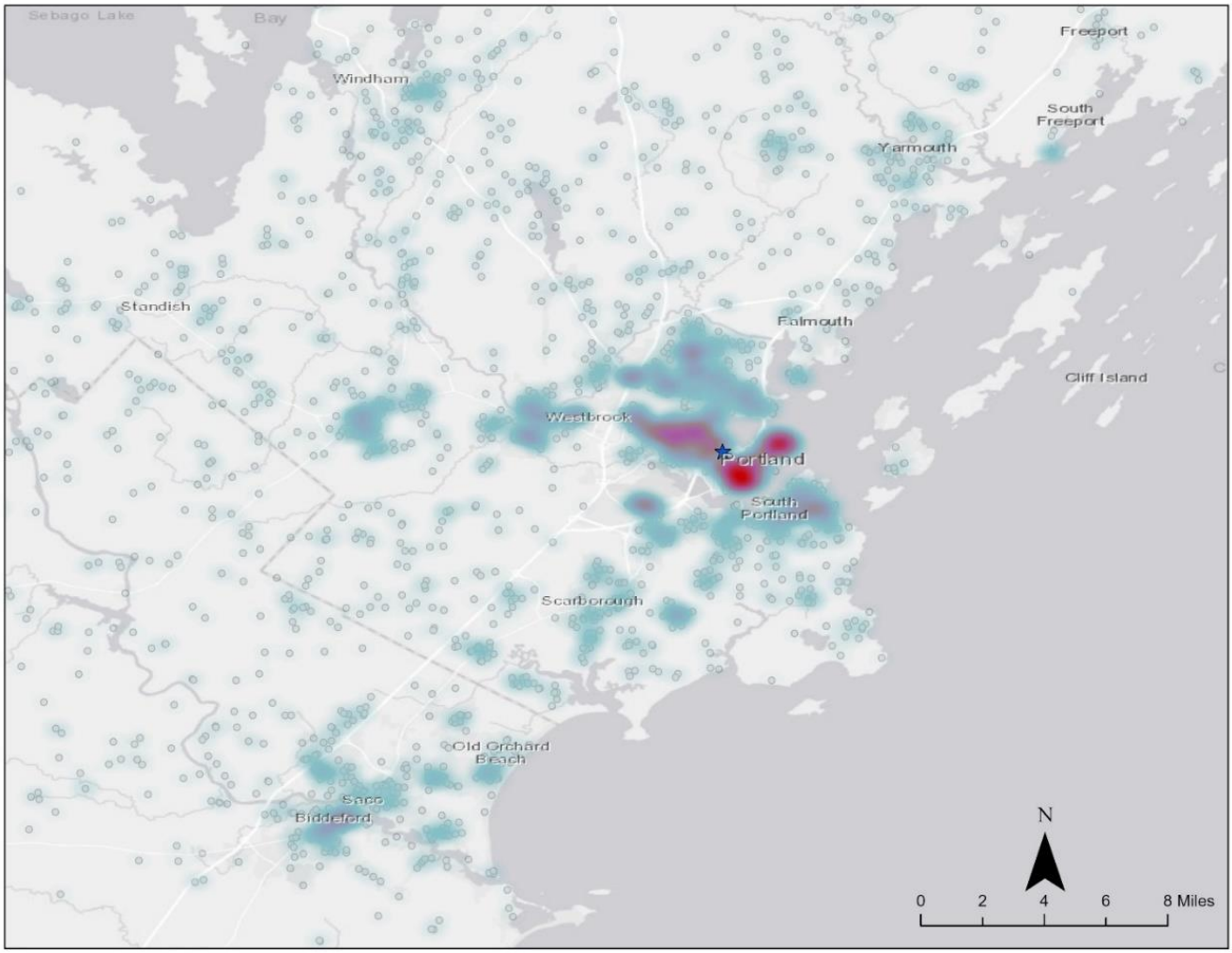


Figure 9: Distribution of Home (Commute Trip Origins) – Greater Portland Area



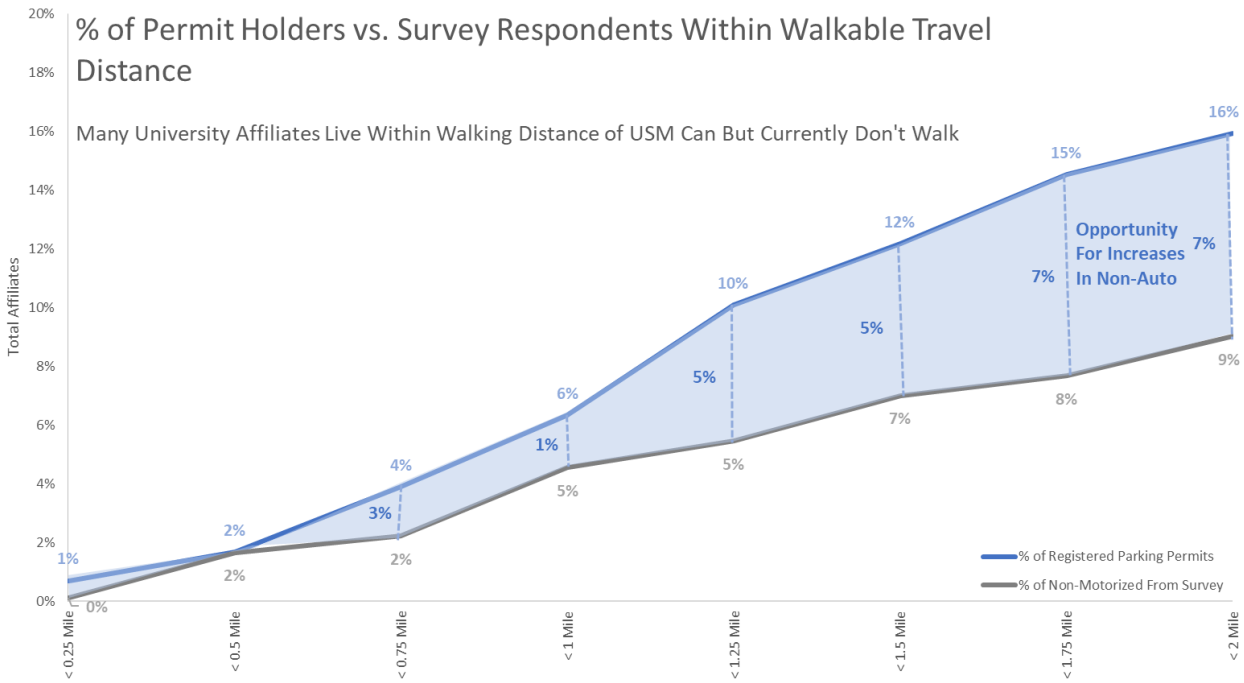
Alternative Mode Potential: Opportunities for TDM

To gauge the modal potential for walking, biking, and transit to USM, the geographic distribution of parking permit trip origin data was compared to the walking, bicycling, and transit travel market sheds. To get an understanding of current travel behavior versus potential travel choices, the 2019 transportation survey results are overlaid against this geographic distribution. The difference between the total number of people matched to a particular mode and the mode choice results from the survey form an "opportunity" zone for a potential increase in the use of a travel mode. People are represented here as FTE (Full-time equivalent) rather than headcount because FTE fits greenhouse gas reporting protocol and the University believes it is a better representation of how trip proportion impacts campus.

Walk Potential

Within a mile walking distance from campus, approximately 5 percent (an estimated 251 full-time equivalent individuals) of USM Portland students/employees reported using non-auto transportation to the USM Portland campus whereas per the permit data 6 percent of parking permit holders were geographically matched to reside a mile from USM (Figure 10). The delta between the two data points increases significantly as distance from campus increases. At 2 miles, only 9 percent of students/employees use non-auto travel modes (per the survey), whereas a total of 16 percent live within 2 miles of campus (per the permit data).

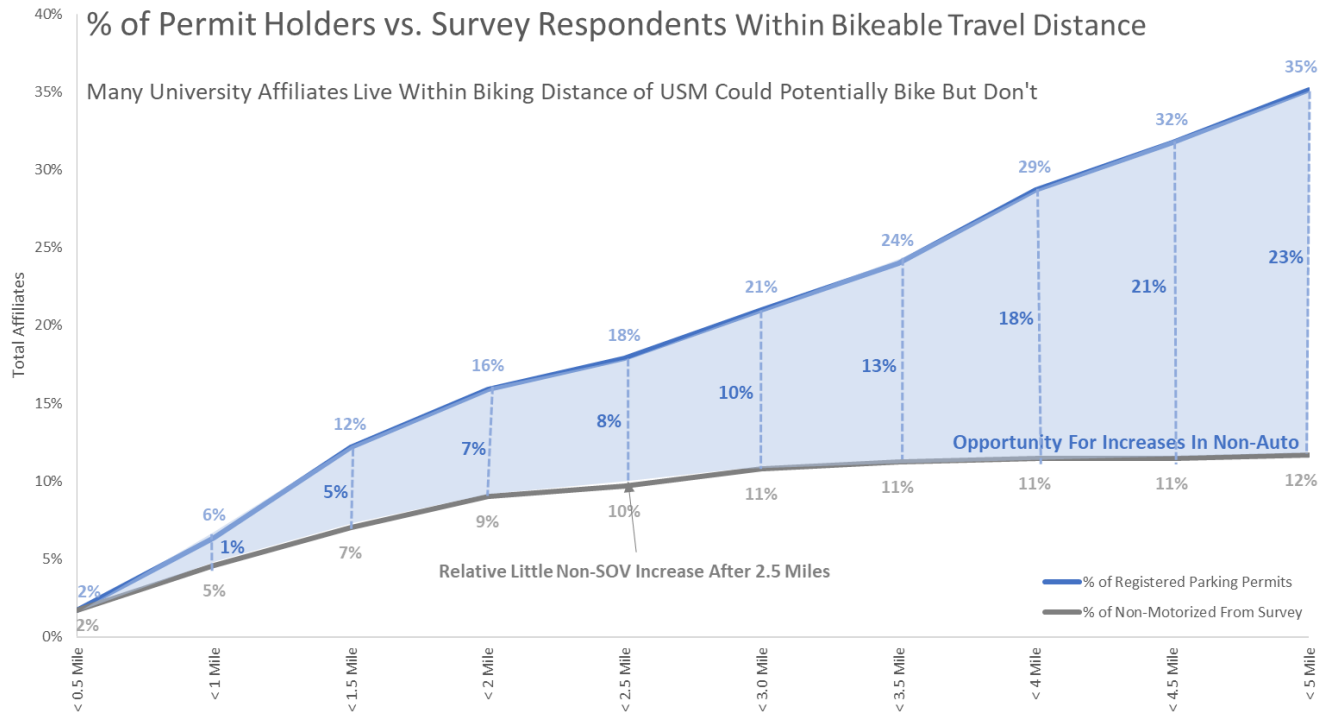
Figure 10: Walk Potential



Bicycling Potential

Biking distance for parking permit holders was compared to non-motorized users based on survey results (Figure 11). Based on the geocoded parking permit data, up to 35 percent of all USM employees and commuter students (an estimated 1,759 full-time equivalent individuals) live within 5 miles of campus, considered the upper limit for a reasonable biking distance for a commute. Per the transportation survey, however, only about 12 percent of commuters who live within 5 miles of campus use a non-motorized form of transportation. According to Figure 11, below, after 2½ miles, most people at USM stop using non-SOV[4] modes of transportation, which may be an indication of the cultural and environmental limits of biking in Maine. Although there is potential beyond 2 ½ miles, that potential should be tempered by barriers of safety, comfort, and weather.

Figure 11: Bike Potential

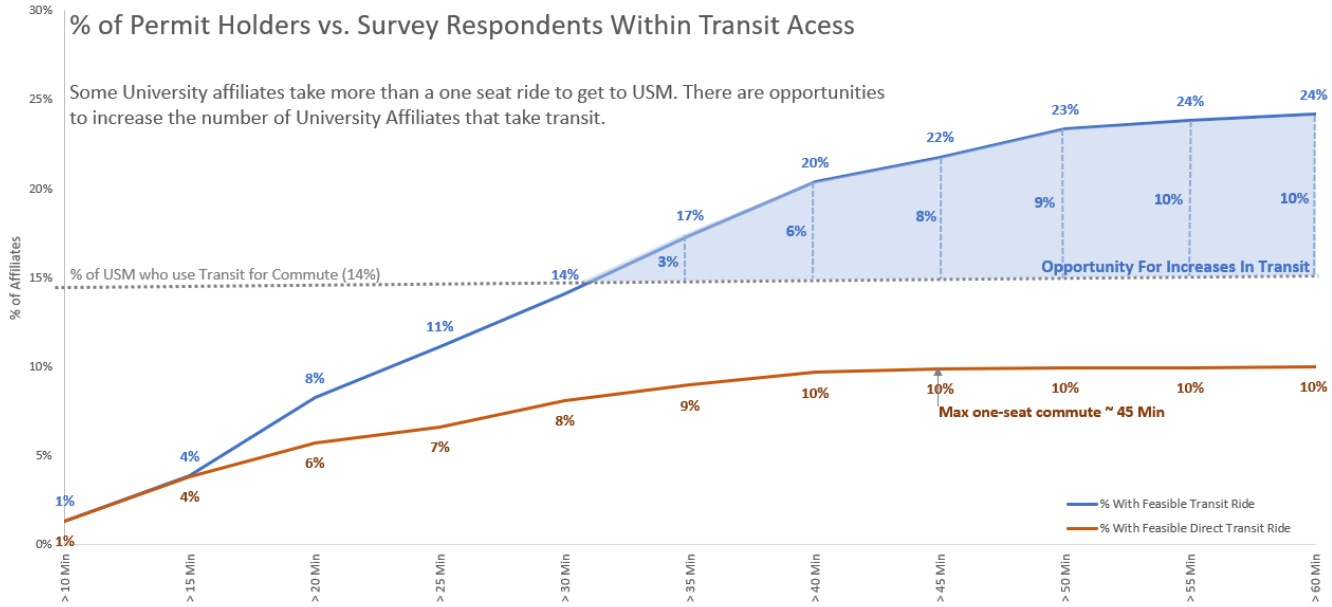


[4] SOV – single-occupancy vehicle (this mode is also referred to as *drive alone*)

Transit Potential

Transit-access time was compared to the percent of commuters from the survey who reported using transit (Figure 12). Up to 10 percent (or 503 FTE individuals) of USM affiliates live within walking distance of a direct transit route to USM Portland (based on the parking permit data). A further 14 percent (summing to 24 percent) can take a transit option that would take less than an hour to access USM Portland. This is 10 percent more than the existing number of University affiliates who indicated taking transit to USM (as reported in the transportation survey).

Figure 12: Transit Potential



Given the higher number of USM affiliates who noted taking transit than the number of affiliates within direct transit routes indicates that either a percentage of affiliates may be connecting on transit service or otherwise driving to a stop first (example driving to Gorham campus and then hopping on the Husky Line). Of all transit routes with direct access to the USM Portland campus, the Husky Line[5] has the highest number of permit holders who live within walking distance (459), followed by Route 4 (451), Route 2 (352), and Route 8 (270). Of all transit routes, the Route 9A and Route 9B serve the most affiliates within walking distance of stops (611), but these routes require a transfer to a transit bus line with direct service to the Portland campus.

[5] This analysis does not account for the fact that the Husky Line is a direct service route with few stops, whereas the other lines are more traditional services; however, the comparison serves to highlight what would be possible if the Husky Line or a route like it where to offer more stops in certain neighborhoods.

4

TDM Coordinator (TC)

TDM program management responsibilities will be designated to a single representative associated with the University.

USM will appoint Aaron Witham, Assistant Director of Facilities Management for Sustainability, as TDM Coordinator for USM; the Director of Auxiliary Services will play a supporting role.

The Assistant Director of Facilities Management for Sustainability can be reached via:

- email at aaron.z.witham@maine.edu
- phone at 207-780-5947.

The responsibilities of the Assistant Director of Facilities Management for Sustainability will include the following:

- Promote non-SOV transportation choices primarily to faculty, staff, students and residents
- Champion the implementation of new TDM strategies to reduce parking demand and increase the use of non-SOV transportation modes
- Conduct new student/new employee orientation to educate incoming affiliates regarding their transportation options to and from the campus.

- Coordinate the implementation of TDM strategies with Campus Scheduling, Human Resources, Parking, and any other departments.
- Work with the City of Portland, METRO, GoMaine, a private carpool app and other potential partners to improve non-SOV transportation access to the campus and to gain support for program implementation.
- Recruit and engage participants for any outreach events or campaigns associated with the TDM program over time.
- Review potential new alternative transportation technology or SOV reduction technology and coordinate implementation efforts associated with them.
- Coordinate all monitoring and evaluation activities necessary to measure the effectiveness of the TDM program in achieving the targets.
- Develop a TDM Report, which will provide an assessment of strategies implemented to date and outline the activities to be implemented in the upcoming year.

The responsibilities of the Director of Auxiliary Services will include the following:

- Provide consultation on TDM strategies that impact parking supply, services, and technology.
- Provide up-to-date data on parking volumes and patterns from the parking garage.
- Provide support for conducting additional parking assessments and measurements annually.
- Co-develop and implement financial parking incentives or disincentives as identified by the TDM plan.
- Maintain existing parking infrastructure and technology, with the support of Facilities Management and Capital Planning.
- Maintain parking services, including payments, campus notifications, and website updates.
- Carry-out parking enforcement.

5

Transportation Demand Reduction Goals

USM expects the TDM program to reduce the number of single-occupancy vehicle trips, thus reducing overall trips, demand for parking and greenhouse gas emissions.

Trip Reduction Goal: USM aims to reduce University-generated peak hour vehicle trips between 3-6% (17-35 trips) for the AM peak hour and by 3-6% (12-23 trips) for the PM peak hour by 2025. This goal is relative to a baseline of 581 and 381 trips, respectively, in the year 2023, at the opening of Portland Commons, the Career & Student Success Center, and a new parking garage (as determined by the Traffic Movement Permit analysis conducted in March of 2020). The peak hours are based on total traffic in the area, inclusive, but not limited to USM's contribution. They are noted to be between 7:30 am- 8:30 am and between 4:30-5:30 pm. Given that the morning hour is a higher peak overall, that hour will be the primary focus of the goal.

Parking Demand Reduction Goal: USM aims to reduce parking demand by 10-14% (159-222 vehicles) by 2025 during the hour of peak demand on campus[6]. The peak parking hour and baseline volume (1,587 vehicles) was established from 12:30-1:30 pm, Monday-Wednesday, inventoried in the Fall of 2018. As strategies are implemented to achieve this

[6] The peak hour for trips is related to the peak hour for parking, but they are not the same. For example, the first peak hour for trips occurs early in the morning when the maximum volume of people are on the road traveling. The peak parking hour occurs later, reflecting cumulative impact as a result of multiple hours of trips coming to campus. This is why the trip reduction goal is smaller than the parking reduction goal.

goal, the peak demand hour may change, so the goal will stand in reference to the volume, not the time, of parking demand measured at the original baseline peak hour in Fall of 2018.

Mode Split Reduction Goal: USM aims to decrease the percentage of SOV (single occupancy vehicle) trips to 70% and increase the percentage of non-SOV trips to 30% by 2030. The SOV category includes personal automobile trips without passengers and motorcycles, while the non-SOV category includes carpools, riding the bus, biking, and walking. The most recent data set of 2019 shows that USM is currently at approximately 75% SOV and 25% non-SOV. Given that measuring this goal relies on self-reported survey data and only includes a sample of the larger population, the University primarily wants to use this goal for internal planning purposes and for estimating greenhouse gas emissions. However, the University will provide the current estimate annually in its reports to the City.

Greenhouse Gas Reduction Goal: USM aims to reduce greenhouse gas emissions from commuting by 20% (or .4 MT of CO2e per capita) by the year 2025, in line with its goal to reduce all scope one emissions at the University by 20%[7]. The 2006 baseline greenhouse gas emissions from commuting on an annual, per capita basis is approximately 2 MT of CO2e. This goal is tied to a larger University pledge called the President's Carbon Commitment, a national commitment among hundreds of colleges and universities to reach carbon neutrality. USM signed the pledge in 2007, and set 2006 as the baseline with a goal of 2040 for carbon neutrality. Since FY 2006, per capita emissions from commuting at the University have fallen by an estimated 5%, according to the last carbon inventory conducted in 2017[8]. The remaining 15% is expected to be surpassed by a combination of the trip and parking goals stated above, promotion and enabling of more electric vehicles relative to gasoline-powered vehicles on campus, and the anticipated increase in fuel economy standards of traditional gasoline-powered vehicles. According to the United States' EPA[9], the SAFE[10] rule announced by the Trump Administration this year will require an increase in MPG by 1.5% every year from 2021 until 2026.

[7] There are three categories of emissions in GHG accounting. Under Second Nature, scope three is comprised of commuting, business travel, study abroad, downstream waste emissions, and transmission and distribution loss from electricity, as well as occasionally other sectors.

[8] The FY 2019 carbon inventory is on track to be completed by Spring of 2021, as it was unfortunately delayed due to pandemic resource constraints.

[9] https://www.epa.gov/regulations-emissions-vehicles-and-engines/safer-affordable-fuel-efficient-safe-vehicles-final-rule

[10] SAFE stands for Safer Affordable Fuel Efficient Vehicles Rule

6

Trip, Parking, Mode Split & GHG Reduction Strategies

The USM Portland TDM Plan establishes an aspirational vision and set of goals for transportation, mobility, and sustainability. The Plan builds off USM's multimodal strengths but pushes forward-thinking and multifaceted solutions.

Ultimately, USM will achieve success if one keeps in mind the following key concepts:

There is no "silver bullet" in TDM. The recommendations represent a package of reforms; implementing only one or two items will not solve USM's parking challenges.

Behavior change is difficult, but critical if USM would like to realize its vision. Future growth at the University will present critical challenges with parking. USM will need to depart from the status quo and rethink parking and transportation in order to grow sustainably.

The Plan is a "living" document. Key to the success of this plan is to implement, measure, learn, and adjust. Over time as the transportation context, technology, institutional culture, and user preferences change, so may the types of strategies that are pursued. This is true now, more than ever, given the current global pandemic, and the need to remain adaptable.

What is presented here is the University's current plan for Transportation Demand Management (TDM). It is subject to change as the global pandemic unfolds, as financial

constraints dictate, and as annual survey data and parking counts inform what is working and what is not working among USM's unique population.

Therefore, the University is not committing to launch every one of these initiatives necessarily or committing to keeping every initiative in place permanently if they prove to not be feasible. Rather, the University is aiming to achieve trip, parking, and greenhouse gas emissions reduction targets using the most effective suite of technologies and policies available and achievable for a particular year. That said, it is the desire of the University to launch most of these initiatives in order to provide a multi-modal suite of options to students, staff and faculty, not all of which have the privilege of owning a personal vehicle. Moreover, the University has identified certain initiatives as "core" initiatives that it is committed to implementing. These are indicated with an asterisk in Table 3.

The matrix below introduces a snapshot of the initiatives that USM hopes to implement. Following the matrix is a section outlining descriptions of the initiatives. To the extent possible, strategies are grouped by categories reflected in the *City of Portland's Technical Manual*. For each strategy, an anticipated launch date is provided.

Table 3: Overview of TDM Initiatives for USM

STRATEGY	LAUNCH DATE	INFRASTRUCTURE	INCENTIVES	EDUCATION
Walking				
Create Walk Spot Maps	Fall 2023			X
Publicize the "Complete City Project"	Fall 2021			X
Hold Fitness Challenges	Spring 2022		X	
Biking				
*Co-launch City Bikeshare	Spring 2023	X		
Build Bicycle Repair Station	Spring 2023	X		X
Promote Local Bike Activities	Spring 2021		X	X
Offer Discounted Bike Supplies	Spring 2021		X	
*Improve Bike Infrastructure	Spring 2023	X		
Apply for Bike Friendly University Certification	Fall 2022	X	X	X
Transit				
*Continue METRO Pass Program	Ongoing	X	X	
Propose Husky Line Improvements	Fall 2022	X		
Propose Transit Service Expansion Beyond Husky Line	Fall 2022	X		
Install Transit Screen	Spring 2023	X		
**Carpooling, Telecommuting & Time-of-Day*				
Establish Vanpool Vehicles	Fall 2022	X	X	
Designate Carpool/Vanpool Spaces	Fall 2022	X	X	

Develop Rideshare Matching Platform	Fall 2022	X		
Promote Telework & Flexwork	Ongoing		X	X
Restructure Course Schedule	Ongoing	X		
Parking Pricing				
Establish Commuter Parking Buyout Program	Fall 2021		X	
*Establish Residential Parking Buyout Program	Spring 2023		X	
Host Carshare Program to Support Buyouts	Spring 2023	X	X	
*Unbundle Student Parking Fees	Fall 2021		X	X
Build Additional EV Charging Stations	Fall 2021	X		
Review Parking Price Levels	Fall 2022		X	
Communications & Marketing				
*Hold New Student & Employee Orientations for Transportation	Spring 2021		X	X
*Revise Transportation Website	Spring 2021			X
*Publish Access Guide	Spring 2021			X
Offer Guaranteed Ride Home Service	Spring 2023		X	

*Core strategies that the University is committing to are indicated by *. In the case of the Carpooling, Telecommuting & Time-of-Day category, the category itself is considered core, but the University will maintain flexibility in which of these strategies it implements, depending on future conditions

Walking Initiatives

Create Walk Spot Maps: Partner with a class and utilize GIS resources to create a semester-long project to build out exciting walking maps that would be made available both online and in print, in high profile locations on campus. The maps would include walkable points of interest, such as bus stops, public restrooms, cafes, breweries, scenic areas, and parks. The online version could be a user interface where you can select your points of interest and create a preferred route around the city. The online version should also include a forum, or a place for individuals to leave comments so they may spread information about the safest and most scenic routes, and also work to create a community of walkers.

This potential initiative program could also be made into a bi-annual "Walking Challenge" where individuals keep track of the various routes and enter that information into a type of raffle or other contest where they win a gift certificate to a sporting goods or shoe store.

Publicize "The Complete City" project: Participate in this project through a class or creation of a stakeholder group. The project is being run by the Portland Society for Architecture. They are reaching out to the Greater Portland community to make the area more accessible, more attractive, more just and equitable. This includes creating what they

(and others) describe as "The Complete City," where within the city, each neighborhood has all it needs within a half mile, incentivizing alternative transportation by intentionally planning communities.

Hold Fitness Challenges: Partner with an existing health app or utilize the USM student app to create a fitness challenge for most steps per week. This will be accessible to most students, as most individuals have a smartphone that would be compatible with such an app. Each week, the app could send out a public note of congratulations to the walker with the most steps. The app could also create benchmarks where if a member of the community reaches a certain number of steps in a certain number of days, they receive a percent discount code to a local sporting goods store or shoe store.

Biking Initiatives

Co-Launch City Bikeshare: Partner with the City of Portland to co-launch a Bikeshare program that will cover, at a minimum, the USM-Portland campus, the back cove, Oakdale, Brighton, Bayside and Parkside. The University will provide financial support for Bikeshare parking spaces on the Portland campus if necessary.

Build Bicycle Repair Station: Install a new student-run bike repair station or shop (deemed "the Hub") in a central part of their campus. Shop will be located in a corner of the Abromson parking garage, a stand-alone shed or some other covered location, where it can be out of the wind and the rain. The University aims to make it a social hub as well, where information about alternative modes of transportation can be offered. If survey data suggests additional need, then we can build a stand-alone self-service fix-it station near the center of campus.

Promote Local Bicycle Activities: Promote the participation in (and facilitation of) local bike activities such as the Portland Slow Ride, Smart Cycling Traffic Skills 101, and Cycling Savvy events. At least one opportunity or event will take place each semester.

Offer Discounted Bike Supplies: Provide Discount Sales for Bike Supplies (through a partnership with Bicycle Coalition of Maine or another program). Sales will either be ongoing in the bookstore and/or combined with the special events noted above once per semester.

Improve Bicycle Infrastructure: Improve bicycle infrastructure on campus, and propose improvements off campus. The University plans to increase bicycle parking spaces to 2.5 times what is currently offered on the Portland campus. Currently there are 250 spaces with another 10 being planned for the Wishcamper lot remodeling. Forty-one of these spaces are covered.

USM plans to add 122 short-term (uncovered spaces) to campus, with a lot of them slated for the new quad and some of them being distributed throughout campus to fill in gaps. USM also plans to add 288 long-term (covered spaces). Forty of these long-term spaces are proposed for a bike room inside the Portland Commons residence hall, and 248 long-term spaces are proposed for another location somewhere near Portland Commons and the Career & Student Success Center (CSSC). Possible sites include the new parking garage if it is located near the other two new buildings, in a stand-alone shelter, or in a secure area of the

Abromson parking garage. In addition to spaces for personal bikes, the current plan is to offer dedicated spaces for the proposed bikeshare bikes. Bikeshare notwithstanding, the total spaces on campus by the Spring of 2023 is planned to be 670.

These volumes of new bike parking meet or exceed several important standards that align with the University's aggressive plan to increase biking among its students, staff and faculty:

- 5.5 times higher than City of Portland's Technical Specs, campus-wide[11]
- Double the amount suggested by APBP for short-term parking for students & employees[12]
- Meets APBP's recommended long-term space allocation per bed[13]
- Exceeds City of Washington D.C.'s requirement by over 50% for long-term spaces per dwelling units in residential apartments[14]
- Double City of Cambridge, MA's requirements for short-term spaces and exceeds their requirements for long-term spaces.[15]

Off campus, the University will collaborate with the City of Portland on identifying improvements to bicycling infrastructure along corridors traveled by USM commuters through the annual transportation survey.

Apply for Bike Friendly University Certification: Apply for Bike Friendly University Certification. The application process, completed every four years, will help the University identify areas for improvement, and inform the types of questions that need to be asked in the annual survey of students, faculty and staff.

Transit Initiatives

Bus ridership has obviously been impacted by the global pandemic by some customers deciding not to ride the bus and by bus capacity being limited to comply with Federal standards. Despite these challenges, VHB believes that transit ridership demand will fully rebound again within a couple of years, so they do not recommend changes to long-term ridership predictions at this point. However, they note that the ability for ridership to be accommodated depends on supply of seats being available, which could possibly be impacted by future policy decisions coming from the Federal government. For the time being, the University is not adjusting expected transit impact for TDM goals set on a 2023 horizon.

Continue METRO Pass Program: In 2018, the University established a program with the Greater Portland METRO to allow students, staff & faculty to ride any METRO route for no

[11] Per City of Portland Code of Ordinances, Section 14-526

[12] Per Association of Pedestrian & Bicycle Professionals' Bicycle Parking Guidelines, 2nd Edition, assuming that student & faculty vehicle spaces are a reasonable proxy for individuals on campus at one time

[13] Per Association of Pedestrian & Bicycle Professionals' Bicycle Parking Guidelines, 2nd Edition multi-family housing criteria of .5 spaces per bed

[14] Per Table 1: https://ddot.dc.gov/sites/default/files/dc/sites/ddot/publication/attachments/DDOT%20bike%20parking%20guide_060118_Screen.pdf

[15] Per College or University Student Activity Facilities, page 4: https://www.cambridgema.gov/-/media/Files/CDD/Transportation/Bike/Bicycle_Parking_Guide_20130926_2017PictureEdits.pdf

cost to the individual, so long as they show a USM ID. The program has been popular for students, as it increased the number of trips offered between Portland and Gorham via the newly established limited stop Husky line. Post pandemic, it has great potential to shift USM commuters out of personal vehicles if they live on or near an existing line. As an initiative, the University endeavors to keep this program in place with METRO for the foreseeable future.

Propose Husky Line Improvements: Conduct graduate-level research on how to increase ridership on the METRO using a community-based social marketing model. Then, make a proposal to METRO with goal of increasing the frequency of the Husky Line to 15 minutes to achieve "transit freedom."

Propose Transit Service Expansion Beyond Husky Line: Conduct graduate-level research, using GIS and USM student, staff, and zip code data to analyze route potential. Then, make a proposal to METRO for potential local on-demand bus shuttle connecting downtown Portland to campus and/or increasing the frequency on other non-Husky line routes that serve the Portland campus.

Install Transit Screen: Install a real-time transit screen in the new Career & Student Success Center. Potential locations include the first floor lobby or near the elevators on the first or second floor. This effort will supplement METRO's own effort to install a transit screen in one of the bus shelters on campus.

Carpooling, Telecommuting & Time of Day Initiatives

The initiatives below, when taken together, are some of the strongest leverage points the University has and some of the most nimble. They are paired together here so that they can be substituted for one another when responding to the risks created by the pandemic. For example, under non-pandemic circumstances, the telework and class schedule initiatives could constitute 50% of the demand management that this category is capable of, while under a pandemic scenario they may need to constitute 100% of the demand management. The aggregate goal for this collection of initiatives is to get 125 vehicles out of parking lots during the peak parking demand hour.

Establish Vanpool Vehicles: Establish a program to lease vanpool vehicles and initiative vanpools in high commuter corridors. A candidate for the first potential vanpool is a Lewiston-Auburn Campus to Portland Campus trip.

Designate Carpool/Vanpool Spaces: Designate prime parking spaces for carpool or vanpool on the Portland campus, starting with 50.

Develop Rideshare Matching Platform: Develop rideshare matching platform or meet n' greet events to pair potential carpool participants. University will consider using Go Maine if Go Maine can increase safety measures for student ridership. The University has provided Go Maine with feedback on how to improve safety.

Promote Telework & Flexwork: Establish teleworking arrangements with more employees. The University would promote its existing voluntary telecommuting policy.

Restructure Course Schedule: Conduct course catalog review with the goal of spreading out courses by day, time, and/or location. A first iteration of this initiative was started this Fall semester, but the effects of it are currently invisible due to the high percentage of classes being taught online due to Covid-19.

Parking Pricing Initiatives

Establish Commuter Parking Buyout Program: Launch a parking buyout program to encourage employee and student commuters to give up their parking pass in exchange for an incentive of upwards of $500 per year. Only individuals who previously purchased a parking pass the semester before may enter the buyout program. Buyouts would be offered on a first come, first serve basis. A max of 50 buyouts would be given out the first year (so that the University can monitor and increase when/if effectiveness is proven). Ten emergency parking passes will be offered each semester, which gives individuals the right to park on campus if they have extenuating circumstances, such as childcare issues or emergent health challenges. Emergency passes could be printed from an online form that records number used per individual).

Establish Residential Parking Buyout Program: Launch a parking buyout program to encourage students residents on the Portland campus to give up their parking pass in exchange for a cash incentive, value toward a bikeshare subscription, and value toward a carshare subscription (if available). The value of each of the three incentives is proposed to be $20 per month, totaling $60 in value, for the nine months comprising the Fall, Spring and Winter semesters. The first 40 applicants would get secure, covered parking inside Portland Commons. The second 60 applicants could utilize secure, covered parking in the larger covered parking area in the vicinity. A max of 100 buyouts would be given out the first year (so that the University can monitor and increase when/if effectiveness is proven).

Host Carshare Program to Support Buyouts: Establish a carshare program in partnership with the City, that may be utilized as part of the residential student buy-out program (in subsidized form), or by commuter students, staff, faculty and non-USM community members. The University recognizes that the carshare business plan has been challenged by covid due to the financial losses sustained by car rental businesses, so this initiative may not prove reliable. To that end, it is not a critical leverage point within this TDM plan; rather it is supplemental to the buy-out initiative. The hope is that the industry will rebound by 2023.

Unbundle Student Parking Fees: Unbundle student transportation fee from their other tuition-related fees, so that the payment for a parking permit must be made separately through a manual opt-in program. This action which will draw attention to the cost of those applying and serve as a disincentive to some.

Build Additional EV Charging Stations: Install additional electric vehicle charging stations at select locations. Goal will be to ensure there are enough charging stations available to meet the next year's expected demand of staff & faculty driving EV vehicles to campus (as

indicated by annual survey), so that spaces to park do not limit potential EV drivers. Stations are likely to be pay-as-you-go. As part of this initiative, the University also endeavors to run conduit to future structured parking facilities, regardless of whether or not it currently has the funds to install EV charging stations at every space.

Review Parking Price Levels: Review of staff member parking to determine if there is a pricing model that will reduce transportation demand. Goal will be to achieve greater parity between employee and student parking pricing.

Communications & Marketing Initiatives

Communications & Marketing: Hold new student & employee orientations for alternative transportation modes, infrastructure, resources and incentives. This initiative may build upon current student and employee orientation programs to maximize participation.

Revise Transportation Website: Build upon current website (launched in May of 2019) by adding new & expanded alternative transportation options and benefits, and performing ongoing maintenance and updates.

Publish Access Guide: Develop a "slick sheet" access guide summarizing ways to travel to campus and nearby destinations.

Offer Guaranteed Ride Home Service: Promote a guaranteed ride home program from Go Maine or a private carpool app to compliment alternative mode use, and provide security to students, staff and faculty.

Potential Greater Portland Initiatives

The University recognizes that it is only one entity within a much larger complex system of transportation within the greater Portland. Toward that end, VHB researched potential improvements that could be considered by the METRO, the City of Portland, and other supporting entities to support USM's TDM plan. VHB also estimated the potential impact these initiatives could have on USM's trip generation and parking goals. The proposed initiatives and their potential impacts are summarized here:

- **Increase frequency of Husky Line to 15 minutes:** Reduction of 39 (2.5%) to 79 (5%) Peak Hour Parking Spaces
- **Increase frequency of METRO Routes 2 & 4 to 15 minutes**: Reduction of 39 (2.5%) to 79 (5%) Peak Hour Parking Spaces
- **Restructure departures and arrivals of all METRO routes serving the Portland campus in order to create 10 minute headways to downtown:** Reduction of 8 (0.5%) to 16 (1%) Peak Hour Parking Spaces, with even greater reductions possible if all routes were routed to serve the same stop on campus
- **Create local on-demand circulator route (shuttle):** Reduction of 56 (3.5%) to 111 (7%) Peak Hour Parking Spaces

- **Improve downtown METRO loop (Route 8) & route it through the USM campus:** Reduction of 43 (2.7%) to 86 (5.4%) Peak Hour Parking Spaces
- **In support of the above initiatives, METRO could begin to plan around USM as an anchor node in their network when the new residence hall comes online**
- **Create a better defined & safer bicycle/pedestrian corridor from USM to downtown:** Reduction too difficult to estimate until the goal is more defined

The reduction ranges featured above should be considered for each initiative individually, as opposed to being additive if all initiatives were implemented. In other words, some individual riders may be affected by more than one initiative. To further explore these initiatives, the University recommends that a coalition of METRO, the City, the University and others research what the potential cost per rider would be for implementing these strategies, in order to determine which may warrant further consideration.

7

Monitoring and Reporting Plan

Program monitoring and evaluation are important components of any successful TDM Program, because they provide a quantitative benchmark of the program's effectiveness in reducing single occupancy vehicle trips and parking demand. The Transportation Coordinator (TC) can use the information gathered via the monitoring plan to direct the ongoing implementation of the TDM Program, allowing for adjustments and the introduction of new strategies.

Furthermore, via regular periodic reports, USM will provide evidence to the City of the applicant's diligence in implementing the program.

There are different methods for collecting the data necessary to monitor a TDM Program, including surveys, program participation documentation, vehicle parking counts, and activity logs. USM's TDM program monitoring will use trip generation counts, vehicle parking counts and person surveys in evaluating the effectiveness of the program. Each of these tools is discussed below.

Trip Generation Counts

Trip generation counts refer to estimating the potential contribution of USM students, staff, and faculty to the total volume of vehicles on the roads feeding the Portland campus. The peak trip hours will be used as the boundary for this metric, and the data will originate from recorded vehicles entering and exiting the parking garage structures on campus, as well as observed vehicles entering and exiting the large surface lots on campus (defined as those lots with more than 20 parking spaces. The peak hours will be assumed to be between the hours of 7:30-8:30 am and 4:30-5:30 pm, Monday through Wednesday, in October, unless future analysis shows they should be at a different time.

The Director of Auxiliary Services at USM will provide vehicle count data from the automated garage entry systems. Data for the surface lots will be collected by direct observation from University staff or contractors hired to stand at the entries and exits and tally vehicles. Qualified University staff or a third-party contractor will compile and analyze the data.

Parking Occupancy Counts

Parking counts refer to a visual or automated account of occupied and/or empty parking spaces. These data are used to ensure that the amount of parking supply (spaces) on site is appropriate to meet peak hour parking demand (parked vehicles).

Under the direction of the Transportation Coordinator, the university will collect observations of vehicle parking during a representative (typically busy, classes-in-session) 3-day period in October. The TC will report the peak parking demand for the campus parking for those observed days.

Parking occupancy of the campus's garages will be based on data retrieved for the parking revenue control system, whereas occupancy of the campus's surface parking lots will require manual field observations. Observations of spaces occupied will be made during each hour in a ten-hour period of 8:00 AM to 6:00 PM.

The reporting of parking transactions and garage use should distinguish, to the extent possible, those users who are USM employees, students, and transient/visitors (hourly, public) users.

A parking occupancy rate relative to total supply of parking on campus will be reported.

Survey of Commuting Patterns, Mode Split & GHG Emissions

The Transportation Coordinator will administer a survey of both employees and students of USM Portland.

Surveys provide a qualitative understanding of how well TDM (and Parking Management) program elements are working. The survey will also be used to estimate greenhouse gas emissions associated with commuting, as well as the current mode split.

The TC will conduct the surveys in either the spring or fall session (e.g., March or October), depending on available resources and labor relative to the resources and labor required to conduct the trip generation and parking analysis. The survey will be completed during a week without any holidays and when classes are in session.

Survey questions will incorporate the following components, in addition to others:

- Type and frequency of modes of transportation used in a typical week
- Destinations traveled to via particular modes
- Reasons why people are driving alone
- Reasons why people are not driving alone
- Level of enthusiasm for incentives that would encourage drive-alone respondents to use an alternative mode
- Ideas for improvements to transportation system, including ideas for incentives
- Routes traveled by foot or bike & associated improvements desired
- Trip generation during time of day (in order to supplement USM-generated contribution to peak traffic generation)
- Ownership of electric vehicles
- Questions required for Bike Friendly University application
- Questions about health concerns (e.g. Covid-19) with different modes and how that is impacting behavior and expected to impact behavior in the future

Status and Monitoring Report

Each year, after data are conducted, the TC will prepare a report summarizing TDM program status and monitoring results. In addition to reporting the results of the data collection, the report will detail (1) what/when strategies were implemented, (2) an estimate of how many individuals participated in certain programs, (3) the lessons learned regarding the most effective TDM strategies, including barriers to not driving alone from the survey.

A core summary table of the goals will be provided in the report that includes baseline numbers, progress to date, goal numbers, and dates by which the University is striving to reach the goals. Goals included will be trip generation, parking counts, mode split, and greenhouse gases. The University will work with the City every year to ensure it is meeting expectations of the City regarding format of the report.

The TC will submit the report to the City of Portland's TDM Program Manager (a position currently staffed in the Planning and Transportation Division of the Planning and Urban Development Department). A report should be issued within 3 months following the last of

the three data collection activities (e.g., if the survey is done in March, then a report should be issued no later than June of that same year). The TC will meet with the City of Portland Planning Department and discuss suggestions for changes to the TDM Program, and will make adjustments before the start of the Fall semester.

Monitoring Schedule

Monitoring (survey, parking, and traffic data collection) should begin within the year following the opening of the planned residence hall. Monitoring will occur according to the schedule detailed below, until the year 2030, the horizon year of the *Facilities Master Plan*. Updates to the *Sustainability Strategic Plan* and/or *Facilities Master Plan* may conclude that further monitoring is warranted.

Annually, the University will:

- Conduct analysis of trip generation (as described above)
- Conduct parking occupancy observations (as described above)
- Conduct a travel survey (as described above)
- Prepare a TDM monitoring report (as described above)

3. PROJECT DESCRIPTION

On behalf of the University of Southern Maine (Applicant), Woodard & Curran is pleased to submit this application for Major Site Plan Review for a new parking garage. This project represents another significant step in the growth of the campus and will specifically support the Portland Commons Residence Hall currently under construction.

This application has been prepared in accordance with the City of Portland's Chapter 14, Land Use Code of Ordinances and the applicable sections of the City of Portland Design and Technical Manuals. It is submitted by Woodard & Curran under authority to act as agent on behalf of the University of Southern Maine (USM) granted in the attached Agent Authorization Letter.

3.1 PROJECT SITE & BACKGROUND

The project site is located at 44 Bedford Street (Tax Map/Lot No. 114 A001001), in the area south of the Wishcamper Center and north of the I-295 corridor. A Site Location Map is attached to this Section for your reference. The subject property is in the R-5 Residential, B-2 Community Business, and University of Southern Maine Overlay Zones. The purpose of the USM Overlay zone is to allow the University to continue and reasonably expand within defined boundaries; and to recognize the unique qualities of a university campus, while at the same time protecting the value and integrity of established neighborhoods. This project is in alignment with that purpose. University buildings and structures are subject to the requirements of the underlying zoning districts, except as modified by the USM Overlay Zone.

The project is not located in a flood hazard zone, as shown on the FEMA FIRM Map attached to this Section.

3.2 PROJECT PURPOSE AND NEED

The University of Southern Maine is comprised of three campus locations in central and southern Maine, a region that is viewed nationally as among the most livable and desirable in the country. The three campuses, located in Portland, Gorham, and Lewiston, have different physical features and dynamics, and each offers a variety of educational, cultural, and recreational opportunities to USM students.

USM completed a Facilities Master Plan in January 2019, which was approved by the Board of Trustees for the University of Maine System. The Facilities Master Plan included a new residence hall (Portland Commons) and Career and Student Success Center (CSSC) on the Portland campus, which are currently under construction and scheduled to be open in the early summer of 2023. Those projects support USM's goals and objectives with respect to advancing student development, providing needed space for student activities, and strengthening of the USM community of residential and commuter students.

The development of the Residence Hall results in additional parking needs for the campus, which will be accommodated with the new structured parking. The additional parking need was determined during the Site Plan approval process for the CSSC and Residence Hall in November of 2020 (Portland File No. PL-001040-2020). The calculation included: projected parking rates for the new residents; displaced parking from the construction of the Residence Hall and new Campus Quad; planned parking to be provided by a surface lot to be developed at the Wishcamper site; and reductions for Transportation Demand Management (TDM). The projected total need was determined to be 396 spaces.

Upon completion of a site study for location of the new structured parking, the Wishcamper site was selected for the new garage. In addition to the 396 spaces required to meet the residence hall needs, the new garage will accommodate the 207 surface parking spaces that were planned for this location under a separate site plan approval. That previous approval, the Wishcamper Parking Lot (PL-974-2020, approved May 26,2020), will not be constructed.

3.3 PROPOSED PROJECT

The proposed development includes a five-level structured parking garage, vehicle turnaround and drop-off area, fire access drive, pedestrian walkways, and associated site improvements, including landscaping and exterior lighting. The proposed parking garage will provide 632 parking spaces for a net increase in 425 parking spaces for the University (632 minus the 207 surface parking spaces on the Wishcamper lot). The proposed garage includes the required ADA accessible parking. A 250-space bike storage room and bike repair room will be included on the interior of the garage. A small plaza and drop-off area will be developed in front of the Osher/Glickman Library entrance. Traffic and pedestrian improvements are also proposed along Bedford and Surrenden Streets in conjunction with the development of the garage and as part of the Traffic Movement Permit (TMP) prepared by others.

3.3.1 Civil Engineering Approach

The site has been designed to provide safe access and circulation for pedestrians, bicyclists, passenger vehicles, delivery vehicles, fire trucks and other emergency vehicles and buses. The site design includes a vehicle turnaround with a two-space drop-off area. Delivery vehicle access to the back of the library and fire truck access through the site and south of the garage will be maintained. The proposed stormwater management system will collect and convey surface runoff to a subsurface detention and treatment system that ultimately discharges to the separated storm sewer on Forest Avenue. Design drawings for the proposed project are included with this application.

3.3.2 Architectural Approach

3.3.2.1 Site Location Criteria

Following an analysis of four portions of the campus, the current development site was selected by USM. There are many benefits of locating the new garage near the existing one. The site is an existing surface parking lot and is adjacent to the nearby uses which will use the garage. Circulation of vehicles and pedestrians is arranged without conflicts and is achieved by extending existing patterns and not by introducing new conflicting ones. One factor in particular is the proximity to the new dormitory, and the garage will readily accommodate long term parking. Since the area is already an open parking lot, the construction of the new garage will not require demolition of existing buildings, either new or historic.

This new location is a part of USM with newer vintage buildings, forming a context which lends itself to a distinct cohesive “neighborhood” within the larger campus. The massing of the new structure will be consistent with its neighbors, the existing garage, and the Wishcamper Center classroom building. Although a building height of 85 feet is allowed at this location in the overlay zone, the new garage will be 50 feet tall, making it similar in size to the existing garage and approximately one story lower than Wishcamper. This design strategy will also keep the library, a taller facility, as the appropriately dominant feature of the southeast part of the campus.

3.3.2.2 Overlay Zone Design Guidelines

The proposed garage will be a significant structure, and as such has been approached with context relationships as a primary design consideration. The concept of best uses of campus edges has featured in the site selection, with the garage located on a campus edge where its use will not provide an inappropriate adjacency. It has both connections to the pedestrian environment as well as having no impact on the Bedford Street view corridor. It is, in fact, located on the campus at the furthest spot possible from the nearby residential neighborhoods.

Given its location in the campus context of the University, the design of the structure as well as its uses has been a driver of the resulting design. The garage itself consists of a central portion of gently sloped tiers, of an understated nature, largely unseen from Bedford Street, which have been developed as a secondary zone in relationship to more detailed end bays. These end bays provide an articulated massing response to the need for a contextual relationship

to the surrounding structures. This intent has been carried into the materials and elevation layouts. Materials in general will be high quality, long lasting, and weather resistant.

- Structural Elements Precast reinforced concrete
- Exposed Spandrels Colored and textured precast concrete or brick-faced precast panels
- Window Framing Clear anodized aluminum
- Window Glass Clear insulating units

3.3.2.3 Crime Prevention Through Environmental Design

Parking garages in particular benefit from inclusion of CPTED features in their design. At many times of the day, users may be alone in the structure while walking to their cars. A sense of community ownership within the garage has been established in the new garage by its inclusion of bicycle storage and designated long term parking spaces. Over time, this will help users be able to differentiate those who are users and those who have no business in the facility.

The structure itself will also contribute to the safety and security of the facility. It is primarily an open structure, with ample views both within the parking tiers and views from the garage of the nearby roads and sidewalks on all sides. Stairways feature large, glazed walls, so that a sense of what lies outside them can be seen. Security call stations will be provided, and will be readily accessed, their blue beacons easily visible in the garage.

3.3.3 Landscaping Approach

The landscape plan for the new parking garage at USM accommodates new vehicular and pedestrian patterns, while prioritizing the campus pedestrian experience through the creation of a new plaza at the Glickman/Osher entrance, and by maintaining access to existing campus nodes.

Vehicular access to the site for pedestrian drop-offs, school buses, and book pickups/drop-offs have been accommodated with a vehicular loop integrated into a large grove of trees. Safe pedestrian drop-offs are accommodated with 2 pullout drop off spaces, continuous with plaza paving, proximal to the Glickman/Osher entrance and accessible to Wishcamper entrances. This paved plaza at the entrance of Glickman/Osher creates a new campus node for pedestrian and school group drop-offs, book pickup, access to an existing book drop slot, expanded bike parking, and a central meeting and gathering spot for students, faculty, or staff- at a scale that complements the buildings and the increasing use of the outdoor space between Glickman/Osher and Wishcamper. Cyclists are accommodated at the plaza as well, the bike racks at the Glickman entrance are expanded from existing capacity of 8 bikes to a new capacity of 18 bikes, honoring the 10 additional short-term bike parking spaces USM said it would include in the original Wishcamper surface lot proposed expansion. An existing nearby rack accommodating 32 bikes will remain.

Service and emergency access are newly separated from pedestrian activity, further enhancing the campus experience and pedestrian safety; only service vehicles and emergency vehicles will travel beyond the drop off loop to access the Glickman loading dock and the fire lane along the south façade of both parking garages.

The grove of native deciduous trees from the City of Portland's Recommended Tree list expands upon the existing planted zones from Bedford Street through the space between Wishcamper and Glickman/Osher. Turf lawn is indicated to the east of the garage beneath and beyond the grove, welcoming students to gather on the grass. Native groundcover is planned for the sculpted mound in the middle of the loop, and for the zone between the loading dock and pedestrian plaza at the Glickman/Osher entry vestibule. All plantings are low maintenance, and deciduous native canopy trees and low native groundcover allow for visibility beneath tree canopies to enhance campus safety.

3.4 ATTACHMENTS

- Agent Authorization Letter
- Site Location Map
- FEMA FIRMette
- Design Drawings (Bound Separately)

University Services
Facilities Management

University of Southern Maine

Maine's Public Universities
UNIVERSITY OF MAINE SYSTEM

University of Southern Maine
Facilities Management Department (CPPM)
96 Falmouth St
Portland, ME 04103
Tel: 207-780-4655
Fax: 207-780-4538
umaine.edu

July 28, 2021

To: Local, State, and Federal Review Officials

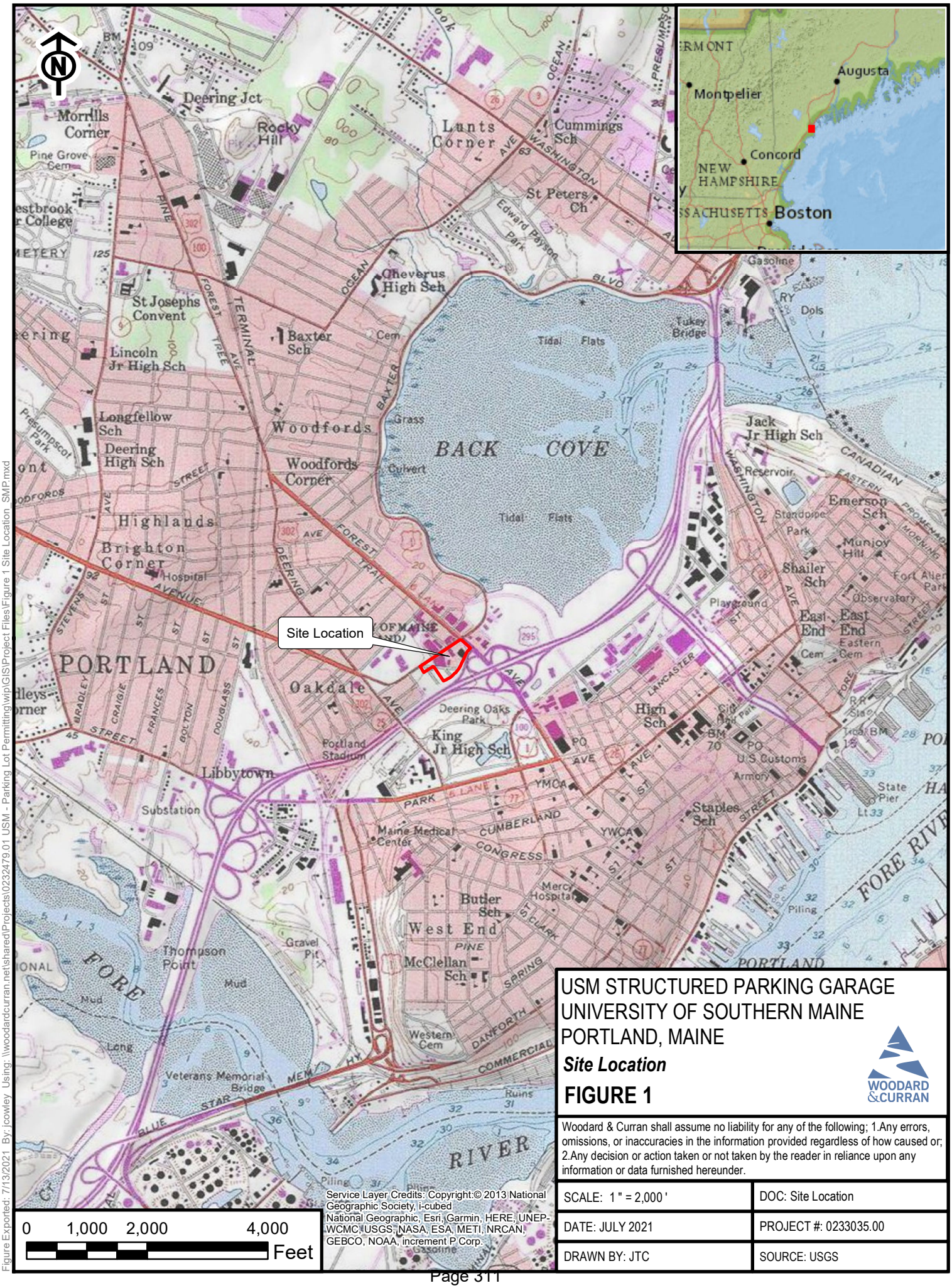
RE: AUTHORIZED REPRESENTATIVE – USM Structured Parking Garage

The University of Southern Maine, a member of the University of Maine System, is preparing plans for the new USM Structured Parking Garage located on the University of Southern Maine, Portland Campus. The University has retained Woodard & Curran, Inc., via Desman Design Management Inc., as our garage consultant, to assist in the preparation of the applications associated with permitting approvals for this project. When necessary, Woodard & Curran, Inc., is authorized as its agent to represent the University in addressing questions on the plans, or applicable applications, for this project.

Sincerely,

John M. Souther,
Executive Director of Facilities Management,
University of Southern Maine for the
University of Maine System

cc: to file.



USM STRUCTURED PARKING GARAGE
UNIVERSITY OF SOUTHERN MAINE
PORTLAND, MAINE

Site Location

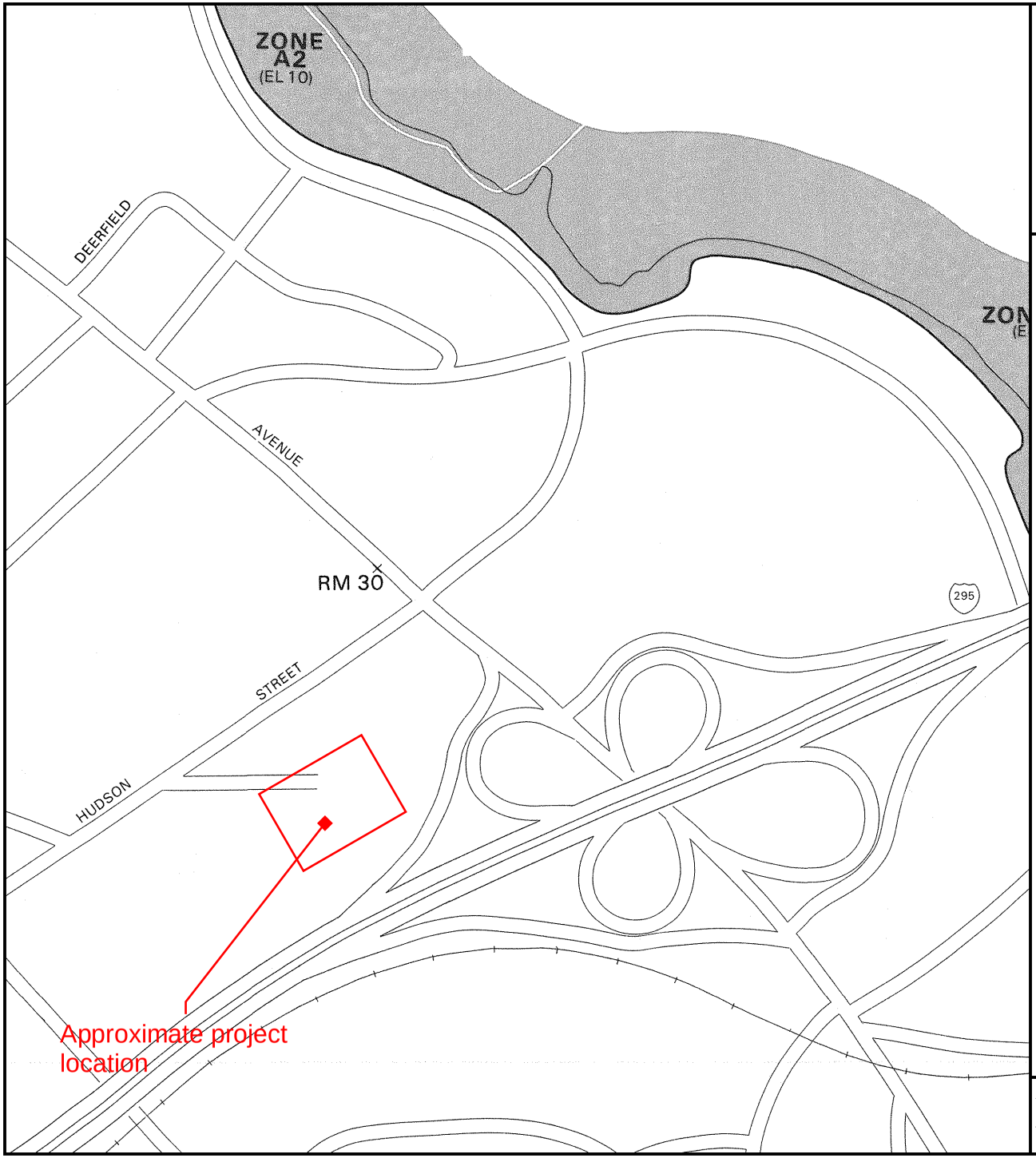
FIGURE 1

WOODARD &CURRAN

Woodard & Curran shall assume no liability for any of the following; 1.Any errors, omissions, or inaccuracies in the information provided regardless of how caused or; 2.Any decision or action taken or not taken by the reader in reliance upon any information or data furnished hereunder.

SCALE: 1 " = 2,000 '	DOC: Site Location
DATE: JULY 2021	PROJECT #: 0233035.00
DRAWN BY: JTC	SOURCE: USGS

Figure Exported: 7/13/2021 By: jcowley Using: \\woodardcurran.net\shared\Projects\0232479.01 USM - Parking Lot Permitting\wip\GIS\Project Files\Figure 1 Site Location_SMP.mxd



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

4. RIGHT, TITLE, & INTEREST

The proposed project is located on property owned by the Applicant and identified as Tax Map 114, Lot A001001. Attached is a copy of the deeds associated with this property.

4.1 ATTACHMENTS

- Deeds

GOVERNOR'S DEED
(with Reverter)

KNOW ALL PERSONS BY THESE PRESENTS, that the STATE OF MAINE, acting by and through its Governor, on recommendation of the Commissioner of its DEPARTMENT OF TRANSPORTATION, under and pursuant to the provisions of 23 M.R.S.A., Section 61, for consideration, the sufficiency of which is hereby acknowledged, RELEASES to THE UNIVERSITY OF MAINE SYSTEM, organized as a non-profit corporation of the State of Maine, with offices at 16 Central Street in Bangor, Maine, its successors and assigns forever, all its right, title and interest in and to a certain lot or parcel of land situated on the southerly side of Winslow Street, so-called, at its intersection with the westerly sideline of the right-of-way of State Highway "295", also known as Interstate 295, in Portland, County of Cumberland and State of Maine, and being as shown on a Right-of-way Map for State Highway "295" Portland, Cumberland County, Federal Aid Project Number I-295-3(28), dated January 1967, File Number 3-185, sheet 57 of 73, on file at the offices of the Maine Department of Transportation in Augusta, bounded and described as follows:

BEGINNING at a point on the southerly sideline of Winslow Street at its intersection with the westerly sideline of the right-of-way of Route 295;

THENCE S 26° 51' 18" W along said westerly sideline of Route 295, a distance of 34.00 feet;

THENCE S 51° 22' 05" W continuing along said westerly sideline of Route 295, a distance of 23.93 feet to land now or formerly of the University Of Southern Maine Foundation;

THENCE N 38° 37' 55" W along said University Of Southern Maine Foundation land 20.00 feet;

THENCE N 6° 51' 23" E continuing along said University Of Southern Maine Foundation land, 33.28 feet to the southerly sideline of said Winslow Street;

THENCE S 85° 26' 46" E along said southerly sideline of Winslow Street, 42.70 feet, more or less to the aforementioned westerly sideline of the right-of-way of Route 295 and the POINT OF BEGINNING, and containing one thousand four hundred twenty-seven square feet, more or less (1,427 sq. ft. ±).

EXCEPTING AND RESERVING from this conveyance any and all rights of access from the herein described parcel of land to State Highway "295", also known as Interstate 295, all of which rights of access are expressly reserved to, and retained by, the State of Maine.

ALSO RESERVING to the State of Maine the perpetual right to enter upon said parcel to maintain any highway slopes and drainage facilities or installations that may exist.

SUBJECT TO all utility easements and installations located on the above described premises, including those shown on the herein referred to Right-of-way Map, and to those rights which any utility enjoys over the subject premises for maintenance, location or relocation of poles and other installations.

NOTWITHSTANDING the foregoing, Grantor gives this deed, and Grantee accepts the same, upon the express CONDITION that the property hereby conveyed is to be retained by the University of Maine system and used for

public purposes only; and if said property or any interest in it, or any portion of it, is transferred, or if it is used for any commercial or other non-public purposes, said property shall at once REVERT to, and re-vest in, the Grantor, its successors or assigns; and that such reversion, should it occur, shall be automatic and require no further act of conveyance or documentation in order to be effective.

BEING a portion of premises acquired by the State of Maine from Charles T. Hayes, Jr. and Beatrice Hayes by warranty deed dated July 19, 1968 and recorded at the Cumberland County Registry of Deeds on July 23, 1968 in Volume 3049 at Page 553; and a portion of premises acquired from Reuben Katz by warranty deed dated January 10, 1969 and recorded at said Registry Of Deeds on January 15, 1969 in Volume 3072 at Page 435.

THE STATE OF MAINE makes no representations or warranties with respect to the premises hereby conveyed. The representations and warranties so excluded encompass, but are not limited to, those pertaining to: land use and environmental matters; fitness of the premises or any portion thereof for any particular purposes; water quality or quantity; the condition or quality of the soil; inchoate or unrecorded liens; status of title to or rights within that area lying between the high and low water marks; or the existence, status, or condition of access to, or public utilities serving the premises. Any subsequent use of, improvement to, or construction on the parcel shall be subject to all applicable laws, regulations, ordinances, and permitting requirements.

IN WITNESS WHEREOF, I, John E. Baldacci, Governor of the State of Maine, have caused the name and Great Seal of the State of Maine to be hereunto affixed this 11th day of Sept. in the year two thousand six.

STATE OF MAINE

By: _____, Governor
John E. Baldacci

Received
Recorded Register of Deeds
Sep 20,2006 02:29:02P
Cumberland County
John B OBrien

Affixed by: _____
Secretary of State

STATE OF MAINE
Kennebec, *ss.*

Sept. 11th, 2006

Personally appeared the above-named, John E. Baldacci, Governor of the State of Maine and acknowledged the foregoing instrument to be his free act and deed in his said capacity and the free act and deed of the State of Maine.

Before me, _____
Notary Public/~~Attorney at Law~~

Print Name: _____

My commission expires: ROSEMARIE D. SMITH
Notary Public, Maine
My Commission Expires January 6, 2009

SEAL

SHORT FORM QUITCLAIM DEED WITH COVENANT

MAINE REAL ESTATE TAX PAID

THE UNIVERSITY OF SOUTHERN MAINE FOUNDATION, a Maine nonprofit corporation with a mailing address of 96 Falmouth Street, Portland, Maine 04104, FOR CONSIDERATION PAID, grants to UNIVERSITY OF MAINE SYSTEM, a body politic and instrumentality of the State of Maine, with a mailing address of 16 Central Street, Bangor, Maine 04401, with QUITCLAIM COVENANT, certain real property, together with any improvements thereon, located in the City of Portland, Cumberland County, Maine and more particularly described on Exhibit A attached hereto and made a part hereof.

Being the same premises conveyed to the grantor herein by a Short Form Quitclaim Deed With Covenant from Frederick J. Olsen dated April 27, 2005 and recorded at the Cumberland County Registry of Deeds in Book 22577, Page 79.

IN WITNESS WHEREOF, The University of Southern Maine Foundation, has caused this instrument to be executed and delivered as of the 20th day of December, 2011.

The University of Southern Maine Foundation

Witness

By: Margaret A. Weston
Name: Margaret A. Weston
Its: President

State of Maine
County of Cumberland, ss. December 16, 2011

Personally appeared the above-named Margaret A. Weston, President of The University of Southern Maine Foundation, and acknowledged the foregoing instrument to be her free act and deed in her said capacity and the free act and deed of The University of Southern Maine Foundation.

Before me,

Amy Blaisdell
Notary Public/Attorney at Law
Name: Amy Blaisdell
Commission Expires: 10/16/2015

Amy Blaisdell
NOTARY PUBLIC
Lisbon Falls, ME
Commission expires on
October 16, 2015

Exhibit A

Formerly Tax Map 114, Block D, Lot 21:

Three (3) certain lots or parcels of land, with the buildings thereon, situated on the northerly side of Winslow Street in the City of Portland, County of Cumberland, State of Maine, being lots numbered 1, 2 and 3 on an unrecorded plan of the Heater piece at and adjoining the junction of said Winslow Street and Bedford Street made by E.C. Jordan & Co., Civ. Eng., in January 1918, and on file in the office of said E.C. Jordan & Co., said three lots taken together, being bounded and described as follows:

Beginning at a point on said northerly line of Winslow Street at the southwest corner of land now or formerly of John W. Lovely heirs and thence running, with an included angle of 88° 43' and by the westerly line of said Lovely land eighty-six (86) feet to a post and land now or formerly of the T.A. Huston & Co.; thence northwesterly and along said Huston land, forty-nine (49) feet to a post; thence northwesterly and along said Huston land thirty-two and three tenths (32.3) feet to an iron post; thence westerly and along said Huston land twenty-two and thirty-five hundredths (22.35) feet to an iron post; thence westerly and along said Huston land nineteen and eighty-four hundredths (19.84) feet to a post; said post being the southeasterly corner of lot numbered 11 on said plan; thence westerly and along the rear or southerly line of said lot numbered 11, fifty-nine and thirty-seven hundredths (59.37) feet to the southwesterly corner of lot numbered 11; thence southwesterly at right angles to said Winslow Street one hundred (100) feet to said northerly line of Winslow Street; thence easterly and along said northerly line of Winslow Street one hundred fifty-nine (159) feet to the point or place of beginning; said three lots having together an area of 18,027 square feet, be the same more or less.

EXCEPTING AND RESERVING from the above-described premises that portion thereof which was conveyed by Ellestad Hansen, Warren K. Webber and Mary E. Hansen to Charles A. Adams by deed dated April 8, 1924 and recorded in the Cumberland County Registry of Deeds in Book 1165, Page 79, and such portion thereof as may have been conveyed by Mary E. Hansen to the State of Maine by deed dated January 7, 1970 and recorded in the said Registry of Deeds in Book 3114, Page 724.

Formerly Tax Map 114, Block D, Lot 22:

ALSO a certain lot or parcel of land situated on the northerly side of Winslow Street in the City of Portland, County of Cumberland and State of Maine, bounded and described as follows, to wit:

Beginning at an iron hub at the southwest corner of a lot of land conveyed by Edward D. Noyes, et al. to Ellestad Hansen and Warren K. Webber by deed dated November 14, 1923 and recorded in the Cumberland County Registry of Deeds in Book 1153, Page 280; thence easterly along the northerly side line of Winslow Street forty-seven (47) feet to a stake; thence northerly at right angles to said Winslow Street one hundred sixteen and thirty-three hundredths (116.33) feet to an iron hub in the northerly line of the lot above mentioned; thence westerly with an included angle of seventy (70) degrees and thirty-six (36) minutes to the right, forty-nine and seventy-six hundredths (49.76) feet to a stake at the northwest corner of the lot above mentioned; thence southerly on a line at right angles to said Winslow Street one hundred (100) feet to the point of beginning.

Formerly Tax Map 114, Block C, Lot 1:

ALSO a certain lot or parcel of land in the City of Portland, County of Cumberland and State of Maine, described as follows: Beginning at a stake on the southerly side of Winslow Street at the intersection with the easterly side of Conant Street; thence 25° E by Conant Street one hundred ten (110) feet; thence easterly at right angles with Conant Street forty-six and thirty-one hundredths (46.31) feet to a stake; thence northerly to a point in the southerly side of Winslow Street distant easterly sixty-three and seventy-two hundredths (63.72) feet from the point of beginning; thence N 71° 37' W by said Winslow Street sixty-three and seventy-two hundredths (63.72) feet to the point of beginning.

Formerly Tax Map 114, Block C, Lot 2:

ALSO a certain lot or parcel of land situated in the City of Portland, County of Cumberland and State of Maine bounded and described as follows, to wit:

Beginning at a point on the present southerly boundary line of Winslow Street at the northeasterly line of land now or formerly of Frederick J. Olsen; thence southeasterly along the northeasterly line of land now or formerly of said Olsen, about sixty-six (66) feet to a corner; thence southwesterly along the southeasterly line of land now or formerly of said Olsen, about forty-six and three tenths (46.3) feet to the northeasterly boundary line of Conant Street; thence southeasterly along the northeasterly boundary line of Conant Street about eighteen (18) feet to a monument located about seventy-one (71) feet northwesterly from and as measured along a line normal to the Ramp F.A. 6 Base Line at about Sta. 5+50; thence northeasterly about sixty-six (66) feet to a point on a line, said line being a projected line between the beforementioned monument and a monument located fifty (50) feet northwesterly from and as measured along a line normal to the Ramp F.A. 6 Base Line at Sta. 4+50, said point being twenty-five (25) feet southwesterly of and as measured along said projected line from said monument located

northwesterly of Sta. 4+50; thence northwesterly at right angles to said projected line twenty (20) feet to a point; thence northerly by a direct course to a point on the present southerly boundary line of Winslow Street; thence westerly along the present southerly boundary line of Winslow Street sixty (60) feet to the point of beginning. Said lot or parcel of land contains about 2,867 square feet and is a portion of that land as acquired from Charles T. Hayes, Jr. and Beatrice Hayes, pursuant to a Notice of Layout and Taking dated March 8, 1973 and recorded at the Cumberland County Registry of Deeds in Book 3367, Page 58. Said parcel is shown on a certain Maine Department of Transportation Right-of-way Map entitled "State Highway '295', Portland, Cumberland County, Federal Aid Project No. 1-295-3(28)" dated January 1967, on file in Augusta, File No. 3-185.

The premises herein conveyed is SUBJECT to a State of Maine Notice of Layout and Taking dated February 28, 1973 and recorded in said Cumberland County Registry of Deeds in Book 3367, Page 58.

Received
Recorded Register of Deeds
Dec 21,2011 12:40:48P
Cumberland County
Pamela E. Lovley

5. EVIDENCE OF STATE AND/OR FEDERAL APPROVALS

The following state and federal permits will be required for the proposed work:

- Maine Department of Environmental Protection Site Location of Development Act Permit Amendment (reviewed by City of Portland under Delegated Review Authority); and
- Maine Construction General Permit Notice of Intent.

Copies of permits can be provided to the City under separate cover as they become available.

6. ZONING ASSESSMENT

The project is located within the City of Portland R-5 and B-2 Zones, as well as the University of Southern Maine Overlay Zone. The entirety of the project is in the USM Overlay Zone, which is governed by Section 8.10 of the Land Use Code. The purpose of the USM Overlay zone is to allow the University to continue and reasonably expand within defined boundaries, and to recognize the unique qualities of a university campus while at the same time protecting the value and integrity of established neighborhoods. University buildings and structures are subject to the requirements of the underlying zoning districts, except as modified by the USM Overlay Zone. Parking Garages are listed as a permitted use in the Overlay Zone. The Overlay Zone provides for an 85-foot building height in the portion of the campus where the new parking garage will be located, and yard setbacks of 10 feet from Bedford Street; 0 feet from Forest Avenue; and 10 feet from the I-295 right-of-way.

The existing grassed area interior to the site that will be converted to parking is not considered open space used for recreation; it is currently used for overflow parking and storage and consists largely of a weedy overgrowth and dirt. It should be noted that the University's plans for development of the CSSC and Portland Commons includes creating an open space that will be central to the campus, which will provide a better opportunity for recreational use than the area that will be replaced by the proposed parking garage.

According to the City's Land Use Ordinance, Chapter 14 of the Code of Ordinances, the proposed work is subject to a maximum impervious surface ratio of 66% of the total land area within the University of Southern Maine overlay zone exclusive of public streets. Based on available data from the City of Portland's Online Stormwater Fee Lookup service, the University currently has an impervious surface ratio of approximately 54%; the proposed parking garage will result in an impervious surface ratio of approximately 56%.

The attached Zoning Assessment Table summarizes how the proposed project will comply with the dimensional requirements specified in the City's Land Use Ordinance.

6.1 ATTACHMENTS

- Zoning Assessment Table

ZONING ANALYSIS Relevant Zone(s) R-5, B-2 & USM Overlay

All Projects:

	Required	Proposed
Lot Size	N/A	N/A
Area Per Dwelling Unit	N/A	N/A
Minimum Street Frontage	N/A	N/A
Front Yard Minimum	10'	>10'
Front Yard Maximum	N/A	N/A
Rear Yard	10'	>10'
Yard Right	10'	>10'
Yard Left	10'	>10'
Side Street Setback	N/A	N/A
Step Back	N/A	N/A
Maximum Lot Coverage	40%	30%
Minimum Lot Coverage	N/A	N/A
Maximum Height	85'	<85'
Open Space	N/A	N/A
Maximum Impervious Area	66%	55%
Pavement Setback	N/A	N/A
Floor Area Ratio	N/A	N/A
Off Street Parking Spaces	N/A	632
Loading Bays	N/A	N/A
Other 1		
Other 2		
Other 3		

N/A

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		

N/A

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):			

7. EASEMENTS & OTHER BURDENS

Existing easements associated with the Site are shown on the enclosed drawings; no new easements will be created as part of the proposed project.

Standard to be Waived: Cite Ordinance or Technical Manual Standard	**Cite Standard Language:** Cite specific language of applicable Ordinance or Technical Manual Standard	**Waiver Being Sought:** Describe waiver being sought. Ex. – We are requesting a two-way parking lot drive aisle width of 20' feet.	**Justification for Waiver:** Address specific waiver criteria, if applicable, and document reasons for the waiver request.
City of Portland Technical Manual Section 1 - Transportation Systems - Subsection 1.17 Electric Vehicle Infrastructure	New structured garages shall provide EV charging to 20% of parking spaces. Remaining spaces must be served by sufficient conduit, wiring, and electrical service to allow for future installation of electric vehicle supply equipment.	58 Charging Stations (9% of garage spaces), tracking usage and forecasting demand, commitment to meet EV charging demand in future and sizing electrical infrastructure to accommodate growth as described in attached narrative.	See Section 8.1 of the Site Plan Narrative for waiver justification.
Technical Manual Section 12.3.5: Luminaire Types	All fixtures must be LED and shall not exceed 3000K Correlated Color Temperature (CCT). Screw in light fixtures must have LED lamps specified to be maximum of 3000K CCT.	Applicant requests a waiver to allow 4,000K CCT fixtures versus 3,000K CCT fixtures.	4,000K color temperature fixtures were selected to match the existing fixtures immediately adjacent to the scope of work area.

9. FINANCIAL & TECHNICAL CAPABILITY

9.1 FINANCIAL CAPABILITY

Attached is evidence of the University's financial capability to complete the proposed project.

9.2 TECHNICAL CAPABILITY

The University of Southern Maine (USM) is a public university with over 8,000 undergraduate and graduate students taking courses online and at campuses in Portland, Gorham, and Lewiston. Known for its academic excellence, student focus and engagement with the community, USM provides students with hands-on experience that complements classroom learning and leads to employment opportunities in one of the nation's most desirable places to live. USM is a member of the University of Maine System (UMS), the State's largest educational enterprise that includes seven universities and an annual enrollment of nearly 30,000 students.

Desman, Inc. is recognized as one of the nation's leading consulting architectural and engineering firms specializing in the planning, design and restoration of structured parking facilities, transportation improvements and other parking related consulting services. Desman offers a complete scope of services in the parking industry including planning, design, restoration, construction administration, financing methods, parking access/revenue control, operational and management techniques. In brief, its core business is parking planning, design, and all other parking related consulting services. Desman has over 45 years of experience in providing these services for parking structures and parking related projects.

Woodard & Curran (W&C), a 1,000-person Portland-based firm, has provided engineering services to the public and private sector for over 40 years, including permitting, civil/site engineering, stormwater, and construction management services. W&C has completed projects for colleges, universities, and healthcare institutions that build strong, sustainable infrastructure and environmental programs serving both their business needs and the communities that make them so vibrant. With extensive experience in design and permitting for site development projects, W&C has completed many projects within the City of Portland and for the University of Maine System.

Winston Scott Architects is a small, design-oriented architectural practice established in 1975 and located in Portland, Maine. Their work encompasses a diverse array of project types and scales ranging from multi-block urban developments to historic renovations, commercial and institutional buildings, and multifamily and single-family residences. The firm has been recognized numerous times for design excellence by the Maine and New England Chapters of the American Institute of Architects, as well as the United States Green Building Council; and their work has been profiled in national trade journals, local publications, and several books focused on design and architecture.

Michael Boucher Landscape Architecture (MBLA) is a professional landscape design firm located in southern Maine. MBLA, founded in 1994, is engaged in ongoing collaborations with many acclaimed architecture firms. The office is currently involved in a variety of projects nationally and internationally, connecting them to many landscape typologies, cultural viewpoints, and methods of building. This experience benefits their clients and projects in providing a sense of objectivity that we fold into each new undertaking. MBLA offers a full scope of landscape architecture services tailored to assist clients in developing clear visions for their properties.

9.3 ATTACHMENTS

- Evidence of Financial Capability

DocuSign Envelope ID: 78157A2A-6DE5-4E27-B7A8-4B2065B0545F

UNIVERSITY OF
SOUTHERN MAINE
Finance and Administration

July 27, 2021

Mr. Darrin Stairs
Woodard & Curran
41 Hutchins Drive
Portland, ME 04102

Dear Mr. Stairs:

The University of Southern Maine expects the Structured Parking project to cost approximately $22 million.

To fund the project, the University would utilize bond anticipation notes and revenue bonding pursuant to approval by the University of Maine System Board of Trustees.

Thank you for your consideration.

Sincerely,

DocuSigned by:
Alexander E. Porteous
73AFFEE3455845F...

Alexander E. Porteous
Chief Operating Officer & Chief Business Officer

P.O. Box 9300, Portland, ME 04104-9300
(207) 780-4484 TTY (207) 780-5646, FAX (207) 780-4549
www.usm.maine.edu
A member of the University of Maine System

10. COMPLIANCE WITH SITE PLAN STANDARDS

Article 14 of the City of Portland's Land Use Code outlines the site plan standards that must be met by Major Site Plan projects. The proposed project will comply with the City's design standards as described in the following sections:

10.1 TRANSPORTATION

The proposed project will not increase traffic or parking demand. The proposed parking lot will enable future developments (the Portland Commons residential hall and CSSC) at the University by replacing a portion of the parking that will be displaced by these planned developments. By constructing the proposed parking lot in advance of future developments, the University's existing parking demands will be satisfied for future construction. It should be noted that the University has developed a campus-wide Transportation Demand Management (TDM) Plan that comprehensively addresses the University's long-term goals for future developments. This TDM Plan was presented as part of the CSSC and Portland Residence Hall Site Plan and Traffic Movement Plan applications.

10.1.1 Traffic Impact

VHB has conducted a technical analysis in support of a modification of the Traffic Movement Permit (TMP) previously approved for the development of a new residence hall and Student Center on the University of Southern Maine (USM) campus. Although in the approved TMP for Project ID PL-001040-2020, a parking garage was not the primary subject of the permit application, for the purposes of the traffic analysis, the proposed parking garage location was situated off Falmouth Street. Anticipated new trips to and from the campus were assumed to utilize the new parking garage structure.

The proposed location of the parking garage has since been relocated as a response to neighborhood feedback and a site evaluation process. The locations of the 580-bed residence hall and Student Center that were previously permitted have not changed. The new parking garage will now be located adjacent to the existing parking structure on campus with joint access to and from Bedford Street. As a result, the traffic that had previously been assigned to the garage on Falmouth Street will instead access the proposed parking structure location. This traffic was redistributed across the adjacent street network and reevaluated to assess the resulting traffic impacts.

The shift to add these trips to the roadway network at the new proposed parking garage location along Bedford Street results in some delay increases at the intersection of Forest Avenue with Bedford Street and Baxter Boulevard as compared to the garage location along Falmouth Street. Advance queue detection should be considered in order to ensure that the addition of this traffic to intersection of Forest Avenue with Bedford Street does not cause an impact beyond the available queue storage and impact the operation of the I-295 off ramp. Overall, this proposed location for the parking garage is not anticipated to adversely affect traffic operations in the vicinity of the USM campus.

Updated traffic circulation for access and egress to the existing and proposed parking garages will compel updates to the Bedford Street corridor. It is proposed that vehicles will enter the parking garages via Winslow Street and exit the parking garages via Surrenden Street, as previously discussed and depicted in Figure 1 below. A dedicated left turn lane will be provided for vehicles traveling westbound on Bedford Street and entering the parking garages via Winslow Street, replacing the raised median island and crosswalk currently set back from the intersection on the east leg. This crosswalk will be replaced by a crossing on the west leg of the intersection to limit the number of vehicular lanes pedestrians will need to cross to two. A painted median will be extended beyond the existing raised median island between Bedford Street and Winslow Street, separating the single vehicular through lanes and painted bike lanes in each direction. The need for a single departure lane from the intersection on Winslow Street will allow for a pedestrian bumpout to be implemented. The bumpout will effectively shorten the crossing distance for pedestrians across the Winslow Street leg of the intersection and widen back to two lanes to maximize the queuing space for vehicles entering

the parking garages. An amendment to USM's Traffic Movement Permit (TMP) describing the proposed improvements in more detail and supplemental design drawings will be submitted to the City under separate cover.

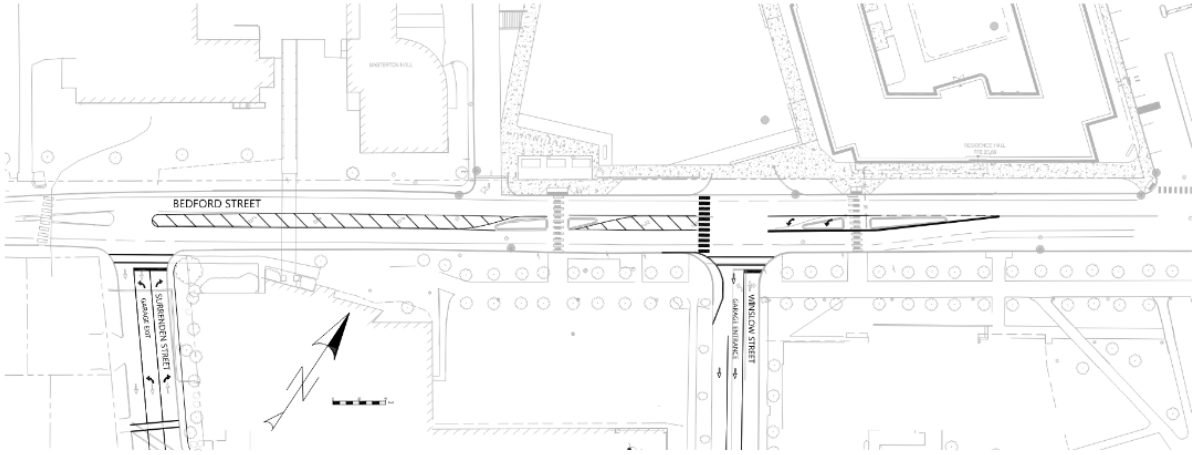


Figure 1. Conceptual Plan for Bedford Street and Parking Garage Circulation

10.1.2 Access & Circulation

The proposed parking garage will include ADA accessible parking spaces at ground-level and accessible pedestrian walkways. Traffic signage, pavement markings and various paving materials/patterns will be provided to circulate pedestrian and vehicular traffic throughout the Site. A loop road has been provided to the drop off area in front of the Osher/Glickman library, as well as maintenance of an emergency access road to the rear of the parking garages.

10.1.3 Loading & Servicing

The proposed project will not include any changes to the Site's loading or servicing needs. modification to the loop road will continue to service the loading and service areas behind the Osher/Glickman Library, as well as drop offs to the library and Wishcamper.

10.1.4 Sidewalks

Internal sidewalks and ADA ramps will be provided, as shown, and detailed on the design drawings.

10.1.5 Public Transit

No changes to public transit access are proposed as part of this project.

10.1.6 Parking

As previously described, the purpose of the proposed parking garage is to replace parking that will be displaced by the residence hall and CSSC project and to meet demand for residential parking. The proposed parking garage will provide 632 parking spaces for a net increase in 425 parking spaces for the University, including required ADA parking; a parking summary is provided on the Plans. The proposed parking garage has been designed in accordance with the dimensional standards of Section 1 of the City's Technical Design Manual, as shown on the design drawings.

10.1.7 Bicycle Parking

The proposed parking garage will include a covered and secured bicycle storage area capable of holding 250 bikes. This storage will serve commuter students who ride bicycles to campus as well as bicycle storage needs for the new dormitory, Portland Commons. Additional bicycle parking is provided along the sidewalk and building entrances elsewhere on the site.

10.1.8 Snow Storage

Proposed snow storage areas are indicated on the drawings. The proposed landscaped areas will be the primary source for snow storage. Snow that exceeds the available space on-site will be hauled off-site. A snow dump area is provided from the roof deck of the new garage in the southeast corner.

10.1.9 Traffic Demand Management

USM has a robust Traffic Demand Management (TDM) plan in place. This was provided as part of the CSSC and Residence Hall project, and copies can be provided upon request

10.2 ENVIRONMENTAL & LANDSCAPE FEATURES

10.2.1 Preservation of Significant Natural Features

The Site has been previously developed and there are no known areas of significant natural features, including rare or endangered botanical features, significant wildlife habitats, or wetland areas. The attached Official Species List identifies the northern long-eared bat, which has been listed as a Federally Threatened Species, in association with the project area (a common designation across the state); however, there are no critical habitat areas located within the project area. Based on US Fish & Wildlife information, the northern long-eared bat typically lives in caves during the winter months, and in trees larger than three inches in diameter during the summer, with migration between these two habitats in the spring in the fall. Tree-clearing for this project will be minimal; it is not anticipated that this project will have an impact on the northern long-eared bat species.

10.2.2 Landscape Preservation

A Tree Preservation & Removals Plan is included in the design drawings; this Plan shows what existing trees will be preserved and specifies protection measures.

10.2.3 Site Landscaping

Landscaping Plans are included in the drawings referenced in Section 3 of this Report. These Plans show proposed landscaping and screening of the Site; plant sizes are specified in the planting schedule provided on the Plans.

10.3 ENVIRONMENTAL & STORMWATER

10.3.1 Water Quality, Stormwater Management, & Erosion Control

The project must comply with the water quality, stormwater management, and erosion control standards identified by the City of Portland in the Land Use Chapter of the Code of Ordinances and Section 5 of the City's Technical Manual, as well as the MaineDEP Chapter 500 Stormwater Standards associated with Site Location of Development Act Permit requirements. The stormwater management system is comprised of a series of catch basins, a subsurface detention system, and proprietary treatment unit. The subsurface detention and treatment system will consist of large metal pipe and a StormFilter unit, which will provide storage and treatment for site runoff prior to discharging to the City's separated stormwater system in Forest Avenue. The Stormwater Management Plan included with this application demonstrates

that the proposed development meets the applicable standards. The project will not result in the flooding of adjacent lots or City property.

Erosion and sediment control measures are shown and detailed on the drawings. The project is not located within the watershed of an Urban Impaired Stream and is not anticipated to pose a risk of groundwater contamination during or after construction; the project does not include subsurface sanitary sewage disposal.

10.4 PUBLIC INFRASTRUCTURE & SAFETY

10.4.1 Consistency with City Master Plans

The proposed project is consistent with the City of Portland Comprehensive Plan, Portland's Plan 2030, developed in 2017. The proposed project will help support the growth of the University of Southern Maine's student body, a vital resource for the economic development of the City of Portland.

10.4.2 Public Safety & Fire Prevention

10.4.2.1 Natural Surveillance

The layout of the site and the features of the garage have been designed to create formal and informal natural surveillance conditions. These conditions of "see and be seen" will enhance the safety of legitimate users and deter potential offenders. The site layout will include zones of use which will be readily identifiable to users:

Private: Areas within the garage will be screened from the public areas.

Semi-Private: Clusters of picnic tables will encourage small group use in dedicated spaces.

Public: Open walkways will interconnect with plazas and destination uses.

Lighting of the site and garage will meet the City's standards and will also provide uniform coverage of the entrances, exits and pathways to create a saft people-oriented environment. Clear observation conditions will create the feeling of safety and belonging which will foster active use without concerns of areas which need to be avoided.

The garage will also include a surveillance system that will allow viewing of areas not easily observed within the garage. This system will be an extension of the security system in the existing garage, and will be monitored in the existing parking office. It will provide general viewing of all areas of the garage. In addition, the system will also provide close views of key points – entries, elevator lobbies and stairs.

10.4.2.2 Access Management

The site has been designed with a hierarchy of pathways, plazas, and vehicular routes which are coordinated and serve to reinforce guidance place-making for the USM community. Emergency use areas will be gated so that while that while still readily usable by staff, fire and security forces, they will be off-limits for others.

10.4.2.3 Territorial Reinforcement

The site has been designed with a hierarchy of pathways, plazas, and vehicular routes which are coordinated and serve to reinforce guidance place-making for the USM community.

10.4.2.4 Fire Department Access and Operations

The garage has been designed to the applicable requirements of NFPA standards outlined in the Technical Standards. It will include a dry standpipe system, with interconnected risers, available to be fed from a fire hydrant near the garage.

The site layout for the garage will extend the existing 20' at the south side of the existing garage for the full length of the new facility. This will provide full access for operations on three sides of the garage. Stair towers in the garage will exit directly to exterior walks, and the stair exits in the existing garage will be maintained. An emergency access road will be maintained to the south of the two garages.

10.4.3 Availability & Adequacy of Public Utilities

Portions of the existing water, sewer, and stormwater utility infrastructure on-site will be displaced to accommodate construction of the garage and its foundation, including a fire hydrant and Vortechnics unit. Locations of relocated utilities are shown on the Utility Plan in the design drawings attached to Section 3 of this Report. No water services are proposed to the new garage. The garage design includes a dry stand pipe and sprinkler system with a Fire Department Connection (FDC) in the northeast corner stairwell. Woodard & Curran will coordinate with the Portland Water District to approval for the proposed design; documentation of Portland Water District approval can be provided upon receipt.

A new sewer service and oil/water separator will be provided along the southern edge of the garage for the floor drains in the lower levels of the garage. The sewer service and oil/water separator will discharge to the combined sewer interior to the site. Runoff from the rooftop level of the garage will be conveyed to the separated storm sewer system, as shown on the design drawings, and described in the Stormwater Management Report (submitted under separate cover). The attached letter was provided to the Portland Department of Public Works to request confirmation of ability to serve the proposed development; the Wastewater Capacity Application was submitted with this letter. A copy of the City's determination will be provided upon receipt.

As described in the Stormwater Management Report, the stormwater management system for the site will be comprised of a series of catch basins, a subsurface detention system, and proprietary treatment unit that discharge to the City's separated stormwater system in Forest Avenue. As requested by the City, site drainage patterns will be modified to direct stormwater runoff from the proposed development to the City's separated stormwater system in Forest Avenue instead of the combined sewer; the City has indicated that the stormwater system on Forest Avenue has capacity to convey additional stormwater flow from the site.

The proposed project will also generate construction waste and demolition debris (CDD). The Contractor will be responsible for hauling the CDD or contracting with a waste management service to haul the CDD, from the project site. The Contractor will be fully responsible for handling, managing, and disposing of all waste generated by construction in accordance with Maine Solid Waste Management Regulations – 06-096 CMR 400-409 and all other applicable local, state, and federal regulations.

The proposed development is not anticipated to produce any hazardous waste. Environmental assessments of the Site have been conducted and the Owner is a participant in the Maine Department of Environmental Protection Voluntary Response Action Program (VRAP). A soil management plan will be developed for the Site.

The proposed project will not result in any additional solid waste after construction has been completed.

10.5 SITE DESIGN

10.5.1 Massing, Ventilation, & Wind Impact

The parking structure has been designed within the context of the surrounding similarly scaled buildings.

10.5.2 Shadows

The parking structure has been designed to minimize impacts of shadows on open space and public areas that would affect the viability of the public use and existing vegetation.

10.5.3 Snow & Ice Loading

The parking structure has been designed to prevent snow and ice from accumulating and falling onto abutting properties and public ways.

10.5.4 View Corridors

The parking structure will not obstruct public view corridors identified in the City's Downtown Vision View Corridor Protection Plan.

10.5.5 Historic Resources

The proposed development is not located in or adjacent to a historic district or historic landmark.

10.5.6 Exterior Lighting

Proposed exterior lighting is shown on the drawings. A Photometric Plan and details for the proposed lighting fixtures are included in the drawings; cut sheets of the proposed lighting fixtures are also attached to this Section for your reference. It should be noted that the project abuts the I-295 corridor; according to Section 12 of the Technical Manual, public rights-of-way is considered a non-sensitive use and, as such, illumination at the property boundary must not exceed 1.0 foot-candles; the lighting plan has been designed in accordance with these standards. Existing light poles in the surface parking lot will be demolished as shown on the Demolition plan in the design drawings.

10.5.7 Noise & Vibration

The proposed project will not result in any increase in noise or vibration on the Site.

10.5.8 Signage & Wayfinding

Existing signage will be maintained, and new traffic signage will be provided as shown on the drawings.

10.5.9 Zoning Related Design Standards

A summary of the project's compliance with zoning related design standards is provided in Section 6 of this Report.

10.6 ATTACHMENTS

- Traffic Movement Permit Amendment Application (submitted under separate cover)
- Official Species List
- Stormwater Management Plan (submitted under separate cover)
- Wastewater Ability-to-Serve Letter & Application
- Photometric Plan
- Light Fixture Cut Sheets

United States Department of the Interior

FISH AND WILDLIFE SERVICE
Maine Ecological Services Field Office
P. O. Box A
East Orland, ME 04431
Phone: (207) 469-7300 Fax: (207) 902-1588
http://www.fws.gov/mainefieldoffice/index.html

In Reply Refer To: April 01, 2021
Consultation Code: 05E1ME00-2021-SLI-0915
Event Code: 05E1ME00-2021-E-02772
Project Name: USM Garage

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

To Whom It May Concern:

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

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

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

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

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

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

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

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

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

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

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

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

Attachment(s):

- Official Species List

Official Species List

This list is provided pursuant to Section 7 of the Endangered Species Act, and fulfills the requirement for Federal agencies to "request of the Secretary of the Interior information whether any species which is listed or proposed to be listed may be present in the area of a proposed action".

This species list is provided by:

Maine Ecological Services Field Office
P. O. Box A
East Orland, ME 04431
(207) 469-7300

Project Summary

Consultation Code: 05E1ME00-2021-SLI-0915
Event Code: 05E1ME00-2021-E-02772
Project Name: USM Garage
Project Type: DEVELOPMENT
Project Description: An addition to the existing USM Surrenden Street Parking Garage on the University of Southern Maine's campus.

Project Location:

Approximate location of the project can be viewed in Google Maps: https://www.google.com/maps/@43.66203135,-70.27331546908917,14z



Counties: Cumberland County, Maine

Endangered Species Act Species

There is a total of 1 threatened, endangered, or candidate species on this species list.

Species on this list should be considered in an effects analysis for your project and could include species that exist in another geographic area. For example, certain fish may appear on the species list because a project could affect downstream species.

IPaC does not display listed species or critical habitats under the sole jurisdiction of NOAA Fisheries[1], as USFWS does not have the authority to speak on behalf of NOAA and the Department of Commerce.

See the "Critical habitats" section below for those critical habitats that lie wholly or partially within your project area under this office's jurisdiction. Please contact the designated FWS office if you have questions.

---

1. NOAA Fisheries, also known as the National Marine Fisheries Service (NMFS), is an office of the National Oceanic and Atmospheric Administration within the Department of Commerce.

Mammals

NAME	STATUS
Northern Long-eared Bat *Myotis septentrionalis*	Threatened

No critical habitat has been designated for this species.
Species profile: https://ecos.fws.gov/ecp/species/9045

Critical habitats

THERE ARE NO CRITICAL HABITATS WITHIN YOUR PROJECT AREA UNDER THIS OFFICE'S JURISDICTION.

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

July 30, 2021

ATTN: Bradley Roland, P.E.
Department of Public Works
212 Canco Road
Portland, ME 04103

Re: USM Structured Parking Garage – Request for Evidence of Ability to Serve

Dear Mr. Roland:

The University of Southern Maine Portland Campus is proposing to construct a structured parking garage adjacent to the existing garage located at 44 Bedford Street in Portland, Maine. The proposed project will include the construction of a structured parking garage with associated site improvements including lighting, landscaping, utilities, and stormwater management infrastructure. Please refer to the enclosed Utility Plan for locations and sizes of proposed service connection and associated oil/water separator for the proposed parking garage floor drain. Upon completion of development, the proposed project is anticipated to discharge approximately 20 gallons per minute to the site's combined sewer system; the proposed project will not generate any wastewater flow. We have submitted a Major Site Plan Application for the proposed project to the City of Portland Planning Department and would appreciate documentation regarding the City's ability to accommodate the proposed flows.

Please let us know if any additional information is required to facilitate your review. We appreciate your assistance. If you have any questions or require any additional information, please do not hesitate to contact me at (207) 558-3665 or aefletcher@woodardcurran.com.

Sincerely,

WOODARD & CURRAN INC.

Ashley Fletcher, PE
Technical Manager

Enclosures: Utility Plan
City of Portland Wastewater Capacity Application Form

cc:

PN: 0233035.00

CITY OF PORTLAND WASTEWATER CAPACITY APPLICATION

Portland Dept. of Public Works -
Water Resources
55 Portland Street,
Portland, Maine 04101-2991

Bradley Roland, P.E.
Water Resources Division
Department of Public Works
55 Portland Street
Portland, ME 04103

Date: **July 30, 2021**

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

Site Address: **44 Bedford Street**

Chart Block Lot Number: **114 A001001**

Proposed Use: **Parking Garage**
Previous Use: **Surface Parking**
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.

21" combined sewer between Bedford Street & I295.

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

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

2. Please, Submit Contact Information.

City Planner's Name: **James Rather** Phone: **207-874-8699**
Owner/Developer Name: **University of Southern Maine, c/o Ann Vashon**
Owner/Developer Address: **25 Bedford Street, Portland, ME 04104**
Phone: **(207) 780-4177** Fax: **N/A** E-mail: **ann.vashon@maine.edu**
Engineering Consultant Name: **Woodard & Curran, c/o Ashley Fletcher, PE**
Engineering Consultant Address: **41 Hutchins Drive, Portland, ME 04101**
Phone: **(207) 558-3665** Fax: **N/A** E-mail: **aefletcher@woodardcurran.com**

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

3. Please, Submit Domestic Wastewater Design Flow Calculations.

Estimated Domestic Wastewater Flow Generated: **0 gpd**
Peaking Factor/ Peak Times: **Peak flow = 20 gpm (rainy days)**
Specify the source of design guidelines: *(i.e.* "*Handbook of Subsurface Wastewater Disposal in Maine,*" "*Plumbers and Pipe Fitters Calculation Manual,*" *Portland Water District Records, Other (specify)*

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

4. Please, Submit External Grease Interceptor Calculations.

Total Drainage Fixture Unit (DFU) Values: **N/A**

Size of External Grease Interceptor: _____

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.

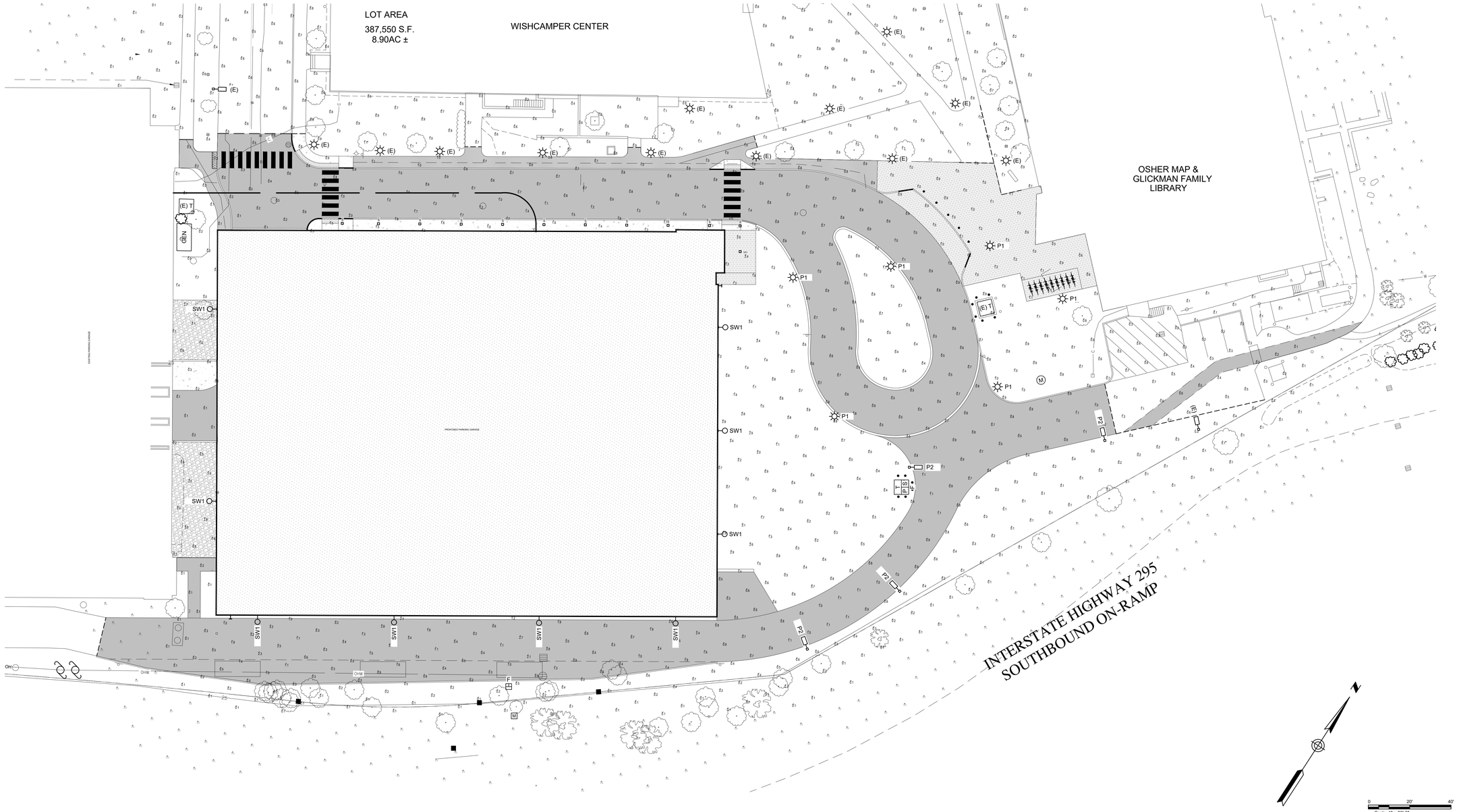
LUMINAIRE SCHEDULE ~ SITE

TYPE	DESCRIPTION	MFR	CATALOG SERIES NUMBER SEE NOTE 1	MOUNTING, U.N.O.	VOLTS	LAMP				KEY NOTES
						QTY PER FIXTURE	WATTS	LUMENS	TYPE	
P1	SITE LIGHT AND POLE, "ICE CREAM CONE" SHAPE	SEE NOTE 8		14' POLE	277	1	24	3,330	LED ARRAY ~ 4000K	8,9
P2	SITE LIGHT AND POLE, "SHOEBOX" SHAPE	SEE NOTE 8		14' POLE	277	1	18	2,160	LED ARRAY ~ 4000K	8,10
SW1	WALL MOUNTED EXTERIOR LIGHT	LITHONIA	KAXW-LED-P1-40K-R4-MVOLT	KEYNOTE 5	UNV	1	29	3,643	LED ARRAY ~ 4000K	5
SR1	RECESSED CANOPY LIGHT	LITHONIA	LDN4SQ-40-07-LS4-AR-LSS-MVOLT	RECESSED CANOPY	UNV	1	8.6	620	LED ARRAY ~ 4000K	

	NOTES
1	**NOTE THAT THESE NUMBERS ARE NOT COMPLETE CATALOG NUMBERS. PROVIDE ALL REQUIREMENTS ON SCHEDULE, NOTES, SPECS, AND DRAWINGS COMBINED.**
2	**CATALOG SERIES NUMBERS ARE USED TO ESTABLISH A LEVEL OF QUALITY AND NOT INTENDED TO LIMIT COMPETITION. SERIES NUMBERS ARE NOT COMPLETE CATALOG NUMBERS. COMPLY WITH ADDITIONAL REQUIREMENTS IN SPECIFICATIONS AND DRAWINGS.**
3	PROVIDE WALL,CEILING, OR PENDANT MOUNTING AS INDICATED ON PLANS. PROVIDE NUMBER OF FACES AND ARROWS AS INDICATED.
4	VERIFY CEILING STRUCTURE AND MOUNTING HEIGHT PRIOR TO ORDERING ANY LIGHT FIXTURES.
5	COORDINATE MOUNTING HEIGHT WITH STRUCTURAL AND ARCHITECTURAL DRAWINGS.
6	PROVIDE COLD WEATHER OPTION.
7	CONFIRM EXACT FIXTURE CONFIGURATION AND OPTIONS WITH MUNICIPALITY PRIOR TO ORDERING FIXTURE.
8	FIXTURE AND POLE SHALL BE PROVIDED BY OWNER FROM EXISTING OWNER'S STOCK.
9	PROVIDE SCREW-IN LED RETROFIT LAMP. BASIS OF DESIGN IS MFG. BY LIGHT EFFICIENT DESIGN, PART NO. LED-8029E345-A.
10	PROVIDE SCREW-IN LED RETROFIT LAMP. BASIS OF DESIGN IS MFG. BY LIGHT EFFICIENT DESIGN, PART NO. LED-8039E40-A.

Calculation Summary

Label	CalcType	Units	Avg	Max	Min	Avg/Min	Max/Min
DRIVES	Illuminance	Fc	0.99	3.5	0.2	4.95	17.50
WALKWAY- GLICKMAN	Illuminance	Fc	1.00	1.3	0.5	2.00	2.60
WALKWAY- NEW GARAGE	Illuminance	Fc	1.46	1.7	1.2	1.22	1.42



A1	PHOTOMETRIC SITE PLAN
SCALE: 1"=20'-0"	

7/2/2021 3:16:33 PM

UNIVERSITY OF SOUTHERN MAINE

25 Bedford Street, Portland, ME 04104
207.712.5183 | USM.MAINE.EDU

PROJECT TEAM:

CLIENT
UNIVERSITY OF SOUTHERN MAINE

PRIME CONSULTANT
& STRUCTURAL ENGINEER
DESMAN Design Management
18 Tremont Street #300
Boston, MA 02108

ARCHITECT
WINTON-SCOTT ARCHITECTS
5 MILK STREET
PORTLAND, ME 04101

CIVIL ENGINEER
WOODARD & CURRAN
41 HUTCHINS DRIVE
PORTLAND, ME 04102

LANDSCAPE ARCHITECT
MICHAEL BOUCHER LANDSCAPE ARCHITECTURE
457 US ROUTE 1 SUITE 2
FREEPORT, ME 04032

MEP/FP ENGINEER
ALLIED ENGINEERING
160 VERANDA STREET
PORTLAND, ME 04103

GEOTECHNICAL ENGINEER
S.W. COLE
286 PORTLAND ROAD
GREY, ME 04039

TRAFFIC ENGINEER
VANASSE HANGEN BRUSTLIN INC
40 IDX DR 100 #200, SOUTH
BURLINGTON, VT 05403

COST ESTIMATOR
PREFERRED CONSTRUCTION MGMT
94 AUBURN ST,
PORTLAND, ME 04103

SEAL / SIGNATURE

© DESMAN, Inc.
2021

PROJECT:

USM - Structured Parking Garage

Address

44 Bedford Street,
Portland ME 04104

REVISIONS:

No.	Date	Description

SUBMISSIONS:

Date	Issued For:
07/30/21	Site Plan Submittal

SCALE	**AS NOTED**
DATE ISSUED	**07/30/2021**
PROJECT NO	**20-20145.00-1**
DRAWN BY	**GMC**
CHECKED BY	**BTG**

SHEET TITLE:

SITE PHOTOMETRIC PLAN AND SCHEDULES

SL-100

ORDERING INFORMATION

Sample Number: MSA-400-MH-MT-3S-FG-BK-L

MSA	100	MH	208	5S	FG	DP		DL1

Product Family [1]
MSA=MESA

Lamp Wattage [2]
HID
50=50W
70=70W
100=100W
150=150W
175=175W
250=250W
320=320W [3]
350=350W [3]
400=400W [4]
Compact Fluorescent
42=42W [5]
57=57W [5,6]
114=(2) 57W [7]
140=(2) 70W [7]
Electrodeless Fluorescent
85=85W [8]

Lamp Type
MH=Metal Halide
MP=Pulse Start Metal Halide
HPS=High Pressure Sodium
CF=Compact Fluorescent [9]
QL=Electrodeless Fluorescent

Voltage [10]
120=120V
208=208V
240=240V
277=277V
347=347V
480=480V
DT=Dual-Tap Wired 277V [11]
MT=Multi-Tap Wired 277V [11]
TT=Triple-Tap Wired 347V [11]

Distribution
2S=Type II
3S=Type III
4S=Type IV
5S=Type V
SL=Forward Throw Spill Light Eliminator

Lens Type
FG=Flat Glass
FR=Frosted Flat Glass
SG=Sag Glass
FRS=Frosted Sag Glass
VS=Polycarbonate Vandal Shield [12]

Colors (add as suffix/must specify) [13]
BK=Black
AP=Grey
BZ=Bronze
WH=White
DP=Dark Platinum
GM=Graphite Metallic
GN=Hartford Green

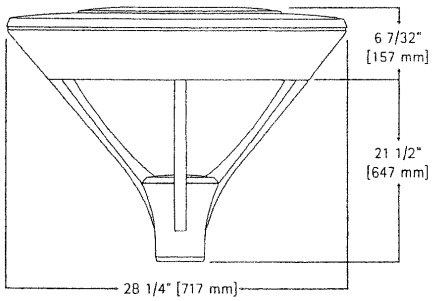
Options (add as suffix)
F=Single Fuse (120, 277, or 347V / Specify Voltage)
FF=Double Fuse (208, 240 or 480V / Specify Voltage)
Q=Quartz Restrike [14]
EM=Quartz Restrike with Delay (Also Strikes at Cold Start) [14]
EM/SC=Quartz Emergency Separate Circuit [14]
42CF/EM=Emergency Battery Backup [15]
R=NEMA Twistlock Photocontrol Receptacle
PC=Button Photocontrol
DS=Dual Fluorescent Switching Control [16]
HS=House Side Shield [17]
L=Lamp Included

Accessories (order separately/ replace XX with color suffix)
VA6028-XX=Dual Mount Arm
VA6029-XX=Wall Mount Arm
OA/RA1016=Photocontrol–Multi-tap
OA/RA1027=Photocontrol–480V
OA/RA1201=Photocontrol–Multi-tap 347V

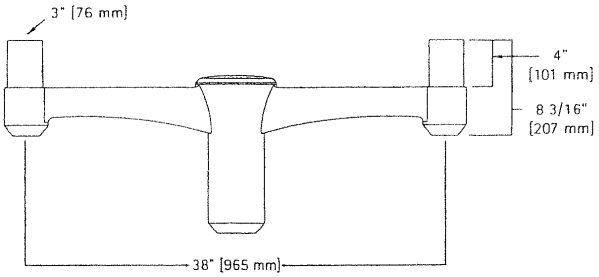
NOTES: 1 Slipfits over 3" O.D. tenon. 2 50-175W HID lamps use medium-base lampholders. 250-400W HID lamps use mogul-base lampholders. 3 320 and 350W Pulse Start Metal Halide only. 4 400W Metal Halide requires reduced envelope ED-28 lamps. 5 Compact Fluorescent lamp only. Available in Type 3S, 4S and 5S distributions only. 6 Nominal M.O.L. lamp length of 57W CFL not to exceed 7". 7 Dual 57 and 70W Compact Fluorescent lamp available in Type 4S distribution only. 8 Electrodeless Fluorescent lamp option available in Type 3S and 5S distributions only. 120V only. 9 Compact Fluorescent ballasts contain internal fusing. No supplemental fusing is necessary. CF ballasts are 120 through 277V. 10 Products also available in non-US voltages and 50Hz for international markets. Consult factory for availability and ordering information. 11 Dual-Tap is 120/277V wired 277V. Multi-Tap is 120/208/240/277V wired 277V. Triple-Tap ballast is 120/277/347V wired 347V. 12 Maximum wattage of 250W HID. 13 RAL and custom color matches available. Consult your INVUE Lighting Systems Representative. 14 Quartz options not available with SL optic. 15 Battery backup provides 90 minutes of supplemental light at 60% of initial rated lamp lumens. Type 3S, 4S, 5S optics only. Must specify 42W Compact Fluorescent lamp. 16 Dual switching requires dual 57W or dual 70W Compact Fluorescent lamps, and allows independent switching control of each lamp through use of two (2) electronic ballasts. Allows 50% power reduction. 17 House side shield not available on 5S or SL optics.

DIMENSIONS

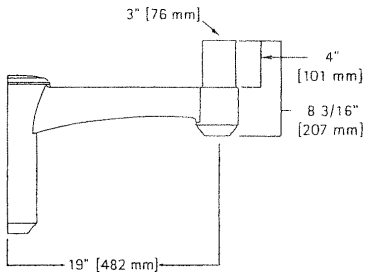
MESA [EPA 1.1]



Dual Mount Arm [EPA 1.36]



Wall Mount Arm



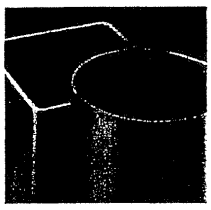
WATTAGE TABLE

	MSA
Metal Halide	50, 70, 100, 175, 250, 400W
Pulse Start Metal Halide	250, 320, 350, 400W
High Pressure Sodium	50, 70, 100, 150, 250, 400W
Compact Fluorescent	42, 57, (2) 57, (2) 70W
Electrodeless Fluorescent	85W

SHIPPING DATA

	MSA
Net. Weight (lbs.)	50
E.P.A.	1.1

NOTE: The above are approximate weights and volumes.



POLES

INVUE Lighting Systems offers a comprehensive package of steel, aluminum and decorative poles to suit any site lighting application. Consult the INVUE Poles brochure for ordering information and product specifications.

STANDARD COLORS

BK Black
AP Grey
BZ Bronze
WH White
DP Dark Platinum
GM Graphite Metallic
GN Hartford Green



APPLICATIONS DEPARTMENT

Let the application experts at Cooper Lighting design your next lighting layout. Aided by the latest computer simulation software and a comprehensive lighting background, our Application Engineers can design, analyze, and provide statistical layouts for any lighting application. Whether the design criteria calls for Illuminance, Luminance, or Small Target Visibility (STV) compliance, Cooper Lighting can provide the fixture layout and supporting documentation necessary to help secure your next project.



INVUE WEBSITE

Visit invuelighting.com for the latest product information from INVUE Lighting Systems. With instant access to IES photometric files, PDF product specification sheets, new product announcements, and other helpful specification tools, the INVUE Lighting website is an invaluable resource for getting information to customers-quickly.

ARX=ORDERING INFORMATION

The following information illustrates the correct way to enter an order for ARS4T08NGMA1V. The ordering designation is detailed as follows.

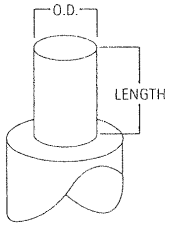
Aluminum	Round	Straight	Shaft Dia. (at base)	Wall Thickness	Mounting Height (ft.)	Base Type	Colors	Fixture Mounting + Type	No. + Location of Arms	Accessories (Vibration Damper)
A	R	X	4	T	08	N	GM	A	1	V

Mtg. Height (Ft.) MH	Catalog Number[3]	Wall Thickness (In.)	Shaft Dia. (In.) B	Bolt Proj. (In.) BP	Bolt Circle Dia. (In.) BC	Anchor Bolt D x AB x H (In.) AB	Net. Wt. (Lbs.)	EPA (Sq. Ft.)[2,4] At Pole Top 70	80	90	100	EPA (Sq. Ft.)[2,4] 18" Above Pole Top 70	80	90	100	Max. Fixture Load—Include Bracket (Lbs.)
8	ARX4T08NBZ	.125	4	1 7/8	6 3/4	3/4 x 17 x 3	20	18.9	14.2	10.9	8.6	15.6	11.7	9.0	7.1	100
10	ARX4T10NBZ	.125	4	1 7/8	6 3/4	3/4 x 17 x 3	24	14.0	10.3	7.8	6.0	11.9	8.8	6.6	5.1	100
12	ARX4T12NBZ	.125	4	1 7/8	6 3/4	3/4 x 17 x 3	27	10.6	7.6	5.6	4.2	9.2	6.6	4.9	3.7	100
12	ARX5T12NBZ	.125	5	1 7/8	7 3/4	3/4 x 17 x 3	33	17.9	13.2	10.2	8.2	15.6	11.5	9.0	7.1	100
15	ARX4T15NBZ	.125	4	1 7/8	6 3/4	3/4 x 17 x 3	33	7.0	4.8	3.2	2.3	6.3	4.3	2.9	2.0	100
15	ARX5T15NBZ	.125	5	1 7/8	7 3/4	3/4 x 17 x 3	40	12.5	9.0	6.9	5.4	11.2	8.0	6.1	4.8	100
18	ARX4M18NBZ[1]	.188	4	1 7/8	6 3/4	3/4 x 17 x 3	54	8.1	5.5	3.7	2.5	7.3	5.0	3.3	2.3	100
18	ARX5M18NBZ	.188	5	1 7/8	7 3/4	3/4 x 17 x 3	66	14.4	10.3	7.9	6.2	13.1	9.4	7.2	5.6	150
20	ARX5M20NBZ	.188	5	1 7/8	7 3/4	3/4 x 17 x 3	73	11.7	8.2	6.2	4.8	10.8	7.5	5.7	4.4	150

NOTES: 1 Factory installed vibration dampeners.
2 The above is our standard offering. Where higher EPA/wind speed capability or mounting height is required, other shaft dimensions and/or wall thickness are available. Consult INVUE Lighting Representative for pricing and lead times. The above E.P.A. capacities are based on loading from (1994) and pole drag coefficients from (2001) American Association of State Highway and Transportation Officials Specification.
3 Catalog item includes one set of anchor bolts, single nuts and (2) leveling shims.
4 EPAs based on shaft properties with wind normal to flat. EPAs calculated using base wind velocity as indicated plus 30% gust factor.

MOUNTING OPTIONS=FIXED TENON [add as suffix]

Designation Number	O.D. (in.)	Length (in.)
1	2 3/8"	3 1/2"
2	2 3/8"	4"
5	3"	4"
4	4"	6"

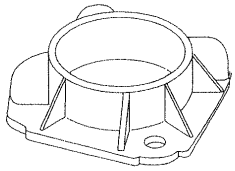


ACCESSORIES

C=Convenience Outlet
E=GFI Convenience Outlet
F=Vibration Pad
G=Ground Lug
V=Vibration Damper
D=Base Cover ("A" Base Only)

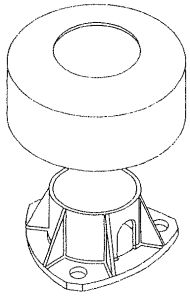
STANDARD BASE [Round Aluminum Pole only]

Type A=6", 7", 8" or 10"



STANDARD BASE [Round Aluminum Pole only]

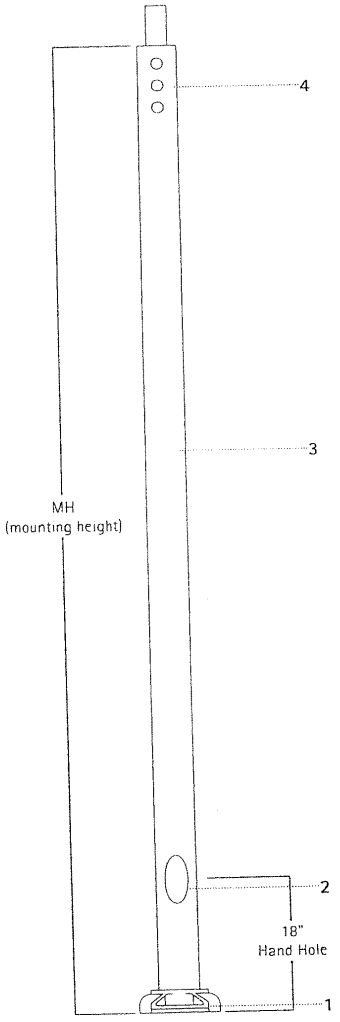
Type N=4", 5", or 6" (Standard with Base Cover)



ARX=ALUMINUM ROUND STRAIGHT

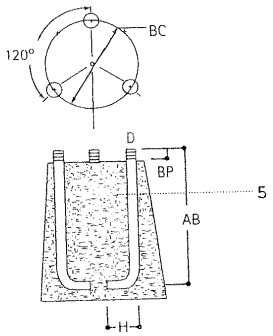
8'–20' Mounting Height

PL1





Base View



SPECIFICATION FEATURES

1 356-T6 cast aluminum alloy shoe base with aluminum alloy bolt covers or base cover dependent upon base type.

2 Flush hand hole assembly 2 3/8" x 4 1/2" for 4" and 3" x 5" for 5" shafts with ground lug located opposite opening drilled and tapped. Ground lug located opposite hand hole opening drilled and tapped for 3/8" 16NC-2 grounding screw.

3 Straight round shaft 6063-T6 aluminum alloy finished in premium TGIC polyester powder coat.

4 Drilled or Tenon (specify).

5 Anchor bolt per ASTM A576 with (1) nut, (1) flat washer, and (2) shims. Nuts, washers and threaded portion of bolt are hot dip galvanized.

POLE COMPATIBILITY MATRIX	DRILL	EPA + MOUNTING CONFIGURATIONS					
	PATTERN	Single w/Arm	2 @ 180°	2 @ 90°	3 @ 90°	3 @ 120°	4 @ 90°
PRODUCT	TENON	[1]	[2]	[5]	[3]	[6]	[4]
ICON SMALL	A	0.69	1.38	1.38	1.84	1.84	2.07
ICON MEDIUM	C	1.09	2.18	2.18	2.86	2.86	3.20
ICON SMALL STRUCTURAL MOUNT	J	0.71	1.42	1.42	1.90	1.90	2.14
ICON MEDIUM STRUCTURAL MOUNT	K	1.11	2.22	2.22	2.92	2.92	3.27
SLIDE	4*	2.97	--	--	--	--	--
FLITE	4*	1.56	--	--	--	--	--
VISION SMALL	E	1.27	2.54	2.54	3.60	3.60	4.13
VISION MEDIUM	M	1.6	3.20	3.20	4.50	4.50	5.55
VISION SMALL STRUCTURAL MOUNT	F	1.28	2.56	2.56	3.63	3.63	4.17
VISION MEDIUM STRUCTURAL MOUNT	G	1.82	3.64	3.64	4.96	4.96	5.62
ASCENT SMALL	A	0.85	1.70	1.70	2.35	2.35	2.68
ASCENT MEDIUM	C	1.35	2.70	2.70	3.83	3.83	4.56
STRUT SMALL	A	1.03	2.06	2.06	2.89	2.89	3.49
STRUT MEDIUM	C	1.64	3.28	3.28	4.70	4.70	5.77
X-FORM SMALL	E	1.15	2.30	2.30	3.20	3.20	3.81
X-FORM MEDIUM	M	2.1	4.20	4.20	6.00	6.00	7.50
MESA	5**	1.1	3.56	--	--	--	--
EPIC MEDIUM	4*	Consult EPIC brochure for system EPA data					
EPIC LARGE	4*	Consult EPIC brochure for system EPA data					

* Fits 4" O.D. by 6" long tenon or slipfits over 4" ARX or SRX pole. ** Fits 3" O.D. by 4" long tenon.

THREE BOLT ANCHORAGE [see ordering information]

BC=Bolt Circle
PB=Bolt Projection
AB=Bolt Dimensions
D=Bolt Diameter
H=Bolt Dimensions

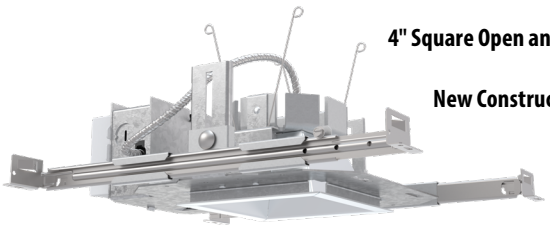
NOTE: Specifications and dimensions subject to change without notice.

LITHONIA LIGHTING®

Catalog Number	
Notes	
Type	

LDN4SQ

4" Square Open and WallWash LED
Non-IC
New Construction Downlight



FEATURES & SPECIFICATIONS

INTENDED USE — Typical applications include corridors, lobbies, conference rooms and private offices.

CONSTRUCTION — Durable square metal reflectors retained by torsion springs.

Galvanized steel mounting/plaster frame; galvanized steel junction box with bottom-hinged access covers and spring latches.

Vertically adjustable mounting brackets with commercial bar hangers provide 3-3/4" total adjustment.

Two combination 1/2"-3/4" and four 1/2" knockouts for straight-through conduit runs. Capacity: 8 (4 in, 4 out). No. 12 AWG conductors, rated for 90°C.

Accommodates 12"-24" joist spacing.

Passive cooling thermal management for 25°C standard; high ambient (40°C) option available. Light engine and drivers are accessible from above or below ceiling.

Max ceiling thickness 1-1/2".

OPTICS — LEDs are binned to a 3-step SDCM; 80 CRI minimum. 90 CRI optional.

LED light source concealed with diffusing optical lens.

General illumination lighting with 1.0 S/MH and 55° cutoff to source and source image.

Self-flanged anodized reflectors in specular, semi-specular, or matte diffuse finishes. Also available in white and black painted reflectors.

Self-flanged anodized reflectors in specular, semi-specular, or matte diffuse finishes.

ELECTRICAL — Multi-volt (120-277V, 50/60Hz) 0-10V dimming drivers mounted to junction box, 10% or 1% minimum dimming level available.

0-10V dimming fixture requires two (2) additional low-voltage wires to be pulled.

70% lumen maintenance at 60,000 hours.

LISTINGS — Certified to US and Canadian safety standards. Wet location standard (covered ceiling). IP55 rated. ENERGY STAR® certified product.

BUY AMERICAN — Product with the BAA option is assembled in the USA and meets the Buy America(n) government procurement requirements under FAR, DFARS and DOT.

Please refer to www.acuitybrands.com/buy-american for additional information.

WARRANTY — 5-year limited warranty. Complete warranty terms located at:
www.acuitybrands.com/support/warranty/terms-and-conditions

Note: Actual performance may differ as a result of end-user environment and application.

All values are design or typical values, measured under laboratory conditions at 25 °C.

Specifications subject to change without notice.

Buy American

battery pack

A+ Capable options indicated by this color background.

ORDERING INFORMATION Lead times will vary depending on options selected. Consult with your sales representative.

Example: LDN4SQ 35/15 LS4AR LSS MVOLT EZ1

LDN4SQ															
Series		**Color temperature**		**Lumens**[1]				**Aperture/Trim Color**				**Finish**		**Voltage**	
LDN4SQ	4" square	27/	2700K	05	500 lumens	20	2000 lumens	LS4	Downlight	AR	Clear	LSS	Semi-specular	MVOLT	Multi-volt
		30/	3000K	07	750 lumens	25	2500 lumens	LSW4	Wallwash	WR[2]	White	LD	Matte diffuse	120	120V
		35/	3500K	10	1000 lumens	30	3000 lumens			BR[2]	Black	LS	Specular	277	277V
		40/	4000K	15	1500 lumens	40	4000 lumens							347[3]	347V
		50/	5000K												

Driver		**Options**			
GZ10	0-10V driver dims to 10%	SF[4]	Single fuse	NPS80EZ[7]	nLight® dimming pack controls 0-10V eldoLED drivers (EZ10, EZ1).
GZ1	0-10V driver dims to 1%	TRW[5]	White painted flange	NPS80EZER[7]	nLight® dimming pack controls 0-10V eldoLED drivers (EZ10, EZ1). ER controls fixtures on emergency circuit.
D10	Minimum dimming 10% driver for use with JOT	TRBL[5]	Black painted flange	NLTAIR2[8,10]	nLight® Air enabled
D1	Minimum dimming 1% driver for use with JOT	EL[6]	Emergency battery pack with integral test switch. 10W Constant Power, Not Certified in CA Title 20 MAEDBS	NLTAIRER2[8,10]	nLight® AIR Dimming Pack Wireless Controls. Controls fixtures on emergency circuit, not available with battery pack options
EZ10	0-10V eldoLED driver with smooth and flicker-free deep dimming performance down to 10%	ELR[6]	Emergency battery pack with remote test switch. 10W Constant Power, Not Certified in CA Title 20 MAEDBS	NLTAIREM2[8,10]	nLight® AIR Dimming Pack Wireless Controls. UL924 Emergency Operation, via power interrupt detection. Available with battery pack options.
EZ1	0-10V eldoLED driver with smooth and flicker-free deep dimming performance down to 1%	ELSD[6]	Emergency battery pack with self-diagnostics, 10W Constant Power, integral test switch. Not Certified in CA Title 20 MAEDBS	N80[9]	nLight™ Lumen Compensation
EDAB	eldoLED DALI SOLDRIVE dim to dark	ELRSD[6]	Emergency battery pack with self-diagnostics, 10W Constant Power, remote test switch. Not Certified in CA Title 20 MAEDBS	JOT[13]	Wireless room control with "Just One Touch" pairing
		E10WCP[6]	Emergency battery pack, 10W Constant Power with integral test switch. Certified in CA Title 20 MAEDB	HAO[11]	High ambient option (40°C)
		E10WCPR[6]	Emergency battery pack, 10W Constant Power with remote test switch. Certified in CA Title 20 MAEDB	CP[12]	Chicago Plenum
		NPP16D[7]	nLight® network power/relay pack with 0-10V dimming for non-eldoLED drivers (GZ10, GZ1).	RRL___	RELOC®-ready luminaire connectors enable a simple and consistent factory installed option across all ABL luminaire brands. Refer to RRL for complete nomenclature. Available only in RRLA, RRLB, RRLAE, and RRLC12S.
		NPP16DER[7]	nLight® network power/relay pack with 0-10V dimming for non-eldoLED drivers (GZ10, GZ1). ER controls fixtures on emergency circuit.	BAA	Buy America(n) Act Compliant
				90CRI	High CRI (90+)

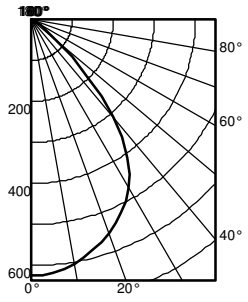
Notes

1. Overall height varies based on lumen package; refer to dimensional chart on page 3.
2. Not available with finishes.
3. Not available with emergency options.
4. Must specify voltage 120V or 277V.
5. Available with clear (AR) reflector only.
6. 12.5" of plenum depth or top access required for battery pack maintenance.
7. Specify voltage. ER for use with generator supply EM power. Will require an emergency hot feed and normal hot feed.
8. NLTAIR2, NLTAIRER2 and NLTAIREM2 not recommended for metal ceiling installations.
9. Fixture begins at 80% light level. Must be specified with NPS80EZ or NPS80EZ ER. Only available with EZ10 and EZ1 drivers.
10. Not available with CP, NPS80EZ, NPS80EZER, NPP16D, NPP16DER or N80 options.
11. Fixture height is 5-11/16" for all lumen packages with HAO.
12. Must specify voltage for 3000lm. Not available with emergency battery pack option.
13. Must specify D10 or D1 driver. Not available with nLight options. Not available with CP. Not recommended for metal ceiling installation. Not for use with emergency backup power systems other than battery packs.

PHOTOMETRY

Distribution Curve	Distribution Data	Output Data	Coefficient of Utilization	Illuminance Data at 30" Above Floor for a Single Luminaire

LDN4SQ 35/10 LS4AR, input watts: 10.58, delivered lumens: 908.4, LM/W = 85.86, spacing criterion at 0= 1.15, test no. ISF 35250P109



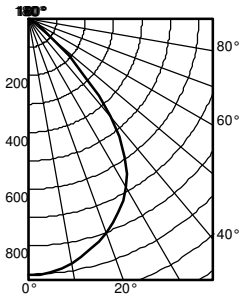
	Ave	Lumens
0	625	
5	621	59
15	580	163
25	519	238
35	409	251
45	192	148
55	37	38
65	7	8
75	2	2
85	0	0
90	0	

Zone	Lumens	% Lamp
0° - 30°	460.2	50.7
0° - 40°	710.8	78.2
0° - 60°	897.5	98.8
0° - 90°	908.1	100.0
90° - 120°	0.0	0.0
90° - 130°	0.0	0.0
90° - 150°	0.1	0.0
90° - 180°	0.3	0.0
0° - 180°	908.4	*100.0
*Efficiency		

pf	20%								
pc	80%			70%			50%		
pw	50%	30%	10%	50%	30%	10%	50%	30%	10%
0	119	119	119	116	116	116	111	111	111
1	109	107	104	107	105	102	103	101	99
2	100	96	92	99	94	91	95	92	89
3	92	86	82	90	85	81	88	83	80
4	84	78	73	83	77	73	81	76	72
5	78	71	66	77	70	66	75	69	65
6	72	65	60	71	64	60	69	63	59
7	66	59	54	66	59	54	64	58	54
8	62	55	50	61	54	50	60	54	50
9	57	50	46	57	50	46	56	50	46
10	53	47	42	53	47	42	52	46	42

		50% beam - 59.5°		10% beam - 90.9°	
Mounting Height	Inital FC Center Beam	Diameter	FC	Diameter	FC
8.0	20.6	6.3	10.3	11.2	2.1
10.0	11.1	8.6	5.5	15.2	1.1
12.0	6.9	10.9	3.5	19.3	0.7
14.0	4.7	13.1	2.4	23.4	0.5
16.0	3.4	15.4	1.7	27.4	0.3

LDN4SQ 35/15 LS4AR, input watts: 17.5, delivered lumens: 1314.4, LM/W = 75.10, spacing criterion at 0= 1.15, test no. ISF 35250P114.



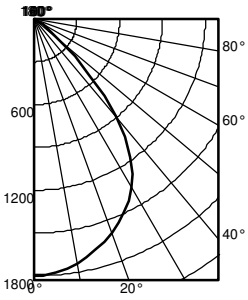
	Ave	Lumens
0	904	
5	898	85
15	840	237
25	751	344
35	592	363
45	277	214
55	54	56
65	11	12
75	2	3
85	1	1
90	0	

Zone	Lumens	% Lamp
0° - 30°	665.9	50.7
0° - 40°	1028.5	78.2
0° - 60°	1298.6	98.8
0° - 90°	1314.0	100.0
90° - 120°	0.0	0.0
90° - 130°	0.0	0.0
90° - 150°	0.1	0.0
90° - 180°	0.4	0.0
0° - 180°	1314.4	*100.0
*Efficiency		

pf	20%								
pc	80%			70%			50%		
pw	50%	30%	10%	50%	30%	10%	50%	30%	10%
0	119	119	119	116	116	116	111	111	111
1	109	107	104	107	105	102	103	101	99
2	100	96	92	99	94	91	95	92	89
3	92	86	82	90	85	81	88	83	80
4	84	78	73	83	77	73	81	76	72
5	78	71	66	77	70	66	75	69	65
6	72	65	60	71	64	60	69	63	59
7	66	59	54	66	59	54	64	58	54
8	62	55	50	61	54	50	60	54	50
9	57	50	46	57	50	46	56	50	46
10	53	47	42	53	47	42	52	46	42

		50% beam - 59.5°		10% beam - 90.9°	
Mounting Height	Inital FC Center Beam	Diameter	FC	Diameter	FC
8.0	29.9	6.3	14.9	11.2	3.0
10.0	16.1	8.6	8.0	15.2	1.6
12.0	10.0	10.9	5.0	19.3	1.0
14.0	6.8	13.1	3.4	23.4	0.7
16.0	5.0	15.4	2.5	27.4	0.5

LDN4SQ 35/30 LS4AR, input watts: 32.1, delivered lumens: 2614.1, LM/W = 83.78, spacing criterion at 0= 1.15, test no. ISF 31036P129.



	Ave	Lumens
0	1797	
5	1786	169
15	1670	470
25	1493	685
35	1178	721
45	551	426
55	107	111
65	21	24
75	5	6
85	1	1
90	0	

Zone	Lumens	% Lamp
0° - 30°	1324.3	50.7
0° - 40°	2045.4	78.2
0° - 60°	2582.5	98.8
0° - 90°	2613.2	100.0
90° - 120°	0.0	0.0
90° - 130°	0.0	0.0
90° - 150°	0.2	0.0
90° - 180°	0.8	0.0
0° - 180°	2614.0	*100.0
*Efficiency		

pf	20%								
pc	80%			70%			50%		
pw	50%	30%	10%	50%	30%	10%	50%	30%	10%
0	119	119	119	116	116	116	111	111	111
1	109	107	104	107	105	102	103	101	99
2	100	96	92	99	94	91	95	92	89
3	92	86	82	90	85	81	88	83	80
4	84	78	73	83	77	73	81	76	72
5	78	71	66	77	70	66	75	69	65
6	72	65	60	71	64	60	69	63	59
7	66	59	54	66	59	54	64	58	54
8	62	55	50	61	54	50	60	54	50
9	57	50	46	57	50	46	56	50	46
10	53	47	42	53	47	42	52	46	42

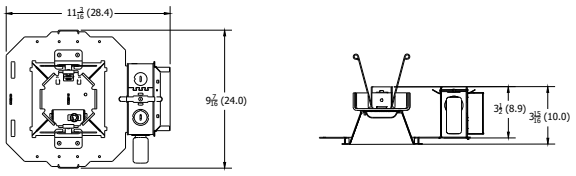
		50% beam - 59.5°		10% beam - 90.9°	
Mounting Height	Inital FC Center Beam	Diameter	FC	Diameter	FC
8.0	59.4	6.3	29.7	11.2	5.9
10.0	32.0	8.6	16.0	15.2	3.2
12.0	19.9	10.9	10.0	19.3	2.0
14.0	13.6	13.1	6.8	23.4	1.4
16.0	9.9	15.4	4.9	27.4	1.0

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LDN4SQ

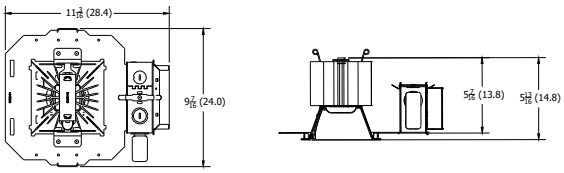
* All dimensions are inches (centimeters) unless otherwise noted.

LDN4 500 - 1500 LUMENS



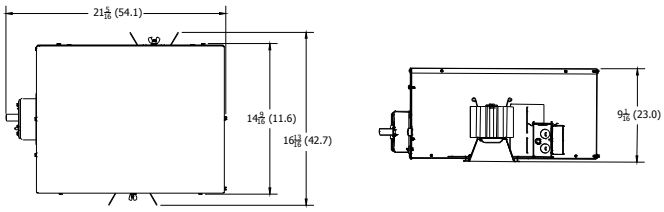
Aperture: 4-5/16" (11)
Ceiling Opening: 5-1/8" (13)
Overlap Trim: 5-7/16" (13.8)

LDN4 2000 - 3000 LUMENS



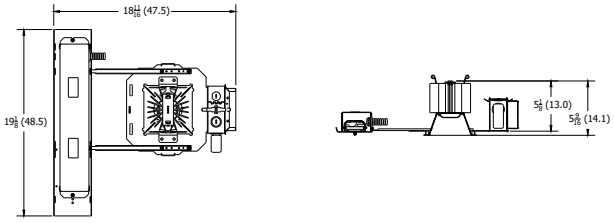
Aperture: 4-5/16" (11)
Ceiling Opening: 5-1/8" (13)
Overlap Trim: 5-7/16" (13.8)

LDN4 CP



Aperture: 4-5/16" (11)
Ceiling Opening: 5-1/8" (13)
Overlap Trim: 5-7/16" (13.8)

LDN4 EL



Aperture: 4-5/16" (11)
Ceiling Opening: 5-1/8" (13)
Overlap Trim: 5-7/16" (13.8)

LDN4SQ			
Nominal	**Lumens**	**Wattage**	**Lm/W**
500	432.5	5.7	75.3
750	620	8.6	72.1
1000	863	10.6	81.6
1500	1249	17.5	71.4
2000	1657	22.1	74.9
2500	2218	26.1	85.0
3000	2483	32.1	77.4
4000	3479	43.0	80.9

LUMEN OUTPUT MULTIPLIERS ☒FINISH			
	Clear (AR)	**White (WR)**	**Black (BR)**
Specular (LS)	1.0	N/A	N/A
Semi-specular (LSS)	0.950	N/A	N/A
Matte di☒use (LD)	0.85	N/A	N/A
Painted	N/A	0.87	0.73

HOW TO ESTIMATE DELIVERED LUMENS IN EMERGENCY MODE

Use the formula below to estimate the delivered lumens in emergency mode

Delivered Lumens = 1.25 x P x LPW

P = Ouput power of emergency driver. P = 10W for PS1055CP

LPW = Lumen per watt rating of the luminaire. This information is available on the ABL luminaire spec sheet.
The LPW rating is also available at Designlight Consortium.

LUMEN OUTPUT MULTIPLIERS ☒CCT					
	2700K	**3000K**	**3500K**	**4000K**	**5000K**
80CRI	0.950	0.966	1.000	1.025	1.101

Notes

- Tested in accordance with IESNA LM-79-08.
- Tested to current IES and NEMA standards under stabilized laboratory conditions.
- CRI: 80 typical.

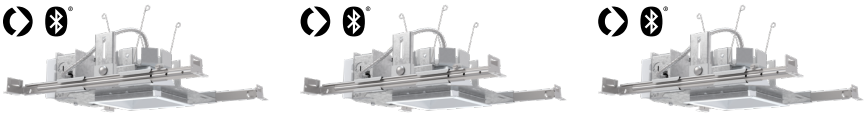
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ADDITIONAL DATA

JOT
JUST ONE TOUCH

The Sensor Switch JOT enabled solution offers a wireless, app-free approach to single room lighting control. JOT enabled products use Bluetooth® Low Energy (BLE) technology to enable wireless dimming and switching.

Diagram



LDN4SQ Series



Sensor Switch
WSXA JOT

1. **Power:** Install JOT enabled fixtures and controls as instructed.
2. **Pair:** Insert the pairing tool into the pinhole on the wall switch; press and hold any button for 6 seconds.
3. **Play:** Once paired, each fixture will individually dim down to 10% brightness. All products will be fully functional.

COMPATIBLE 0-10V WALL-MOUNT DIMMERS		
MANUFACTURER	PART NO.	POWER BOOSTER AVAILABLE
Lutron®	Diva® DVTV	
	Diva® DVSCTV	
	Nova T® NTFTV	
	Nova® NFTV	
Leviton®	AWSMT-7DW	CN100
	AWSMG-7DW	PE300
	AMRMG-7DW	
	Leviton Centura Fluorescent Control System	
	IllumaTech® IP7 Series	
Synergy®	ISD BC	RDMFC
	SLD LPCS	
	Digital Equinox (DEQ BC)	
Douglas Lighting Controls	WPC-5721	
Entertainment Technology	Tap Glide TG600FAM120 (120V)	
	Tap Glide Heatsink TGH1500FAM120 (120V)	
	Oasis OA2000FAMU	
Honeywell	EL7315A1019	EL7305A1010 (optional)
	EL7315A1009	
HUNT Dimming	Preset slide: PS-010-IV and PS-010-WH	
	Preset slide: PS-010-3W-IV and PS-010-3W-WH	
	Preset slide, controls FD-010: PS-IFC-010-IV and PS-IFC-010-WH-120/277V	
	Preset slide, controls FD-010: PS-IFC-010-3W-IV and PS-IFC-010-3W-WH-120/277V	
	Remote mounted unit: FD-010	
Lehigh Electronic Products	Solitaire	PBX
PDM Electrical Products	WPC-5721	
Starfield Controls	TR61 with DALI interface port	RT03 DALInet Router
WattStopper®	LS-4 used with LCD-101 and LCD-103	

A+ Capable Luminaire

This item is an A+ capable luminaire, which has been designed and tested to provide consistent color appearance and out-of-the-box control compatibility with simple commissioning.

- All configurations of this luminaire meet the Acuity Brands' specification for chromatic consistency
- This luminaire is part of an A+ Certified solution for nLight® control networks when ordered with drivers marked by a shaded background*
- This luminaire is part of an A+ Certified solution for nLight control networks, providing advanced control functionality at the luminaire level, when selection includes driver and control options marked by a shaded background*

To learn more about A+, visit www.acuitybrands.com/aplus.

*See ordering tree for details

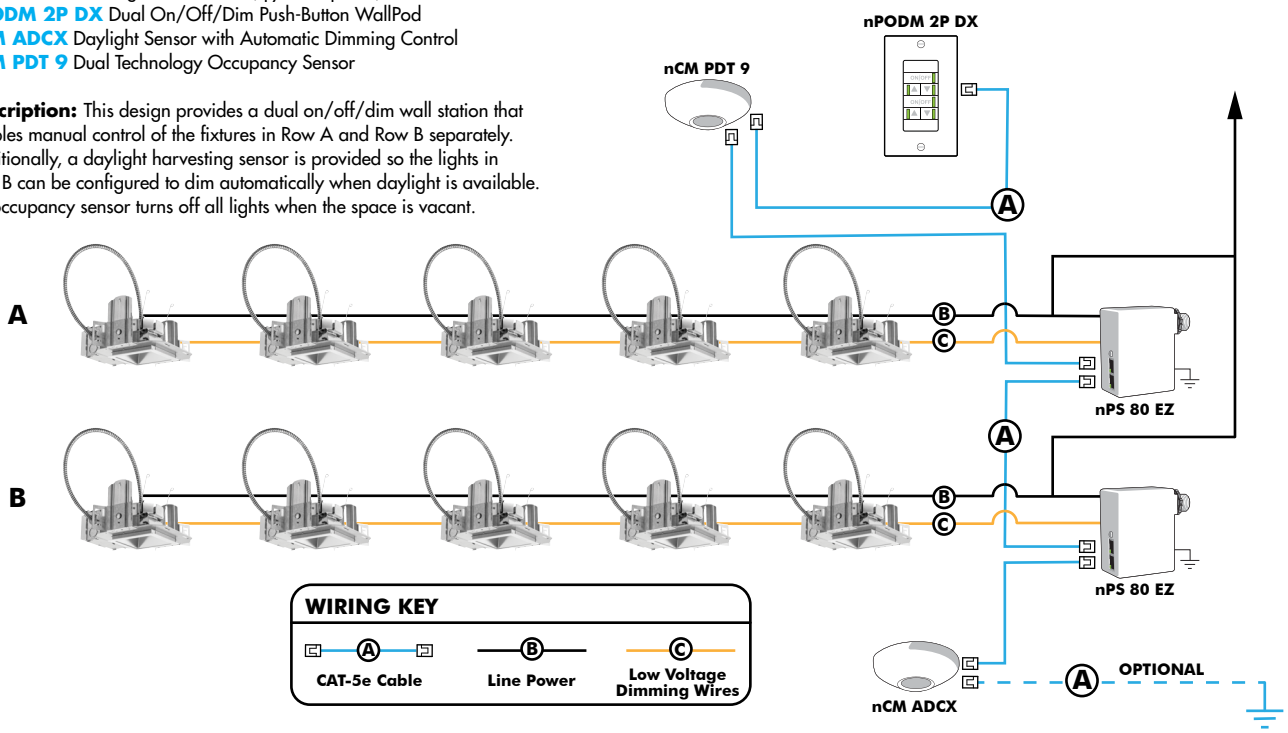
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LDN4SQ

EXAMPLE
Group Fixture Control*
*Appiication diagram applies for fixtures with eldoLED drivers only.

nPS 80 EZ Dimming/Control Pack (qty: 2 required)
nPODM 2P DX Dual On/Off/Dim Push-Button WallPod
nCM ADCX Daylight Sensor with Automatic Dimming Control
nCM PDT 9 Dual Technology Occupancy Sensor

Description: This design provides a dual on/off/dim wall station that enables manual control of the fixtures in Row A and Row B separately. Additionally, a daylight harvesting sensor is provided so the lights in Row B can be configured to dim automatically when daylight is available. An occupancy sensor turns off all lights when the space is vacant.



Choose Wall Controls

nLight offers multiple styles of wall controls - each with varying features and user experience.



Push-Button Wallpod
Traditional tactile buttons and LED user feedback



Graphic Wallpod
Full color touch screen provides a sophisticated look and feel

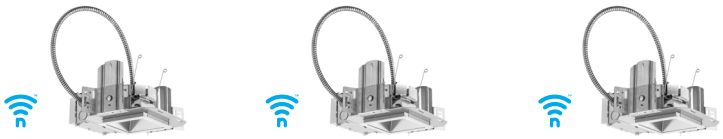
nLight® Wired Controls Accessories:			
Order as separate catalog number. Visit www.acuitybrands.com/products/controls/nlight for complete listing of nLight controls.			
WallPod Stations	**Model number**	**Occupancy sensors**	**Model Number**
On/Off	nPODM (Color)	Small motion 360°, ceiling (PIR/dual Tech)	nCM 9 / nCM PDT 9
On/Off & Raise/Lower	nPOD DX (Color)	Large motion 360°, ceiling (PIR/dual tech)	nCM 10 / nCM PDT 10
Graphic Touchscreen	nPOD GFX (Color)	Wide View (PIR/dual tech)	nWV 16 / nWV PDT 16
Photocell controls	**Model Number**	Wall Switch w/ Raise/Lower (PIR/dual tech)	nWSX LV DX / nWSX PDT LV DX
Dimming	nCM ADCX	**Cat-5 cables (plenum rated)**	**Model Number**
		10', CAT5 10FT	CAT5 10FT J1
		15, CAT5 15FT	CAT5 15FT J1

nLight® AIR Control Accessories: *Order as separate catalog number. Visit www.acuitybrands.com/products/controls/nlightair.*	
Wall switches	**Model number**
On/Off single pole	rPODB [color]
On/Off two pole	rPODB 2P [color]
On/Off & raise/lower single pole	rPODB DX [color]
On/Off & raise/lower two pole	rPODB 2P DX [color]
On/Off & raise/lower single pole	rPODBZ DX WH[1]

Notes
1 Can only be ordered with the RES7Z zone control sensor version.

nLight AIR

nLight AIR is the ideal solution for retrofit or new construction spaces where adding communication is cost prohibitive. The integrated nLight AIR rPP20 Power Pack is part of each Lithonia LDN Luminaire. These individually addressable controls offer the ultimate in flexibility during initial setup and for space repurposing.



Simple as 1,2,3

1. Install the nLight® AIR fixtures with embedded smart sensor
2. Install the wireless battery-powered wall switch
3. With CLAIRITY app, pair the fixtures with the wall switch and if desired, customize the sensor settings for the desired outcome



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KAXW
LED Wall Luminaire

NIGHTTIME FRIENDLY

Catalog Number

Notes

Type

Hit the Tab key or mouse over the page to see all interactive elements.

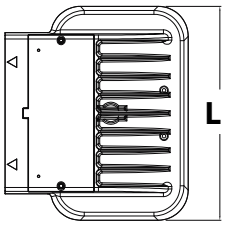
Specifications

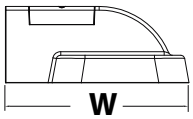
Length: 14" (35.6 cm)

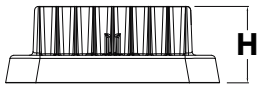
Width: 12" (35.6 cm)

Height: 5" (12.7 cm)

Weight (max): 19.7 lbs (8.9 kg)







A+ Capable Luminaire

This item is an A+ capable luminaire, which has been designed and tested to provide consistent color appearance and system-level interoperability.

- All configurations of this luminaire meet the Acuity Brands' specification for chromatic consistency
- This luminaire is A+ Certified when ordered with DTL® controls marked by a shaded background. DTL DLL equipped luminaires meet the A+ specification for luminaire to photocontrol interoperability1
- This luminaire is part of an A+ Certified solution for ROAM® or XPoint™ Wireless control networks, providing out-of-the-box control compatibility with simple commissioning, when ordered with drivers and control options marked by a shaded background[1]

To learn more about A+, visit www.acuitybrands.com/aplus.

1. See ordering tree for details.

A+ Capable options indicated by this color background.

Ordering Information

EXAMPLE: KAXW LED P3 40K R3 MVOLT DDBXD

KAXW LED

Series	Performance package	Color temperature	Distribution	Voltage	Mounting	Control options	Other options	Finish *(required)*
KAXW LED	P1 P2 P3	30K 3000 K 40K 4000 K 50K 5000 K	R3 Type 3 R4 Type 4	MVOLT [1] 120 [1] 208 [1] 240 [1] 277 [1] 347 [2] 480 [2]	**Shipped included** (blank) Surface mounting bracket	**Shipped installed** PER NEMA twist-lock receptacle only (controls ordered separate)[3,4] PER5 Five-wire receptacle only (controls ordered separate)[4,5] PER7 Seven-wire receptacle only (controls ordered separate)[4,5] PIR 180° motion/ambient light sensor, <15' mtg ht [6] FAO Field adjustable output[7] PIRH Bi-level, motion/ambient sensor, 15-30' mounting height, ambient sensor enabled at 5fc [6] PIR1FC3V Bi-level, motion/ambient sensor, 8-15' mounting height, ambient sensor enabled at 1fc [6] PIRH1FC3V Bi-level, motion/ambient sensor, 15-30' mounting height, ambient sensor enabled at 1fc [6]	**Shipped installed** SF Single fuse (120, 277 or 347V)[8] DF Double fuse (208, 240 or 480V)[9] HS House-side shield [10] LCE Left Conduit Entry [11] RCE Right Conduit Entry [11] **Shipped separately** BSW Bird-deterrent spikes[10] EGS External glare shield[10]	DDBXD Dark bronze DBLXD Black DNAXD Natural aluminum DWHXD White DSSXD Sandstone DDBTXD Textured dark bronze DBLBXD Textured black DNATXD Textured natural aluminum DWHGXD Textured white DSSTXD Textured sandstone

NOTES

1 MVOLT driver operates on any line voltage from 120-277V (50/60 Hz).
2 Not available in the P1 performance package.
3 Not available with ROAM®. See PER5 or PER7 option.
4 Photocell ordered and shipped as a separate line item from Acuity Brands Controls. See Accessories information.
5 If ROAM® node required, it must be ordered and shipped as a separate line item from Acuity Brands Controls.
6 Specifies the Sensor Switch MSOD-7-ODP control; see Outdoor Control Technical Guide for details. Dimming driver standard. Not available with PER5 or PER7. Must specify 120V or 277V. Requires PER or separate on/off.
7 Not available with PER5 or PER7 options.
8 Must specify 120, 277, or 347V option.
9 Must specify 208, 240, or 480V option.
10 Also available as a separate accessory; see Accessories information.
11 Requires a contractor supplied ½" EMT raintight fitting.
12 Requires luminaire to be specified with PER, PER5 or PER7 option. Ordered and shipped as a separate line item from Acuity Brands Controls.

Accessories

Ordered and shipped separately.

DLL127F 1.5 JU	Photocell - SSL twist-lock (120-277V) [12]
DLL347F 1.5 CUL JU	Photocell - SSL twist-lock (347V) [12]
DLL480F 1.5 CUL JU	Photocell - SSL twist-lock (480V) [12]
DSHORT SBK U	Shorting cap
KAXWHS U	House-side shield
KAXWBSW U	Bird-deterrent spikes
KAXWEGS U	External glare shield

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Performance Data

Lumen Output

Lumen values are from photometric tests performed in accordance with IESNA LM-79-08. Data is considered to be representative of the configurations shown, within the tolerances allowed by Lighting Facts. Contact factory for performance data on any configurations not shown here.

Performance Package	System Watts	Dist. Type	30K (3000 K, 70 CRI)					40K (4000 K, 70 CRI)					50K (5000 K, 70 CRI)				
			Lumens	B	U	G	LPW	Lumens	B	U	G	LPW	Lumens	B	U	G	LPW
P1	29W	R3	3,322	1	0	1	115	3,545	1	0	1	122	3,607	1	0	1	124
		R4	3,415	1	0	1	118	3,643	1	0	1	126	3,707	1	0	1	128
P2	49W	R3	5,731	1	0	1	117	6,115	1	0	1	125	6,222	1	0	1	127
		R4	5,891	1	0	1	120	6,285	1	0	1	128	6,396	1	0	1	131
P3	79W	R3	8,852	1	0	1	112	9,445	2	0	2	120	9,611	2	0	2	122
		R4	9,099	2	0	2	115	9,708	2	0	2	123	9,879	2	0	2	125

Lumen Ambient Temperature (LAT) Multipliers

Use these factors to determine relative lumen output for average ambient temperatures from 0-50°C (32-122°F).
* Shaded cells include active dynamic temperature sensing.

Ambient	Lumen Multiplier		
	P1	P2	P3
0°C	1.05	1.05	1.05
10°C	1.03	1.03	1.03
20°C	1.01	1.01	1.01
25°C	1	1	1
30°C	0.99	0.99	0.99
40°C	0.97	0.97	0.93
45°C	0.96	0.96	0.84
50°C	0.95	0.95	0.74

Electrical Load

Package		120V	208V	240V	277V	347V	480V
P1	Current (A)	0.24A	0.14A	0.13A	0.11A		
	System Watts	29W	29W	29W	29W		
P2	Current (A)	0.41A	0.24A	0.21A	0.18A	0.14A	0.11A
	System Watts	49W	48W	48W	48W	47W	47W
P3	Current (A)	0.66A	0.38A	0.33A	0.29A	0.23A	0.17A
	System Watts	79W	78W	78W	78W	77W	76W

Projected LED Lumen Maintenance

Operating Hours	25,000	50,000	100,000
Lumen Maintenance Factor	>0.94	>0.89	>0.80

Values calculated according to IESNA TM-21-11 methodology and valid up to 40°C.

PER Table

Control	PER (3 wire)	PER5 (5 wire)		PER7 (7 wire)		
			Wire 4/Wire5		Wire 4/Wire5	Wire 6/Wire7
Photocontrol Only (On/Off)	✔	⚠	Wired to dimming leads on driver	⚠	Wired to dimming leads on driver	Wires Capped inside fixture
ROAM	⊘	✔	Wired to dimming leads on driver	⚠	Wired to dimming leads on driver	Wires Capped inside fixture
ROAM with Motion (ROAM on/off only)	⊘	⚠	Wires Capped inside fixture	⚠	Wires Capped inside fixture	Wires Capped inside fixture
Future-proof*	⊘	⚠	Wired to dimming leads on driver	✔	Wired to dimming leads on driver	Wires Capped inside fixture
Future-proof* with Motion	⊘	⚠	Wires Capped inside fixture	✔	Wires Capped inside fixture	Wires Capped inside fixture

✔ Recommended
⊘ Will not work
⚠ Alternate

*Future-proof means: Ability to change controls in the future.

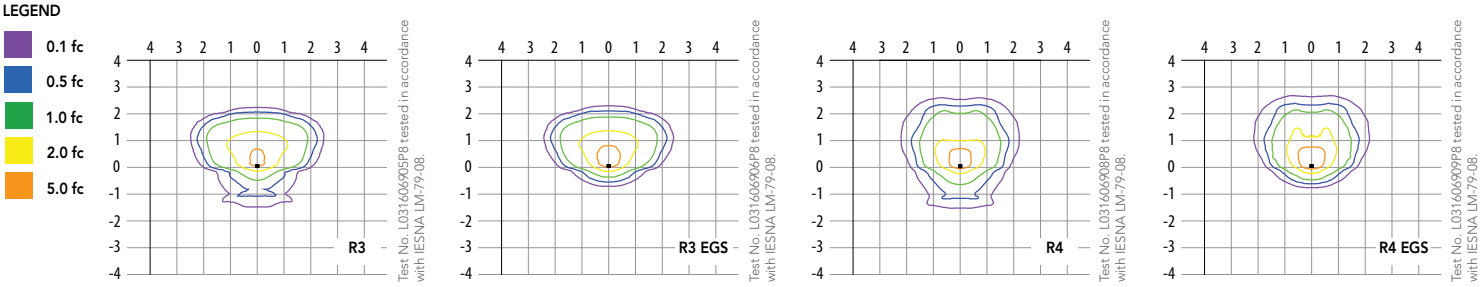
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Photometric Diagrams

To see complete photometric reports or download .ies files for this product, visit Lithonia Lighting's KAXW homepage.

Isofootcandle plots for the KAXW LED P3 40K. Distances are in units of mounting height (20').

LEGEND



FEATURES & SPECIFICATIONS

INTENDED USE
This feature-rich luminaire embodies the highest level of functionality with extraordinary efficacy which maximizes your application efficiency providing high levels of light for minimal cost specifically for building-mounted doorway and pathway illumination on nearly any type of facility.

CONSTRUCTION
The die-cast aluminum housing has integral heat sink fins to optimize thermal management through conductive and convective cooling. This modular design allows for ease of maintenance and future light engine upgrades. The LED driver is installed in a separate compartment to thermally isolate it from the light engines for low operating temperature and long life. The housing is completely sealed against moisture and environmental contaminants (IP65).

FINISH
Exterior parts are protected by a zinc-infused Super Durable TGIC thermoset powder coat finish that provides superior resistance to corrosion and weathering. A tightly controlled multi-stage process ensures a minimum 3 mils thickness for a finish that can withstand extreme climate changes without cracking or peeling. Available in both textured and non-textured finishes.

OPTICS
Individually formed acrylic lenses are engineered for superior application efficiency which maximizes the light in the areas where it is most needed. Light engines are available in 3000 K, 4000 K or 5000 K (minimum 70 CRI) configurations. The KAXW has zero uplight and qualifies as a Nighttime Friendly™ product, meaning it is consistent with the LEED® and Green Globes™ criteria for eliminating wasteful uplight.

ELECTRICAL
Light engine(s) configurations consist of high-efficacy LEDs mounted to metal-core circuit boards to maximize heat dissipation and promote long life (up to >L80/100,000 hours). Class 1 electronic drivers are designed to have a power factor >90%, THD <20%, and an expected life of 100,000 hours.

INSTALLATION
Included wall mount plate facilitates a quick and easy installation. Mounting bolts feature a 1000-hour salt fog finish. Optional bi-level motion sensor and NEMA 3, 5 or 7 pin twist lock photocontrol receptacle are also available.

LISTINGS
CSA Listed for wet locations. Light engines and electrical compartment are IP66 rated. Rated for temperatures as low as -40°C minimum ambient.

DesignLights Consortium® (DLC) qualified product. Not all versions of this product may be DLC qualified. Please check the DLC Qualified Products List at www.designlights.org/QPL to confirm which versions are qualified.

WARRANTY
5-year limited warranty. Complete warranty terms located at:
www.acuitybrands.com/CustomerResources/Terms_and_conditions.aspx.

Note: Actual performance may differ as a result of end-user environment and application. All values are design or typical values, measured under laboratory conditions at 25 °C. Specifications subject to change without notice.

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11. CONSISTENCY WITH USM DESIGN PRINCIPLES AND STANDARDS

The *University of Southern Maine Campus and Design Principles and Standards* were created in recognition of the need of the university to grow in a vibrant, aesthetic, and sustainable manner that provides a strong sense of place and conveys an identity as a high-quality institution of learning.

All new buildings shall be designed to create a visual connection with existing campus buildings with a goal of achieving a cohesive campus appearance. New development shall be characterized by excellence in architectural design, craftsmanship, materials, streetscape and landscape improvements, signage, and lighting appropriate for a university in an urban setting in the Northeast.

These principles and standards were intended to regulate the future build out of the institution while ensuring that new development is sensitive to adjacent residential neighborhoods and commercial areas and is successfully integrated with the City as a whole.

11.1 APPLICABILITY

The principles and standards apply to all development on the University of Southern Maine Portland campus. The following summarizes how the proposed project addresses each of the principles and standards found in the USM Campus and Design Principles and Standards.

11.2 PRINCIPLES AND STANDARDS

Principle A Campus Design

Standard A-1: Campus Edges.

Following an extensive evaluation of available sites on the campus, the proposed parking garage has been located on the campus edge bordering Route 295. This site replaces an existing surface lot with a higher density structure, which is remotely located with respect to other campus edges abutting residential neighborhoods.

Standard A-2: Building Orientation

The new parking garage is oriented so that its users easily connect to existing major pedestrian routes between the garage and university destination activities. The massing of the garage reinforces an existing open space which affords access to the Glickman Library, and effectively creates a new courtyard which further highlights the library entrance.

Standard A-3: Pedestrian Environment

The main pedestrian exit of the new parking garage at the northeast stair tower features a canopy overhead, and opens to a large, paved landing to accommodate larger numbers of pedestrians for events. The secondary pedestrian entrance/exit at the northwest, shared with the vehicular entrance, is continuous with an existing sidewalk along the access road leading to Bedford Street, and is within view of the stair tower exit at the existing parking garage. A 6' concrete sidewalk and lighted canopy is planned along the north façade of the new garage as refuge for pedestrians as well. All exits lead to existing campus paths and sidewalks adjacent to vehicle ways or planted zones of lawn and trees. Three crosswalks safely guide pedestrians from the parking garage to important campus destinations.

Standard A-4: Gateways

This standard is not applicable.

Standard A-5: Views and Landmarks

Neither the Bedford Street View Corridor nor the views of the Glickman Library entrance have been impacted by the new garage.

Principle B Access and Circulation

Standard B-1: Connectivity

The new parking garage, located between Wishcamper Center, Glickman/Osher Libraries, and the existing parking garage, provides new pedestrian connections for users of the garage to Wishcamper and Glickman/Osher, as well as connections to existing north south routes to the campus center.

Standard B-2: Circulation

The main pedestrian exit opens to a large, paved landing leading pedestrians to a crosswalk strategically placed at a node to the north of the access road at the closest point to serve Wishcamper, Glickman/Osher, and an existing path to Bedford Street and campus center. The secondary exit, to the northwest, is adjacent to the stair tower exit of the existing garage and leads pedestrians to an existing sidewalk along the access road to Bedford Street, or, to a crosswalk to access the sidewalk along the south of Wishcamper. At the Glickman/Osher library entrance a new paved plaza with a pullout drop off space allows for safe vehicular, and bus drop off of pedestrians, bike parking near the entrance of Glickman, and book drop off. Service and emergency access are newly separated from pedestrian activity; only service vehicles and emergency vehicles will travel beyond the drop off loop and grove to access the Glickman loading dock and the fire lane along the south façade of both parking garages.

Standard B-3: Multi-modality

The proposed site layout will provide clear, safe, and convenient multi-modal circulation paths on-site. A bus and vehicle turnaround and drop-off area is provided by the library entrance. Fire and emergency vehicle access is provided along the southern edge of the building. Measures have been taken to clarify and minimize pedestrian and vehicular crossings. Convenient and accessible routes are provided from the parking garage pedestrian entrances to the adjacent buildings.

The proposed parking garage will include a covered and secured bicycle storage area with capacity to serve bicycle commuters and bicycles owned by residents of new dormitory, Portland Commons. A separate entrance is provided for the bicycle storage area to provide separation from traffic in the garage. Additional bicycle parking is provided along the sidewalk and at building entrances for convenience.

Standard B-4: Traffic Calming

The pedestrian environment is the focus of this design and measures have been taken to enhance this and create a higher level of safety for pedestrians by limiting pedestrian and vehicular interaction.

Standard B-5: Sidewalks

As previously described in Section 10.1 of this Report, several improvements associated with the project are proposed along Bedford Street. This standard will be addressed as part of the TMP Amendment application submitted under separate cover. Private sidewalk layout and materials are shown on the design drawings.

Standard B-6: Street Lights

No work is proposed along public streets; this standard is not applicable.

Principle C Parking, Loading and Service Areas

Standard C-1: Parking Structures - Structure

The proposed parking garage will be a structure which is compatible with its adjacent uses. Its apparent size will match that of the existing garage, and its combination of materials will be compatible also. Thin brick, permanently bonded to precast panels will give the new facility a relationship to other buildings on the campus including the existing garage. This brick, due to the manufacturing standards for precast panels, must be more dimensionally uniform than waterstruck brick, but will have a variegated mixture of tones and will match or complement nearby brickwork. Thin brick that has a uniform sheen or a lack of texture will not be used. Precast concrete spandrels will be a buff color similar to the existing garage and will feature a sandblasted texture with slightly exposed aggregate. Each panel will have a smooth finish top, similar in concept to a coping stone, which will be separated from the face of the panel by a simple shadow joint.

Standard C-2: Parking Structures – Active Uses

This standard is not applicable; the new garage is set back approximately 185 feet from Bedford Street.

Standard C-3: Parking Structures – Decks and Ramps

Because of space limitations on the chosen site, sloping decks will be needed for all parking tiers. A sloping deck of 5% to 6% will be used in the middle bay of the structure, but its length will not be adequate to rise a full story. Sloping decks of 1.9% will be utilized at center portions of the north and south sides of the garage to make up the difference. Only a portion of the center of the north side will be visible from Bedford Street due to its 185-foot setback and its location behind the Wishcamper Center. The visual focus of the views from Bedford Street will be the emphasized pavilions of the north and south ends of the garage.

Standard C-4: Surface Lots

The existing surface parking lot will be replaced by the parking garage; this standard is not applicable.

Standard C-5: Loading and Service Areas

Service areas are consolidated along the southern edge of the garage to conceal them from public view.

Standard C-6: Utility Services

All utilities are located adjacent to the proposed garage out of public view and access.

Principle D Architectural Design

Standard D1: Height

The proposed garage is 50' high, very slightly higher than the existing garage. This is lower than the height allowed by the overlay zone criteria which allows 85'. The height is approximately one story lower than the Wishcamper Center and four stories lower than the Glickman Library. This maintains the precedence of the nearby destination uses and continues their landmark status on the Campus.

Standard D-2: Setbacks

This standard is not applicable.

Standard D-3: Stepbacks

This standard is not applicable.

Standard D-4: Massing

This standard is not applicable.

Standard D-5: Entrances

The primary entrance to the parking garage is located adjacent to a pedestrian route between the Glickman Library and the Wishcamper Center and has been emphasized by a glass-enclosed stair. The secondary entrance which is combined with the vehicles entrance is also adjacent to major pedestrian routes to the campus at the north end of Wishcamper. This location also includes a major bicycle storage facility for 250 bicycles, secured within the new garage.

Standard D-6: Windows

Although the garage will be open to the weather without windows, the concept of transparency at the ground level will be utilized. Instead of walls, this level will be enclosed by metal security gratings, which easily allow views into and out of the garage. A dark color will be used to avoid veiling. This will enhance security and the awareness of activity.

Standard D-7: Materials

The new garage will be constructed of 100-year materials including precast concrete, prefinished metal trim, clear anodized aluminum curtainwall with clear glass.

Standard D-8: Signage

Wayfinding to the new garage will be denoted to the public with a new monument sign at the corner of the garage access drive and Bedford Street.

Wayfinding within the garage will begin with a signboard over the vehicle entrance and will continue within the garage using overhead signage.

Standard D-9: Historic Structures

This standard is not applicable.

Standard D-10 Original Residential Structures

This standard is not applicable.

12. CONSTRUCTION MANAGEMENT PLAN

A Construction Management Plan has been prepared for the proposed project per the City of Portland guidelines. The Contractor will be required to provide adequate safety fencing and signage directing pedestrians safely around the construction area. The Construction Management Plan is attached to this Section for your reference.

12.1 ATTACHMENTS

- Construction Management Plan

Construction Management Plan

Project: University of Southern Maine - Structured Parking Garage

The University of Southern Maine - Structured Parking Garage Construction Management Plan depicts the overall planning, coordination, and control of the proposed construction site, including sequential phasing, from beginning to completion.

The following construction management plan has been developed by the University's Design Team Members based on the components of the project and the City's goal for a 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. This plan minimizes construction impacts in their duration and magnitude to the surrounding area and provides a visual framework to convey and communication the process for addressing site logistics, minimizing conflicts and addressing access for university, construction and emergency vehicles and pedestrians.

Presently the University is soliciting proposals from qualified Construction Managers. It is the intent of the University to allocate the management of the Construction Management Plan to the selected Construction Manager.

The following construction management plan for the USM - Structured Parking Garage may be subject to adjustments based on coordination with the Construction Manager following selection. 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 purpose of this Construction Management Plan is to maintain a safe construction site and minimize impacts to adjacent buildings, university operations and surrounding neighborhood. The selected Construction Manager shall maintain open lines of communication between the University, City, Public and Consultants to mitigate concerns in the most effective manner during construction. This goal is to be attained by continued planning, review, update, communication and execution with all parties. The following sections further define this approach for the successful application of the Construction Management Plan.

B. Development Review of Construction Management Plan

The Construction Manager will continually maintain and update the Construction Management Plan for the duration of the project to augment and improve site safety measures. This is intended to be a live document that is updated as the project progresses

and site conditions change. The focus of each update will be to ensure the safety of the public, pro-active elimination of adverse situations and maintenance of accessibility for necessary services in and around the construction site. As a part of this plan development the initial Construction Management Phasing and Logistics Plans are included at the end of this document.

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

Prior to scheduling a preconstruction meeting and the issuance of any city required permits, the University of Southern Maine and their selected Construction Manager 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.

Anticipated permits, (if applicable) include:

1. **Street Opening and Street Occupancy Permits:** Construction activity in the public right-of-way shall be in accordance with Chapter 25. Sewer and stormwater system connections shall be in accordance with 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 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.

   Based on preliminary geotechnical findings and information it is not anticipated that blasting will be required.

3. **Building Code:** Employ the best practices, as applicable, of Chapter 33 Safeguards During Construction, from the 2015 International Building Code.

Vehicular access will be maintained around the construction site for the entirety of the project for emergency fire access to the rear of the existing parking garage and access to the Glickman Loading dock. Pedestrian access will remain to the Glickman and Wishcamper buildings. Work within Bedford Street may require the temporary closure of lanes.

D. Construction Administration and Communication

USM and the Construction Manager will work diligently to implement a communication strategy that is agreed upon by the City, Stakeholders and Neighbors. 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, nearby

construction sites, 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 USM staff and Construction Manager personnel that is available 24 hours.
2. Construction Signage posted on the site with Contact Information for Construction Manager.
3. Describe any additional communication strategies.
4. All construction and temporary site signage, including signage at cross walks, existing garage and main streets, shall be updated, adjusted and removed as project progresses through each construction phase and at project completion.

E. Construction Schedule

Construction of the garage is anticipated to commence in the winter/spring of 2022 and be substantially complete in April 2023. The initial phase of construction will include alterations to the parking access control equipment within the existing garage and closure of the east entry/exit. This schedule is in line with, and is in support of, the nearby construction of the Portland Commons & Student Success Center buildings.

Work hours to follow City of Portland regulations during the daytime hours as defined in Section 17-18 “Construction Activities for Building permit” and Section 25-129 “Noise, dust and debris” of the City’s Code of Ordinances. Any required off-hour work will be coordinated directly with the City.

Material Deliveries will be coordinated within normal work hours and be stored on-site as shown in the site logistics plans. Construction deliveries are expected to travel from 295 to Forrest Avenue to Bedford Street and then onto the project site.

F. Security & Public Safety

The construction site will be enclosed by temporary chain link fencing during construction. The fencing will be moved in a phased approach in coordination with the site logistics plan. Primary site access will be from Bedford Street to the garage access road and then into the construction site via a swinging site gate. Secondary gates will be provided for emergency access to the rear of the existing garage and the roadway will be maintained and open at all times for access. Gates will be locked during non-work hours and equipped with knox box for emergency access. Emergency Access and deliveries around the project site to the existing USM parking structure, Wishcamper building and Glickman will be maintained at all times. The construction site will follow all requirements of IBC Chapter 33 “Safeguards during Construction” and NFPA 241 “Standard for Safeguarding Construction, Alteration, and Demolition Operations" including construction and placement of necessary separation and safety barriers between the existing garage and construction site.

Structures undergoing construction, alteration, or demolition operations, including those in underground locations, shall comply with NFPA 1 Chapter 16. A complete fire safety and access plan will be developed in coordination with the City of Portland prior to project commencement.

G. Construction Permitting and Traffic Control Plans

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. The contractor will work to minimize impacts from construction and provide safe access around the site. The project shall follow City of Portland requirements for traffic control throughout the duration of the project. Construction activities and deliveries will not impact public access or streets unless directly coordinated and notified prior.

Sewer and Stormwater: Sewer and stormwater water system connections are controlled by Chapters 24 and 32 of the City Code of Ordinance. Tie-ins of the new connections will occur within the existing surface parking lot. All tie-in connections will obtain the appropriate permits and be coordinated with the DPW.

Traffic Control Plans: Construction activity that impacts the existing public street system will (where applicable) be controlled to protect the safety of the construction workers and all modes of the traveling public. Phased construction of the proposed ring road will include traffic control and safety measures. Traffic controls will include temporary signage and barriers where necessary to manage all modes of travel including, vehicle, pedestrian, and bicycle traffic. ADA compliance for affected public pathways will be maintained for the duration of the project.

H. Site Management and Controls

The Construction Manager will address maintaining the site in a safe condition and will include the following:

1. Regular trash and debris removal including the recycling of materials to meet USM's adopted ParkSmart Certification criteria. Trash dumpsters and areas around the dumpsters will be maintained in a clean and orderly manner.
2. Dust controls- The construction shall comply with Portland's requirements under Section 25-129 on Noise, dust and debris (below). Dust control will include street sweeping, water trucks, truck pads and similar measures to minimize dust from construction activities.

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.

3. Noise: The construction shall comply with the University's and Portland's requirements as defined under Section 17- 18 of the City Code (below) and Section 25-129 on Noise, dust and debris

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.

4. Rodent Control will be provided, if applicable, by a professional exterminator and

consistent with Chapter 22 of the City Code.

5. Snow Removal: Pursuant to Section 25-173 Contractors to ensure a safe means of travel within and areas affected by the work zone including:
    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
6. The construction manager shall ensure the site follows all requirements of IBC Chapter 33 “Safeguards during Construction” and NFPA 241 “Standard for Safeguarding Construction, Alteration, and Demolition Operations"

I. Erosion Control and Preservation of Trees

Prior to construction, erosion and sediment controls with be installed as shown on the design drawings. These shall be regularly inspected and maintained for the duration of the project. The preservation of trees and landscaping shall be as shown on the landscaping plans. Care will be taken to avoid damage to the trees and landscaping that is to remain. Landscape, soils and plantings damage during construction activities will be restored, replaced and re-planted to assimilate pre-existing conditions as cataloged by pre-construction photographic documentation, surveys and similar records.

J. Construction Staging Area

The site logistics plan shows planned locations for staging and laydown areas, onsite truck washing stations, materials storage and construction trailers.

Standard deliveries will be coordinated with the effort to minimize disruption to both the surrounding public spaces and the construction site as much as possible. Precast concrete piece deliveries will be continuous throughout the day during the superstructure erection. An off-site queuing yard will be coordinated to optimize deliveries in coordination with on-going erection activities and avoid queuing of vehicles.

K. Parking During Construction

For portions of the project, minimal on-site parking will be available for construction workers. It is anticipated during these times, that parking will be required off-site with transportation to the site. Parking for workers will be prohibited along nearby public roads.

Closure of a limited number of spaces within the existing garage will be required during construction. The CM will provide phasing documents showing the timeframe and quantity of required parking closures within the existing garage. Garage patrons will be provided advance

notification of proposed modifications to create awareness prior to application.

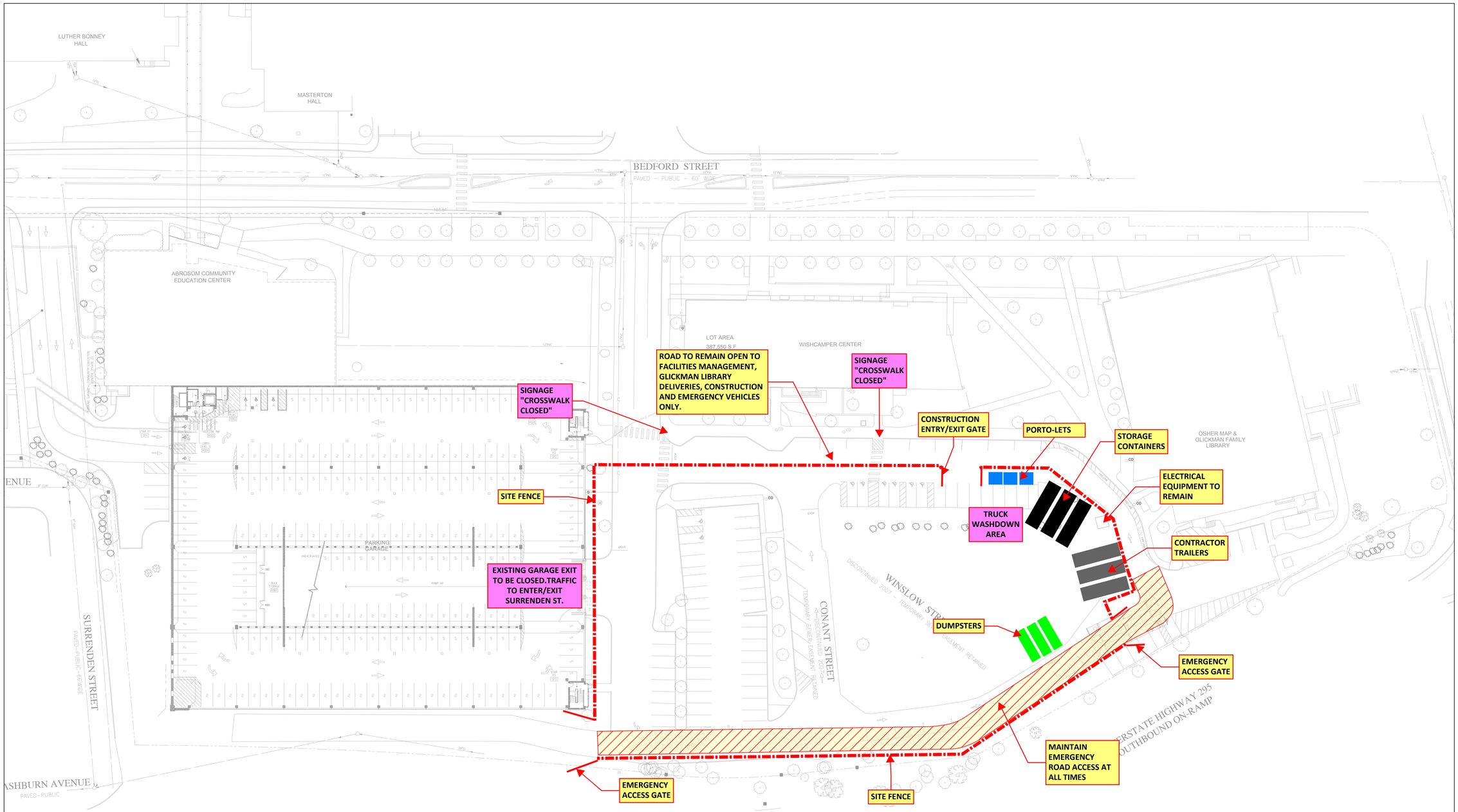
L. Dewatering Plans

A dewatering plan and recommendations will be developed as recommended by the geotechnical report prepared by S.W. Cole. The dewater plan will be submitted and coordinated with the City of Portland. Based on the preliminary geotechnical report it is anticipated that sumping and pumping of shallow excavation will be sufficient to control groundwater.

M. Special Measures as Necessary

The project is proposed to include deep pile-foundations which generally require pile-driving equipment. This technique typically results in ground vibrations in and around the immediate vicinity. To pro-actively mitigate the effects of this construction technique, pre-construction surveys and photographic documentation will be conducted on the surrounding facilities and buildings and, were necessary, vibration monitors installed to document the intensity of the vibrations. An action and monitoring plan along with a photographic catalog of surrounding structures will be will developed and shared with the City and USM in advance of this construction activity.

While is expected that this Construction Management Plan will be updated by the selected Construction Manager, the logistics, staging and control measures presented in this plan are expected in large part, to remain as presented herein. Any modifications, updates or changes in the plan will be submitted to the City of Portland for approval in advance of preceding with any work or portions of work affected by such updates.



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PROJECT:

USM - Structured Parking Garage Phasing Plan

Address

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REVISIONS:

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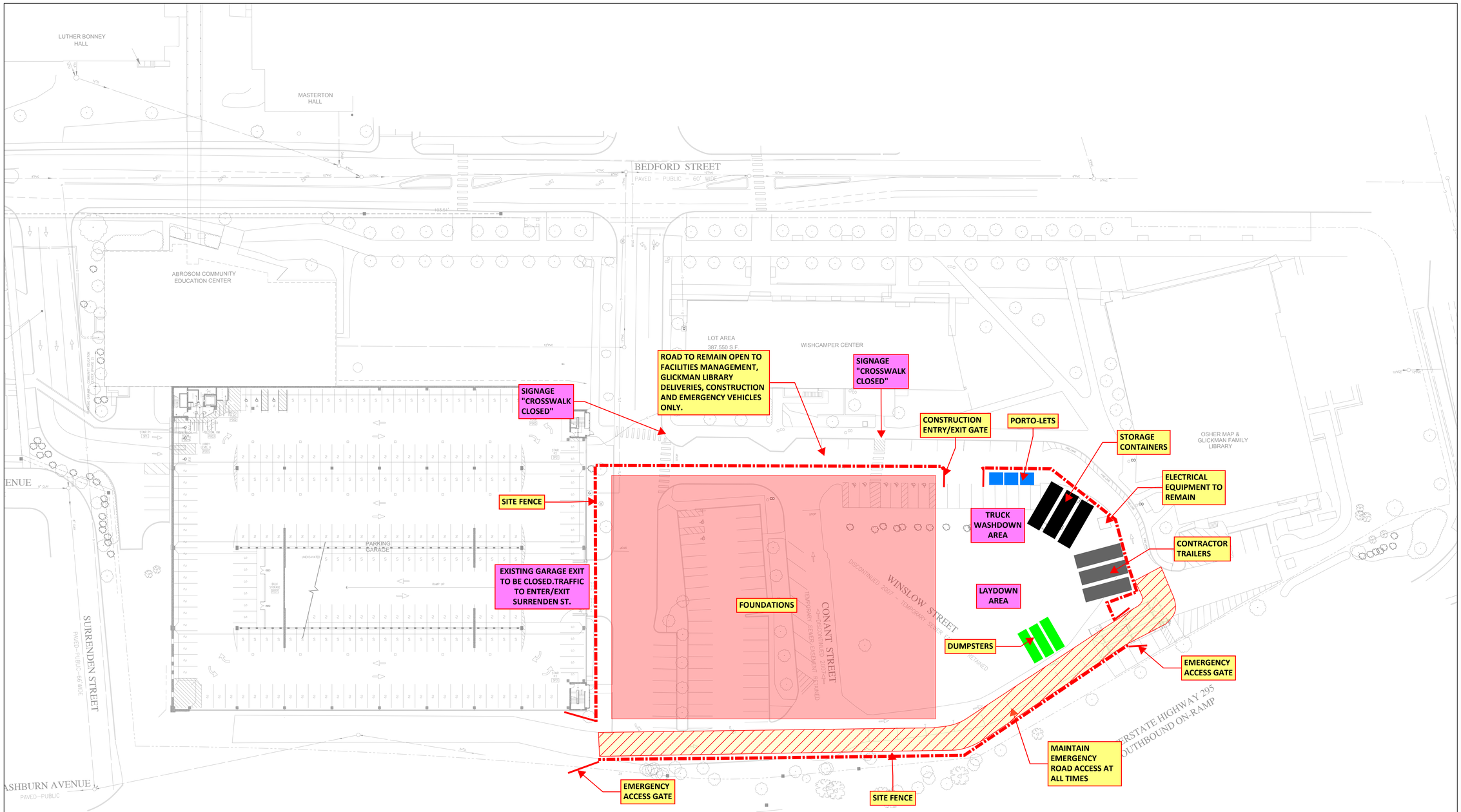
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CHECKED BY	**B.F.**

SHEET TITLE:

PHASE 1 - SITE PREPARATION



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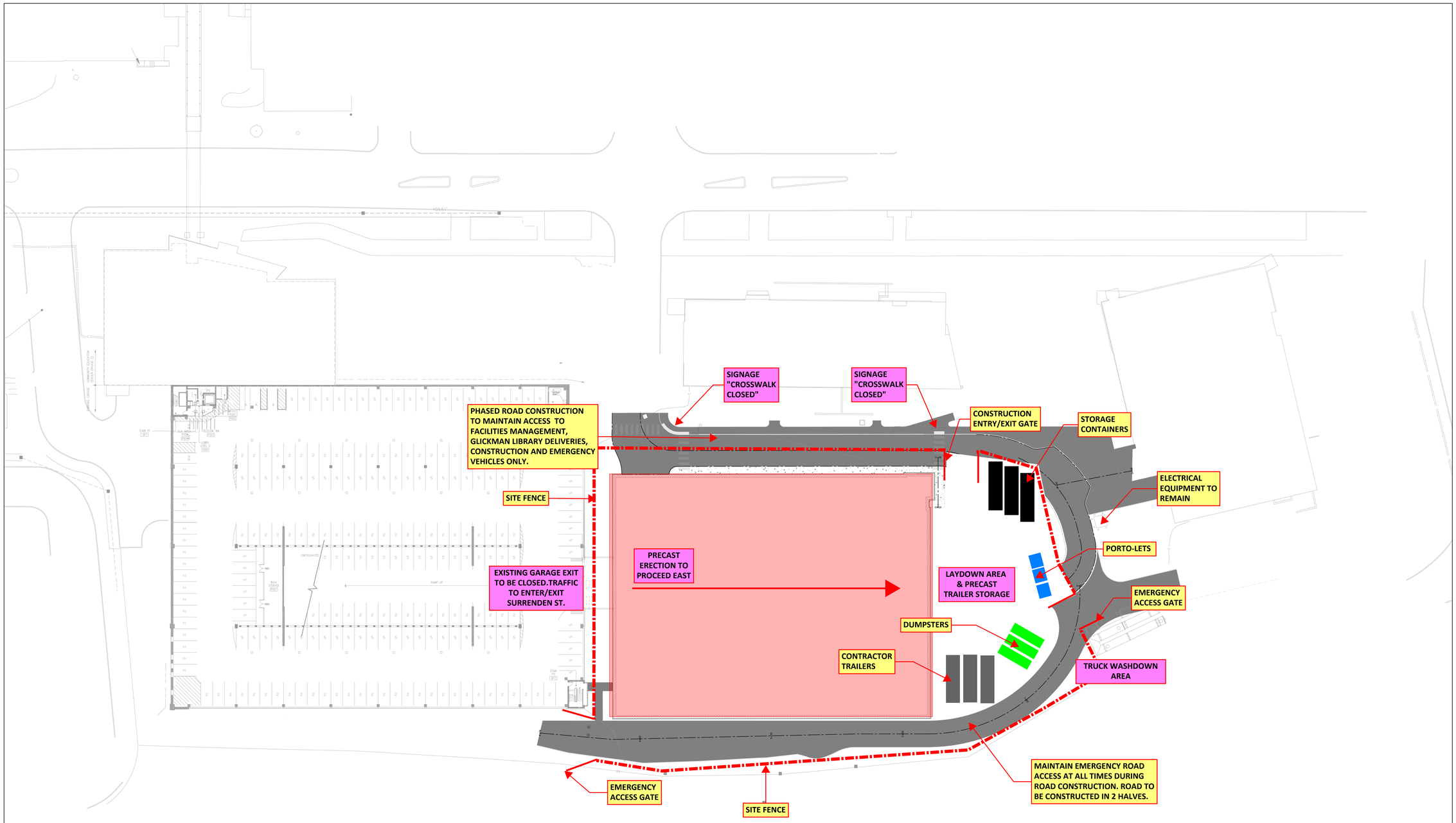
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PHASE 2 - FOUNDATIONS



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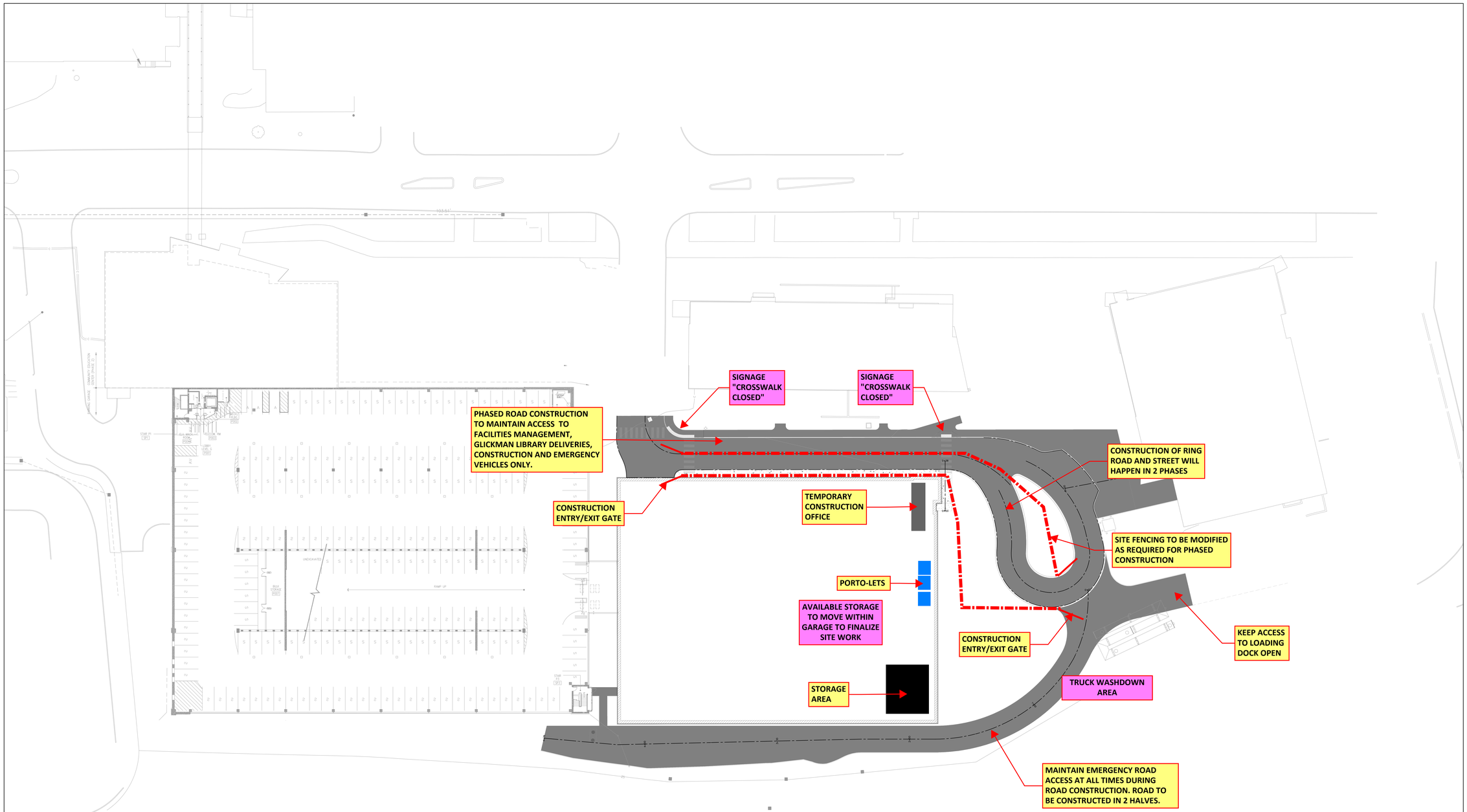
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PHASE 3 - STRUCTURE ERECTION



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CHECKED BY	**B.F.**

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PHASE 4 -RING ROAD & LANDSCAPE

13. BOUNDARY SURVEY

A boundary and topographic survey of the Site was completed by Owen Haskell, Inc. Professional Land Surveyors. The survey is included with the drawings referenced in Section 3 of this Report.

STORMWATER MANAGEMENT PLAN

USM Structured Parking Garage



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woodardcurran.com
COMMITMENT & INTEGRITY DRIVE RESULTS

0233035.00
University of Southern Maine
July 2021

TABLE OF CONTENTS

SECTION **PAGE NO.**

1. STORMWATER MANAGEMENT PLAN 1

1.1 Existing Conditions 1
1.2 Proposed Development 1
1.3 Inspection & Maintenance Requirements 1
1.4 Stormwater Standards 1
1.4.1 Basic Standard (Soil Erosion & Sediment Control) 1
1.4.2 General Standard (Stormwater Quality) 2
1.4.3 Flooding Standard (Stormwater Quantity) 2
1.4.3.1 Stormwater Modeling Methodology 2
1.4.3.2 Pre- and Post-Development Peak Runoff Rate Results 3

APPENDICES

Appendix A: Stormwater Inspection & Maintenance Plan
Appendix B: Stormwater Quality Calculations
Appendix C: HydroCAD Reports
Appendix D: Figures

1. STORMWATER MANAGEMENT PLAN

This Stormwater Management Plan (SWMP) describes existing site conditions, the proposed development, inspection and maintenance requirements for the proposed stormwater system, and compliance with applicable stormwater standards for the proposed structured parking garage located on the University of Southern Maine campus at 44 Bedford Street in Portland, Maine.

1.1 Existing Conditions

The project site is a portion of an approximately 29-acre University campus, south of the Wishcamper Center and north of the I-295 corridor. The project area has been previously developed and is currently utilized for surface parking. Existing conditions consist primarily of impervious paved area and vegetated area utilized for overflow parking and storage. This vegetated parking area consists of a weedy overgrowth and patches of dirt. The project site is not located in a FEMA flood hazard zone. Stormwater runoff from the Site is collected in catch basins and discharged to the City of Portland combined sewer interior to the Site. A small portion of the project area currently drains towards the separated stormwater system in Forest Avenue.

1.2 Proposed Development

The proposed development consists of a structured parking garage, access drive, pedestrian walkways, and associated site improvements. The project will result in approximately 2.4-acres of disturbance. The stormwater management system is comprised of a series of catch basins, a subsurface detention system, and proprietary treatment unit. The subsurface detention and treatment system will consist of large metal pipe and a StormFilter unit, which will provide storage and treatment for site runoff prior to discharging to the City's separated stormwater system in Forest Avenue. As requested by the City, site drainage patterns will be modified to direct stormwater runoff from the proposed development to the City's separated stormwater system in Forest Avenue; the City has indicated that the stormwater system on Forest Avenue has capacity to convey additional stormwater flow from the site.

1.3 Inspection & Maintenance Requirements

General inspection and maintenance of stormwater systems will take place during and after construction. During construction, the Contractor will be responsible for inspecting and maintaining the Site, as described in Section 1.4.1 of this Report. Upon completion of construction, the property owner will be responsible for implementing the Inspection and Maintenance Plan for the proposed stormwater system, which is provided in Appendix A of this Report.

1.4 Stormwater Standards

The project is subject to the MaineDEP Chapter 500 Stormwater Standards. The project is not located within the watershed of an Urban Impaired Stream and is therefore not subject to the Urban Impaired Stream Standard. The following sections describe the project's compliance with the applicable stormwater standards.

1.4.1 Basic Standard (Soil Erosion & Sediment Control)

A variety of erosion and sediment control measures will be utilized during construction, including but not limited to the following:

- Stabilized construction entrances;
- Up-gradient runoff diversion barriers;
- Downgradient sediment barriers;
- Catch basin inlet protection devices;

- Preservation and maintenance of vegetated areas to the maximum extent possible;
- Temporary stabilization of disturbed areas to be exposed for more than seven days;
- Permanent stabilization of final graded areas;
- Controls for fugitive dust, debris, and other materials; and
- Inspection of all measures until the Site is permanently stabilized.

Structural measures will be installed as shown on the design drawings. Details and specifications for these measures are included on the drawings. All measures will be implemented in accordance with the "Maine Erosion and Sedimentation Handbook for Construction: Best Management Practices". All temporary measures will be installed prior to any earth-disturbing activities and will be removed upon permanent stabilization of the Site. The Contractor will be responsible for implementing and maintaining all erosion and sediment control measures in an effective operating condition during construction. Permanent erosion control measures will include vegetation and pavement. After construction, the Owner will be responsible for inspecting and maintaining the Site as described in Section 1.3 of this Report.

1.4.2 General Standard (Stormwater Quality)

The proposed project is considered redevelopment and is therefore subject to Section 4.C(2)(d) of the MaineDEP Chapter 500 Stormwater Standards. As demonstrated by the calculations provided in Appendix B of this Report, the proposed project is required to provide treatment for 60% of the redeveloped area and the proposed StormFilter treatment unit will provide the required treatment. The StormFilter treatment system has been designed in accordance with the MaineDEP proprietary BMP approval letter to Contech dated March 13, 2015. Larger storm events will bypass the StormFilter unit via a weir in the upstream corrugated metal pipe (CMP) system. A letter prepared by Contech describing the design of the StormFilter treatment system is also provided in Appendix B of this Report.

1.4.3 Flooding Standard (Stormwater Quantity)

The project is required to comply with the flooding standard, as the project requires review pursuant to MaineDEP Site Law. Chapter 500 Stormwater Rules require that the stormwater management system detain, retain, or result in the infiltration of the stormwater flows from the 24-hour storm of the 2-year, 10-year, and 25-year frequencies, such that peak flows from the post-development Site do not exceed those from the pre-development Site. Stormwater models were developed for the pre-development and post-development site conditions. Adequate provisions have been made to collect and control stormwater via the proposed stormwater detention system. The following sections describe the stormwater modeling methodology and the results of the HydroCAD analysis.

1.4.3.1 Stormwater Modeling Methodology

Stormwater modeling was completed using the HydroCAD 10.00 Stormwater Modeling System by Applied Microcomputer Systems, which uses TR-20 runoff calculation methodology. The HydroCAD output for both the pre- and post-development models are provided in Appendix C. A 24-hour duration and Type III rainfall distribution was applied to the rainfall depths for the 2-year, 10-year, and 25-year storm events from Appendix H of the DEPs Chapter 500 Rules.

HydroCAD provides a lookup table for curve number (CN), which is a measure of the retention and runoff properties of various surfaces based on the Hydrological Soil Group (HSG) and land cover type using TR-55 methodology. The Site contains Hydrologic Soil Group A soils. The area of each land cover type was delineated utilizing topographical survey information and HydroCAD computed the final CN for each subcatchment based on an area-weighted average. It should be noted that the curve number utilized for the proposed porous pavement is based upon data from the Rhode Island Stormwater Design and Installation Standards Manual.

The Time of Concentration (Tc) is the time required for runoff to travel from the most hydrologically distant point of a watershed to the point of discharge. The longest hydraulic flow path is partitioned into segments based on flow types, land cover, and slopes. The Tc for each watershed is computed within HydroCAD as the sum of the travel times for each consecutive flow segment along the longest hydraulic flow path. The primary types of flow consist of sheet flow, shallow concentrated flow, and channel flows; sheet flow typically occurs within the first 100-feet of runoff. A minimum Tc of six minutes was utilized for all watershed areas.

The HydroCAD model has been prepared utilizing conservative assumptions about the proposed porous pavement walkways. While we anticipate that the proposed walkways will provide some detention and infiltration, this has not been included in the HydroCAD model for the purposes of this stormwater analysis. As previously described, the project area ultimately discharges runoff in two locations; these two discharge points have been utilized as the Study Points for the stormwater analysis:

- Study Point 1: Forest Avenue Storm Drain System; and
- Study Point 2: Combined Sewer System interior to the Site.

Existing and proposed drainage patterns and features are shown on the figures provided in Appendix D.

1.4.3.2 Pre- and Post-Development Peak Runoff Rate Results

The table below provides a summary of the peak runoff rates for the 24-hour, 2-, 10-, and 25-year Type III storm events:

Study Point		Peak Runoff Rate (cfs)		
		2-Year Storm	10-Year Storm	25-Year Storm
#1 (Separated Stormwater System)	Pre-Development	0.9	1.9	2.7
	Post-Development	1.7	3.9	8.4
#2 (Combined Sewer System)	Pre-Development	2.6	5.2	7.6
	Post-Development	0.5	1.0	1.5
Net Change	Pre-Development	3.5	7.1	10.3
	Post-Development	2.2	4.9	9.9

The proposed stormwater management system has been designed to improve and maintain current runoff conditions to the maximum extent possible. As previously noted, the City of Portland has requested that the site drainage patterns be modified to direct stormwater runoff from the proposed development to the City's separated stormwater system in Forest Avenue; as demonstrated by the table above, the result is a reduction in peak runoff rates to the combined sewer system (Study Point #2), an increase in peak runoff rates to the separated stormwater system (Study Point #1), but an overall reduction in the net peak runoff rates from the site during the 2-, 10- and 25-year storm events.

The City of Portland has indicated that the Forest Avenue separated stormwater system has capacity for additional stormwater flow. Additionally, the proposed stormwater management system has been adequately sized to safely convey runoff from the proposed site. Therefore, we do not anticipate that the proposed development will result in any adverse effects, including flooding and erosion, to abutting properties as a result of the project. We respectfully request approval for the proposed increase in the peak rate of runoff to the Forest Avenue stormwater system in order to satisfy the City's desire to separate the runoff from the proposed development from the combined sewer.

APPENDIX A: STORMWATER INSPECTION & MAINTENANCE PLAN

STORMWATER INSPECTION & MAINTENANCE PLAN

USM Structured Parking Garage, Portland, Maine

General inspection and maintenance during and after construction must take place in accordance with the requirements outlined in Appendix B of the Maine Department of Environmental Protection (MaineDEP) Chapter 500 Rules. Upon completion of the project, the Owner will assume responsibility for overseeing the property, including the inspection and maintenance of the Site's stormwater drainage system and treatment measures outlined herein. A person with knowledge of stormwater management and erosion and sediment control, including the standards and conditions in the permit, shall conduct the inspections and perform maintenance of the facilities.

Inspection and maintenance activities will be performed per the attached checklist, schedule, StormFilter guidelines; an example page of the BMP Maintenance Log that shall be kept on-site is also attached.

Storm Drain System

Trash, debris, and sediment shall be removed from storm drain pipes and catch basins as needed on a semi-annual basis. In addition to the inspection and maintenance of stormwater systems, paved areas will be inspected annually each spring. Visual inspections will enable parking areas to be kept clean and clear through periodic sweeping and winter plowing as required. The inspections will also ensure pavement markings are repainted as needed to maintain proper traffic circulation and parking space delineation. Paved areas will be plowed and sanded as often as necessary to maintain public safety. Periodic sweeping of pavement will keep the parking areas clean and will reduce the amount of sediment available to enter the stormwater systems, in turn reducing the need to clean the stormwater systems.

Porous Pavement

Winter maintenance procedures may be problematic (e.g., scraping by plows, clogging by sand, clogging by or inability to treat de-icing chemicals). Snow removal and deicing activities should be done carefully to avoid disturbance to the pavement structure. The plow blade should be raised 1" above the surface or outfitted with a flexible rubber bottom piece. Porous pavement has the potential to become impervious if not properly maintained. Proper maintenance should consist of the following:

- Frequent inspections should be performed during the first few months following construction; the system should inspected routinely on an annual basis thereafter. Inspections should be made after significant storm events to check for surface ponding that could indicate failure due to clogging. Non-routine maintenance may require reconstruction of the surface treatment, and possibly the filter and reservoir layers, to relieve major clogging.
- Prevent sedimentation due to the erosion of areas upgradient of the porous pavement.
- Prevent vehicles with muddy wheels from accessing the porous pavement.
- Sweep, vacuum and/or pressure wash pavement twice annually at a minimum.
- Limit salt use for deicing and do not use sand.
- Remove leaves and organic debris in the fall.
- Measures should be taken to ensure that an area designed to be porous does not receive a future overlay of conventional non-porous paving.

StormFilter System

The StormFilter system must be inspected at least once every six months, and the filters maintained annually per the manufacturer's guidelines, which are outlined in the attached guidance document.

STORMWATER INSPECTION CHECKLIST

Inspection by: _____ Date: _____

Stormwater Management Feature	Condition						Comments
Subsurface Detention System	no siltation		some siltation		heavily silted in		
Subsurface Detention System	no clogging/flooding		some clogging/flooding		heavy clogging/flooding		
Subsurface Detention System	outlet free of erosion		some erosion at outlet		outlet heavily eroded		
Subsurface Detention System	inlet/outlet clear		some debris		completely blocked		
StormFilter System*	Cartridges are in good condition		Cartridges in need of cleaning		Cartridges in need of replacement		
StormFilter System*	no clogging/flooding		some clogging/flooding		heavy clogging/flooding		
Porous Pavement	No sediment or debris accumulation		Some sediment or debris accumulation		Excessive sediment or debris accumulation		
Porous Pavement	Structure is in good condition.		Structure has small visible wear.		Structure has excessive visible wear.		

**See attached manufacturer's guidelines for StormFilter System maintenance and inspection.*

Recommended Actions: _____

_____

Actions Completed: _____ Date: _____

STORMWATER MAINTENANCE TASKS & RECOMMENDED SCHEDULE

TASKS	DETENTION AND STORMFILTER SYSTEM	POROUS PAVEMENT	STORM DRAIN PIPES	SCHEDULE
Inspect for sediment & debris accumulation	X	X	X	Spring and Fall
Remove sediment & Debris accumulation	X	X	X	As needed
Inspect for erosion				As needed
Reestablish vegetation in erosion areas				Early spring
Inspect structural elements during wet weather and compare to as-built plans	X	X	X	Annually
Make adjustments or replacements as determined by wet weather observations	X	X	X	As needed
Keep records of all inspections and maintenance activities	X	X	X	Annually
Have a professional engineer perform emergency inspections upon identification of severe problems	X	X	X	As needed

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StormFilter Inspection and Maintenance Procedures



The Stormwater Management StormFilter®

Maintenance Guidelines

The primary purpose of the Stormwater Management StormFilter® is to filter and prevent pollutants from entering our waterways. Like any effective filtration system, periodically these pollutants must be removed to restore the StormFilter to its full efficiency and effectiveness.

Maintenance requirements and frequency are dependent on the pollutant load characteristics of each site. Maintenance activities may be required in the event of a chemical spill or due to excessive sediment loading from site erosion or extreme storms. It is a good practice to inspect the system after major storm events.

Maintenance Procedures

Although there are many effective maintenance options, we believe the following procedure to be efficient, using common equipment and existing maintenance protocols. The following two-step procedure is recommended::

1. **Inspection**
   - Inspection of the vault interior to determine the need for maintenance.
2. **Maintenance**
   - Cartridge replacement
   - Sediment removal

Inspection and Maintenance Timing

At least one scheduled inspection should take place per year with maintenance following as warranted.

First, an inspection should be done before the winter season. During the inspection the need for maintenance should be determined and, if disposal during maintenance will be required, samples of the accumulated sediments and media should be obtained.

Second, if warranted, a maintenance (replacement of the filter cartridges and removal of accumulated sediments) should be performed during periods of dry weather.



In addition to these two activities, it is important to check the condition of the StormFilter unit after major storms for potential damage caused by high flows and for high sediment accumulation that may be caused by localized erosion in the drainage area. It may be necessary to adjust the inspection/ maintenance schedule depending on the actual operating conditions encountered by the system. In general, inspection activities can be conducted at any time, and maintenance should occur, if warranted, during dryer months in late summer to early fall.

Maintenance Frequency

The primary factor for determining frequency of maintenance for the StormFilter is sediment loading.

A properly functioning system will remove solids from water by trapping particulates in the porous structure of the filter media inside the cartridges. The flow through the system will naturally decrease as more and more particulates are trapped. Eventually the flow through the cartridges will be low enough to require replacement. It may be possible to extend the usable span of the cartridges by removing sediment from upstream trapping devices on a routine as-needed basis, in order to prevent material from being re-suspended and discharged to the StormFilter treatment system.

The average maintenance lifecycle is approximately 1-5 years. Site conditions greatly influence maintenance requirements. StormFilter units located in areas with erosion or active construction may need to be inspected and maintained more often than those with fully stabilized surface conditions.

Regulatory requirements or a chemical spill can shift maintenance timing as well. The maintenance frequency may be adjusted as additional monitoring information becomes available during the inspection program. Areas that develop known problems should be inspected more frequently than areas that demonstrate no problems, particularly after major storms. Ultimately, inspection and maintenance activities should be scheduled based on the historic records and characteristics of an individual StormFilter system or site. It is recommended that the site owner develop a database to properly manage StormFilter inspection and maintenance programs..



Inspection Procedures

The primary goal of an inspection is to assess the condition of the cartridges relative to the level of visual sediment loading as it relates to decreased treatment capacity. It may be desirable to conduct this inspection during a storm to observe the relative flow through the filter cartridges. If the submerged cartridges are severely plugged, then typically large amounts of sediments will be present and very little flow will be discharged from the drainage pipes. If this is the case, then maintenance is warranted and the cartridges need to be replaced.

Warning: In the case of a spill, the worker should abort inspection activities until the proper guidance is obtained. Notify the local hazard control agency and Contech Engineered Solutions immediately.

To conduct an inspection:

Important: Inspection should be performed by a person who is familiar with the operation and configuration of the StormFilter treatment unit.

1. If applicable, set up safety equipment to protect and notify surrounding vehicle and pedestrian traffic.
2. Visually inspect the external condition of the unit and take notes concerning defects/problems.
3. Open the access portals to the vault and allow the system vent.
4. Without entering the vault, visually inspect the inside of the unit, and note accumulations of liquids and solids.
5. Be sure to record the level of sediment build-up on the floor of the vault, in the forebay, and on top of the cartridges. If flow is occurring, note the flow of water per drainage pipe. Record all observations. Digital pictures are valuable for historical documentation.
6. Close and fasten the access portals.
7. Remove safety equipment.
8. If appropriate, make notes about the local drainage area relative to ongoing construction, erosion problems, or high loading of other materials to the system.
9. Discuss conditions that suggest maintenance and make decision as to weather or not maintenance is needed.

Maintenance Decision Tree

The need for maintenance is typically based on results of the inspection. The following Maintenance Decision Tree should be used as a general guide. (Other factors, such as Regulatory Requirements, may need to be considered)

1. Sediment loading on the vault floor.
   a. If >4" of accumulated sediment, maintenance is required.
2. Sediment loading on top of the cartridge.
   a. If >1/4" of accumulation, maintenance is required.
3. Submerged cartridges.
   a. If >4" of static water above cartridge bottom for more than 24 hours after end of rain event, maintenance is required. (Catch basins have standing water in the cartridge bay.)
4. Plugged media.
   a. If pore space between media granules is absent, maintenance is required.
5. Bypass condition.
   a. If inspection is conducted during an average rain fall event and StormFilter remains in bypass condition (water over the internal outlet baffle wall or submerged cartridges), maintenance is required.
6. Hazardous material release.
   a. If hazardous material release (automotive fluids or other) is reported, maintenance is required.
7. Pronounced scum line.
   a. If pronounced scum line (say ≥ 1/4" thick) is present above top cap, maintenance is required.



Maintenance

Depending on the configuration of the particular system, maintenance personnel will be required to enter the vault to perform the maintenance.

Important: If vault entry is required, OSHA rules for confined space entry must be followed.

Filter cartridge replacement should occur during dry weather. It may be necessary to plug the filter inlet pipe if base flows is occurring.

Replacement cartridges can be delivered to the site or customers facility. Information concerning how to obtain the replacement cartridges is available from Contech Engineered Solutions.

Warning: In the case of a spill, the maintenance personnel should abort maintenance activities until the proper guidance is obtained. Notify the local hazard control agency and Contech Engineered Solutions immediately.

To conduct cartridge replacement and sediment removal maintenance:

1. If applicable, set up safety equipment to protect maintenance personnel and pedestrians from site hazards.
2. Visually inspect the external condition of the unit and take notes concerning defects/problems.
3. Open the doors (access portals) to the vault and allow the system to vent.
4. Without entering the vault, give the inside of the unit, including components, a general condition inspection.
5. Make notes about the external and internal condition of the vault. Give particular attention to recording the level of sediment build-up on the floor of the vault, in the forebay, and on top of the internal components.
6. Using appropriate equipment offload the replacement cartridges (up to 150 lbs. each) and set aside.
7. Remove used cartridges from the vault using one of the following methods:

Method 1:

A. This activity will require that maintenance personnel enter the vault to remove the cartridges from the under drain manifold and place them under the vault opening for lifting (removal). Disconnect each filter cartridge from the underdrain connector by rotating counterclockwise 1/4 of a turn. Roll the loose cartridge, on edge, to a convenient spot beneath the vault access.

   Using appropriate hoisting equipment, attach a cable from the boom, crane, or tripod to the loose cartridge. Contact Contech Engineered Solutions for suggested attachment devices.

B. Remove the used cartridges (up to 250 lbs. each) from the vault.



Important: Care must be used to avoid damaging the cartridges during removal and installation. The cost of repairing components damaged during maintenance will be the responsibility of the owner.

C. Set the used cartridge aside or load onto the hauling truck.

D. Continue steps a through c until all cartridges have been removed.

Method 2:

A. This activity will require that maintenance personnel enter the vault to remove the cartridges from the under drain manifold and place them under the vault opening for lifting (removal). Disconnect each filter cartridge from the underdrain connector by rotating counterclockwise 1/4 of a turn. Roll the loose cartridge, on edge, to a convenient spot beneath the vault access.

B. Unscrew the cartridge cap.

C. Remove the cartridge hood and float.

D. At location under structure access, tip the cartridge on its side.

E. Empty the cartridge onto the vault floor. Reassemble the empty cartridge.

F. Set the empty, used cartridge aside or load onto the hauling truck.

G. Continue steps a through e until all cartridges have been removed.

8. Remove accumulated sediment from the floor of the vault and from the forebay. This can most effectively be accomplished by use of a vacuum truck.
9. Once the sediments are removed, assess the condition of the vault and the condition of the connectors.
10. Using the vacuum truck boom, crane, or tripod, lower and install the new cartridges. Once again, take care not to damage connections.
11. Close and fasten the door.
12. Remove safety equipment.
13. Finally, dispose of the accumulated materials in accordance with applicable regulations. Make arrangements to return the used **empty** cartridges to Contech Engineered Solutions.

Material Disposal

The accumulated sediment found in stormwater treatment and conveyance systems must be handled and disposed of in accordance with regulatory protocols. It is possible for sediments to contain measurable concentrations of heavy metals and organic chemicals (such as pesticides and petroleum products). Areas with the greatest potential for high pollutant loading include industrial areas and heavily traveled roads.

Sediments and water must be disposed of in accordance with all applicable waste disposal regulations. When scheduling maintenance, consideration must be made for the disposal of solid and liquid wastes. This typically requires coordination with a local landfill for solid waste disposal. For liquid waste disposal a number of options are available including a municipal vacuum truck decant facility, local waste water treatment plant or on-site treatment and discharge.

Related Maintenance Activities - Performed on an as-needed basis

StormFilter units are often just one of many structures in a more comprehensive stormwater drainage and treatment system.

In order for maintenance of the StormFilter to be successful, it is imperative that all other components be properly maintained. The maintenance/repair of upstream facilities should be carried out prior to StormFilter maintenance activities.

In addition to considering upstream facilities, it is also important to correct any problems identified in the drainage area. Drainage area concerns may include: erosion problems, heavy oil loading, and discharges of inappropriate materials.







Inspection Report

Date: Personnel:

Location: System Size:

System Type: Vault ☐ Cast-In-Place ☐ Linear Catch Basin ☐ Manhole ☐ Other ☐

Sediment Thickness in Forebay: Date:

Sediment Depth on Vault Floor:

Structural Damage:

Estimated Flow from Drainage Pipes (if available):

Cartridges Submerged: Yes ☐ No ☐ Depth of Standing Water:

StormFilter Maintenance Activities (check off if done and give description)

☐ Trash and Debris Removal:

☐ Minor Structural Repairs:

☐ Drainage Area Report

Excessive Oil Loading: Yes ☐ No ☐ Source:

Sediment Accumulation on Pavement: Yes ☐ No ☐ Source:

Erosion of Landscaped Areas: Yes ☐ No ☐ Source:

Items Needing Further Work:

Owners should contact the local public works department and inquire about how the department disposes of their street waste residuals.

Other Comments:

Review the condition reports from the previous inspection visits.

StormFilter Maintenance Report

Date: _____ Personnel: _____

Location: _____ System Size: _____

System Type: Vault ☐ Cast-In-Place ☐ Linear Catch Basin ☐ Manhole ☐ Other ☐

List Safety Procedures and Equipment Used: _____

_____

_____

System Observations

Months in Service:

Oil in Forebay (if present): Yes ☐ No ☐

Sediment Depth in Forebay (if present): _____

Sediment Depth on Vault Floor: _____

Structural Damage: _____

Drainage Area Report

Excessive Oil Loading: Yes ☐ No ☐ Source: _____

Sediment Accumulation on Pavement: Yes ☐ No ☐ Source: _____

Erosion of Landscaped Areas: Yes ☐ No ☐ Source: _____

StormFilter Cartridge Replacement Maintenance Activities

Remove Trash and Debris: Yes ☐ No ☐ Details: _____

Replace Cartridges: Yes ☐ No ☐ Details: _____

Sediment Removed: Yes ☐ No ☐ Details: _____

Quantity of Sediment Removed (estimate?):

Minor Structural Repairs: Yes ☐ No ☐ Details: _____

Residuals (debris, sediment) Disposal Methods: _____

Notes:

_____

_____

_____

_____

_____

_____

_____

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Support

- Drawings and specifications are available at www.conteches.com.
- Site-specific design support is available from our engineers.

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Stormwater BMP Maintenance Log

BMP Structure	Inspector (Name)	Work Performed	Date Performed	Comments
Pavement Sweeping				
Porous Pavement				
Catch Basins				
CMP System				
StormFilter System				
Other				
Additional Comments:				

APPENDIX B: STORMWATER QUALITY CALCULATIONS

WOODARD &CURRAN COMMITMENT & INTEGRITY DRIVE RESULTS
41 HUTCHINS DRIVE
PORTLAND, MAINE 04102

CLIENT: USM
PROJECT: Structured Parking Garage
CALCS BY: JTC/AEF
DATE: 7/12/2021
PROJECT NO.: 233035.00

Redevelopment Treatment Calculations - Per Section 4.C.2.d of the MaineDEP Chapter 500 Rules

Area of Redevelopment (acres) = 2.37

a. Existing Pollutant Impact

Land Use	Pollutant Ranking	Land Area (Ac.)	Impact
High Use Roads	5	0.00	0.00
Medium Use Roads/Parking Lot	4	1.29	5.15
Other Parking Lots/Flat Asphalt Roofs/Industrial Roofs	3	0.00	0.00
Other Roofs/Landscaped Area/Paved Walkway	2	1.07	2.13
Non-grass Landscaping/Stormwater	1	0.02	0.02
Forest/Meadow	0	0.00	0.00
	Sum:	2.37	7.30

b. Proposed Pollutant Impact

Land Use	Pollutant Ranking	Land Area (Ac.)	Impact
High Use Roads	5	0.00	0.00
Medium Use Roads/Parking Lot	4	1.72	6.88
Other Parking Lots/Flat Asphalt Roofs/Industrial Roofs	3	0.00	0.00
Other Roofs/Landscaped Area/Paved Walkway	2	0.65	1.29
Non-grass Landscaping/Stormwater	1	0.00	0.00
Forest/Meadow	0	0.00	0.00
	Sum:	2.37	8.17

c. Existing Impact/Total Redevelopment Acres

3.1

d. Proposed Impact/Total Redevelopment Acres

3.4

e. Item D Minus Item C

0.4

Treatment Requirements - Per Table 3 of the MaineDEP Chapter 500 Rules

Treatment Required (%) = 60%
Treatment Area Required (SF) = 61,940

Treatment Design Calculations

StormFilter System:

Treated Area = 61940 SF
WQV (required) = 1" x Treatment Area Required = 5162 CF

*Refer to Contech Design Review Letter for information on the sizing and design of the StormFilter Treatment System.

Contech Engineered Solutions LLC
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Scarborough, ME 04074
Phone: (207) 885-6191
www.ContechES.com

Amy Lebel
Woodard & Curran
41 Hutchins Drive
Portland, ME 04102

July 28, 2021

RE: University of Southern Maine Structured Parking Garage (Contech Reference No. 635857)
Review of StormFilter Design

To whom it may concern,

The purpose of this letter is to document Contech Engineered Solutions review of the plans and the proposed application of the StormFilter Media Filtration System water quality unit for the USM Structured Parking Garage site in Portland, ME.

Contech Engineered Solutions (Contech) has reviewed the StormFilter (SF) design for this project. We believe the SF configuration to be an appropriate water quality solution for this site.

The SF system with Zeolite-Phosphosorb (Zeo-Psorb) cartridges is approved for use by MEDEP meeting the General Standard of the Stormwater rules (Chapter 500) if designed, installed, and maintained in accordance with the provisions noted in the March 13, 2015 approval letter from the MEDEP.

The SF system is designed in accordance with the maximum drain down rate of 0.27 gallons per minute per square foot of filter surface area (3 gpm per 27" cartridge). Additionally, the SF is designed with an upstream sumped water quality volume (WQv) detention system to retain, route and treat the entire WQ event flow from the contributing drainage area to the treatment unit. The resultant volume from the WQ event storm is detained in the upstream detention to an elevation below any bypass flow paths resulting in a routed storm event volume through the SF cartridges with a required emptying time of 24 to 48 hours. Due to the extended detention time upstream of the SF in the sumped WQv detention system, Contech assumes sedimentation of the larger solids at an estimated 50 percent reduction of the total suspended solids prior to the treatment by the SF.

The engineer of record provided a WQv of 5,162 cf and a drainage area of 2.02 ac, of which 1.54 ac is impervious. In order to adequately treat the runoff from this area, Contech recommends a SF manhole SFMH72 with seven (7) – 27" Zeo-Psorb cartridges.

The SF system requires a hydraulic headwater condition to fully immerse the media and activate the cartridge float valve. For 27" SF cartridges, this headwater condition is 3.05 ft above SF outlet invert. This is achieved by the either physical inlet to outlet pipe elevation drop or an upstream WQ detention filling during the WQ storm flow to the required SF float valve activation elevation.

The site detention system storage is designed to store the WQv and flood control volume separately. The two parts of the detention system are separated by a weir to ensure that the WQv is captured for treatment prior to overflowing into the flood control detention. The WQv shall be stored in a 66" diameter corrugated metal pipe (CMP) with a 6" sump depth. The treatment flow outlet pipe stub is positioned 6" above the 66" CMP WQv detention invert.

The WQv is routed through the SF vault with a drain down flow rate of 0.047 cfs (3 gpm per cartridge x 7 cartridges / 448.83 gpm/cfs) and is estimated to drain down in 30.5 hours. The resulting cumulative treated volume for this design is 5,185 cf.

Contech Engineered Solutions LLC
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Phone: (207) 885-6191
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The weir plate between the WQv and the Flood Control Detention CMP with high overflow weir is positioned to allow storms larger than the WQ storm to overflow into the flood control detention. The flood control detention is a 72" diameter CMP system with an internal flow control wall to control outlet flows to a downstream structure.

Our systems require periodic maintenance to continue operating properly. Given typical runoff pollutant loading rates, Contech recommends maintenance inspections on an annual basis.

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,

David Adams, PE
Contech Engineered Solutions, LLC.
(207) 885-6191
dave.adams@ContechES.com

Determining Number of Cartridges for Systems Downstream of Detention

CONTECH Engineered Solutions Engineer:	DRA
Date Prepared:	7/22/2021

Site Information

Project Name	USM Structured Parking Garage
Project State	Maine
Project Location	Portland
Drainage Area, Ad	2.02 ac
Impervious Area, Ai	1.54 ac
Pervious Area, Ap	0.48
% Impervious	76.09%
Runoff Coefficient, Rc	0.73

Upstream Detention System

Water Quality Volume	5,162 cf
	(provided by Woodard and Curran)
24-hr release rate	27 gpm
48-hr release rate	13 gpm
Detention pretreatment credit	50%

Mass loading calculations

Mean Annual Rainfall, P	47.33 in
Agency required % removal	85%
Percent Runoff Capture	85%
MEDEP Mean Annual Runoff, Vt	252,674 ft^3
Event Mean Concentration of Pollutant, EMC	68 mg/l

Filter System

Filtration brand	StormFilter
Cartridge height	27 in
Specific Flow Rate per MEDEP authorization	3.00 gpm/cart

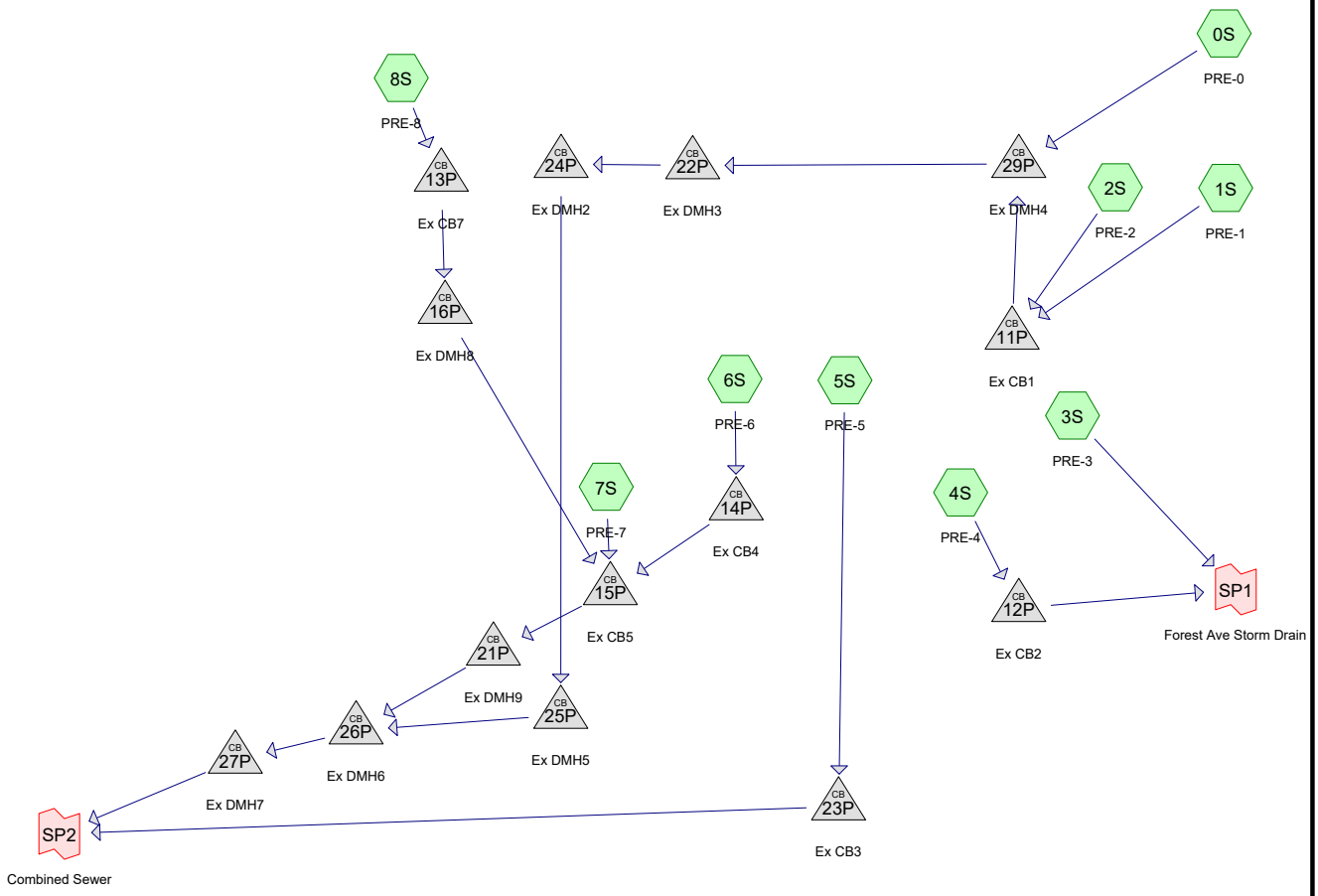
Number of cartridges - mass loading

Mass removed by pretreatment system, M_{pre}	536 lbs
Mass load to filters after pretreatment, M_{pass1}	536 lbs
Estimate the required filter efficiency, E_{filter}	0.70
Mass to be captured by filters, M_{filter}	375 lbs
Allowable Cartridge Flow rate, Q_{cart}	22.50 gpm
Mass load per cartridge, M_{cart} (lbs)	54 lbs
Number of Cartridges required, N_{mass}	7 ea
Treatment Capacity	21 gpm

Determine Critical Sizing Value

SUMMARY	
Mass Loading	
Treatment Mass (lbs)	375
Cartridge Mass Capacity (lbs)	54
Number of Cartridges	7

APPENDIX C: HYDROCAD REPORTS



Subcat Reach Pond Link

Routing Diagram for C1. Pre
Prepared by Woodard Curran, Printed 7/28/2021
HydroCAD® 10.00-21 s/n 01204 © 2018 HydroCAD Software Solutions LLC

Area Listing (all nodes)

Area (acres)	CN	Description (subcatchment-numbers)
0.60	68	Grass cover (parking area), HSG A (1S, 2S, 3S, 4S, 5S)
0.60	39	Grass cover, Good, HSG A (0S, 1S, 2S, 3S, 4S, 5S, 6S, 7S, 8S)
1.45	98	Paved parking, HSG A (0S, 1S, 2S, 3S, 4S, 5S, 6S, 7S, 8S)
0.15	40	Porous Pavement (0S, 1S, 2S, 3S, 5S, 6S, 8S)
2.79	**76**	**TOTAL AREA**

Summary for Subcatchment 0S: PRE-0

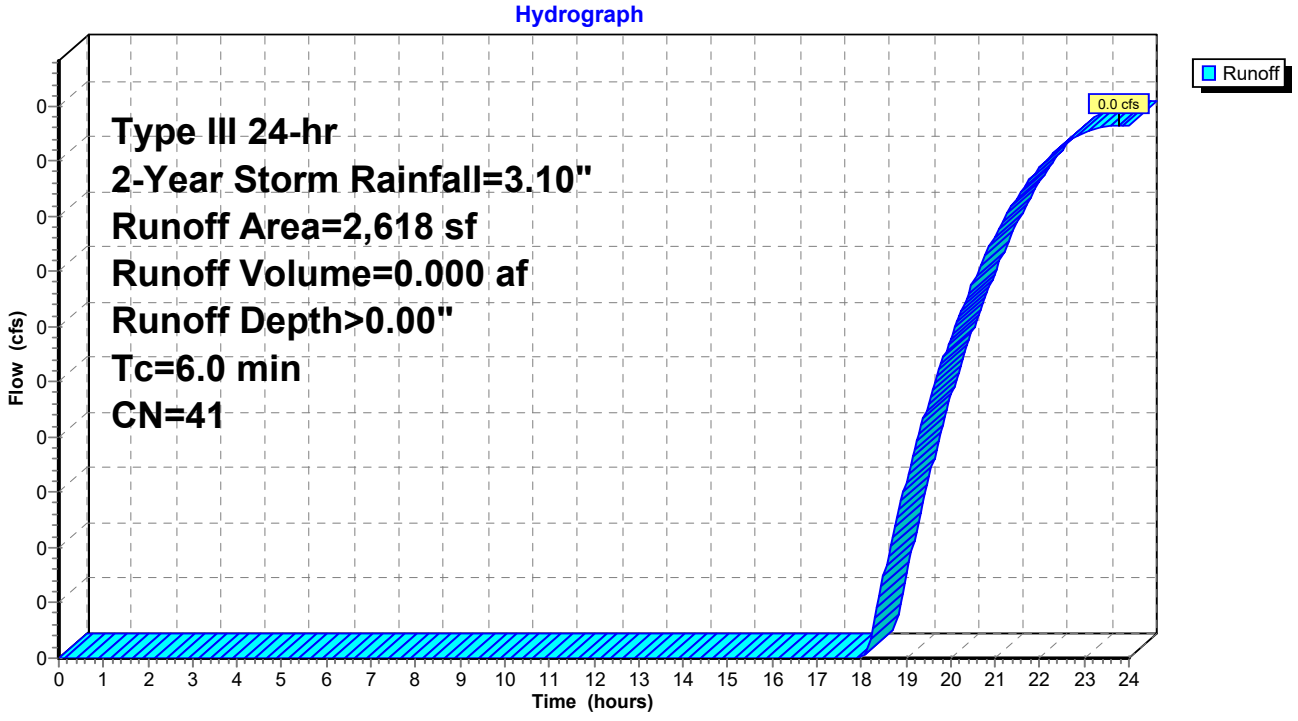
Runoff = 0.0 cfs @ 23.77 hrs, Volume= 0.000 af, Depth> 0.00"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Type III 24-hr 2-Year Storm Rainfall=3.10"

	Area (sf)	CN	Description
	70	98	Paved parking, HSG A
	1,403	39	Grass cover, Good, HSG A
*	1,145	40	Porous Pavement
	2,618	41	Weighted Average
	2,548		97.33% Pervious Area
	70		2.67% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					**Direct Entry,**

Subcatchment 0S: PRE-0



Summary for Subcatchment 1S: PRE-1

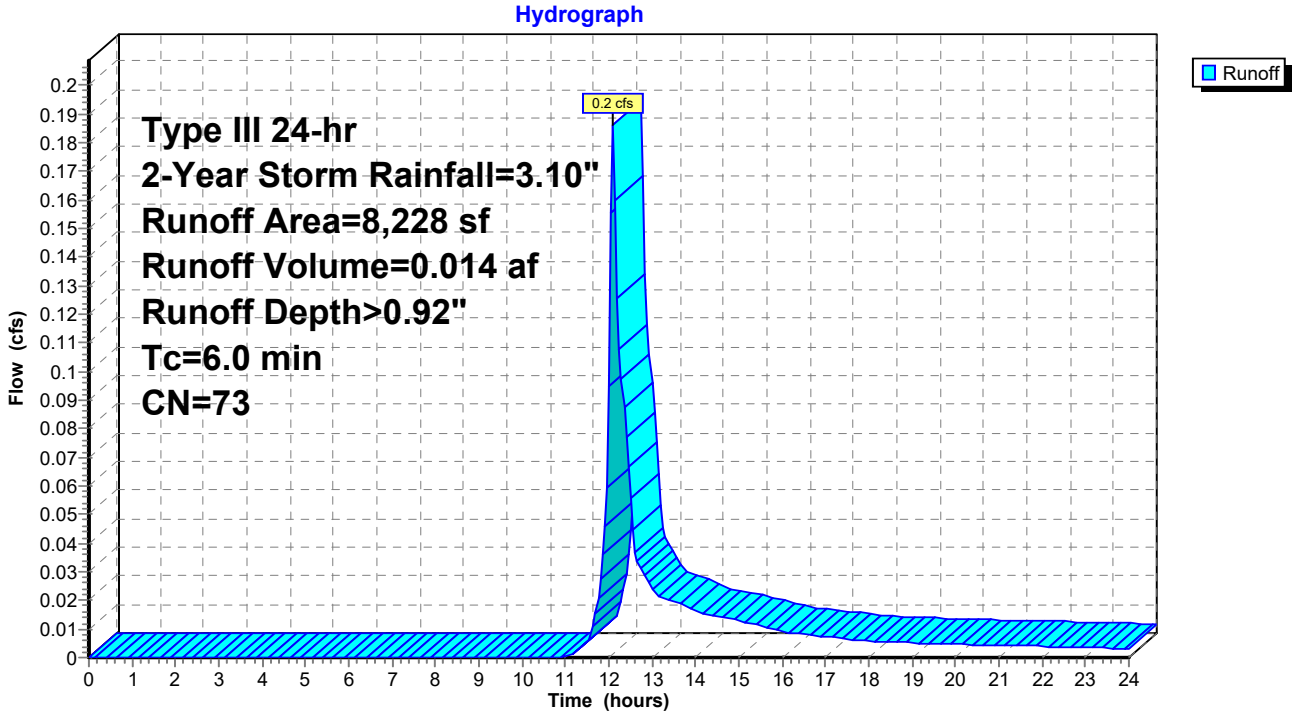
Runoff = 0.2 cfs @ 12.10 hrs, Volume= 0.014 af, Depth> 0.92"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Type III 24-hr 2-Year Storm Rainfall=3.10"

	Area (sf)	CN	Description
	4,083	98	Paved parking, HSG A
	1,673	39	Grass cover, Good, HSG A
*	1,374	68	Grass cover (parking area), HSG A
*	1,098	40	Porous Pavement
	8,228	73	Weighted Average
	4,145		50.38% Pervious Area
	4,083		49.62% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					**Direct Entry,**

Subcatchment 1S: PRE-1



Summary for Subcatchment 2S: PRE-2

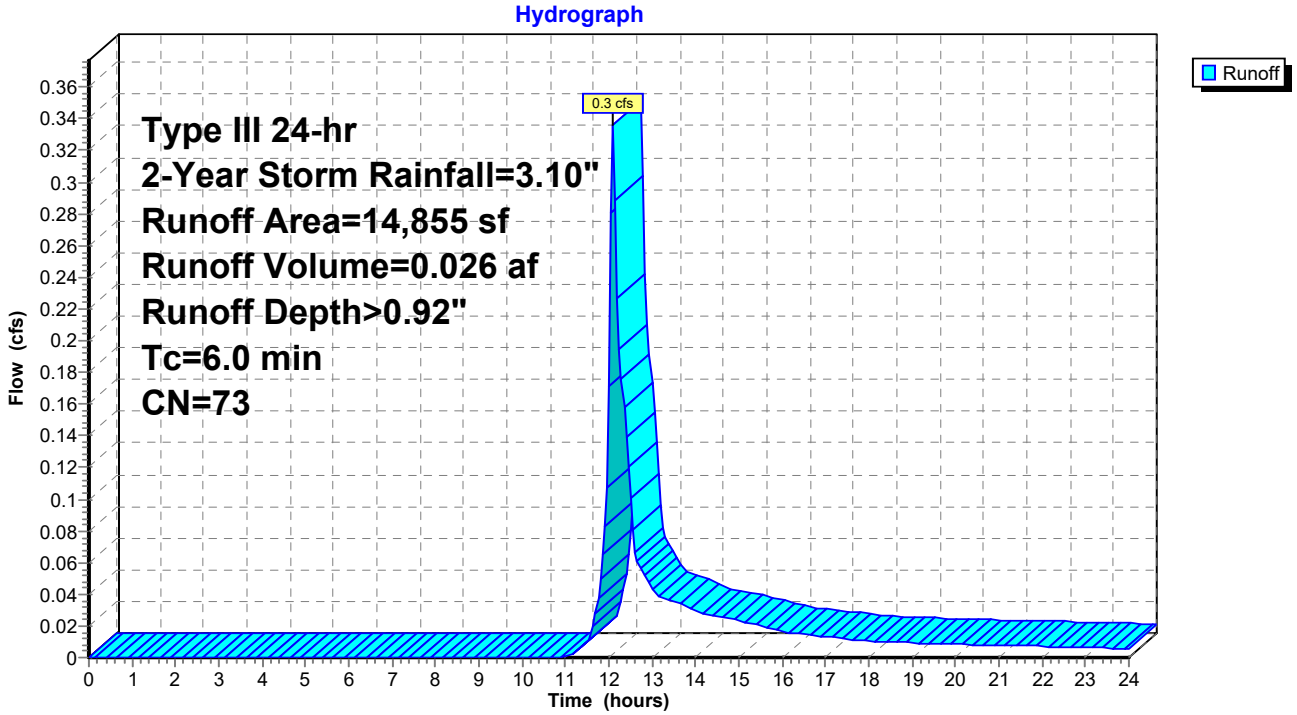
Runoff = 0.3 cfs @ 12.10 hrs, Volume= 0.026 af, Depth> 0.92"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Type III 24-hr 2-Year Storm Rainfall=3.10"

	Area (sf)	CN	Description
	6,344	98	Paved parking, HSG A
	2,948	39	Grass cover, Good, HSG A
	4,408	68	Grass cover (parking area), HSG A
*	1,155	40	Porous Pavement
	14,855	73	Weighted Average
	8,511		57.29% Pervious Area
	6,344		42.71% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					**Direct Entry,**

Subcatchment 2S: PRE-2



Summary for Subcatchment 3S: PRE-3

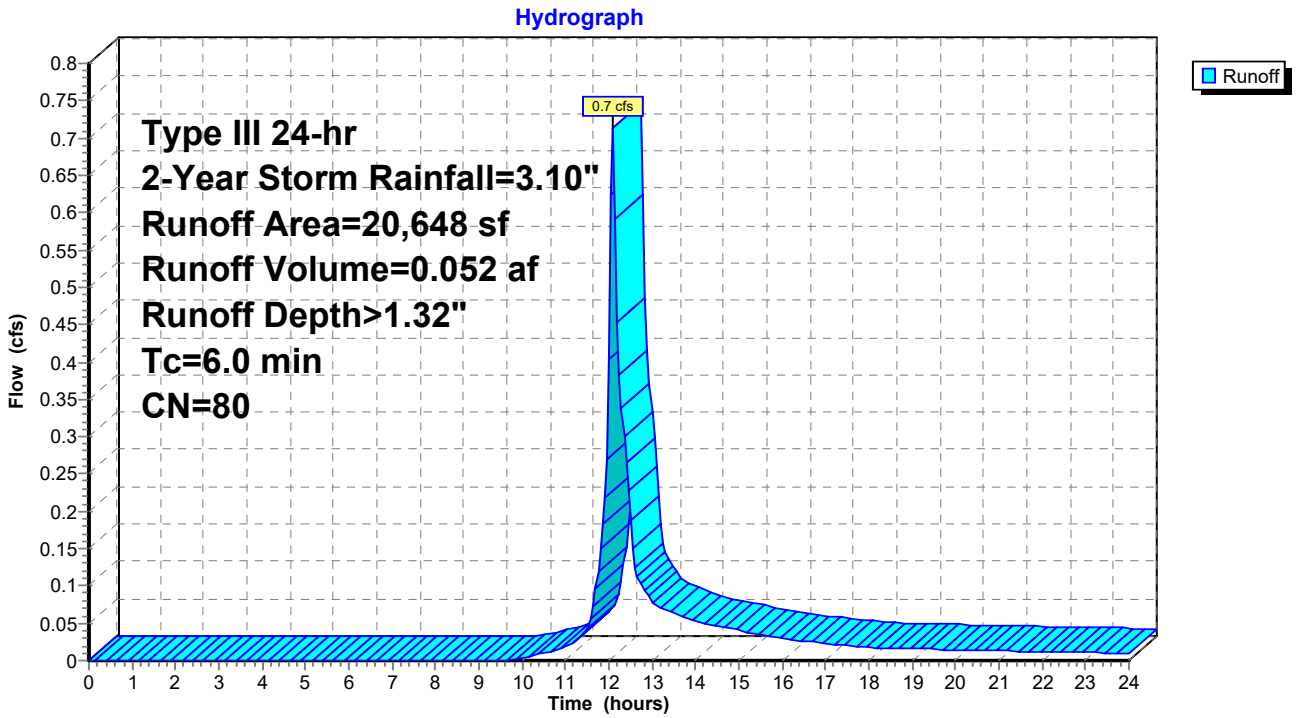
Runoff = 0.7 cfs @ 12.10 hrs, Volume= 0.052 af, Depth> 1.32"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Type III 24-hr 2-Year Storm Rainfall=3.10"

	Area (sf)	CN	Description
	10,577	98	Paved parking, HSG A
	1,903	39	Grass cover, Good, HSG A
	7,715	68	Grass cover (parking area), HSG A
*	453	40	Porous Pavement
	20,648	80	Weighted Average
	10,071		48.77% Pervious Area
	10,577		51.23% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					**Direct Entry,**

Subcatchment 3S: PRE-3



Summary for Subcatchment 4S: PRE-4

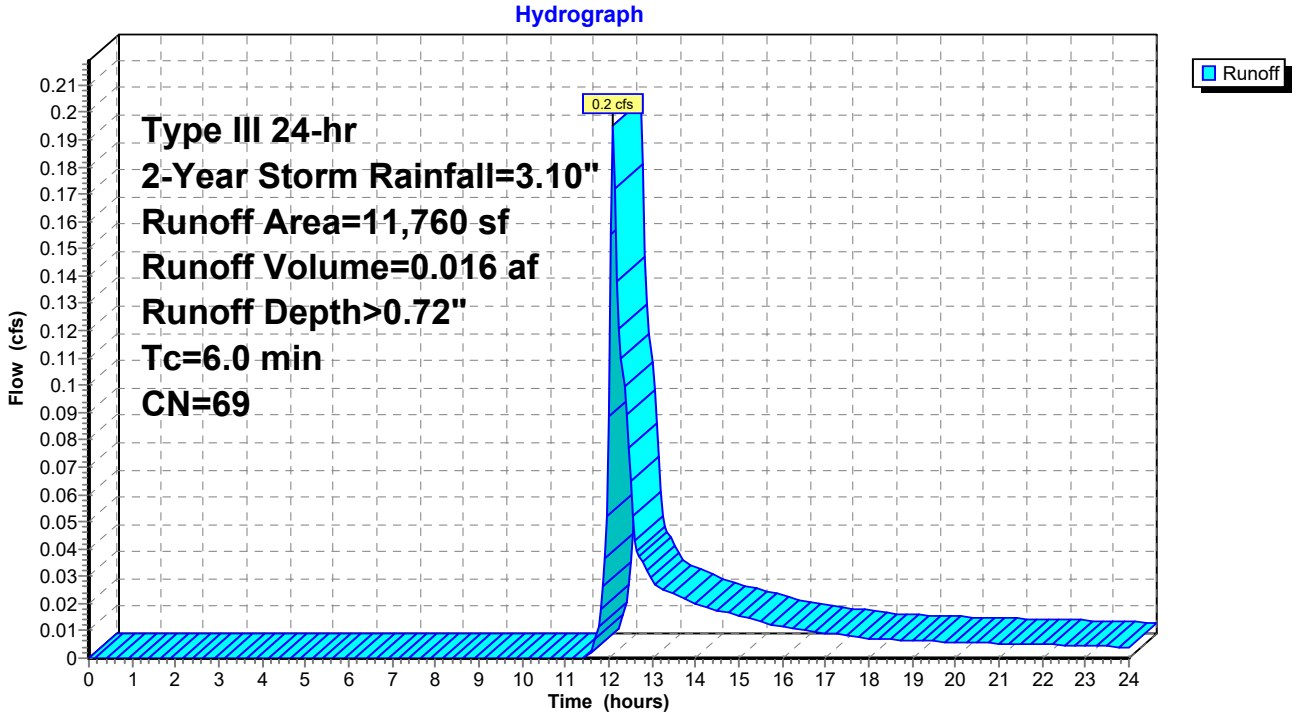
Runoff = 0.2 cfs @ 12.11 hrs, Volume= 0.016 af, Depth> 0.72"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Type III 24-hr 2-Year Storm Rainfall=3.10"

Area (sf)	CN	Description
2,321	98	Paved parking, HSG A
1,957	39	Grass cover, Good, HSG A
7,482	68	Grass cover (parking area), HSG A
11,760	69	Weighted Average
9,439		80.26% Pervious Area
2,321		19.74% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					**Direct Entry,**

Subcatchment 4S: PRE-4



Summary for Subcatchment 5S: PRE-5

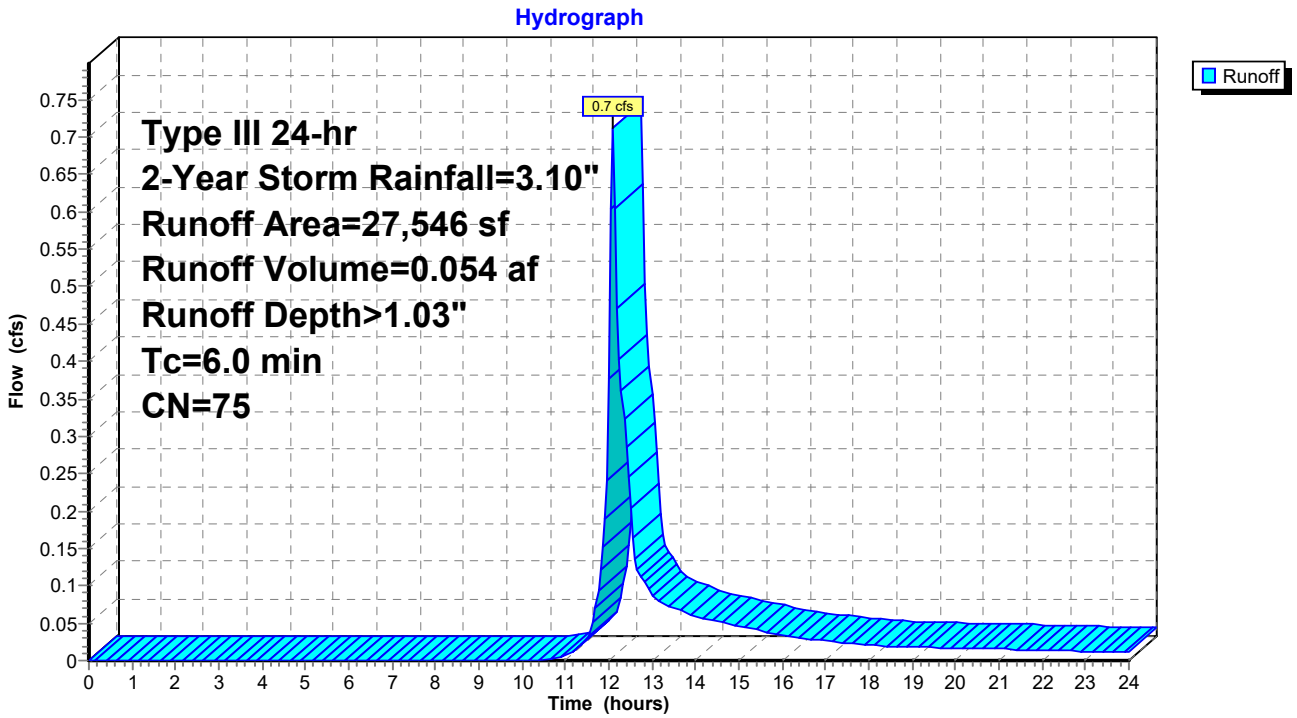
Runoff = 0.7 cfs @ 12.10 hrs, Volume= 0.054 af, Depth> 1.03"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Type III 24-hr 2-Year Storm Rainfall=3.10"

	Area (sf)	CN	Description
	14,114	98	Paved parking, HSG A
	6,700	39	Grass cover, Good, HSG A
	5,072	68	Grass cover (parking area), HSG A
*	1,660	40	Porous Pavement
	27,546	75	Weighted Average
	13,432		48.76% Pervious Area
	14,114		51.24% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					**Direct Entry,**

Subcatchment 5S: PRE-5



Summary for Subcatchment 6S: PRE-6

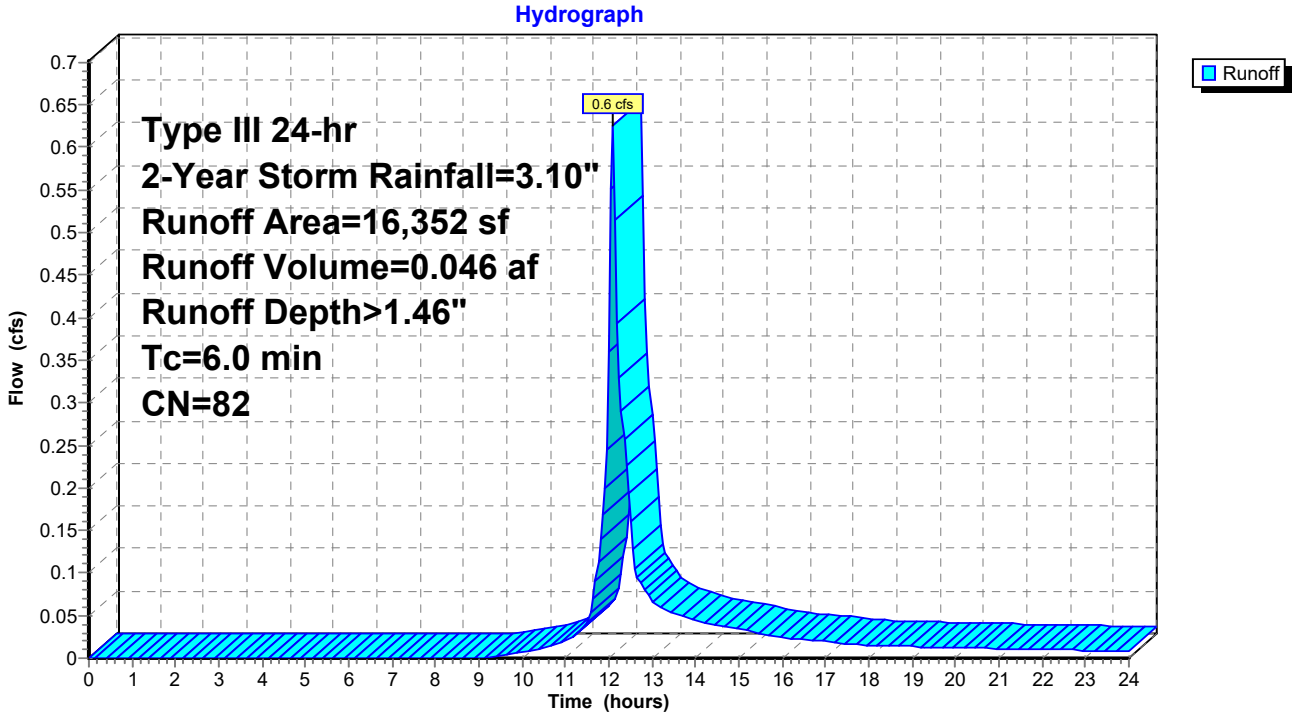
Runoff = 0.6 cfs @ 12.09 hrs, Volume= 0.046 af, Depth> 1.46"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Type III 24-hr 2-Year Storm Rainfall=3.10"

	Area (sf)	CN	Description
	11,768	98	Paved parking, HSG A
	3,865	39	Grass cover, Good, HSG A
*	719	40	Porous Pavement
	16,352	82	Weighted Average
	4,584		28.03% Pervious Area
	11,768		71.97% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					**Direct Entry,**

Subcatchment 6S: PRE-6



Summary for Subcatchment 7S: PRE-7

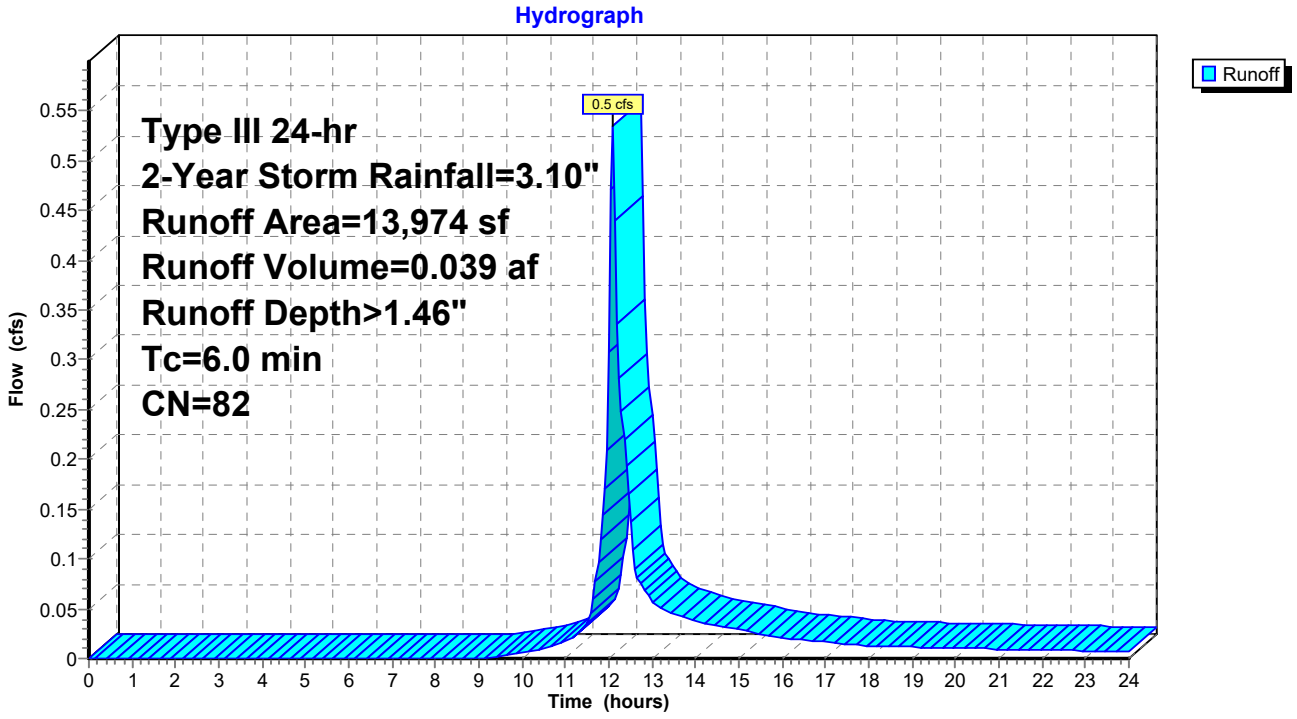
Runoff = 0.5 cfs @ 12.09 hrs, Volume= 0.039 af, Depth> 1.46"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Type III 24-hr 2-Year Storm Rainfall=3.10"

Area (sf)	CN	Description
10,235	98	Paved parking, HSG A
3,739	39	Grass cover, Good, HSG A
13,974	82	Weighted Average
3,739		26.76% Pervious Area
10,235		73.24% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					**Direct Entry,**

Subcatchment 7S: PRE-7



Summary for Subcatchment 8S: PRE-8

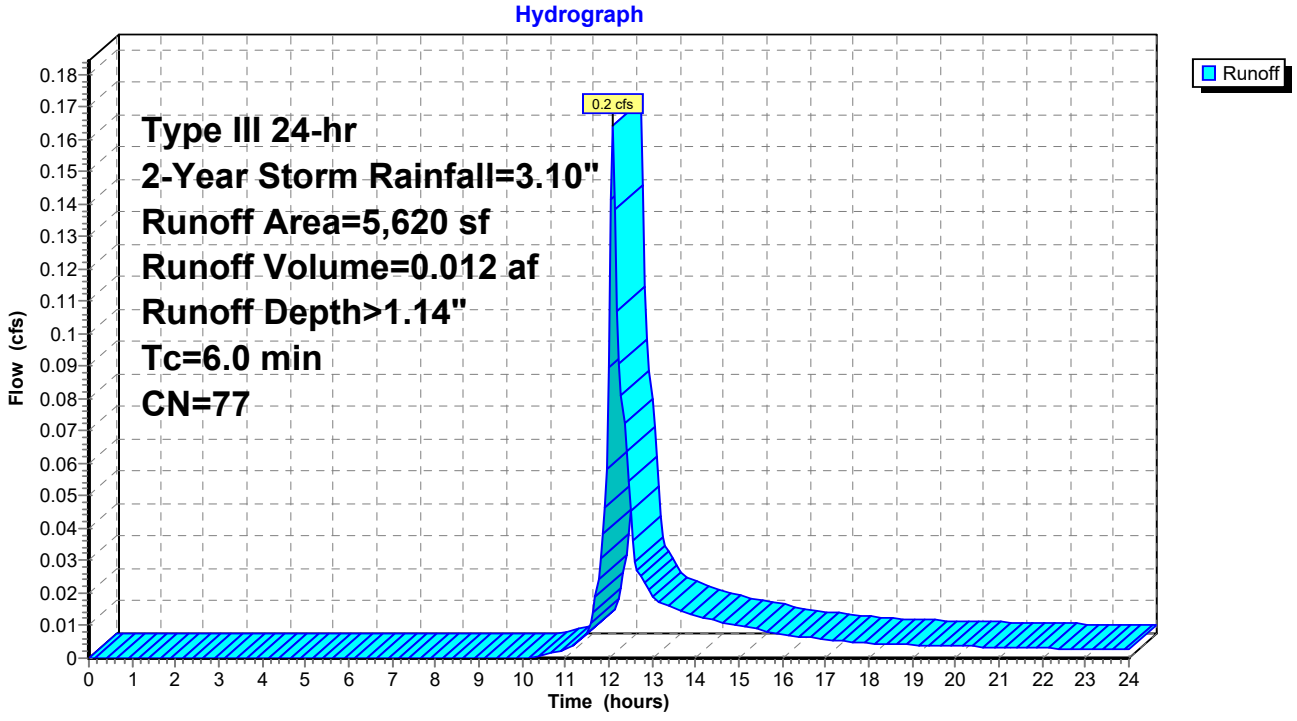
Runoff = 0.2 cfs @ 12.10 hrs, Volume= 0.012 af, Depth> 1.14"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Type III 24-hr 2-Year Storm Rainfall=3.10"

	Area (sf)	CN	Description
	3,664	98	Paved parking, HSG A
	1,857	39	Grass cover, Good, HSG A
*	99	40	Porous Pavement
	5,620	77	Weighted Average
	1,956		34.80% Pervious Area
	3,664		65.20% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					**Direct Entry,**

Subcatchment 8S: PRE-8



Summary for Pond 11P: Ex CB1

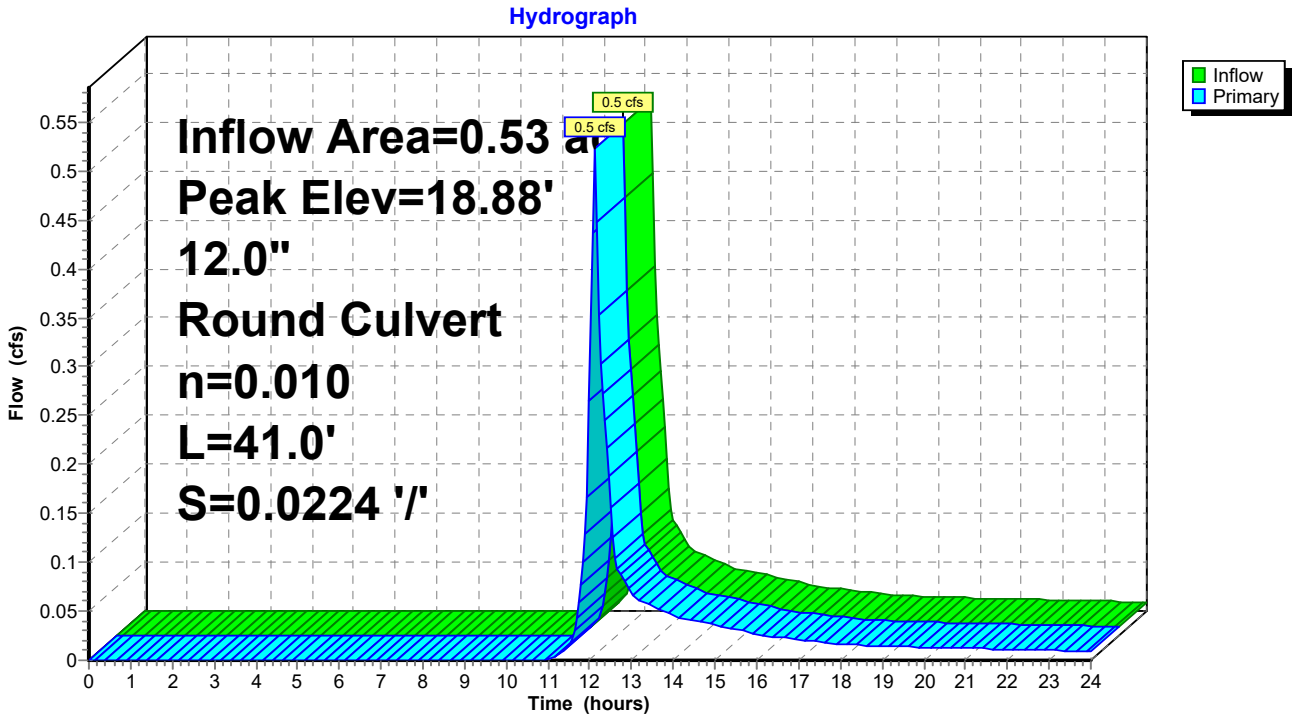
Inflow Area = 0.53 ac, 45.17% Impervious, Inflow Depth > 0.92" for 2-Year Storm event
Inflow = 0.5 cfs @ 12.10 hrs, Volume= 0.041 af
Outflow = 0.5 cfs @ 12.10 hrs, Volume= 0.041 af, Atten= 0%, Lag= 0.0 min
Primary = 0.5 cfs @ 12.10 hrs, Volume= 0.041 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Peak Elev= 18.88' @ 12.10 hrs
Flood Elev= 22.02'

Device	Routing	Invert	Outlet Devices
#1	Primary	18.47'	**12.0" Round Culvert** L= 41.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 18.47' / 17.55' S= 0.0224 '/' Cc= 0.900 n= 0.010 PVC, smooth interior, Flow Area= 0.79 sf

Primary OutFlow Max=0.5 cfs @ 12.10 hrs HW=18.88' TW=17.87' (Dynamic Tailwater)
1=Culvert (Inlet Controls 0.5 cfs @ 1.72 fps)

Pond 11P: Ex CB1



Summary for Pond 12P: Ex CB2

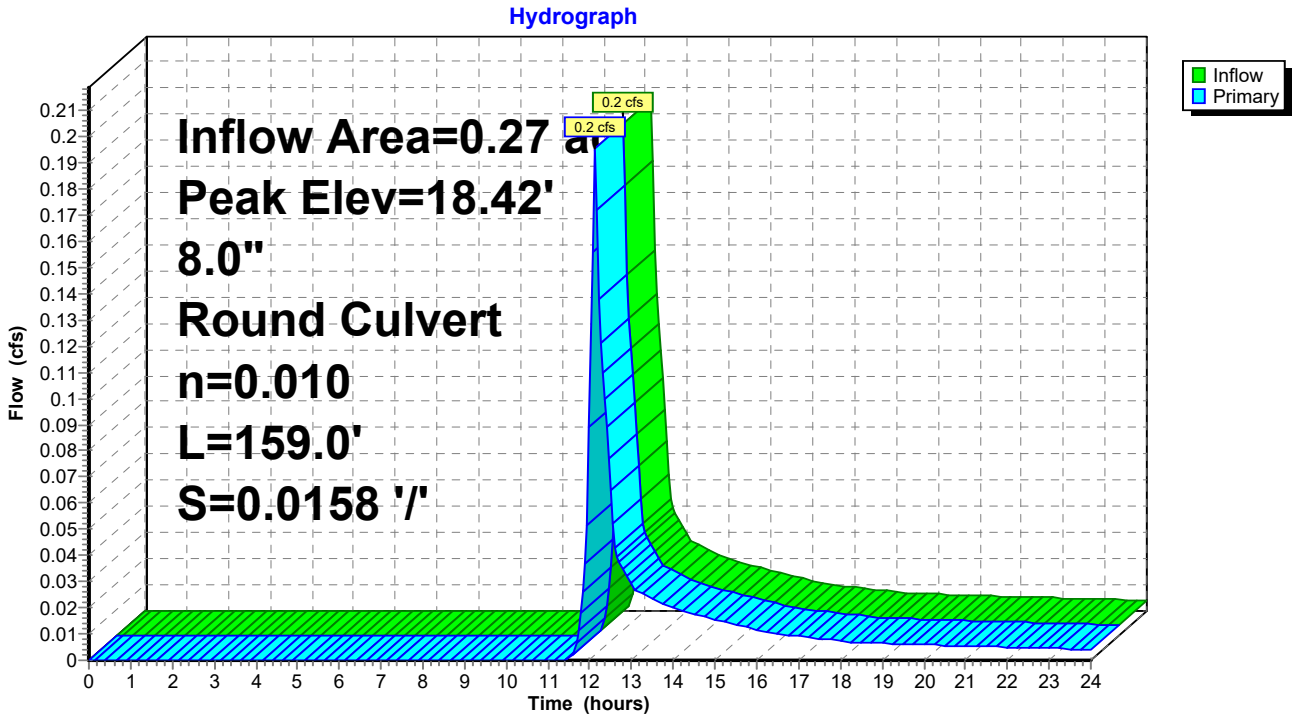
Inflow Area = 0.27 ac, 19.74% Impervious, Inflow Depth > 0.72" for 2-Year Storm event
Inflow = 0.2 cfs @ 12.11 hrs, Volume= 0.016 af
Outflow = 0.2 cfs @ 12.11 hrs, Volume= 0.016 af, Atten= 0%, Lag= 0.0 min
Primary = 0.2 cfs @ 12.11 hrs, Volume= 0.016 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Peak Elev= 18.42' @ 12.11 hrs
Flood Elev= 22.15'

Device	Routing	Invert	Outlet Devices
#1	Primary	18.14'	**8.0" Round Culvert** L= 159.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 18.14' / 15.62' S= 0.0158 '/' Cc= 0.900 n= 0.010 PVC, smooth interior, Flow Area= 0.35 sf

Primary OutFlow Max=0.2 cfs @ 12.11 hrs HW=18.42' TW=0.00' (Dynamic Tailwater)
1=Culvert (Inlet Controls 0.2 cfs @ 1.41 fps)

Pond 12P: Ex CB2



Summary for Pond 13P: Ex CB7

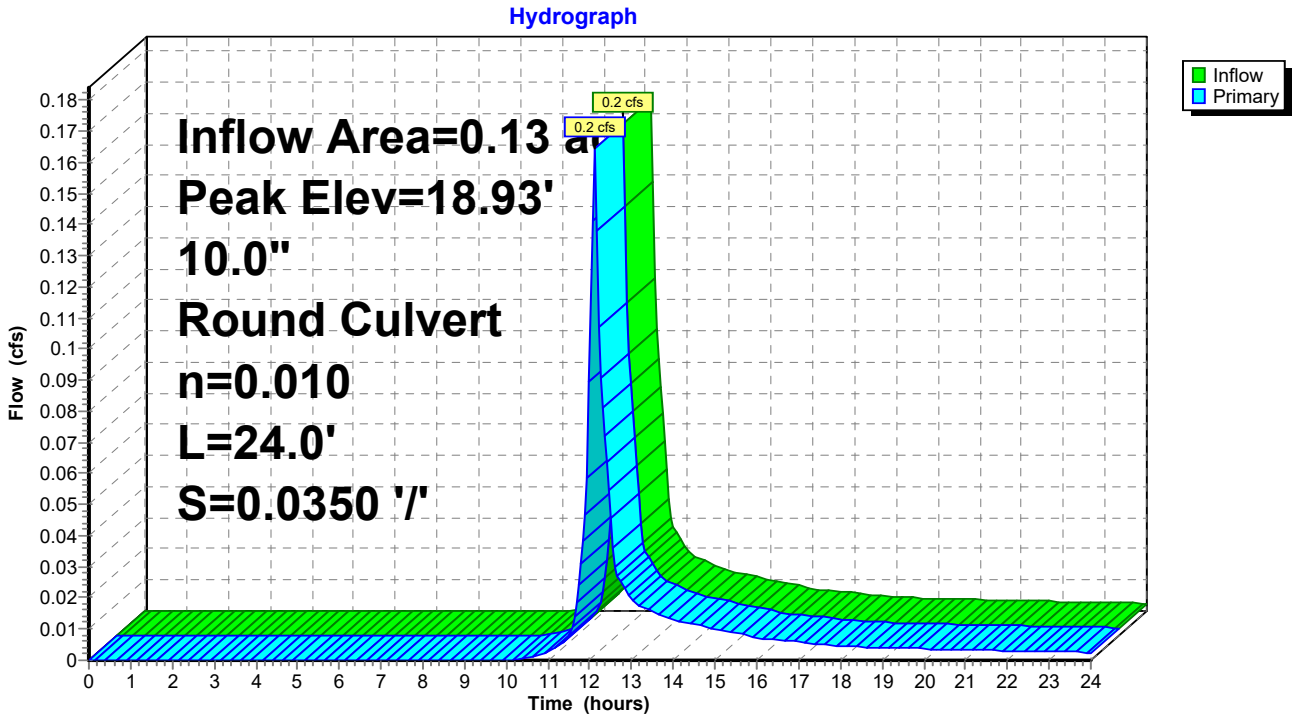
Inflow Area = 0.13 ac, 65.20% Impervious, Inflow Depth > 1.14" for 2-Year Storm event
Inflow = 0.2 cfs @ 12.10 hrs, Volume= 0.012 af
Outflow = 0.2 cfs @ 12.10 hrs, Volume= 0.012 af, Atten= 0%, Lag= 0.0 min
Primary = 0.2 cfs @ 12.10 hrs, Volume= 0.012 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Peak Elev= 18.93' @ 12.10 hrs
Flood Elev= 24.51'

Device	Routing	Invert	Outlet Devices
#1	Primary	18.70'	**10.0" Round Culvert** L= 24.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 18.70' / 17.86' S= 0.0350 '/' Cc= 0.900 n= 0.010 PVC, smooth interior, Flow Area= 0.55 sf

Primary OutFlow Max=0.2 cfs @ 12.10 hrs HW=18.93' TW=15.45' (Dynamic Tailwater)
1=Culvert (Inlet Controls 0.2 cfs @ 1.30 fps)

Pond 13P: Ex CB7



Summary for Pond 14P: Ex CB4

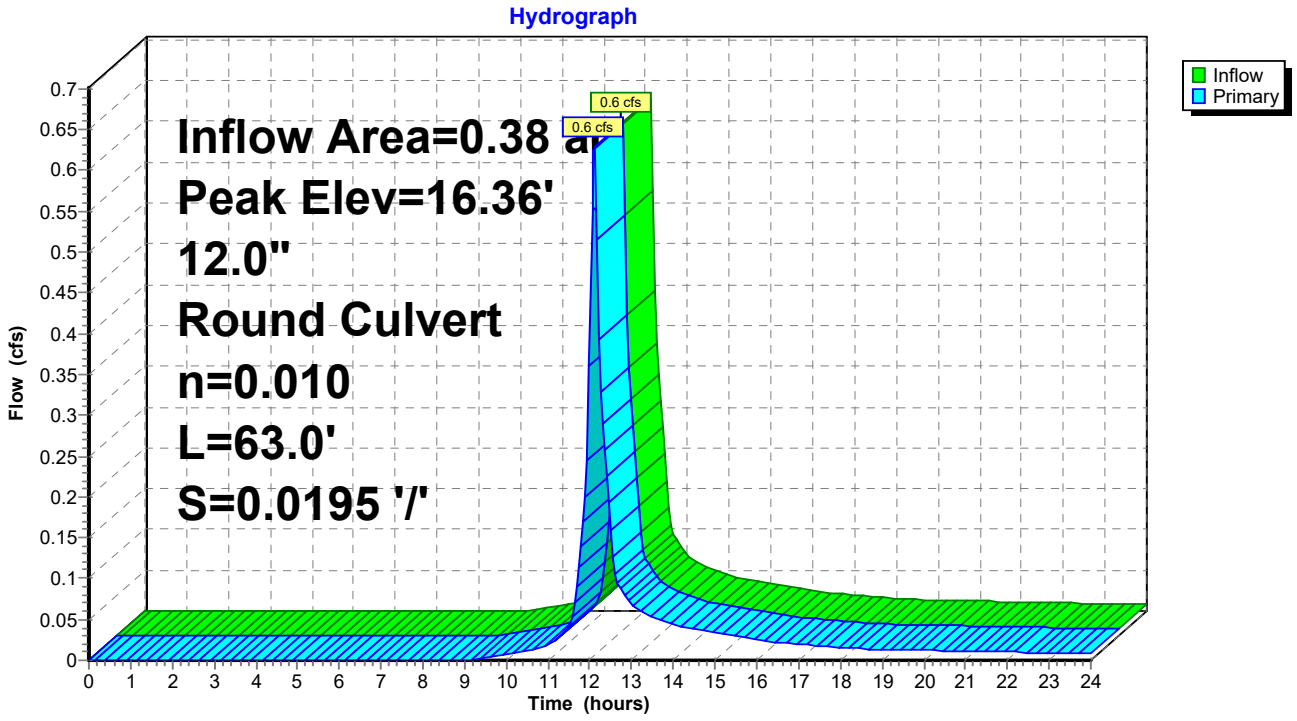
Inflow Area = 0.38 ac, 71.97% Impervious, Inflow Depth > 1.46" for 2-Year Storm event
Inflow = 0.6 cfs @ 12.09 hrs, Volume= 0.046 af
Outflow = 0.6 cfs @ 12.09 hrs, Volume= 0.046 af, Atten= 0%, Lag= 0.0 min
Primary = 0.6 cfs @ 12.09 hrs, Volume= 0.046 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Peak Elev= 16.36' @ 12.09 hrs
Flood Elev= 21.96'

Device	Routing	Invert	Outlet Devices
#1	Primary	15.91'	**12.0" Round Culvert** L= 63.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 15.91' / 14.68' S= 0.0195 '/' Cc= 0.900 n= 0.010 PVC, smooth interior, Flow Area= 0.79 sf

Primary OutFlow Max=0.6 cfs @ 12.09 hrs HW=16.36' TW=15.44' (Dynamic Tailwater)
1=Culvert (Inlet Controls 0.6 cfs @ 1.80 fps)

Pond 14P: Ex CB4



Summary for Pond 15P: Ex CB5

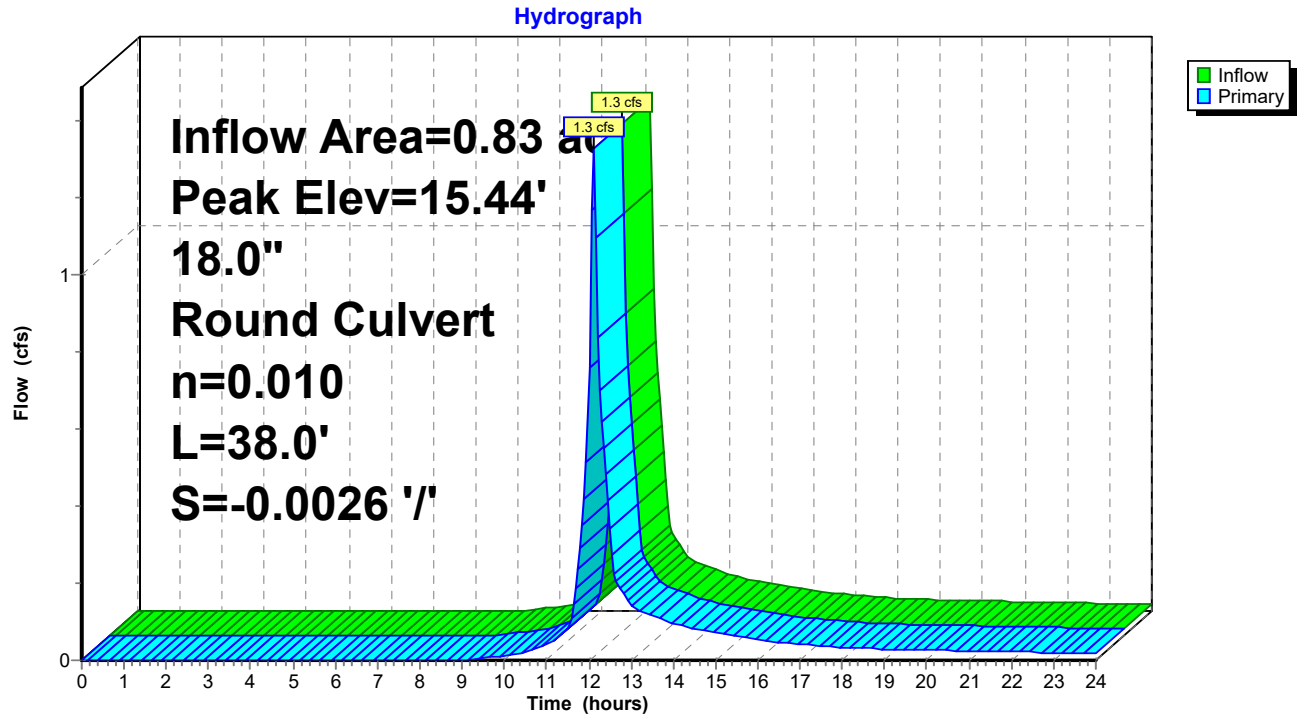
Inflow Area = 0.83 ac, 71.40% Impervious, Inflow Depth > 1.41" for 2-Year Storm event
Inflow = 1.3 cfs @ 12.10 hrs, Volume= 0.097 af
Outflow = 1.3 cfs @ 12.10 hrs, Volume= 0.097 af, Atten= 0%, Lag= 0.0 min
Primary = 1.3 cfs @ 12.10 hrs, Volume= 0.097 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Peak Elev= 15.44' @ 12.10 hrs
Flood Elev= 22.70'

Device	Routing	Invert	Outlet Devices
#1	Primary	14.80'	**18.0" Round Culvert** L= 38.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 14.70' / 14.80' S= -0.0026 '/' Cc= 0.900 n= 0.010 PVC, smooth interior, Flow Area= 1.77 sf

Primary OutFlow Max=1.3 cfs @ 12.10 hrs HW=15.44' TW=15.22' (Dynamic Tailwater)
1=Culvert (Inlet Controls 1.3 cfs @ 1.76 fps)

Pond 15P: Ex CB5



Summary for Pond 16P: Ex DMH8

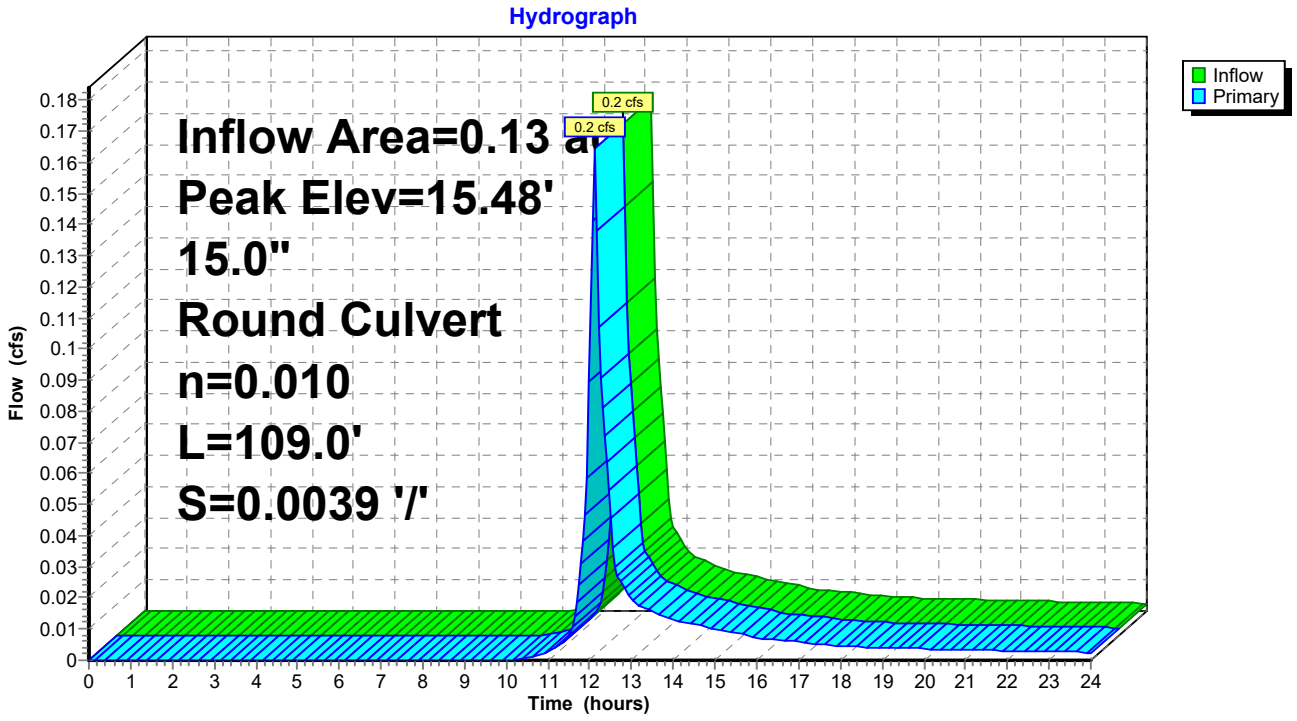
Inflow Area = 0.13 ac, 65.20% Impervious, Inflow Depth > 1.14" for 2-Year Storm event
Inflow = 0.2 cfs @ 12.10 hrs, Volume= 0.012 af
Outflow = 0.2 cfs @ 12.10 hrs, Volume= 0.012 af, Atten= 0%, Lag= 0.0 min
Primary = 0.2 cfs @ 12.10 hrs, Volume= 0.012 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Peak Elev= 15.48' @ 12.14 hrs
Flood Elev= 24.67'

Device	Routing	Invert	Outlet Devices
#1	Primary	15.08'	**15.0" Round Culvert** L= 109.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 15.08' / 14.65' S= 0.0039 '/' Cc= 0.900 n= 0.010 PVC, smooth interior, Flow Area= 1.23 sf

Primary OutFlow Max=0.1 cfs @ 12.10 hrs HW=15.45' TW=15.44' (Dynamic Tailwater)
1=Culvert (Outlet Controls 0.1 cfs @ 0.28 fps)

Pond 16P: Ex DMH8



Summary for Pond 21P: Ex DMH9

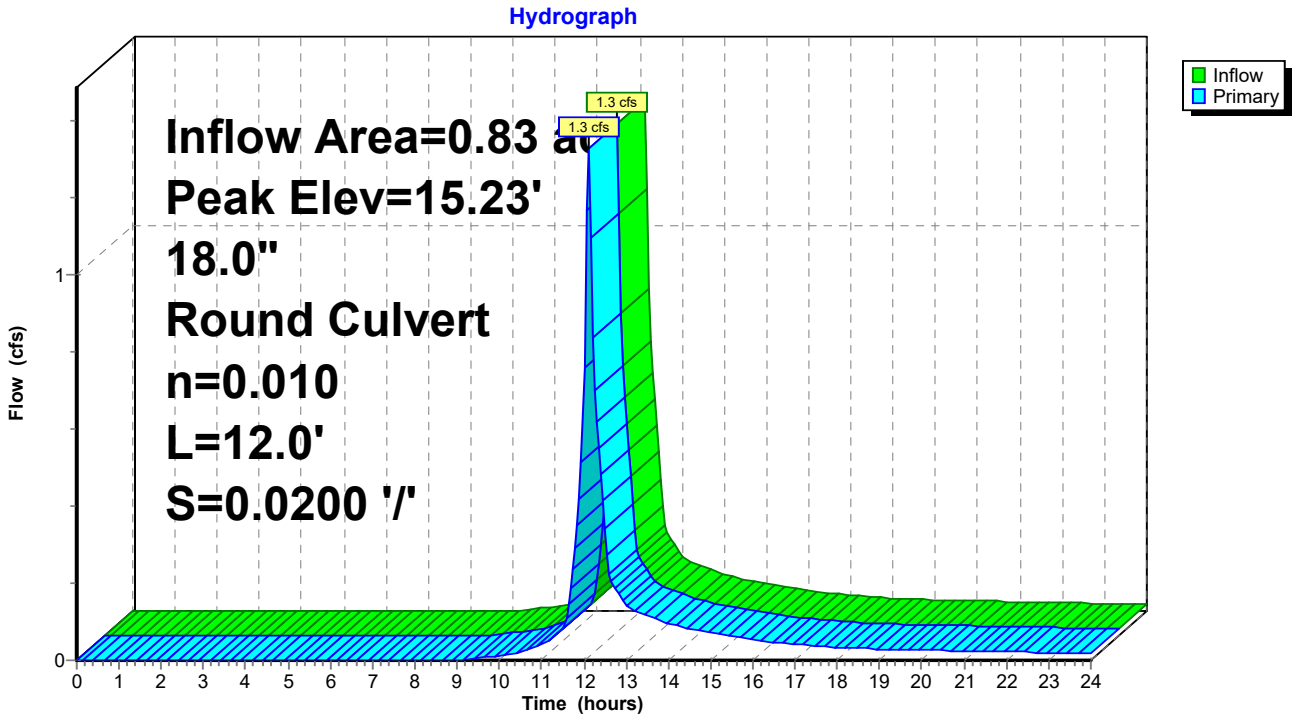
Inflow Area = 0.83 ac, 71.40% Impervious, Inflow Depth > 1.41" for 2-Year Storm event
Inflow = 1.3 cfs @ 12.10 hrs, Volume= 0.097 af
Outflow = 1.3 cfs @ 12.10 hrs, Volume= 0.097 af, Atten= 0%, Lag= 0.0 min
Primary = 1.3 cfs @ 12.10 hrs, Volume= 0.097 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Peak Elev= 15.23' @ 12.11 hrs
Flood Elev= 23.72'

Device	Routing	Invert	Outlet Devices
#1	Primary	14.62'	**18.0" Round Culvert** L= 12.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 14.62' / 14.38' S= 0.0200 '/' Cc= 0.900 n= 0.010 PVC, smooth interior, Flow Area= 1.77 sf

Primary OutFlow Max=1.2 cfs @ 12.10 hrs HW=15.22' TW=15.00' (Dynamic Tailwater)
1=Culvert (Outlet Controls 1.2 cfs @ 2.61 fps)

Pond 21P: Ex DMH9



Summary for Pond 22P: Ex DMH3

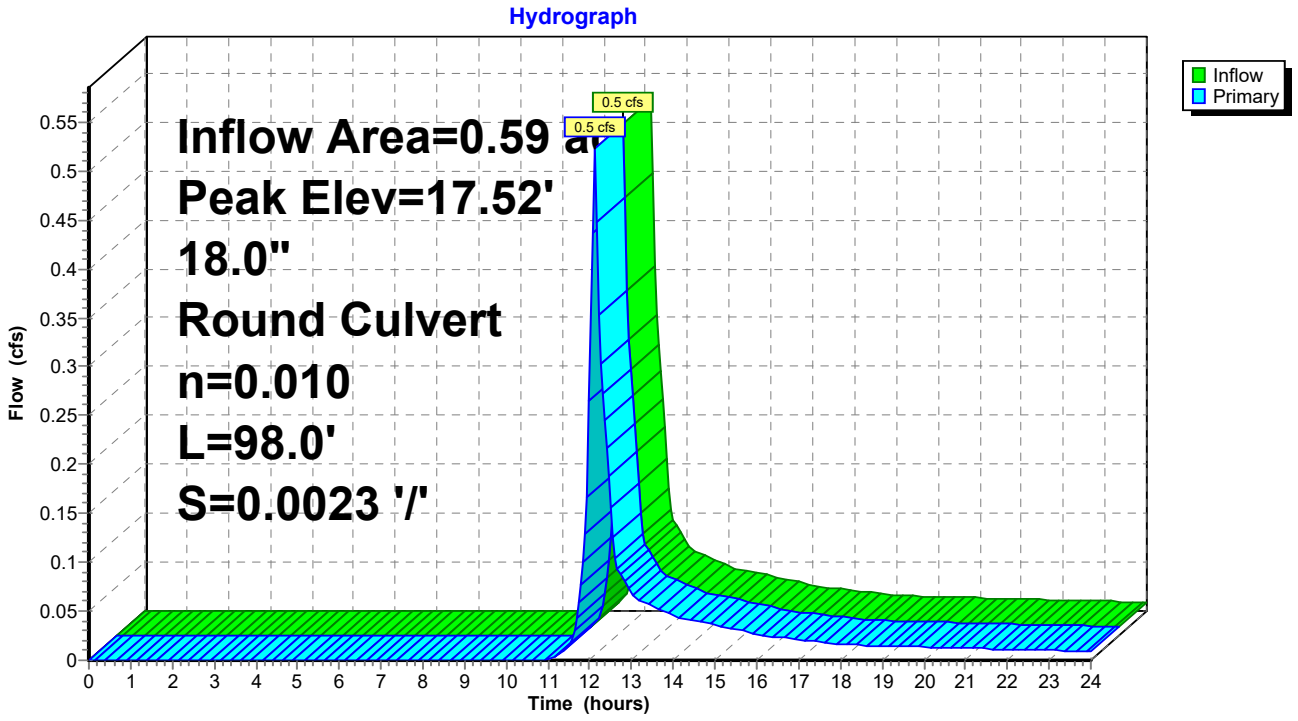
Inflow Area = 0.59 ac, 40.84% Impervious, Inflow Depth > 0.83" for 2-Year Storm event
Inflow = 0.5 cfs @ 12.10 hrs, Volume= 0.041 af
Outflow = 0.5 cfs @ 12.10 hrs, Volume= 0.041 af, Atten= 0%, Lag= 0.0 min
Primary = 0.5 cfs @ 12.10 hrs, Volume= 0.041 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Peak Elev= 17.52' @ 12.10 hrs
Flood Elev= 24.92'

Device	Routing	Invert	Outlet Devices
#1	Primary	17.12'	**18.0" Round Culvert** L= 98.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 17.12' / 16.89' S= 0.0023 '/' Cc= 0.900 n= 0.010 PVC, smooth interior, Flow Area= 1.77 sf

Primary OutFlow Max=0.5 cfs @ 12.10 hrs HW=17.51' TW=17.16' (Dynamic Tailwater)
1=Culvert (Barrel Controls 0.5 cfs @ 2.11 fps)

Pond 22P: Ex DMH3



Summary for Pond 23P: Ex CB3

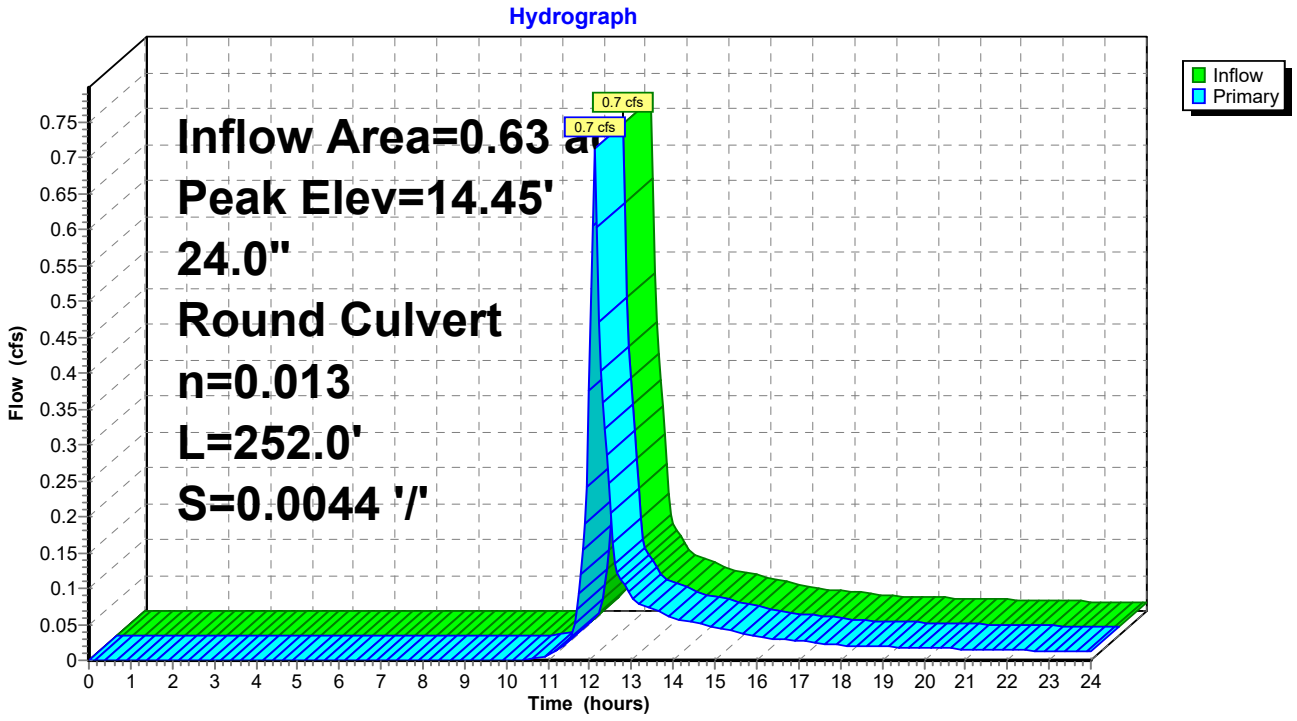
Inflow Area = 0.63 ac, 51.24% Impervious, Inflow Depth > 1.03" for 2-Year Storm event
Inflow = 0.7 cfs @ 12.10 hrs, Volume= 0.054 af
Outflow = 0.7 cfs @ 12.10 hrs, Volume= 0.054 af, Atten= 0%, Lag= 0.0 min
Primary = 0.7 cfs @ 12.10 hrs, Volume= 0.054 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Peak Elev= 14.45' @ 12.10 hrs
Flood Elev= 23.60'

Device	Routing	Invert	Outlet Devices
#1	Primary	14.05'	**24.0" Round Culvert** L= 252.0' CMP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 14.05' / 12.94' S= 0.0044 '/' Cc= 0.900 n= 0.013 Cast iron, coated, Flow Area= 3.14 sf

Primary OutFlow Max=0.7 cfs @ 12.10 hrs HW=14.45' TW=0.00' (Dynamic Tailwater)
1=Culvert (Barrel Controls 0.7 cfs @ 2.40 fps)

Pond 23P: Ex CB3



Summary for Pond 24P: Ex DMH2

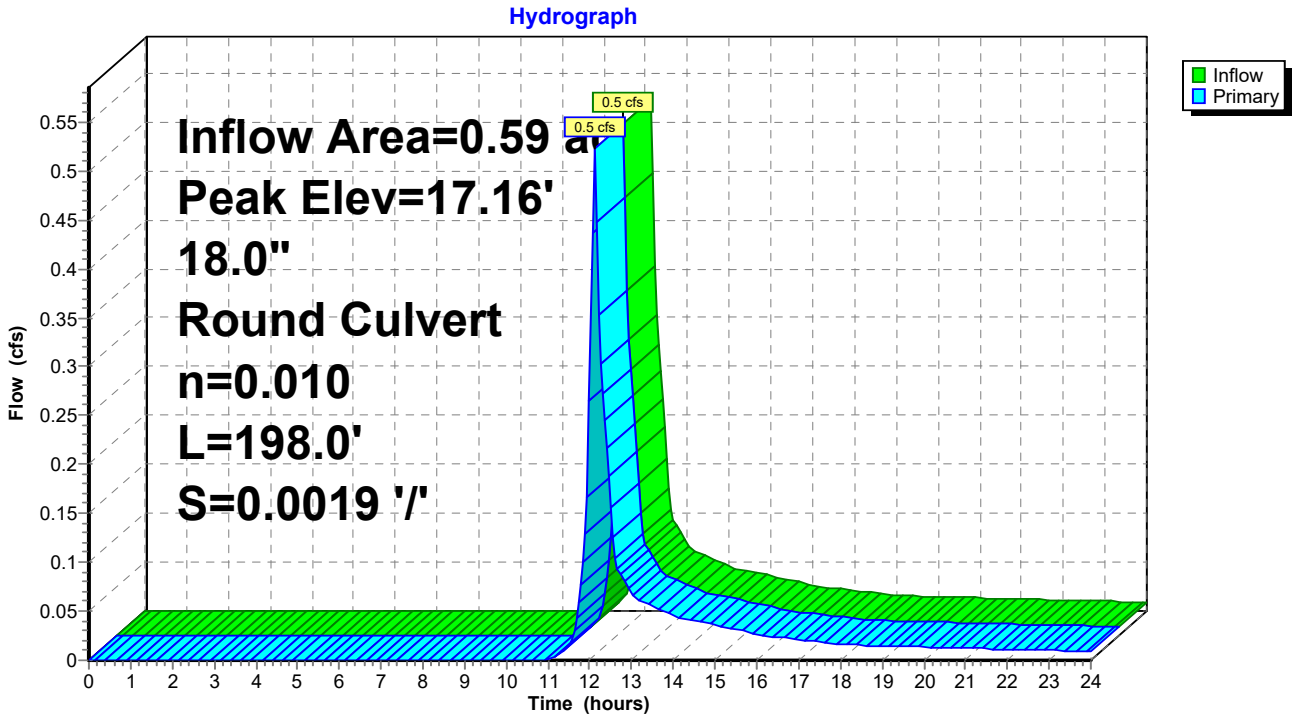
Inflow Area = 0.59 ac, 40.84% Impervious, Inflow Depth > 0.83" for 2-Year Storm event
Inflow = 0.5 cfs @ 12.10 hrs, Volume= 0.041 af
Outflow = 0.5 cfs @ 12.10 hrs, Volume= 0.041 af, Atten= 0%, Lag= 0.0 min
Primary = 0.5 cfs @ 12.10 hrs, Volume= 0.041 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Peak Elev= 17.16' @ 12.10 hrs
Flood Elev= 25.38'

Device	Routing	Invert	Outlet Devices
#1	Primary	16.75'	**18.0" Round Culvert** L= 198.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 16.75' / 16.38' S= 0.0019 '/' Cc= 0.900 n= 0.010 PVC, smooth interior, Flow Area= 1.77 sf

Primary OutFlow Max=0.5 cfs @ 12.10 hrs HW=17.16' TW=15.80' (Dynamic Tailwater)
1=Culvert (Barrel Controls 0.5 cfs @ 2.02 fps)

Pond 24P: Ex DMH2



Summary for Pond 25P: Ex DMH5

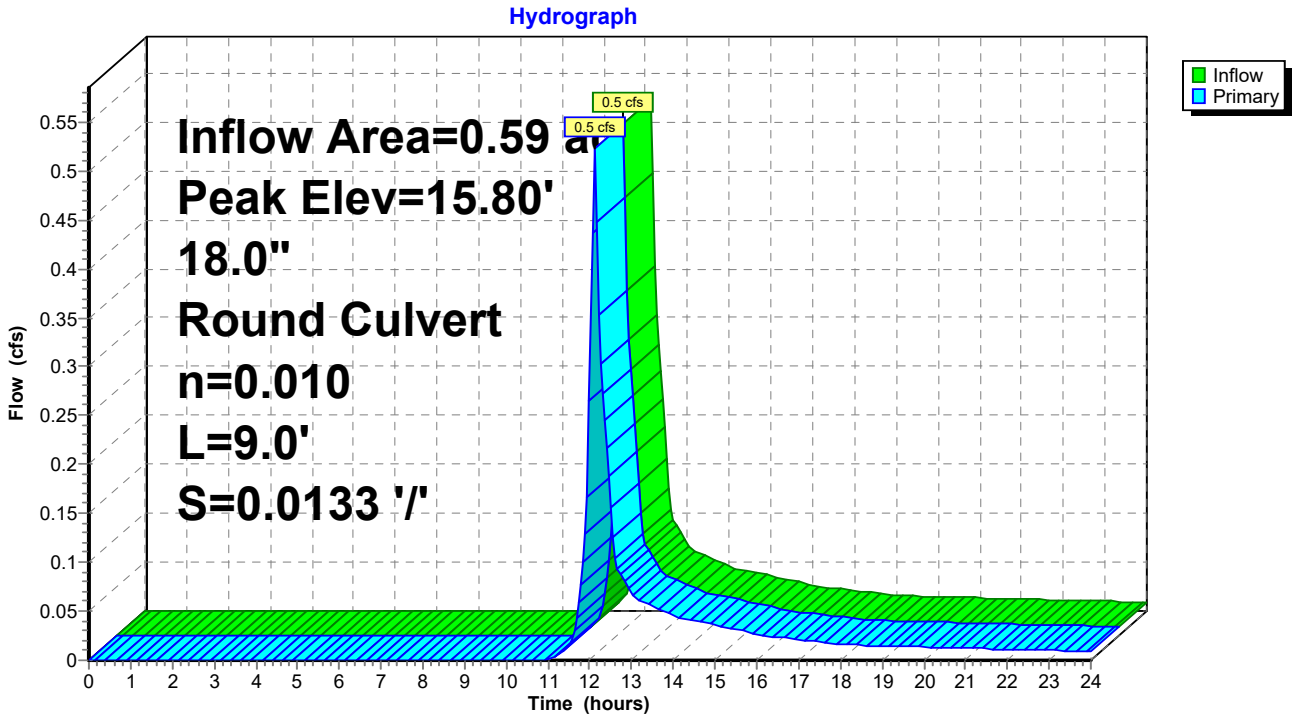
Inflow Area = 0.59 ac, 40.84% Impervious, Inflow Depth > 0.83" for 2-Year Storm event
Inflow = 0.5 cfs @ 12.10 hrs, Volume= 0.041 af
Outflow = 0.5 cfs @ 12.10 hrs, Volume= 0.041 af, Atten= 0%, Lag= 0.0 min
Primary = 0.5 cfs @ 12.10 hrs, Volume= 0.041 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Peak Elev= 15.80' @ 12.10 hrs
Flood Elev= 23.84'

Device	Routing	Invert	Outlet Devices
#1	Primary	15.44'	**18.0" Round Culvert** L= 9.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 15.44' / 15.32' S= 0.0133 '/' Cc= 0.900 n= 0.010 PVC, smooth interior, Flow Area= 1.77 sf

Primary OutFlow Max=0.5 cfs @ 12.10 hrs HW=15.80' TW=15.00' (Dynamic Tailwater)
1=Culvert (Inlet Controls 0.5 cfs @ 1.61 fps)

Pond 25P: Ex DMH5



Summary for Pond 26P: Ex DMH6

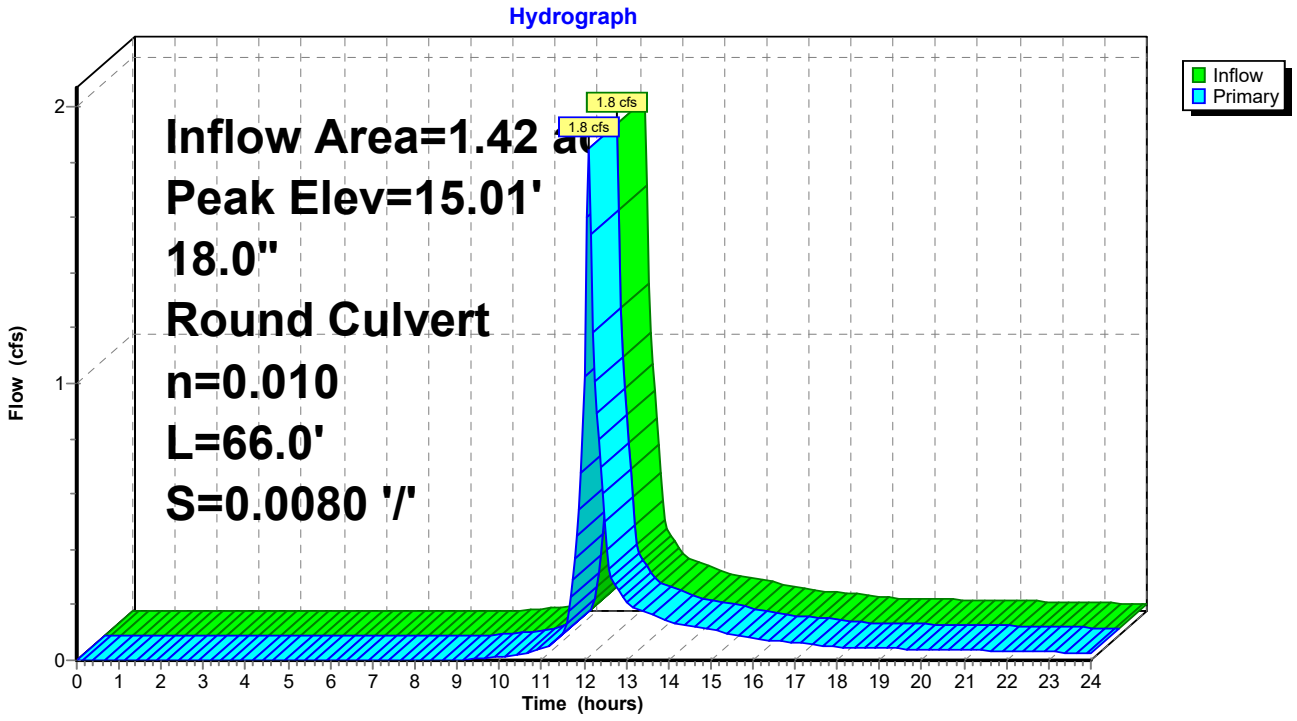
Inflow Area = 1.42 ac, 58.66% Impervious, Inflow Depth > 1.16" for 2-Year Storm event
Inflow = 1.8 cfs @ 12.10 hrs, Volume= 0.137 af
Outflow = 1.8 cfs @ 12.10 hrs, Volume= 0.137 af, Atten= 0%, Lag= 0.0 min
Primary = 1.8 cfs @ 12.10 hrs, Volume= 0.137 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Peak Elev= 15.01' @ 12.10 hrs
Flood Elev= 23.95'

Device	Routing	Invert	Outlet Devices
#1	Primary	14.30'	**18.0" Round Culvert** L= 66.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 14.30' / 13.77' S= 0.0080 '/' Cc= 0.900 n= 0.010 PVC, smooth interior, Flow Area= 1.77 sf

Primary OutFlow Max=1.8 cfs @ 12.10 hrs HW=15.00' TW=14.53' (Dynamic Tailwater)
1=Culvert (Outlet Controls 1.8 cfs @ 3.25 fps)

Pond 26P: Ex DMH6



Summary for Pond 27P: Ex DMH7

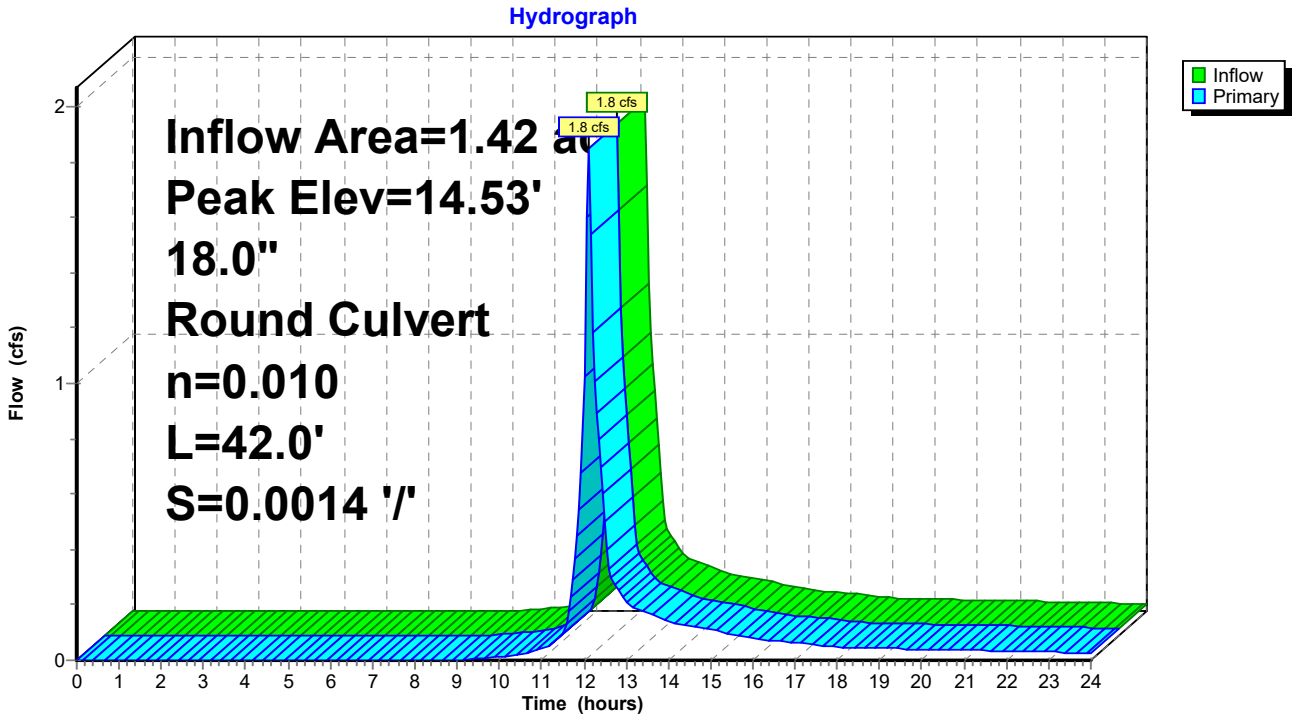
Inflow Area = 1.42 ac, 58.66% Impervious, Inflow Depth > 1.16" for 2-Year Storm event
Inflow = 1.8 cfs @ 12.10 hrs, Volume= 0.137 af
Outflow = 1.8 cfs @ 12.10 hrs, Volume= 0.137 af, Atten= 0%, Lag= 0.0 min
Primary = 1.8 cfs @ 12.10 hrs, Volume= 0.137 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Peak Elev= 14.53' @ 12.10 hrs
Flood Elev= 24.90'

Device	Routing	Invert	Outlet Devices
#1	Primary	13.70'	**18.0" Round Culvert** L= 42.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 13.70' / 13.64' S= 0.0014 '/' Cc= 0.900 n= 0.010 PVC, smooth interior, Flow Area= 1.77 sf

Primary OutFlow Max=1.8 cfs @ 12.10 hrs HW=14.53' TW=0.00' (Dynamic Tailwater)
1=Culvert (Barrel Controls 1.8 cfs @ 2.65 fps)

Pond 27P: Ex DMH7



Summary for Pond 29P: Ex DMH4

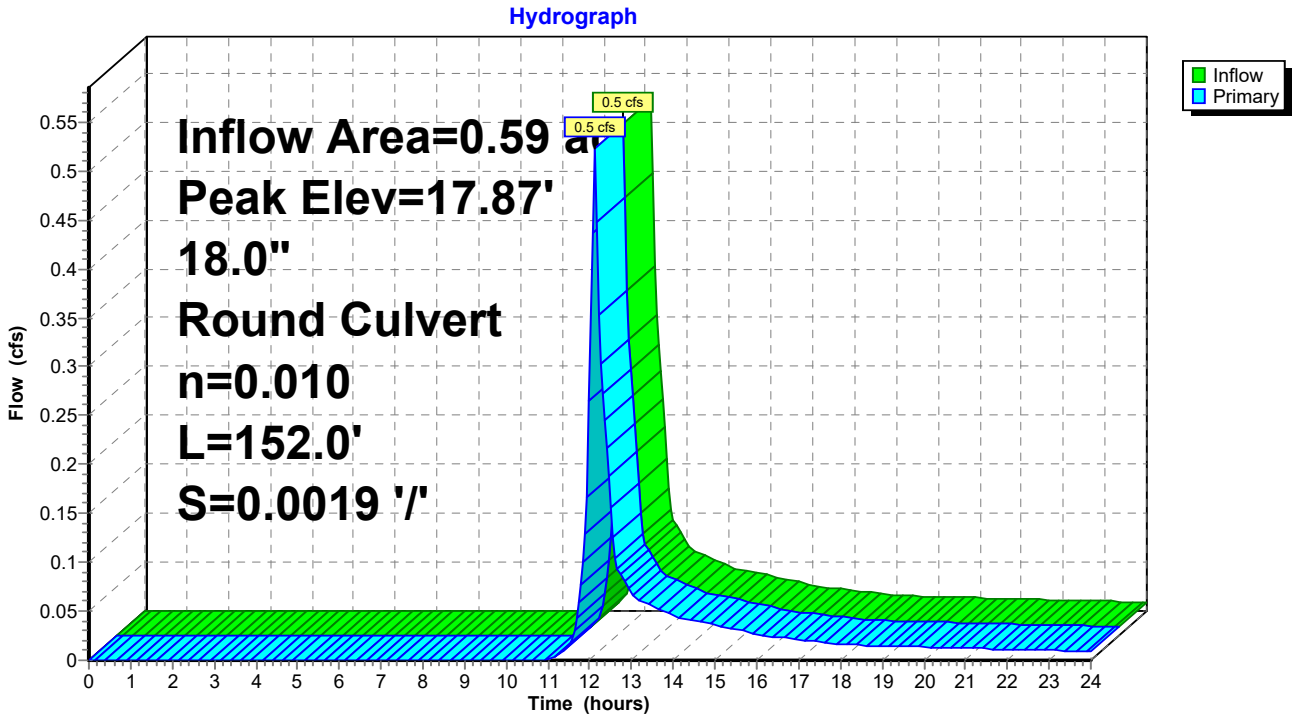
Inflow Area = 0.59 ac, 40.84% Impervious, Inflow Depth > 0.83" for 2-Year Storm event
Inflow = 0.5 cfs @ 12.10 hrs, Volume= 0.041 af
Outflow = 0.5 cfs @ 12.10 hrs, Volume= 0.041 af, Atten= 0%, Lag= 0.0 min
Primary = 0.5 cfs @ 12.10 hrs, Volume= 0.041 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Peak Elev= 17.87' @ 12.11 hrs
Flood Elev= 23.44'

Device	Routing	Invert	Outlet Devices
#1	Primary	17.46'	**18.0" Round Culvert** L= 152.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 17.46' / 17.17' S= 0.0019 '/' Cc= 0.900 n= 0.010 PVC, smooth interior, Flow Area= 1.77 sf

Primary OutFlow Max=0.5 cfs @ 12.10 hrs HW=17.87' TW=17.51' (Dynamic Tailwater)
1=Culvert (Outlet Controls 0.5 cfs @ 1.92 fps)

Pond 29P: Ex DMH4

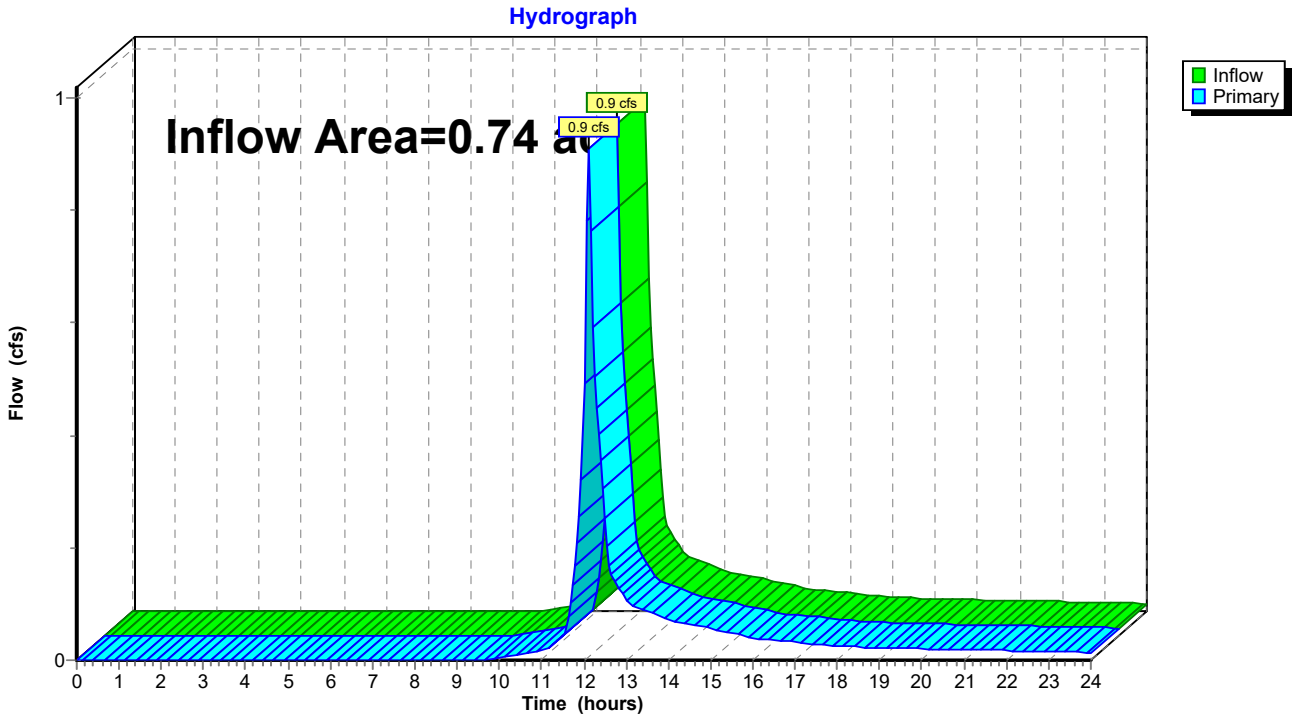


Summary for Link SP1: Forest Ave Storm Drain

Inflow Area = 0.74 ac, 39.80% Impervious, Inflow Depth > 1.11" for 2-Year Storm event
Inflow = 0.9 cfs @ 12.10 hrs, Volume= 0.069 af
Primary = 0.9 cfs @ 12.10 hrs, Volume= 0.069 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs

Link SP1: Forest Ave Storm Drain

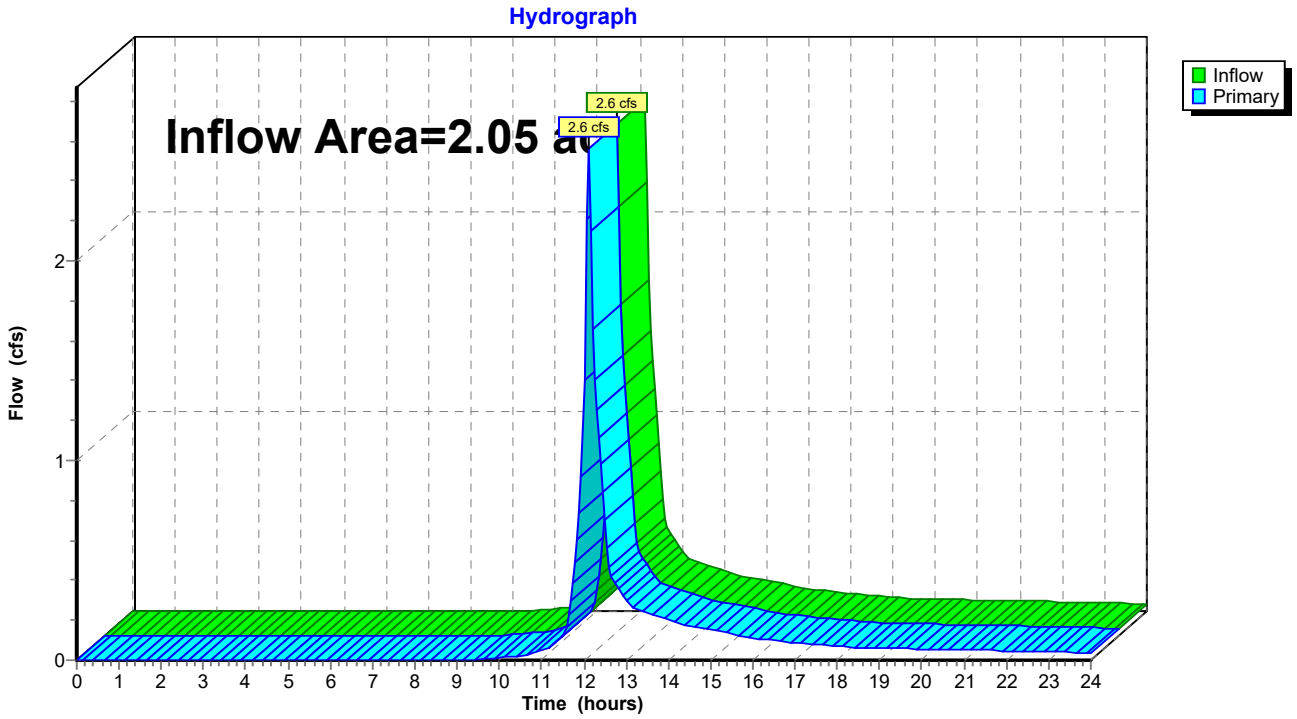


Summary for Link SP2: Combined Sewer

Inflow Area = 2.05 ac, 56.37% Impervious, Inflow Depth > 1.12" for 2-Year Storm event
Inflow = 2.6 cfs @ 12.10 hrs, Volume= 0.191 af
Primary = 2.6 cfs @ 12.10 hrs, Volume= 0.191 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs

Link SP2: Combined Sewer



Summary for Subcatchment 0S: PRE-0

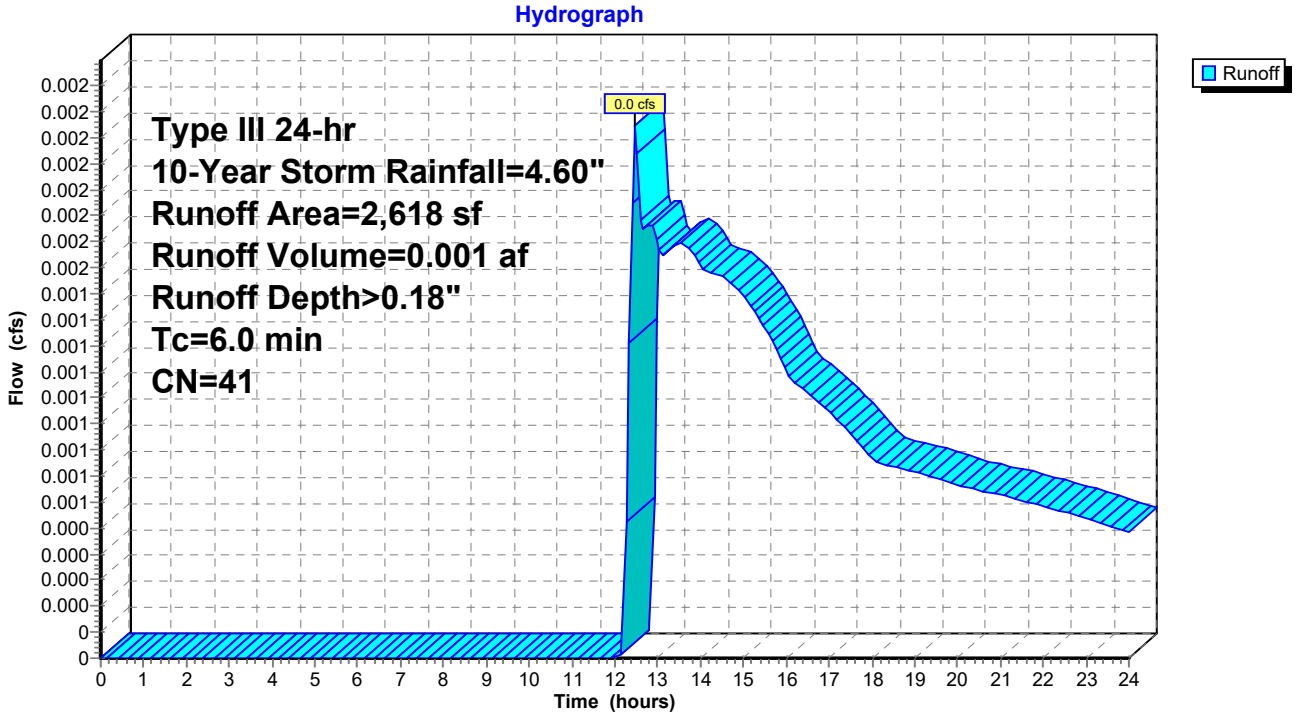
Runoff = 0.0 cfs @ 12.48 hrs, Volume= 0.001 af, Depth> 0.18"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Type III 24-hr 10-Year Storm Rainfall=4.60"

	Area (sf)	CN	Description
	70	98	Paved parking, HSG A
	1,403	39	Grass cover, Good, HSG A
*	1,145	40	Porous Pavement
	2,618	41	Weighted Average
	2,548		97.33% Pervious Area
	70		2.67% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					**Direct Entry,**

Subcatchment 0S: PRE-0



Summary for Subcatchment 1S: PRE-1

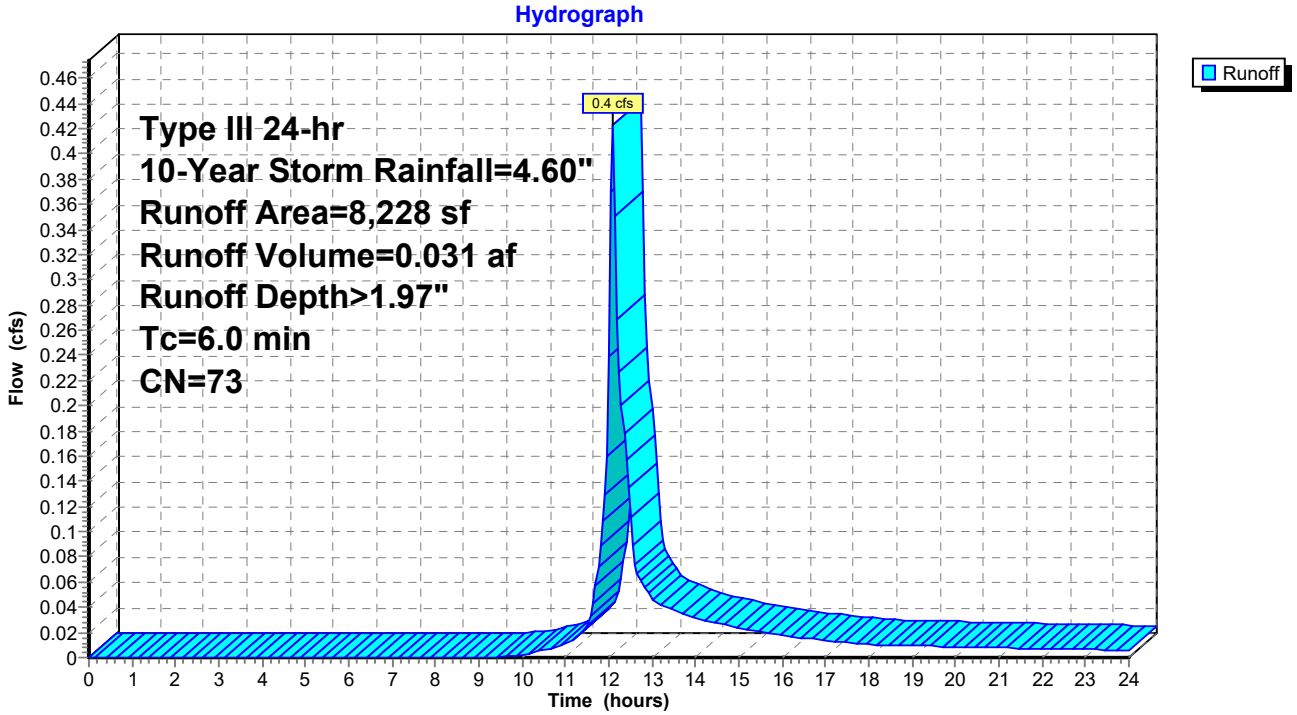
Runoff = 0.4 cfs @ 12.10 hrs, Volume= 0.031 af, Depth> 1.97"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Type III 24-hr 10-Year Storm Rainfall=4.60"

	Area (sf)	CN	Description
	4,083	98	Paved parking, HSG A
	1,673	39	Grass cover, Good, HSG A
*	1,374	68	Grass cover (parking area), HSG A
*	1,098	40	Porous Pavement
	8,228	73	Weighted Average
	4,145		50.38% Pervious Area
	4,083		49.62% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					**Direct Entry,**

Subcatchment 1S: PRE-1



Summary for Subcatchment 2S: PRE-2

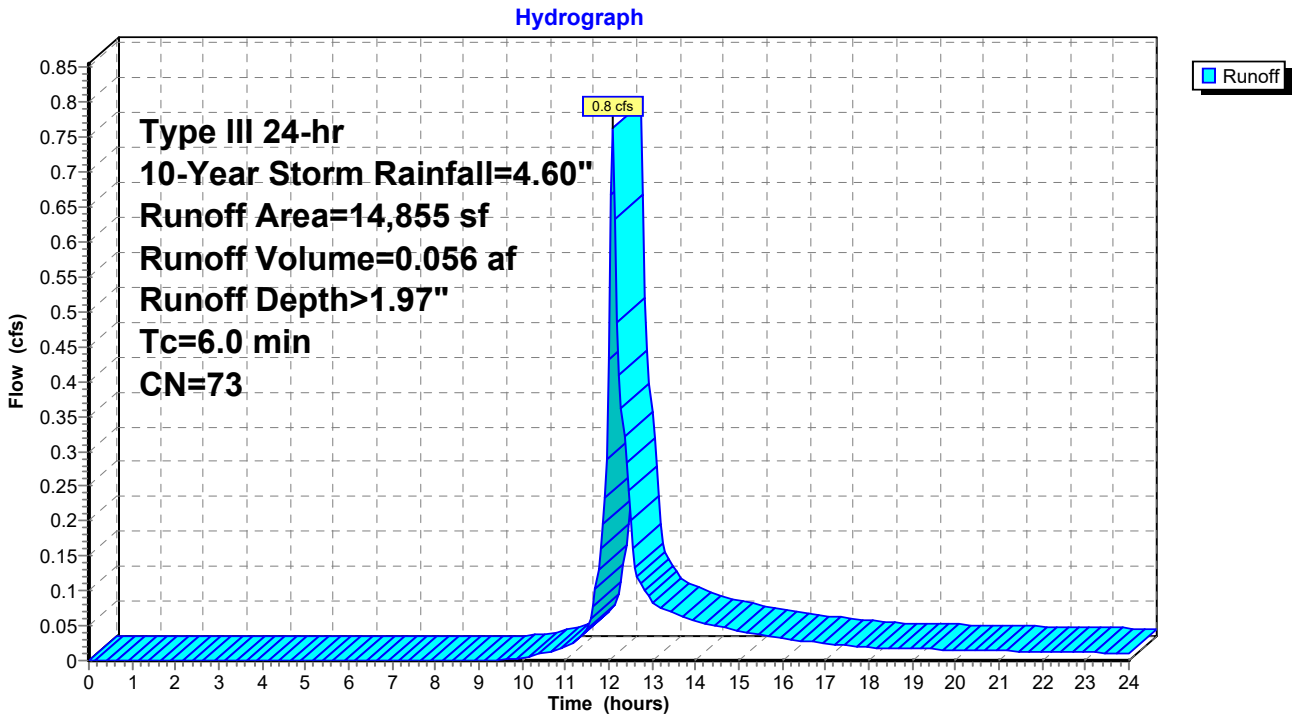
Runoff = 0.8 cfs @ 12.10 hrs, Volume= 0.056 af, Depth> 1.97"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Type III 24-hr 10-Year Storm Rainfall=4.60"

	Area (sf)	CN	Description
	6,344	98	Paved parking, HSG A
	2,948	39	Grass cover, Good, HSG A
	4,408	68	Grass cover (parking area), HSG A
*	1,155	40	Porous Pavement
	14,855	73	Weighted Average
	8,511		57.29% Pervious Area
	6,344		42.71% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					**Direct Entry,**

Subcatchment 2S: PRE-2



Summary for Subcatchment 3S: PRE-3

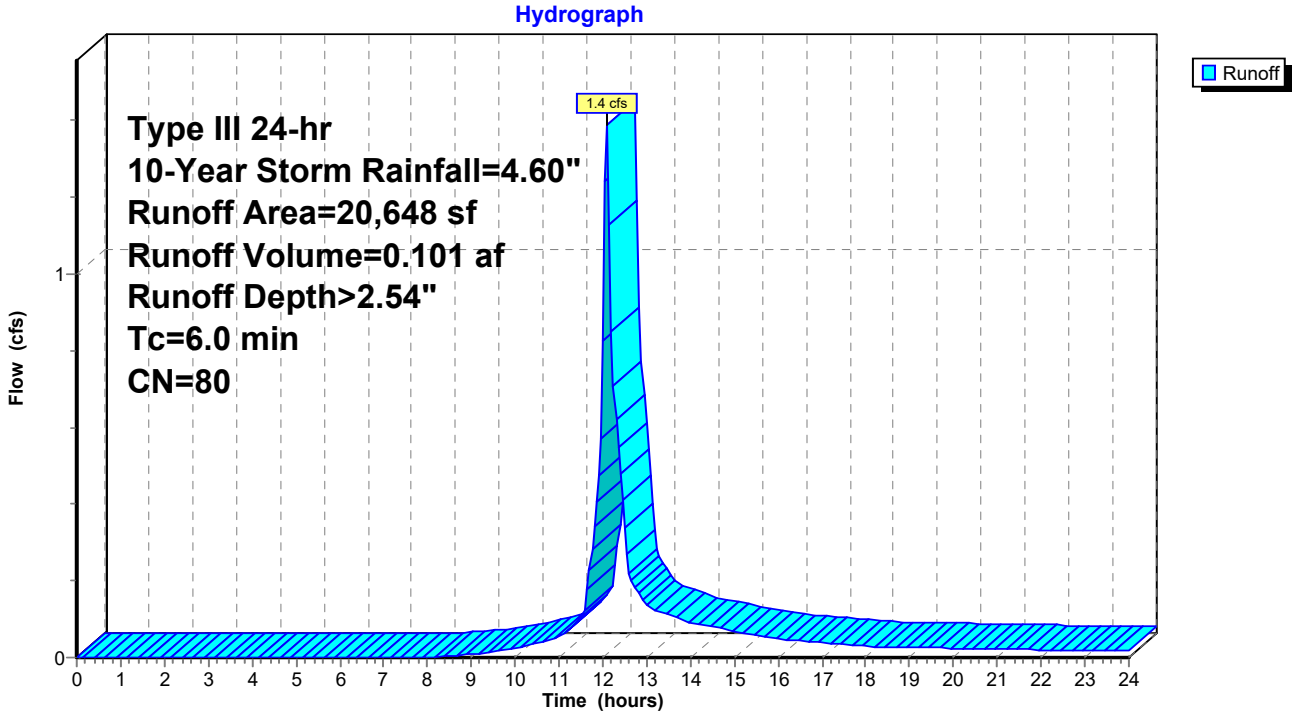
Runoff = 1.4 cfs @ 12.09 hrs, Volume= 0.101 af, Depth> 2.54"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Type III 24-hr 10-Year Storm Rainfall=4.60"

	Area (sf)	CN	Description
	10,577	98	Paved parking, HSG A
	1,903	39	Grass cover, Good, HSG A
	7,715	68	Grass cover (parking area), HSG A
*	453	40	Porous Pavement
	20,648	80	Weighted Average
	10,071		48.77% Pervious Area
	10,577		51.23% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					**Direct Entry,**

Subcatchment 3S: PRE-3



Summary for Subcatchment 4S: PRE-4

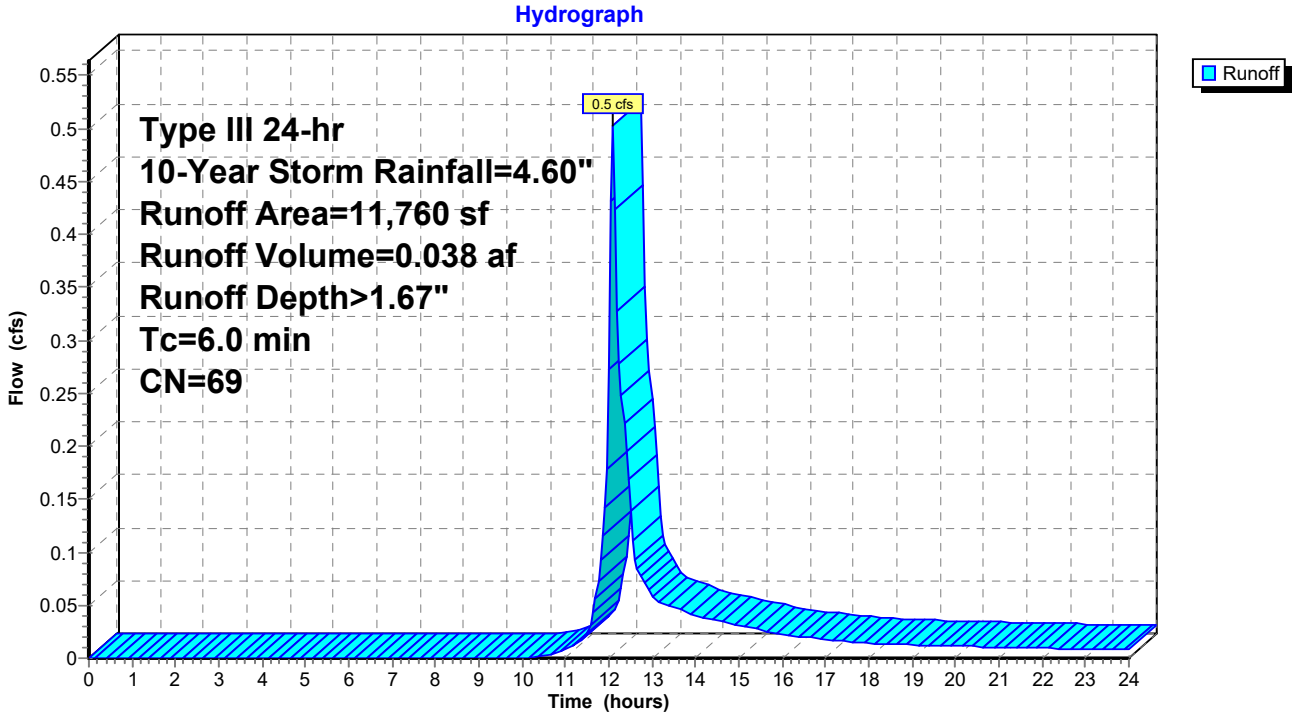
Runoff = 0.5 cfs @ 12.10 hrs, Volume= 0.038 af, Depth> 1.67"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Type III 24-hr 10-Year Storm Rainfall=4.60"

Area (sf)	CN	Description
2,321	98	Paved parking, HSG A
1,957	39	Grass cover, Good, HSG A
7,482	68	Grass cover (parking area), HSG A
11,760	69	Weighted Average
9,439		80.26% Pervious Area
2,321		19.74% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					**Direct Entry,**

Subcatchment 4S: PRE-4



Summary for Subcatchment 5S: PRE-5

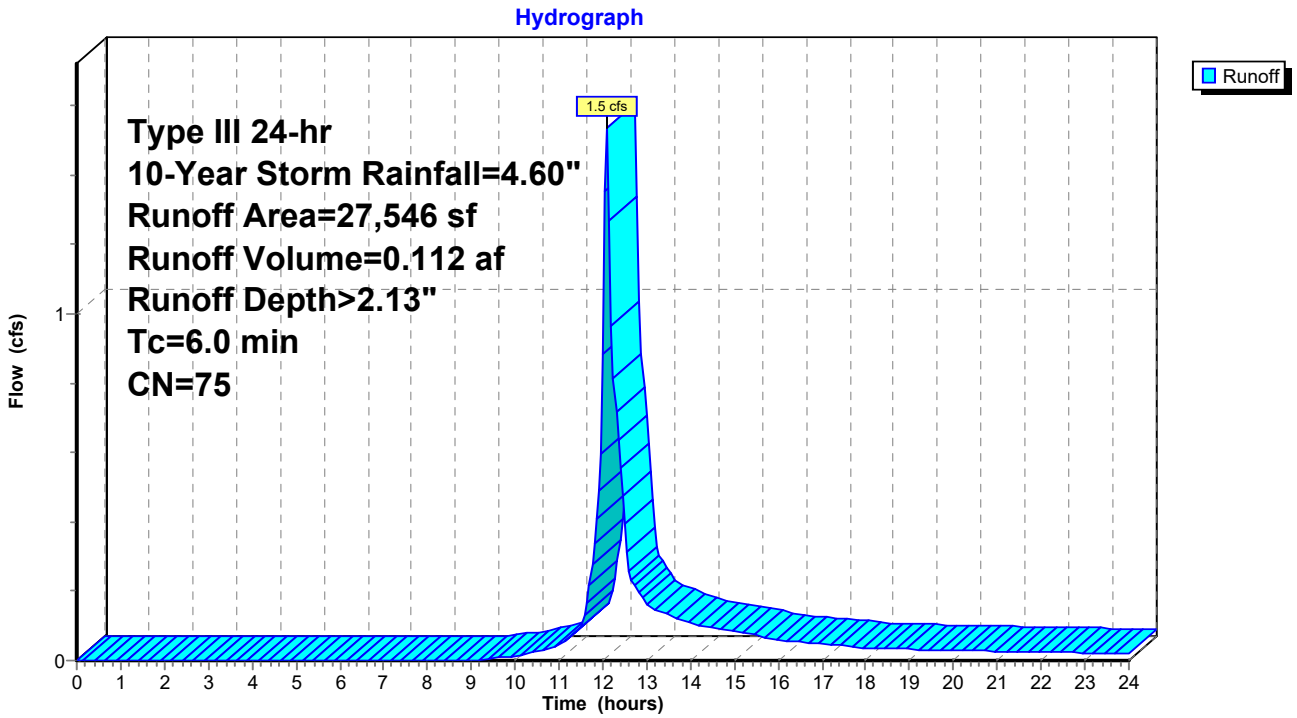
Runoff = 1.5 cfs @ 12.10 hrs, Volume= 0.112 af, Depth> 2.13"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Type III 24-hr 10-Year Storm Rainfall=4.60"

	Area (sf)	CN	Description
	14,114	98	Paved parking, HSG A
	6,700	39	Grass cover, Good, HSG A
	5,072	68	Grass cover (parking area), HSG A
*	1,660	40	Porous Pavement
	27,546	75	Weighted Average
	13,432		48.76% Pervious Area
	14,114		51.24% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					**Direct Entry,**

Subcatchment 5S: PRE-5



Summary for Subcatchment 6S: PRE-6

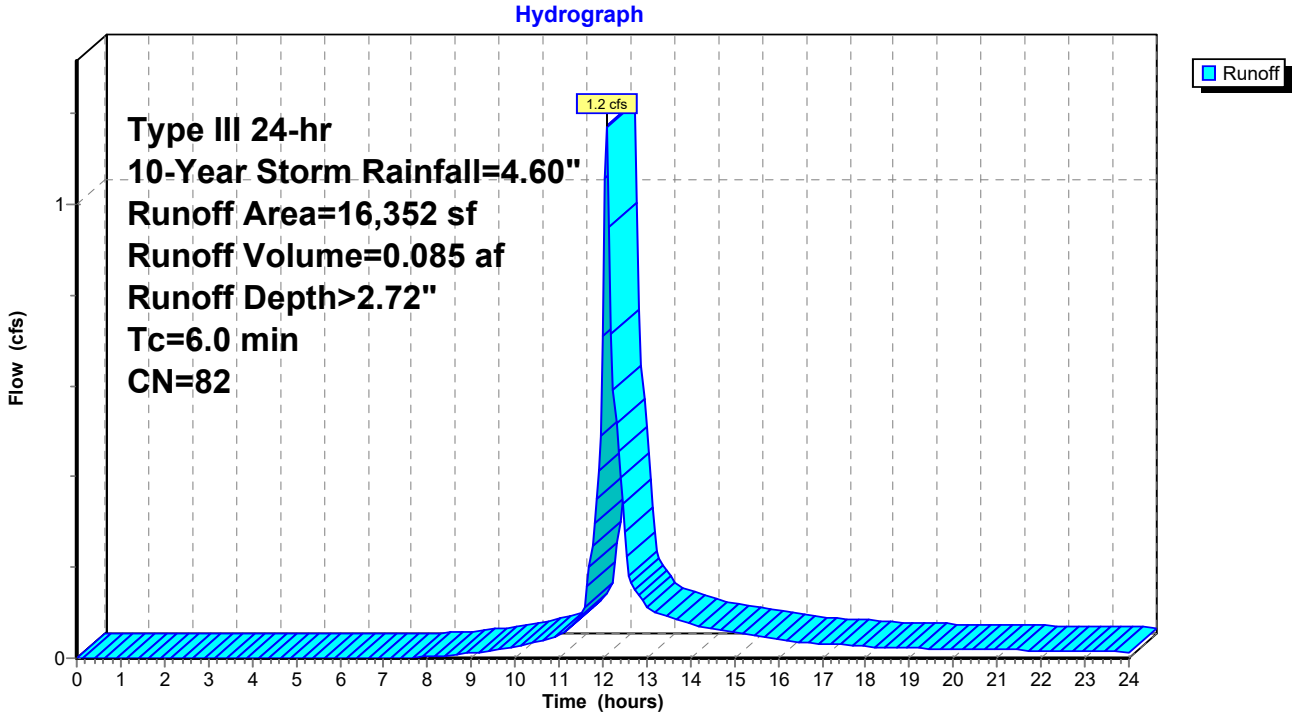
Runoff = 1.2 cfs @ 12.09 hrs, Volume= 0.085 af, Depth> 2.72"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Type III 24-hr 10-Year Storm Rainfall=4.60"

	Area (sf)	CN	Description
	11,768	98	Paved parking, HSG A
	3,865	39	Grass cover, Good, HSG A
*	719	40	Porous Pavement
	16,352	82	Weighted Average
	4,584		28.03% Pervious Area
	11,768		71.97% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					**Direct Entry,**

Subcatchment 6S: PRE-6



Summary for Subcatchment 7S: PRE-7

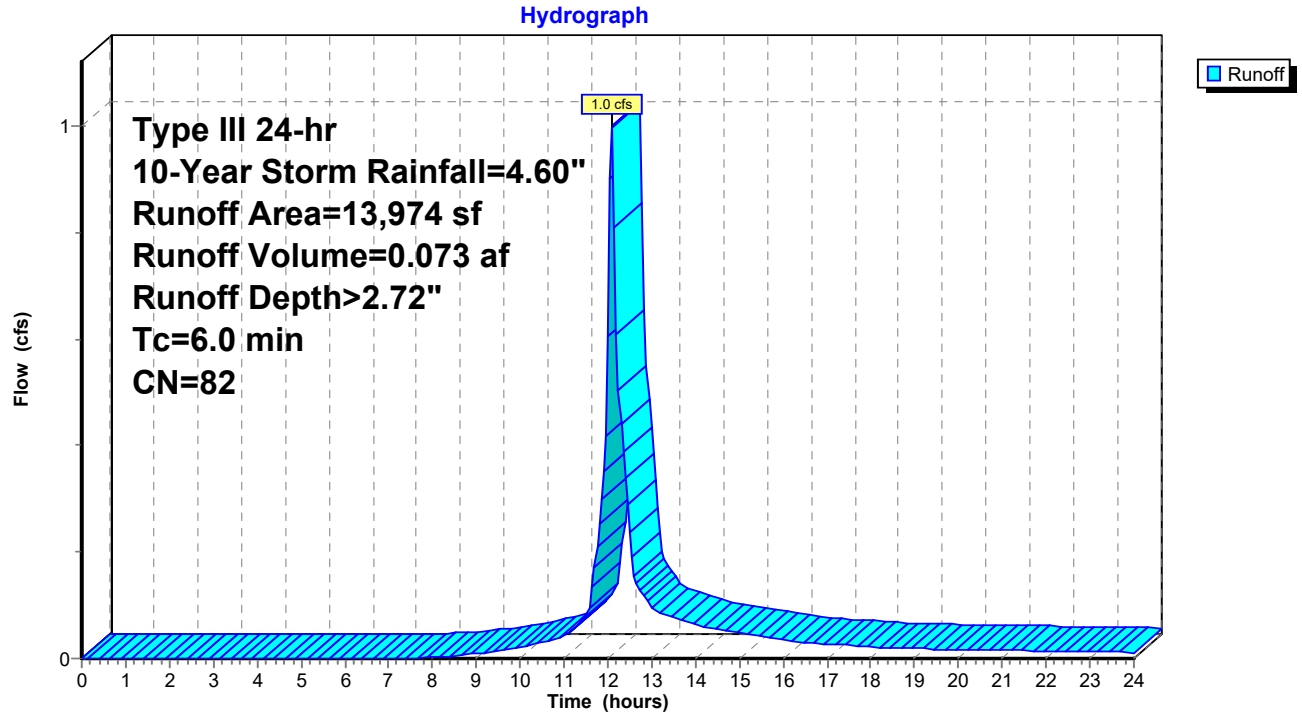
Runoff = 1.0 cfs @ 12.09 hrs, Volume= 0.073 af, Depth> 2.72"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Type III 24-hr 10-Year Storm Rainfall=4.60"

Area (sf)	CN	Description
10,235	98	Paved parking, HSG A
3,739	39	Grass cover, Good, HSG A
13,974	82	Weighted Average
3,739		26.76% Pervious Area
10,235		73.24% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					**Direct Entry,**

Subcatchment 7S: PRE-7



Summary for Subcatchment 8S: PRE-8

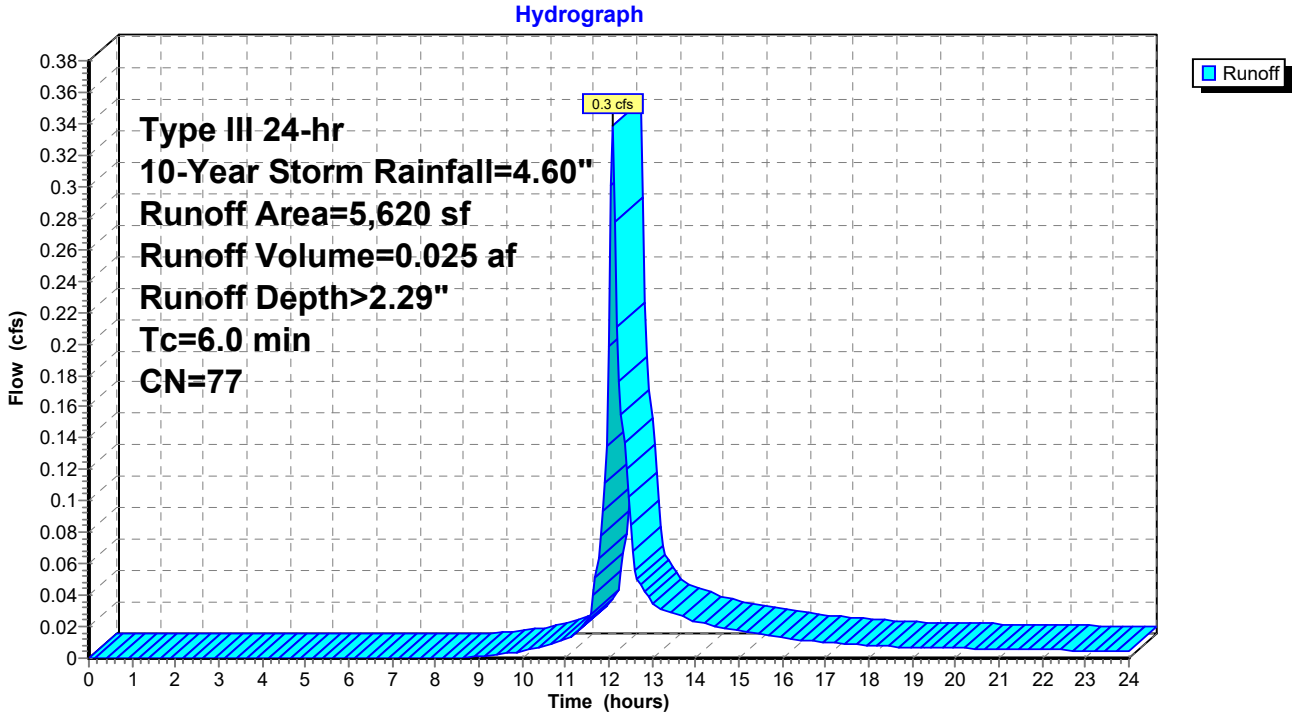
Runoff = 0.3 cfs @ 12.09 hrs, Volume= 0.025 af, Depth> 2.29"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Type III 24-hr 10-Year Storm Rainfall=4.60"

	Area (sf)	CN	Description
	3,664	98	Paved parking, HSG A
	1,857	39	Grass cover, Good, HSG A
*	99	40	Porous Pavement
	5,620	77	Weighted Average
	1,956		34.80% Pervious Area
	3,664		65.20% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					**Direct Entry,**

Subcatchment 8S: PRE-8



Summary for Pond 11P: Ex CB1

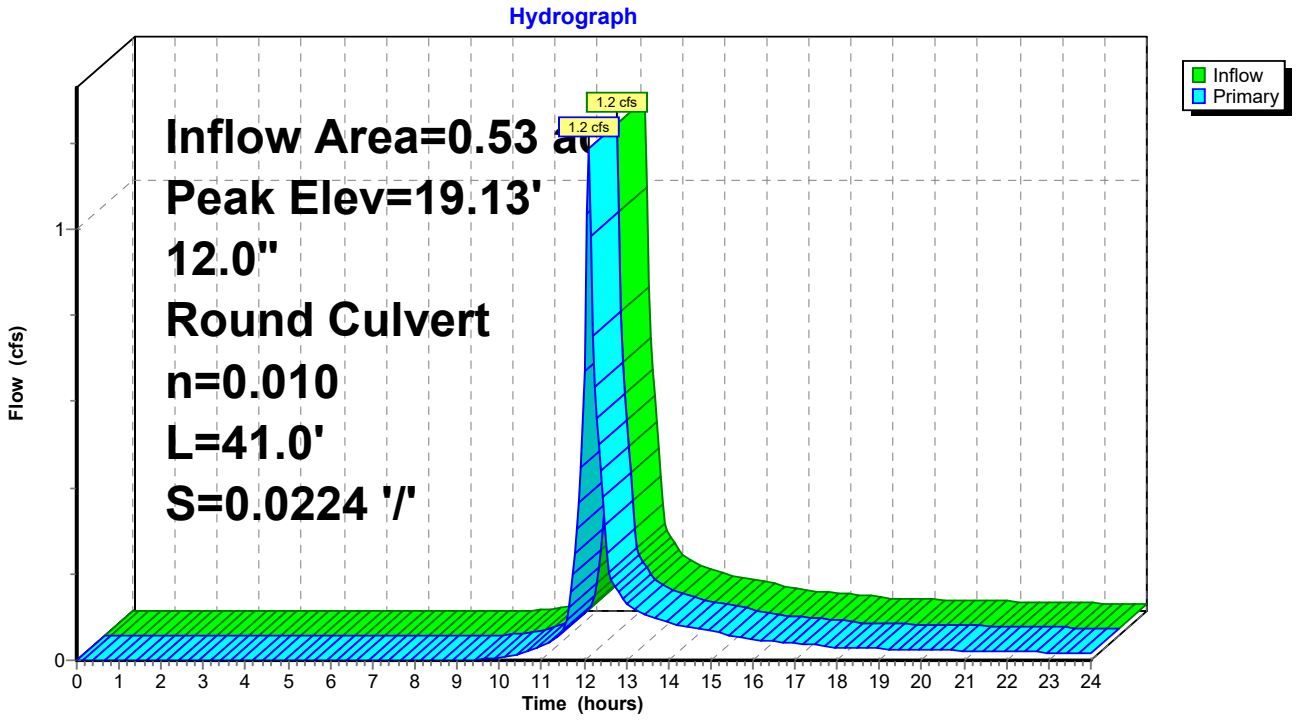
Inflow Area = 0.53 ac, 45.17% Impervious, Inflow Depth > 1.97" for 10-Year Storm event
Inflow = 1.2 cfs @ 12.10 hrs, Volume= 0.087 af
Outflow = 1.2 cfs @ 12.10 hrs, Volume= 0.087 af, Atten= 0%, Lag= 0.0 min
Primary = 1.2 cfs @ 12.10 hrs, Volume= 0.087 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Peak Elev= 19.13' @ 12.10 hrs
Flood Elev= 22.02'

Device	Routing	Invert	Outlet Devices
#1	Primary	18.47'	**12.0" Round Culvert** L= 41.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 18.47' / 17.55' S= 0.0224 '/' Cc= 0.900 n= 0.010 PVC, smooth interior, Flow Area= 0.79 sf

Primary OutFlow Max=1.2 cfs @ 12.10 hrs HW=19.12' TW=18.09' (Dynamic Tailwater)
1=Culvert (Inlet Controls 1.2 cfs @ 2.17 fps)

Pond 11P: Ex CB1



Summary for Pond 12P: Ex CB2

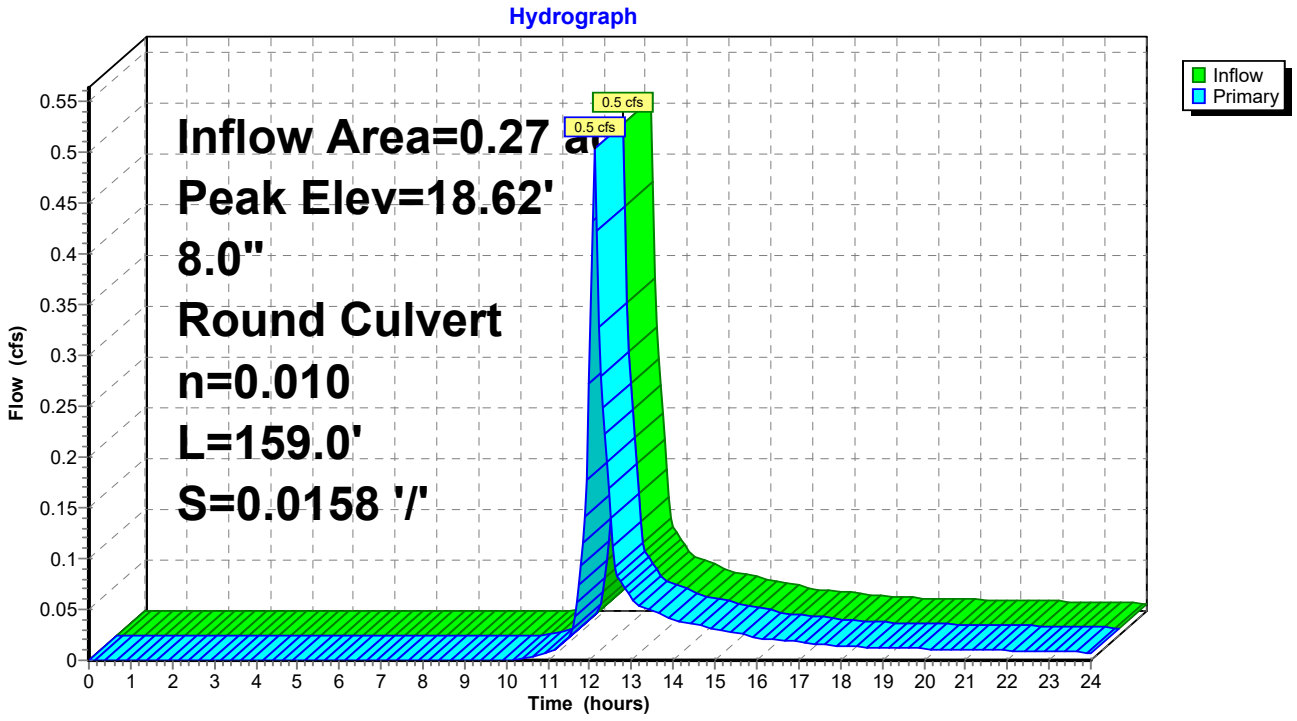
Inflow Area = 0.27 ac, 19.74% Impervious, Inflow Depth > 1.67" for 10-Year Storm event
Inflow = 0.5 cfs @ 12.10 hrs, Volume= 0.038 af
Outflow = 0.5 cfs @ 12.10 hrs, Volume= 0.038 af, Atten= 0%, Lag= 0.0 min
Primary = 0.5 cfs @ 12.10 hrs, Volume= 0.038 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Peak Elev= 18.62' @ 12.10 hrs
Flood Elev= 22.15'

Device	Routing	Invert	Outlet Devices
#1	Primary	18.14'	**8.0" Round Culvert** L= 159.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 18.14' / 15.62' S= 0.0158 '/' Cc= 0.900 n= 0.010 PVC, smooth interior, Flow Area= 0.35 sf

Primary OutFlow Max=0.5 cfs @ 12.10 hrs HW=18.62' TW=0.00' (Dynamic Tailwater)
1=Culvert (Inlet Controls 0.5 cfs @ 1.86 fps)

Pond 12P: Ex CB2



Summary for Pond 13P: Ex CB7

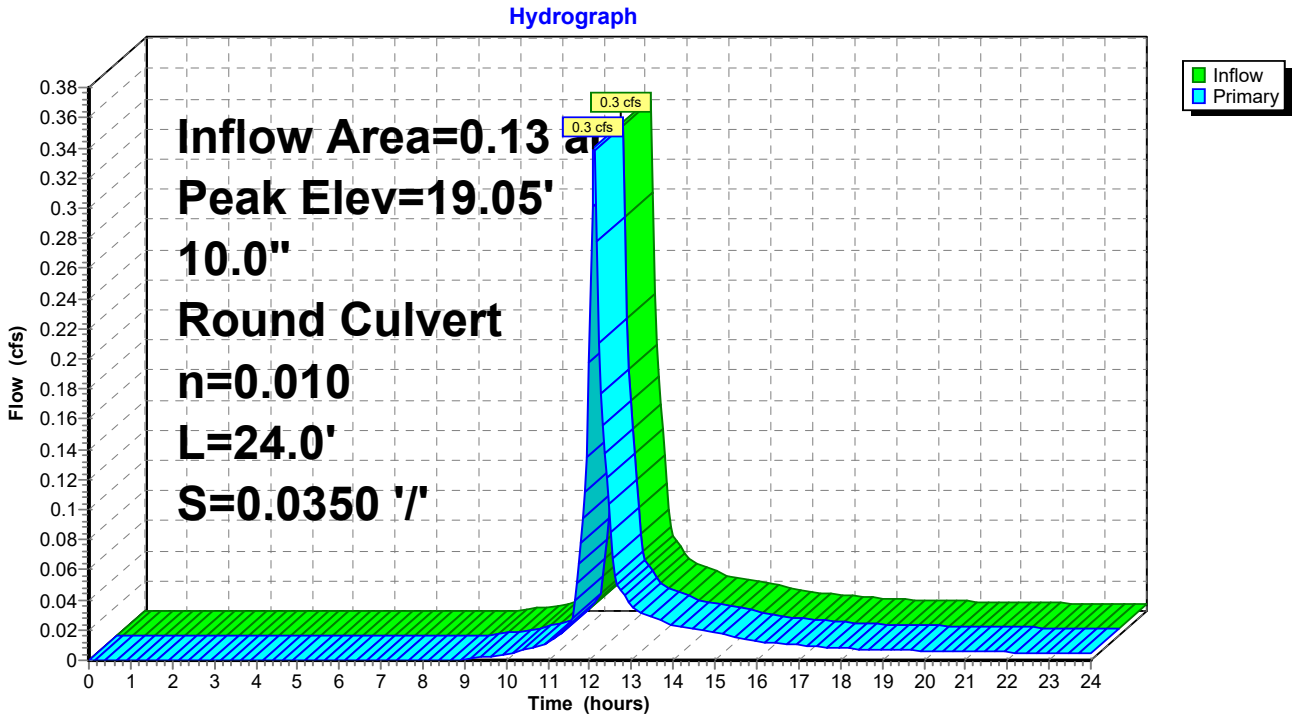
Inflow Area = 0.13 ac, 65.20% Impervious, Inflow Depth > 2.29" for 10-Year Storm event
Inflow = 0.3 cfs @ 12.09 hrs, Volume= 0.025 af
Outflow = 0.3 cfs @ 12.09 hrs, Volume= 0.025 af, Atten= 0%, Lag= 0.0 min
Primary = 0.3 cfs @ 12.09 hrs, Volume= 0.025 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Peak Elev= 19.05' @ 12.09 hrs
Flood Elev= 24.51'

Device	Routing	Invert	Outlet Devices
#1	Primary	18.70'	**10.0" Round Culvert** L= 24.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 18.70' / 17.86' S= 0.0350 '/' Cc= 0.900 n= 0.010 PVC, smooth interior, Flow Area= 0.55 sf

Primary OutFlow Max=0.3 cfs @ 12.09 hrs HW=19.04' TW=15.70' (Dynamic Tailwater)
1=Culvert (Inlet Controls 0.3 cfs @ 1.58 fps)

Pond 13P: Ex CB7



Summary for Pond 14P: Ex CB4

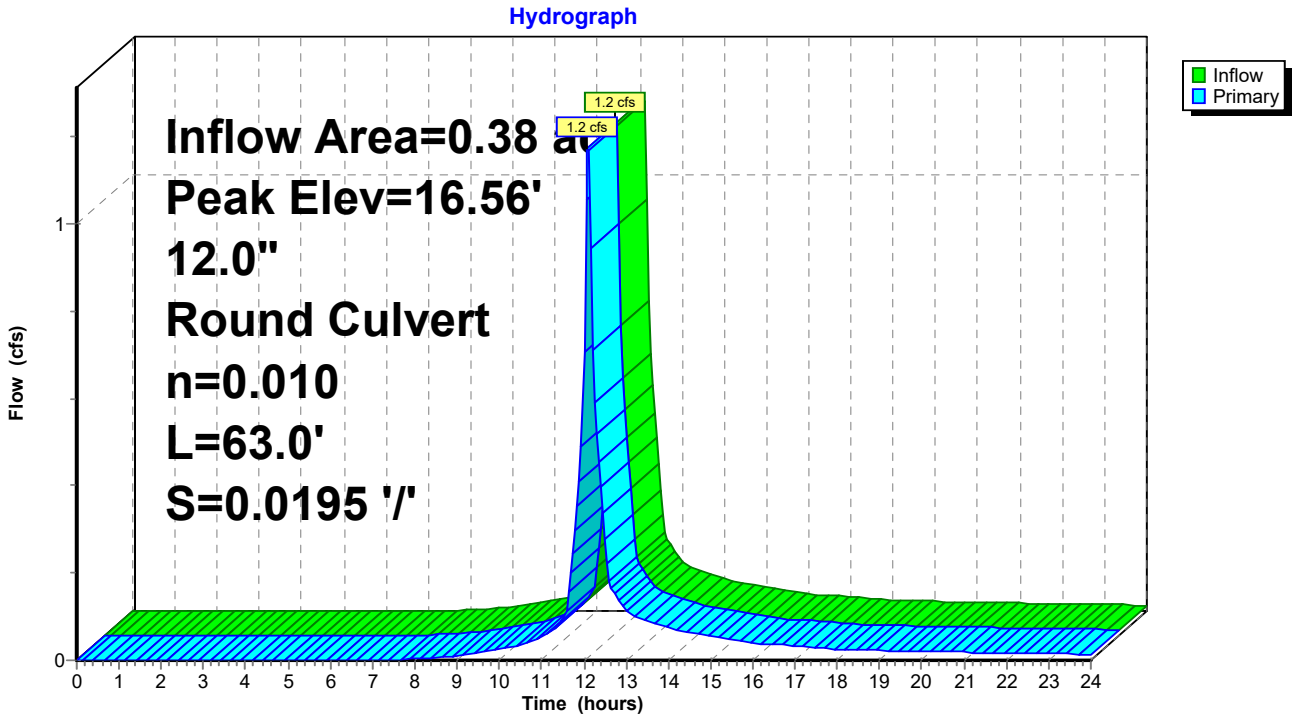
Inflow Area = 0.38 ac, 71.97% Impervious, Inflow Depth > 2.72" for 10-Year Storm event
Inflow = 1.2 cfs @ 12.09 hrs, Volume= 0.085 af
Outflow = 1.2 cfs @ 12.09 hrs, Volume= 0.085 af, Atten= 0%, Lag= 0.0 min
Primary = 1.2 cfs @ 12.09 hrs, Volume= 0.085 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Peak Elev= 16.56' @ 12.09 hrs
Flood Elev= 21.96'

Device	Routing	Invert	Outlet Devices
#1	Primary	15.91'	**12.0" Round Culvert** L= 63.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 15.91' / 14.68' S= 0.0195 '/' Cc= 0.900 n= 0.010 PVC, smooth interior, Flow Area= 0.79 sf

Primary OutFlow Max=1.2 cfs @ 12.09 hrs HW=16.55' TW=15.74' (Dynamic Tailwater)
1=Culvert (Inlet Controls 1.2 cfs @ 2.16 fps)

Pond 14P: Ex CB4



Summary for Pond 15P: Ex CB5

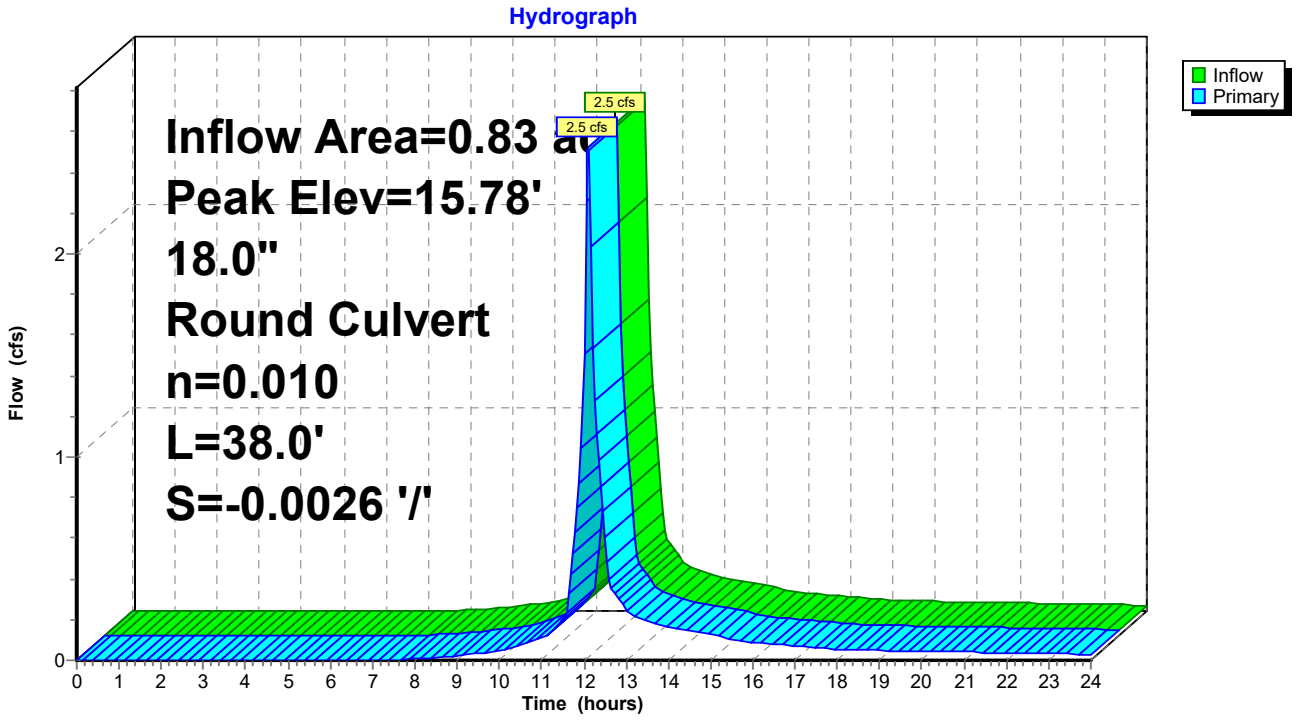
Inflow Area = 0.83 ac, 71.40% Impervious, Inflow Depth > 2.65" for 10-Year Storm event
Inflow = 2.5 cfs @ 12.09 hrs, Volume= 0.183 af
Outflow = 2.5 cfs @ 12.09 hrs, Volume= 0.183 af, Atten= 0%, Lag= 0.0 min
Primary = 2.5 cfs @ 12.09 hrs, Volume= 0.183 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Peak Elev= 15.78' @ 12.14 hrs
Flood Elev= 22.70'

Device	Routing	Invert	Outlet Devices
#1	Primary	14.80'	**18.0" Round Culvert** L= 38.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 14.70' / 14.80' S= -0.0026 '/' Cc= 0.900 n= 0.010 PVC, smooth interior, Flow Area= 1.77 sf

Primary OutFlow Max=1.9 cfs @ 12.09 hrs HW=15.74' TW=15.56' (Dynamic Tailwater)
1=Culvert (Inlet Controls 1.9 cfs @ 1.59 fps)

Pond 15P: Ex CB5



Summary for Pond 16P: Ex DMH8

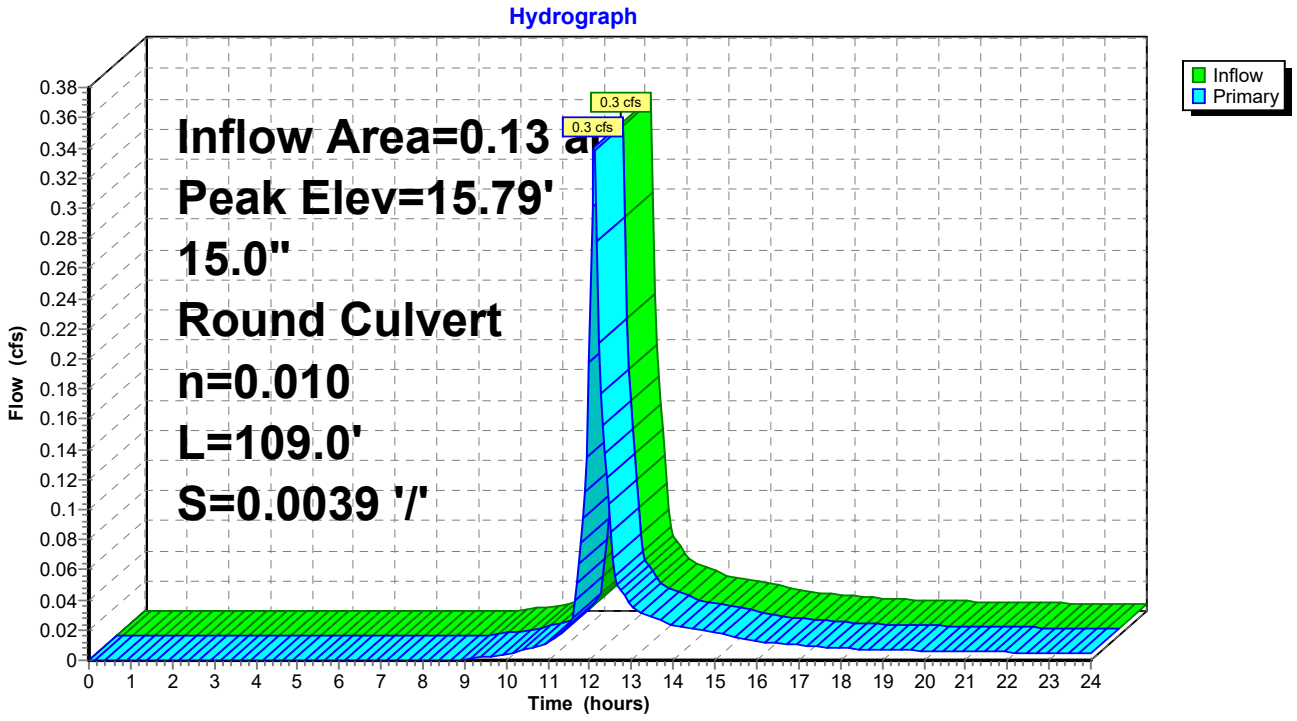
Inflow Area = 0.13 ac, 65.20% Impervious, Inflow Depth > 2.29" for 10-Year Storm event
Inflow = 0.3 cfs @ 12.09 hrs, Volume= 0.025 af
Outflow = 0.3 cfs @ 12.09 hrs, Volume= 0.025 af, Atten= 0%, Lag= 0.0 min
Primary = 0.3 cfs @ 12.09 hrs, Volume= 0.025 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Peak Elev= 15.79' @ 12.19 hrs
Flood Elev= 24.67'

Device	Routing	Invert	Outlet Devices
#1	Primary	15.08'	**15.0" Round Culvert** L= 109.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 15.08' / 14.65' S= 0.0039 '/' Cc= 0.900 n= 0.010 PVC, smooth interior, Flow Area= 1.23 sf

Primary OutFlow Max=0.0 cfs @ 12.09 hrs HW=15.70' TW=15.74' (Dynamic Tailwater)
↑**1=Culvert** (Controls 0.0 cfs)

Pond 16P: Ex DMH8



Summary for Pond 21P: Ex DMH9

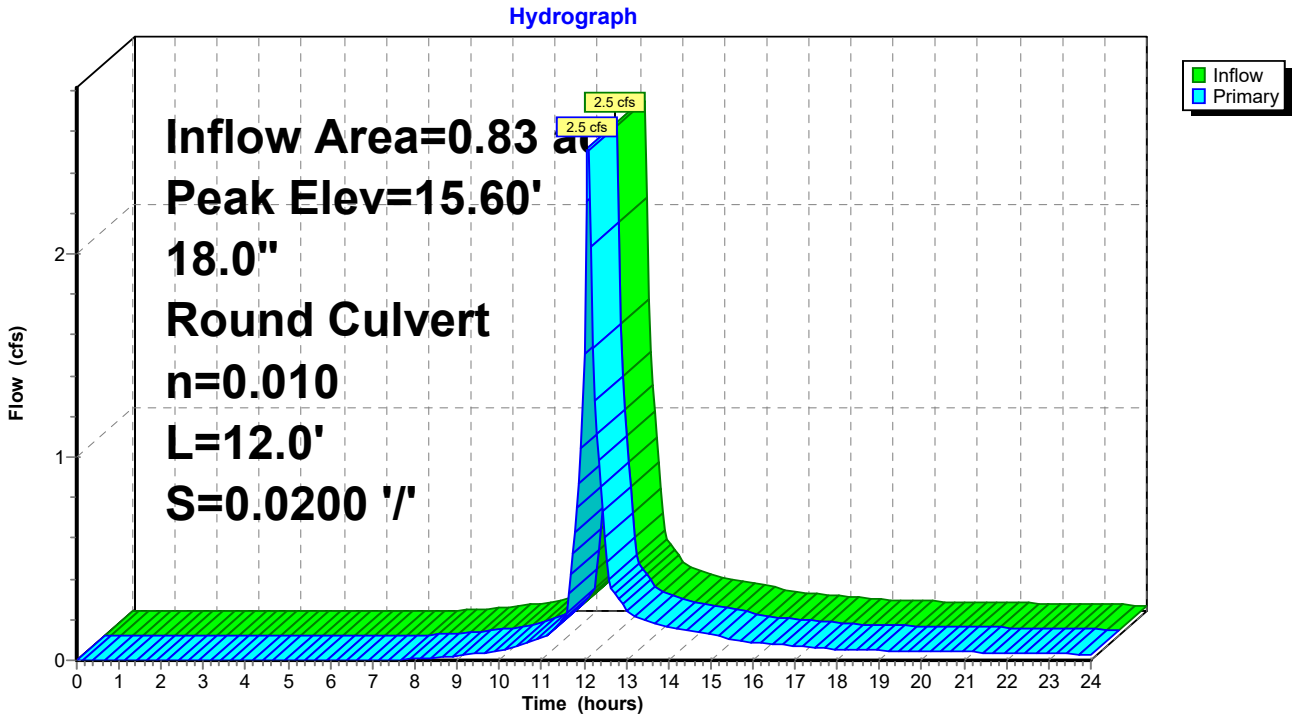
Inflow Area = 0.83 ac, 71.40% Impervious, Inflow Depth > 2.65" for 10-Year Storm event
Inflow = 2.5 cfs @ 12.09 hrs, Volume= 0.183 af
Outflow = 2.5 cfs @ 12.09 hrs, Volume= 0.183 af, Atten= 0%, Lag= 0.0 min
Primary = 2.5 cfs @ 12.09 hrs, Volume= 0.183 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Peak Elev= 15.60' @ 12.13 hrs
Flood Elev= 23.72'

Device	Routing	Invert	Outlet Devices
#1	Primary	14.62'	**18.0" Round Culvert** L= 12.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 14.62' / 14.38' S= 0.0200 '/' Cc= 0.900 n= 0.010 PVC, smooth interior, Flow Area= 1.77 sf

Primary OutFlow Max=1.9 cfs @ 12.09 hrs HW=15.56' TW=15.38' (Dynamic Tailwater)
1=Culvert (Inlet Controls 1.9 cfs @ 1.62 fps)

Pond 21P: Ex DMH9



Summary for Pond 22P: Ex DMH3

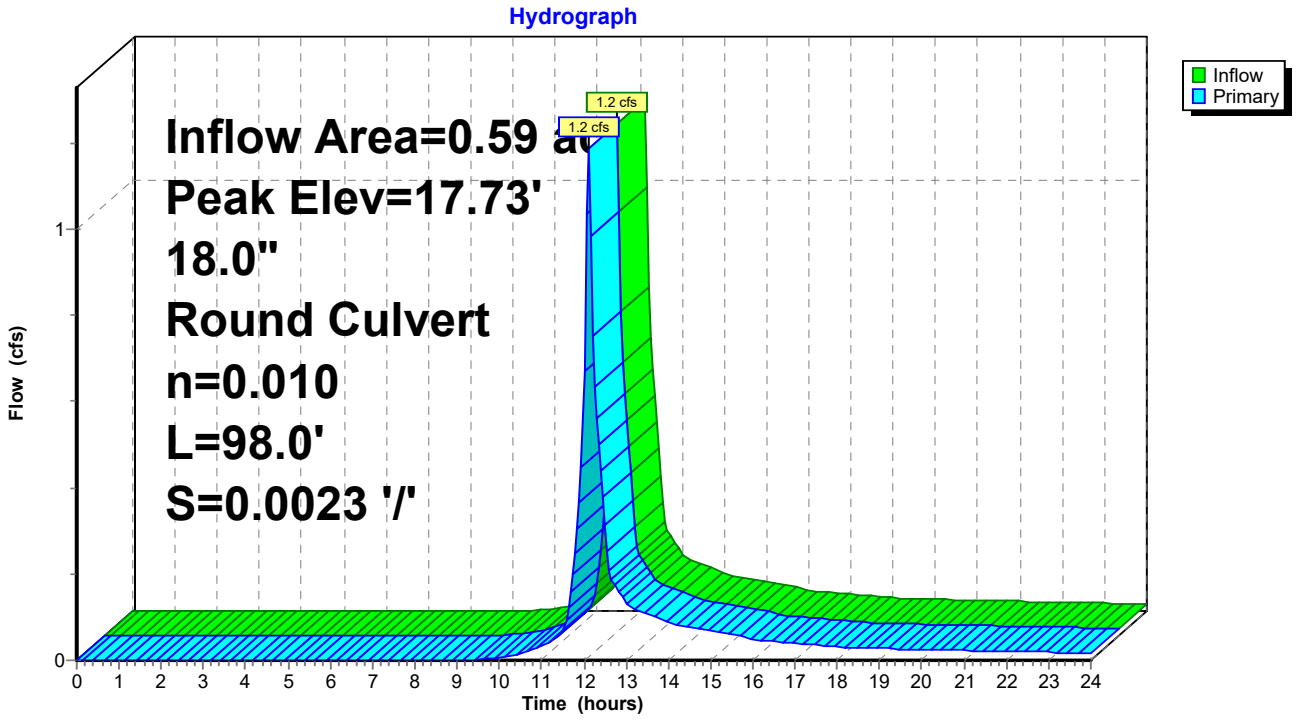
Inflow Area = 0.59 ac, 40.84% Impervious, Inflow Depth > 1.79" for 10-Year Storm event
Inflow = 1.2 cfs @ 12.10 hrs, Volume= 0.088 af
Outflow = 1.2 cfs @ 12.10 hrs, Volume= 0.088 af, Atten= 0%, Lag= 0.0 min
Primary = 1.2 cfs @ 12.10 hrs, Volume= 0.088 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Peak Elev= 17.73' @ 12.10 hrs
Flood Elev= 24.92'

Device	Routing	Invert	Outlet Devices
#1	Primary	17.12'	**18.0" Round Culvert** L= 98.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 17.12' / 16.89' S= 0.0023 '/' Cc= 0.900 n= 0.010 PVC, smooth interior, Flow Area= 1.77 sf

Primary OutFlow Max=1.1 cfs @ 12.10 hrs HW=17.73' TW=17.37' (Dynamic Tailwater)
1=Culvert (Outlet Controls 1.1 cfs @ 2.51 fps)

Pond 22P: Ex DMH3



Summary for Pond 23P: Ex CB3

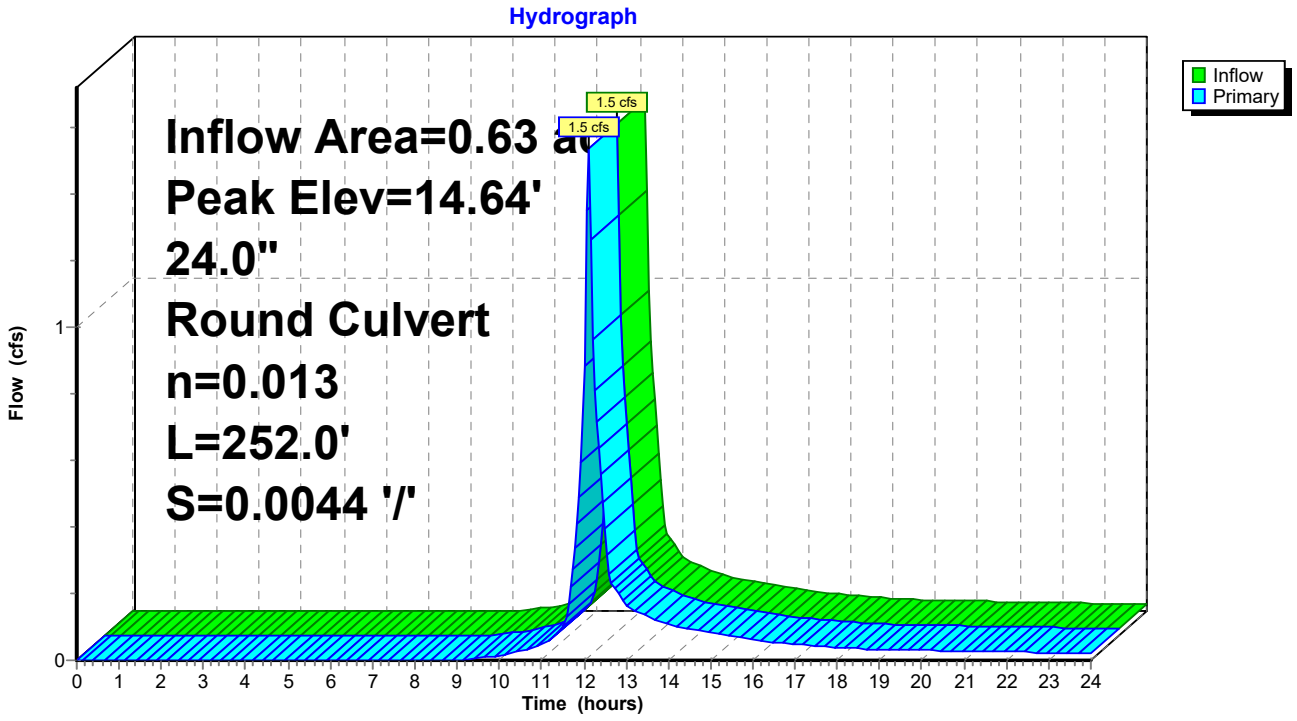
Inflow Area = 0.63 ac, 51.24% Impervious, Inflow Depth > 2.13" for 10-Year Storm event
Inflow = 1.5 cfs @ 12.10 hrs, Volume= 0.112 af
Outflow = 1.5 cfs @ 12.10 hrs, Volume= 0.112 af, Atten= 0%, Lag= 0.0 min
Primary = 1.5 cfs @ 12.10 hrs, Volume= 0.112 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Peak Elev= 14.64' @ 12.09 hrs
Flood Elev= 23.60'

Device	Routing	Invert	Outlet Devices
#1	Primary	14.05'	**24.0" Round Culvert** L= 252.0' CMP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 14.05' / 12.94' S= 0.0044 '/' Cc= 0.900 n= 0.013 Cast iron, coated, Flow Area= 3.14 sf

Primary OutFlow Max=1.5 cfs @ 12.10 hrs HW=14.64' TW=0.00' (Dynamic Tailwater)
1=Culvert (Barrel Controls 1.5 cfs @ 2.95 fps)

Pond 23P: Ex CB3



Summary for Pond 24P: Ex DMH2

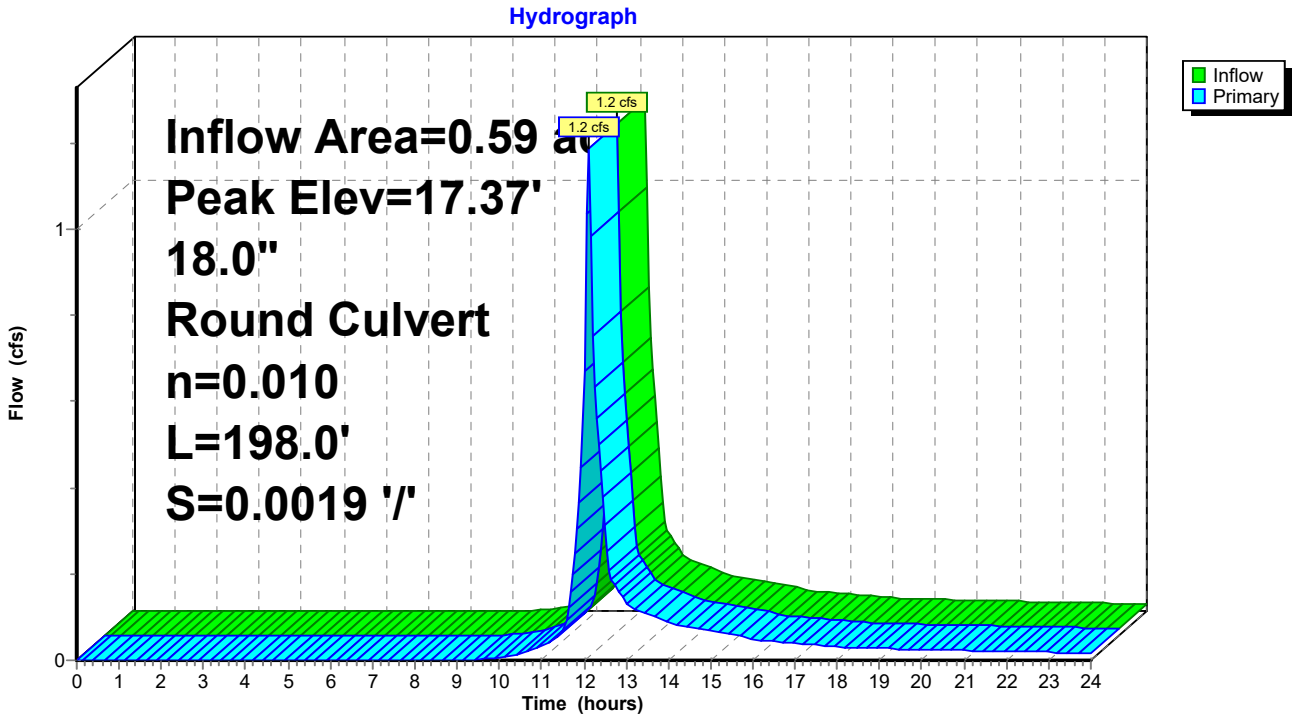
Inflow Area = 0.59 ac, 40.84% Impervious, Inflow Depth > 1.79" for 10-Year Storm event
Inflow = 1.2 cfs @ 12.10 hrs, Volume= 0.088 af
Outflow = 1.2 cfs @ 12.10 hrs, Volume= 0.088 af, Atten= 0%, Lag= 0.0 min
Primary = 1.2 cfs @ 12.10 hrs, Volume= 0.088 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Peak Elev= 17.37' @ 12.10 hrs
Flood Elev= 25.38'

Device	Routing	Invert	Outlet Devices
#1	Primary	16.75'	**18.0" Round Culvert** L= 198.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 16.75' / 16.38' S= 0.0019 '/' Cc= 0.900 n= 0.010 PVC, smooth interior, Flow Area= 1.77 sf

Primary OutFlow Max=1.2 cfs @ 12.10 hrs HW=17.37' TW=16.01' (Dynamic Tailwater)
1=Culvert (Barrel Controls 1.2 cfs @ 2.52 fps)

Pond 24P: Ex DMH2



Summary for Pond 25P: Ex DMH5

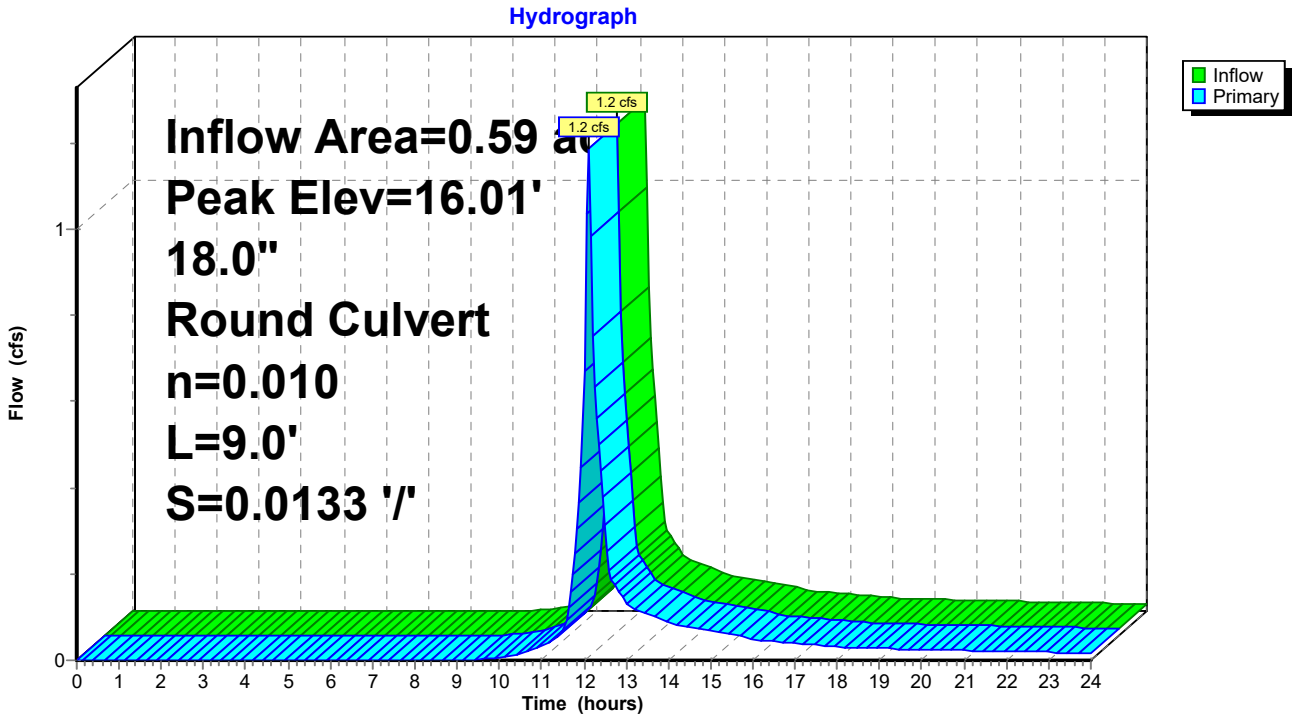
Inflow Area = 0.59 ac, 40.84% Impervious, Inflow Depth > 1.79" for 10-Year Storm event
Inflow = 1.2 cfs @ 12.10 hrs, Volume= 0.088 af
Outflow = 1.2 cfs @ 12.10 hrs, Volume= 0.088 af, Atten= 0%, Lag= 0.0 min
Primary = 1.2 cfs @ 12.10 hrs, Volume= 0.088 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Peak Elev= 16.01' @ 12.10 hrs
Flood Elev= 23.84'

Device	Routing	Invert	Outlet Devices
#1	Primary	15.44'	**18.0" Round Culvert** L= 9.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 15.44' / 15.32' S= 0.0133 '/' Cc= 0.900 n= 0.010 PVC, smooth interior, Flow Area= 1.77 sf

Primary OutFlow Max=1.2 cfs @ 12.10 hrs HW=16.01' TW=15.39' (Dynamic Tailwater)
1=Culvert (Barrel Controls 1.2 cfs @ 2.85 fps)

Pond 25P: Ex DMH5



Summary for Pond 26P: Ex DMH6

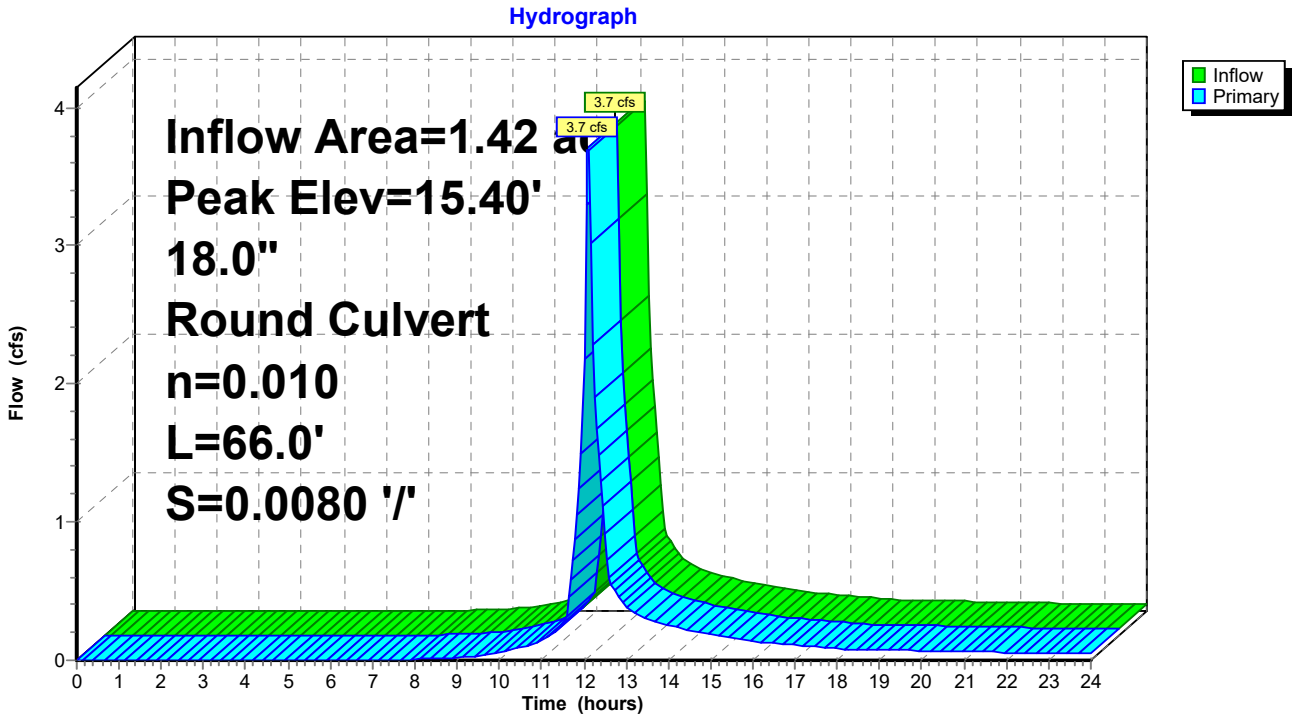
Inflow Area = 1.42 ac, 58.66% Impervious, Inflow Depth > 2.29" for 10-Year Storm event
Inflow = 3.7 cfs @ 12.09 hrs, Volume= 0.270 af
Outflow = 3.7 cfs @ 12.09 hrs, Volume= 0.270 af, Atten= 0%, Lag= 0.0 min
Primary = 3.7 cfs @ 12.09 hrs, Volume= 0.270 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Peak Elev= 15.40' @ 12.11 hrs
Flood Elev= 23.95'

Device	Routing	Invert	Outlet Devices
#1	Primary	14.30'	**18.0" Round Culvert** L= 66.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 14.30' / 13.77' S= 0.0080 '/' Cc= 0.900 n= 0.010 PVC, smooth interior, Flow Area= 1.77 sf

Primary OutFlow Max=3.3 cfs @ 12.09 hrs HW=15.39' TW=14.93' (Dynamic Tailwater)
1=Culvert (Outlet Controls 3.3 cfs @ 3.40 fps)

Pond 26P: Ex DMH6



Summary for Pond 27P: Ex DMH7

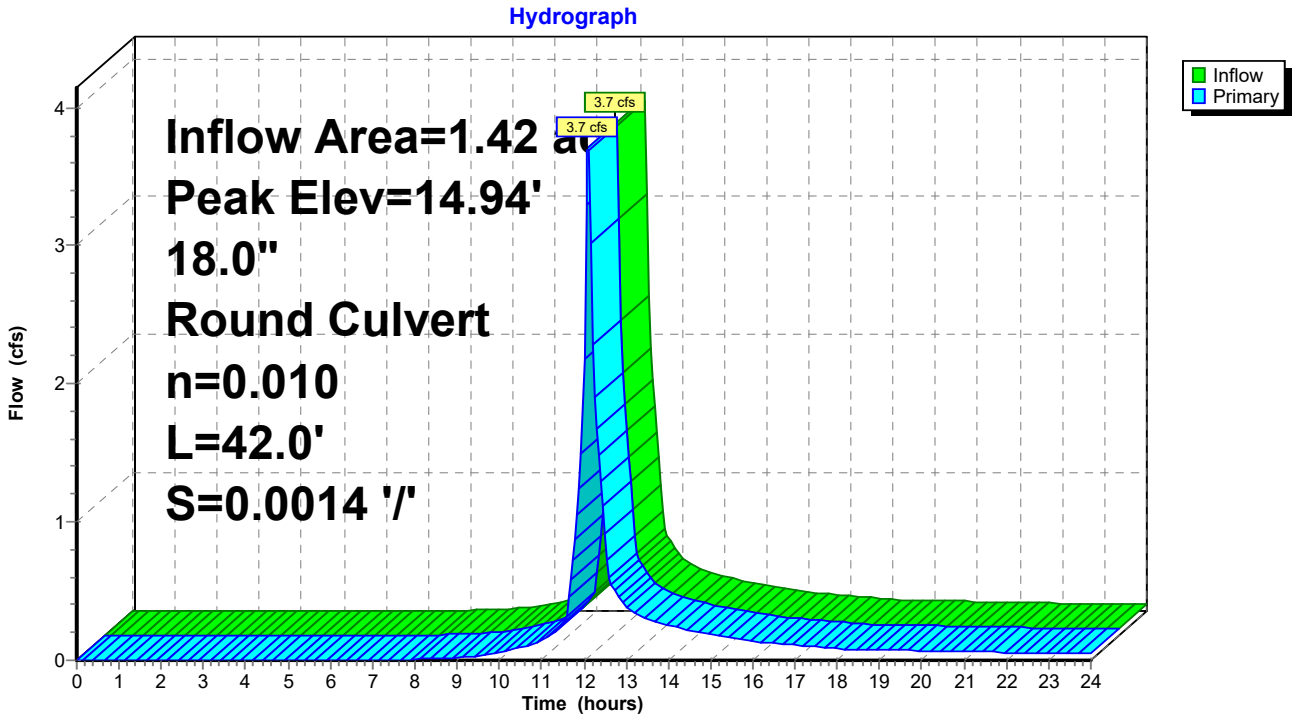
Inflow Area = 1.42 ac, 58.66% Impervious, Inflow Depth > 2.29" for 10-Year Storm event
Inflow = 3.7 cfs @ 12.09 hrs, Volume= 0.270 af
Outflow = 3.7 cfs @ 12.09 hrs, Volume= 0.270 af, Atten= 0%, Lag= 0.0 min
Primary = 3.7 cfs @ 12.09 hrs, Volume= 0.270 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Peak Elev= 14.94' @ 12.09 hrs
Flood Elev= 24.90'

Device	Routing	Invert	Outlet Devices
#1	Primary	13.70'	**18.0" Round Culvert** L= 42.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 13.70' / 13.64' S= 0.0014 '/' Cc= 0.900 n= 0.010 PVC, smooth interior, Flow Area= 1.77 sf

Primary OutFlow Max=3.6 cfs @ 12.09 hrs HW=14.93' TW=0.00' (Dynamic Tailwater)
1=Culvert (Barrel Controls 3.6 cfs @ 3.21 fps)

Pond 27P: Ex DMH7



Summary for Pond 29P: Ex DMH4

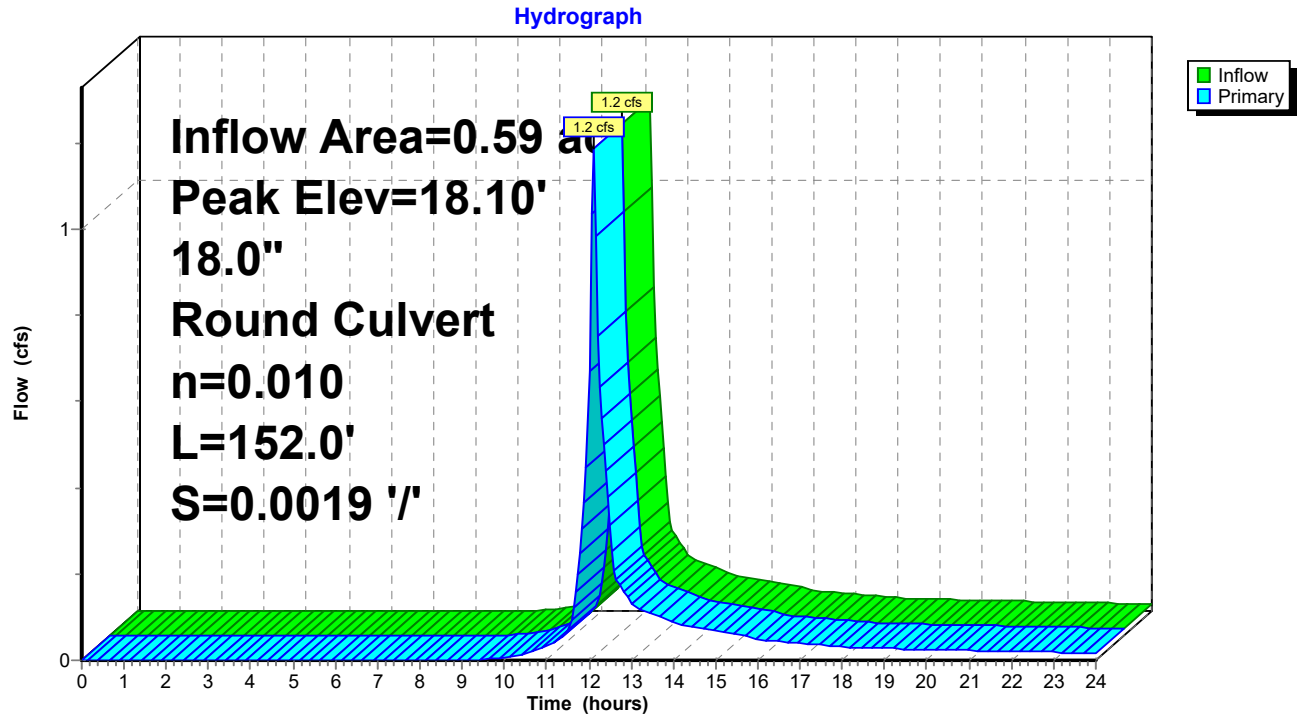
Inflow Area = 0.59 ac, 40.84% Impervious, Inflow Depth > 1.79" for 10-Year Storm event
Inflow = 1.2 cfs @ 12.10 hrs, Volume= 0.088 af
Outflow = 1.2 cfs @ 12.10 hrs, Volume= 0.088 af, Atten= 0%, Lag= 0.0 min
Primary = 1.2 cfs @ 12.10 hrs, Volume= 0.088 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Peak Elev= 18.10' @ 12.11 hrs
Flood Elev= 23.44'

Device	Routing	Invert	Outlet Devices
#1	Primary	17.46'	**18.0" Round Culvert** L= 152.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 17.46' / 17.17' S= 0.0019 '/' Cc= 0.900 n= 0.010 PVC, smooth interior, Flow Area= 1.77 sf

Primary OutFlow Max=1.1 cfs @ 12.10 hrs HW=18.09' TW=17.73' (Dynamic Tailwater)
1=Culvert (Outlet Controls 1.1 cfs @ 2.30 fps)

Pond 29P: Ex DMH4

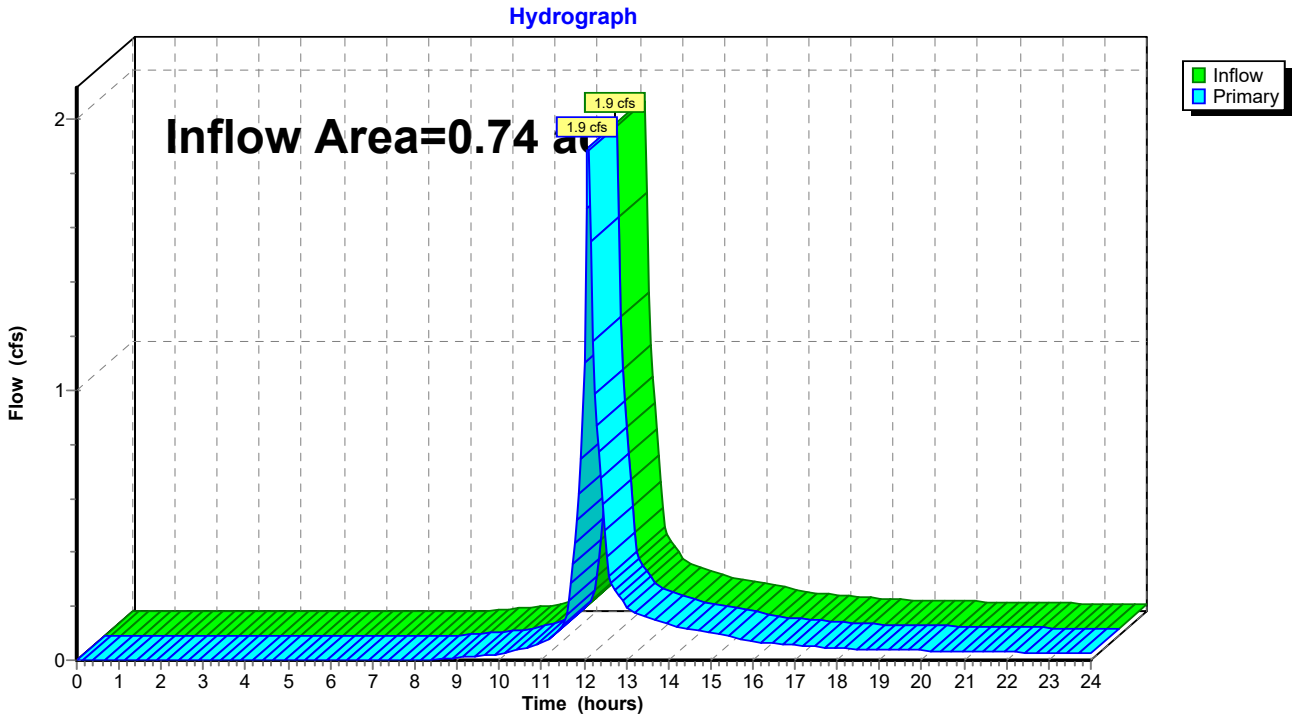


Summary for Link SP1: Forest Ave Storm Drain

Inflow Area = 0.74 ac, 39.80% Impervious, Inflow Depth > 2.23" for 10-Year Storm event
Inflow = 1.9 cfs @ 12.09 hrs, Volume= 0.138 af
Primary = 1.9 cfs @ 12.09 hrs, Volume= 0.138 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs

Link SP1: Forest Ave Storm Drain

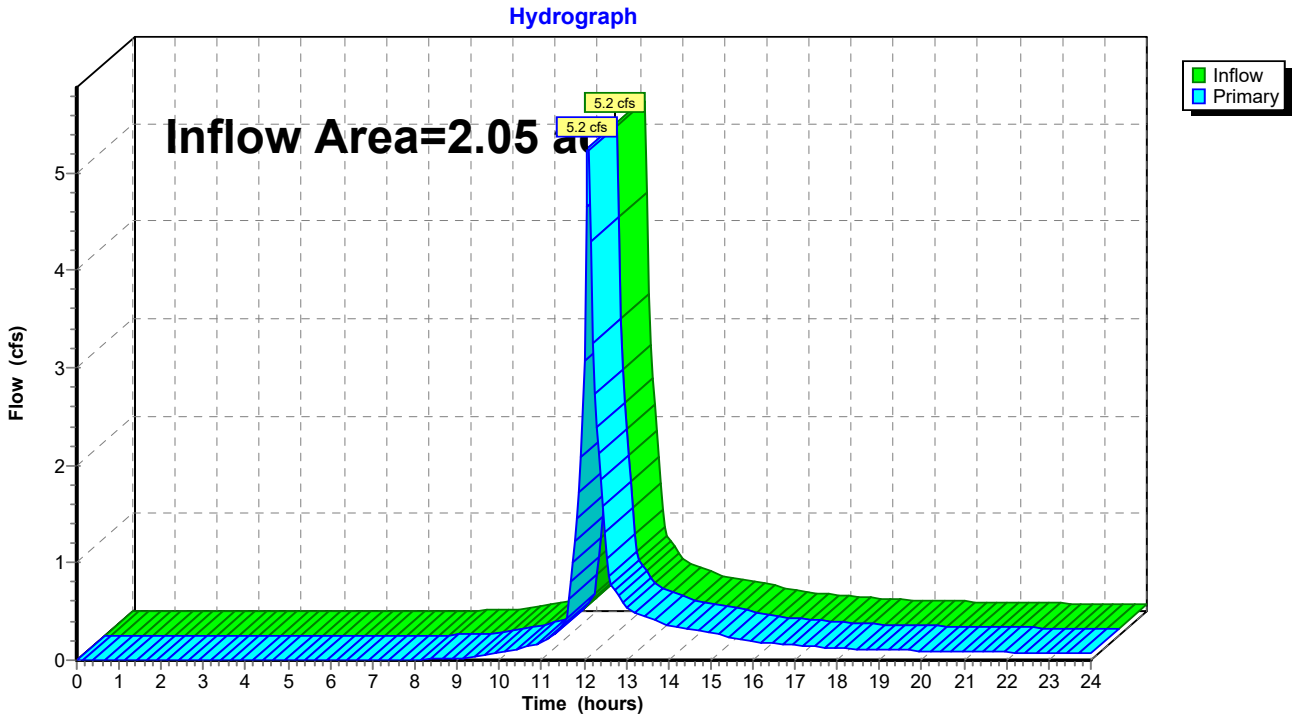


Summary for Link SP2: Combined Sewer

Inflow Area = 2.05 ac, 56.37% Impervious, Inflow Depth > 2.24" for 10-Year Storm event
Inflow = 5.2 cfs @ 12.09 hrs, Volume= 0.382 af
Primary = 5.2 cfs @ 12.09 hrs, Volume= 0.382 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs

Link SP2: Combined Sewer



Summary for Subcatchment 0S: PRE-0

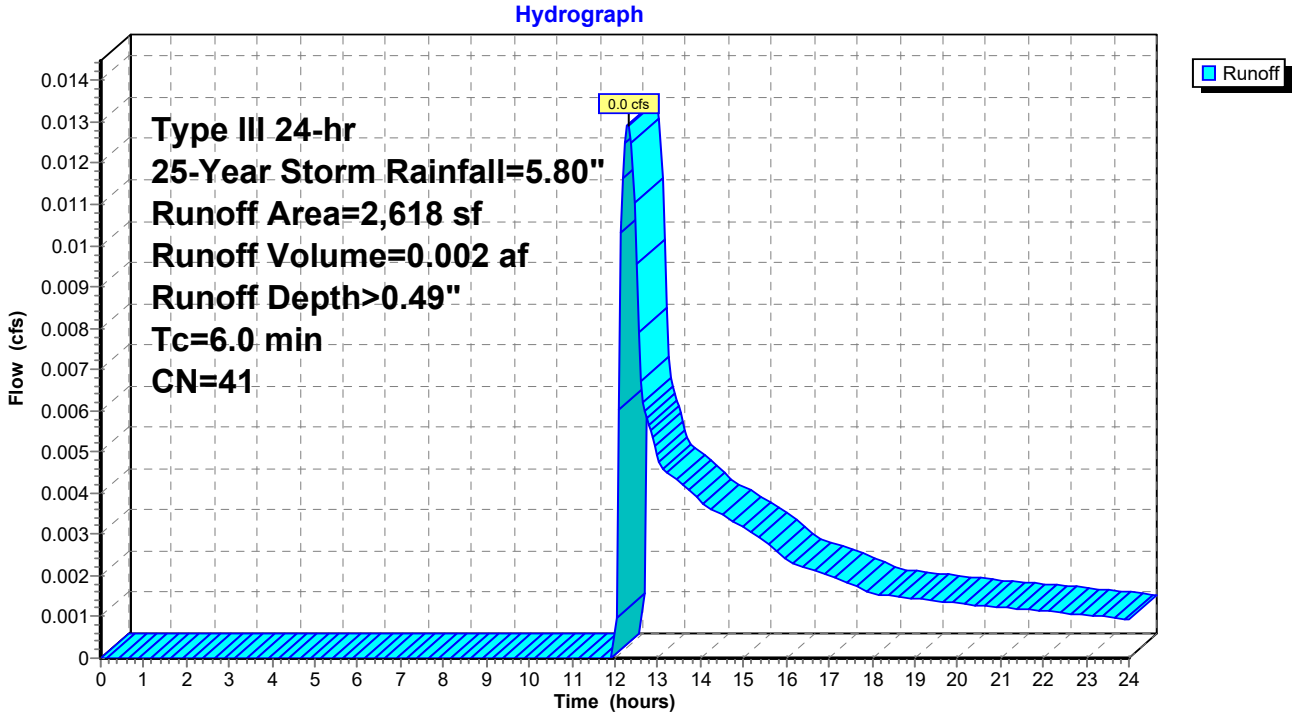
Runoff = 0.0 cfs @ 12.31 hrs, Volume= 0.002 af, Depth> 0.49"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Type III 24-hr 25-Year Storm Rainfall=5.80"

	Area (sf)	CN	Description
	70	98	Paved parking, HSG A
	1,403	39	Grass cover, Good, HSG A
*	1,145	40	Porous Pavement
	2,618	41	Weighted Average
	2,548		97.33% Pervious Area
	70		2.67% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					**Direct Entry,**

Subcatchment 0S: PRE-0



Summary for Subcatchment 1S: PRE-1

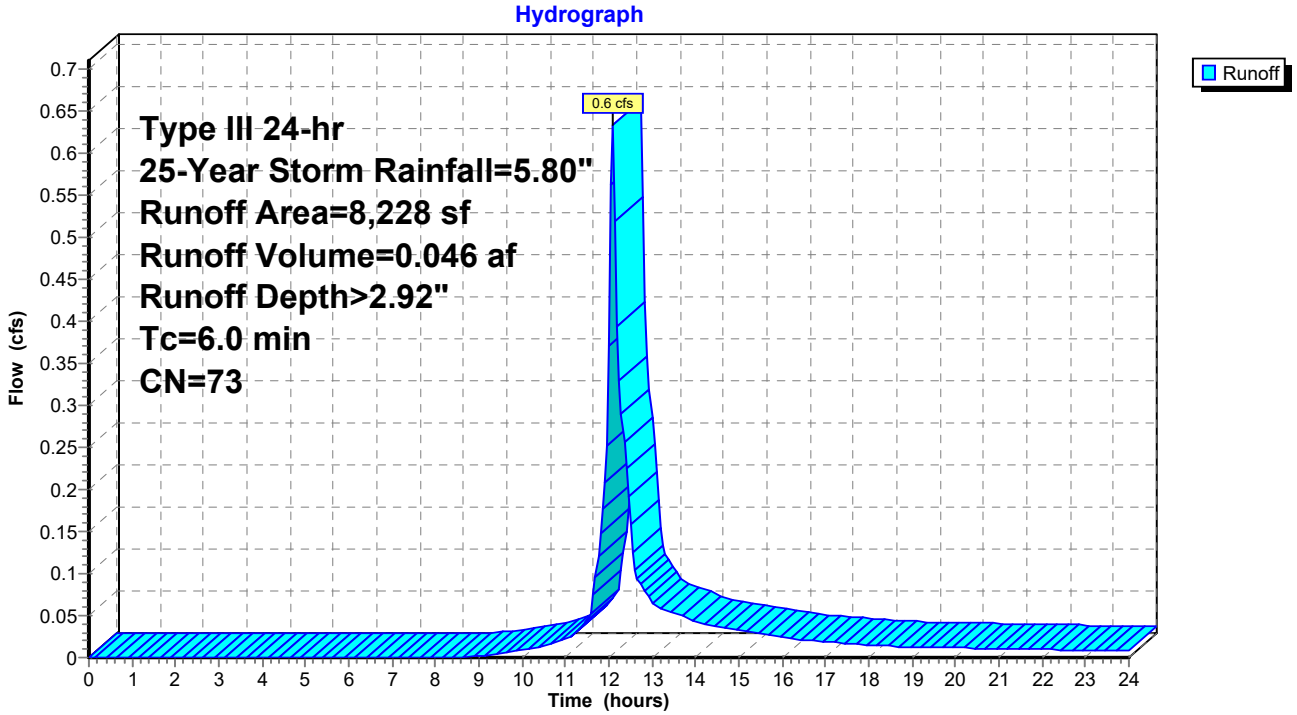
Runoff = 0.6 cfs @ 12.09 hrs, Volume= 0.046 af, Depth> 2.92"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Type III 24-hr 25-Year Storm Rainfall=5.80"

	Area (sf)	CN	Description
	4,083	98	Paved parking, HSG A
	1,673	39	Grass cover, Good, HSG A
*	1,374	68	Grass cover (parking area), HSG A
*	1,098	40	Porous Pavement
	8,228	73	Weighted Average
	4,145		50.38% Pervious Area
	4,083		49.62% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					**Direct Entry,**

Subcatchment 1S: PRE-1



Summary for Subcatchment 2S: PRE-2

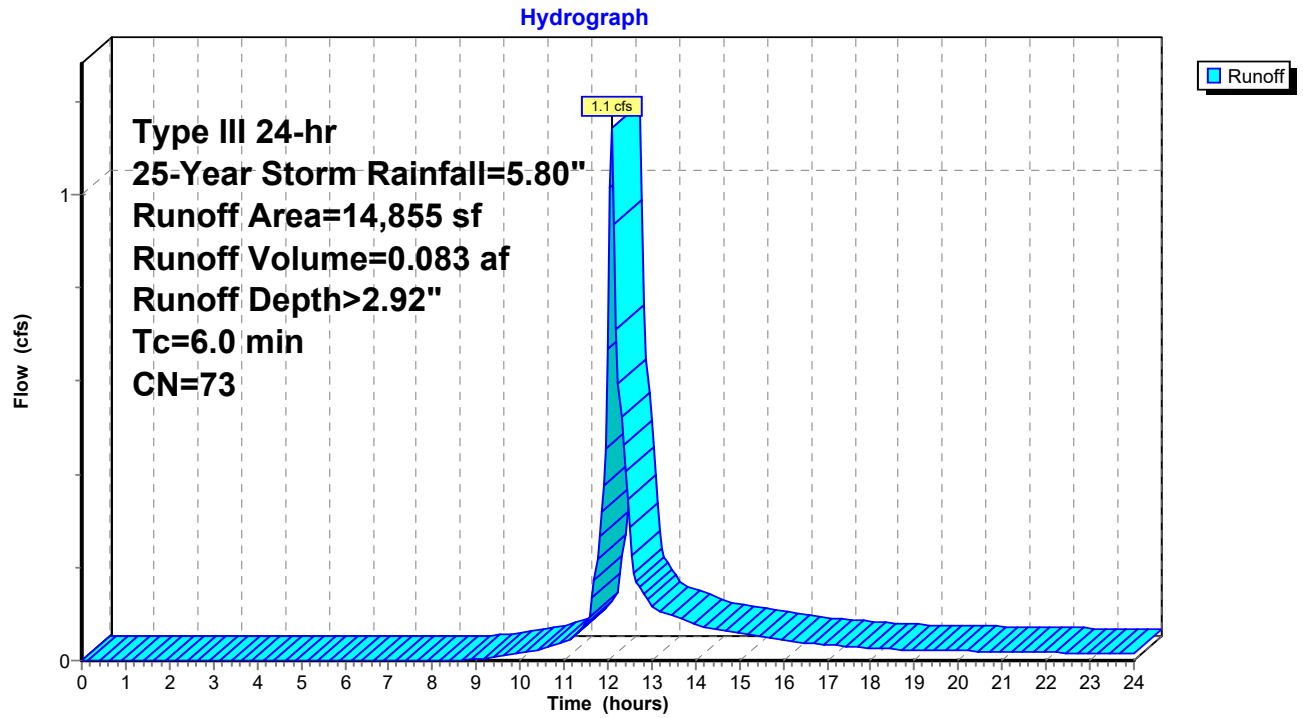
Runoff = 1.1 cfs @ 12.09 hrs, Volume= 0.083 af, Depth> 2.92"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Type III 24-hr 25-Year Storm Rainfall=5.80"

	Area (sf)	CN	Description
	6,344	98	Paved parking, HSG A
	2,948	39	Grass cover, Good, HSG A
	4,408	68	Grass cover (parking area), HSG A
*	1,155	40	Porous Pavement
	14,855	73	Weighted Average
	8,511		57.29% Pervious Area
	6,344		42.71% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					**Direct Entry,**

Subcatchment 2S: PRE-2



Summary for Subcatchment 3S: PRE-3

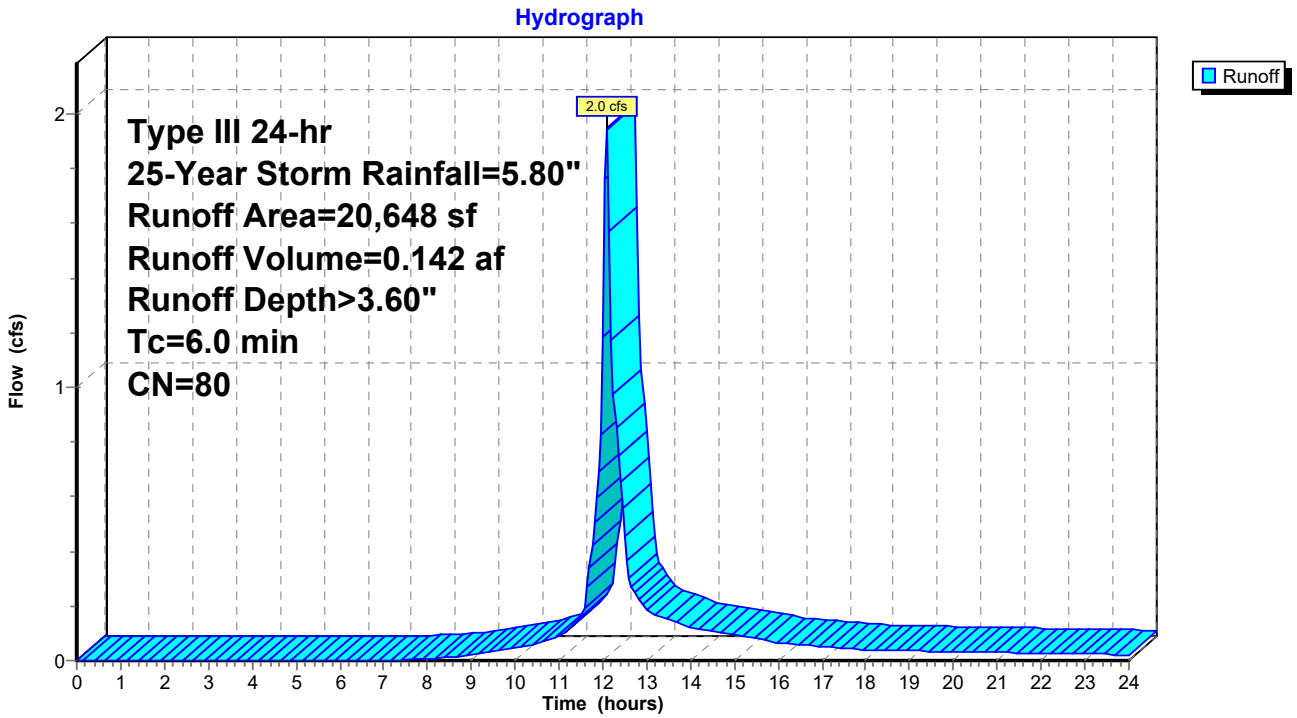
Runoff = 2.0 cfs @ 12.09 hrs, Volume= 0.142 af, Depth> 3.60"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Type III 24-hr 25-Year Storm Rainfall=5.80"

	Area (sf)	CN	Description
	10,577	98	Paved parking, HSG A
	1,903	39	Grass cover, Good, HSG A
	7,715	68	Grass cover (parking area), HSG A
*	453	40	Porous Pavement
	20,648	80	Weighted Average
	10,071		48.77% Pervious Area
	10,577		51.23% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					**Direct Entry,**

Subcatchment 3S: PRE-3



Summary for Subcatchment 4S: PRE-4

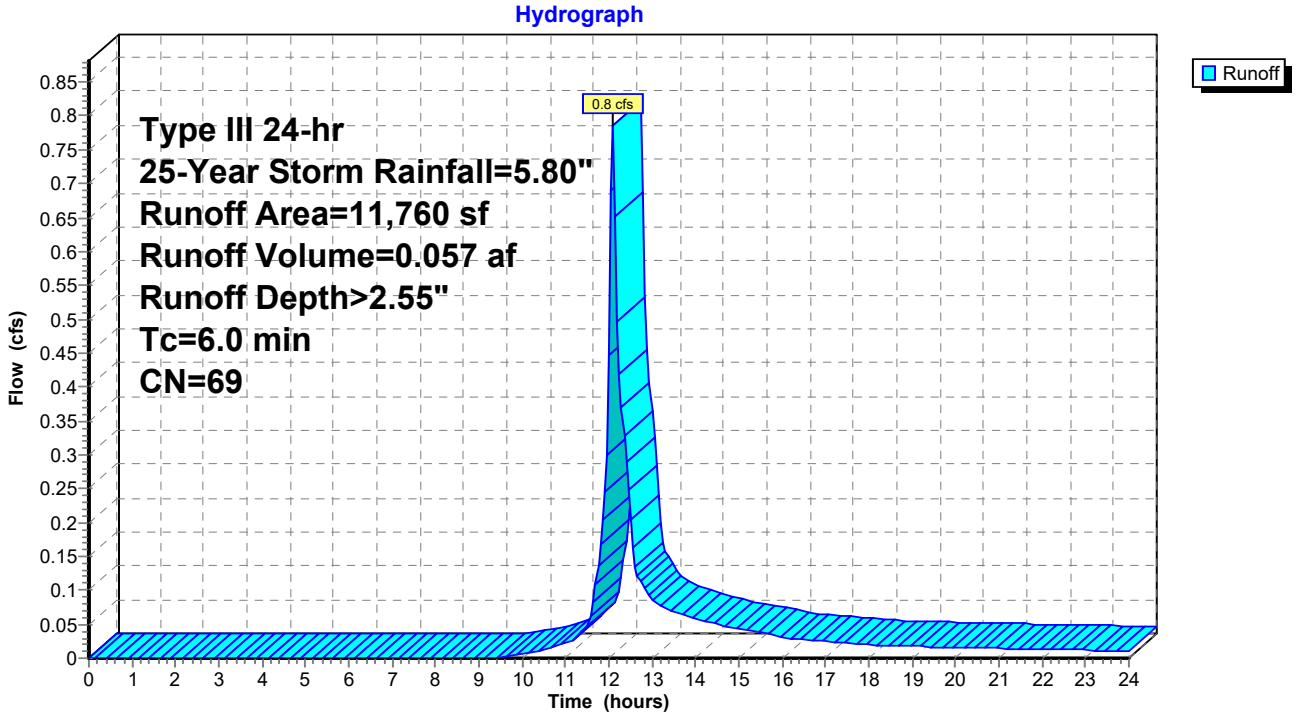
Runoff = 0.8 cfs @ 12.10 hrs, Volume= 0.057 af, Depth> 2.55"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Type III 24-hr 25-Year Storm Rainfall=5.80"

Area (sf)	CN	Description
2,321	98	Paved parking, HSG A
1,957	39	Grass cover, Good, HSG A
7,482	68	Grass cover (parking area), HSG A
11,760	69	Weighted Average
9,439		80.26% Pervious Area
2,321		19.74% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					**Direct Entry,**

Subcatchment 4S: PRE-4



Summary for Subcatchment 5S: PRE-5

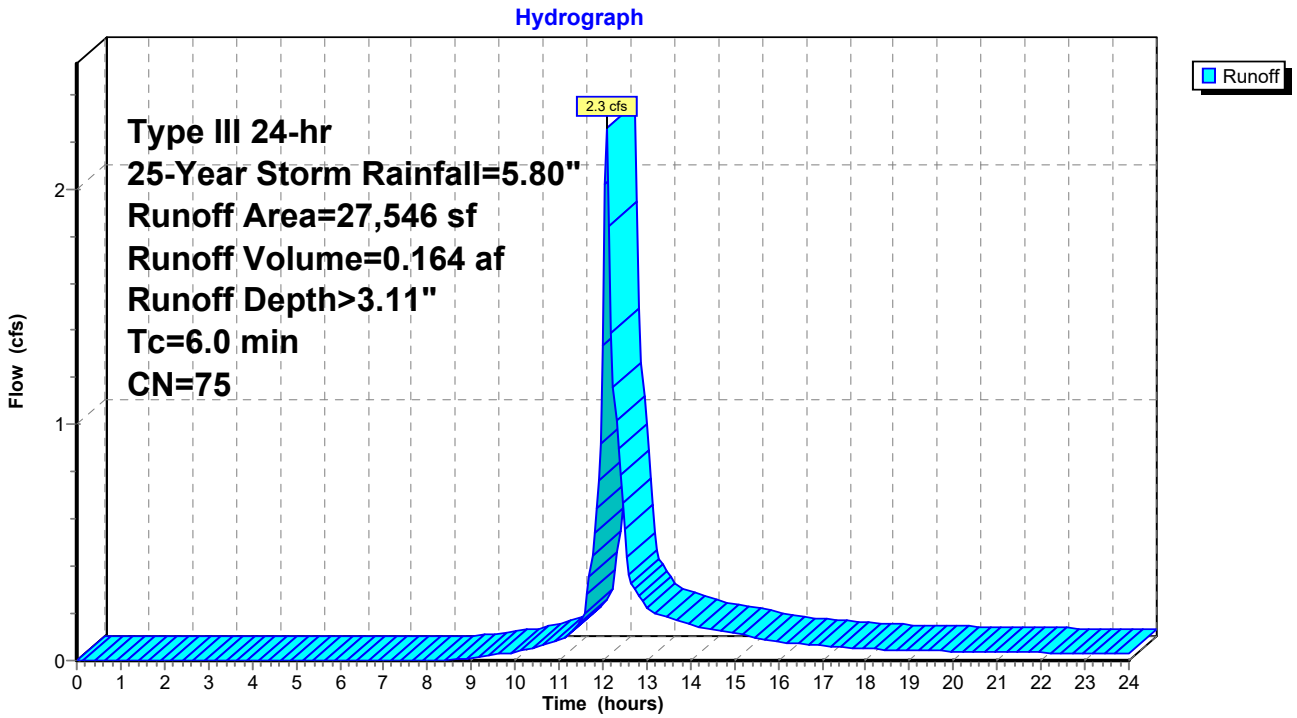
Runoff = 2.3 cfs @ 12.09 hrs, Volume= 0.164 af, Depth> 3.11"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Type III 24-hr 25-Year Storm Rainfall=5.80"

	Area (sf)	CN	Description
	14,114	98	Paved parking, HSG A
	6,700	39	Grass cover, Good, HSG A
	5,072	68	Grass cover (parking area), HSG A
*	1,660	40	Porous Pavement
	27,546	75	Weighted Average
	13,432		48.76% Pervious Area
	14,114		51.24% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					**Direct Entry,**

Subcatchment 5S: PRE-5



Summary for Subcatchment 6S: PRE-6

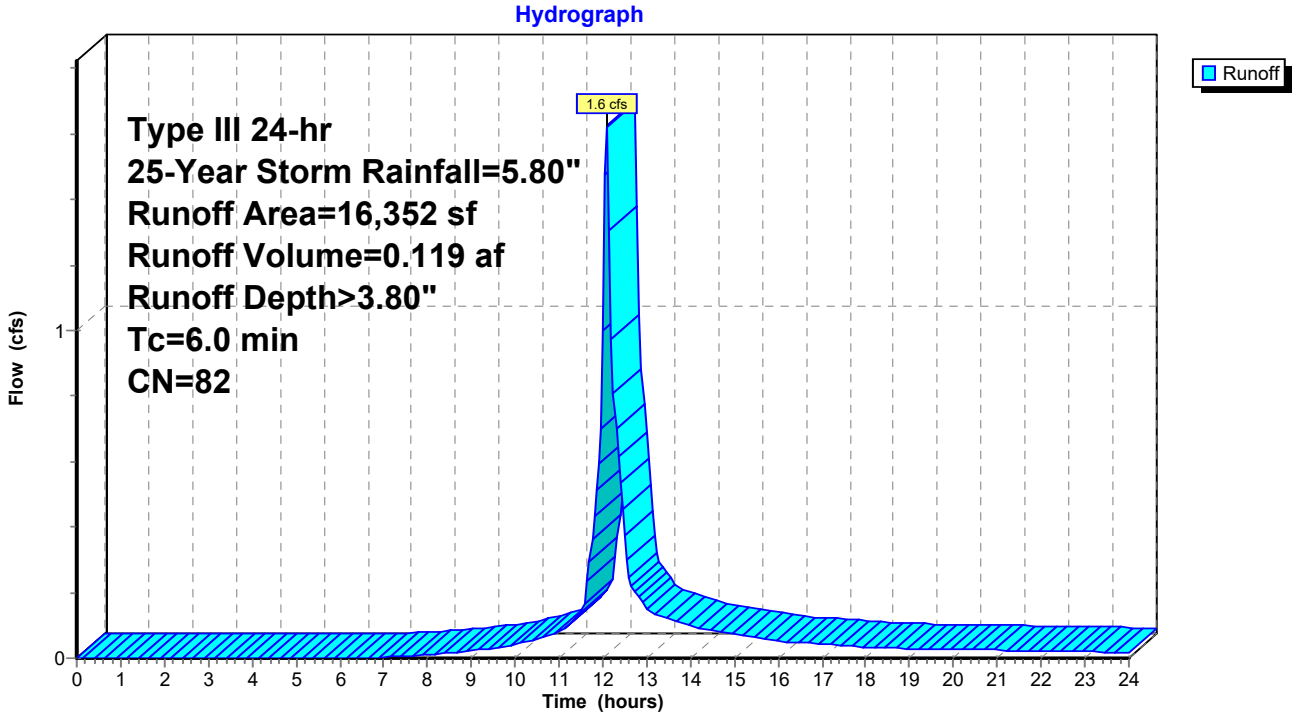
Runoff = 1.6 cfs @ 12.09 hrs, Volume= 0.119 af, Depth> 3.80"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Type III 24-hr 25-Year Storm Rainfall=5.80"

	Area (sf)	CN	Description
	11,768	98	Paved parking, HSG A
	3,865	39	Grass cover, Good, HSG A
*	719	40	Porous Pavement
	16,352	82	Weighted Average
	4,584		28.03% Pervious Area
	11,768		71.97% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					**Direct Entry,**

Subcatchment 6S: PRE-6



Summary for Subcatchment 7S: PRE-7

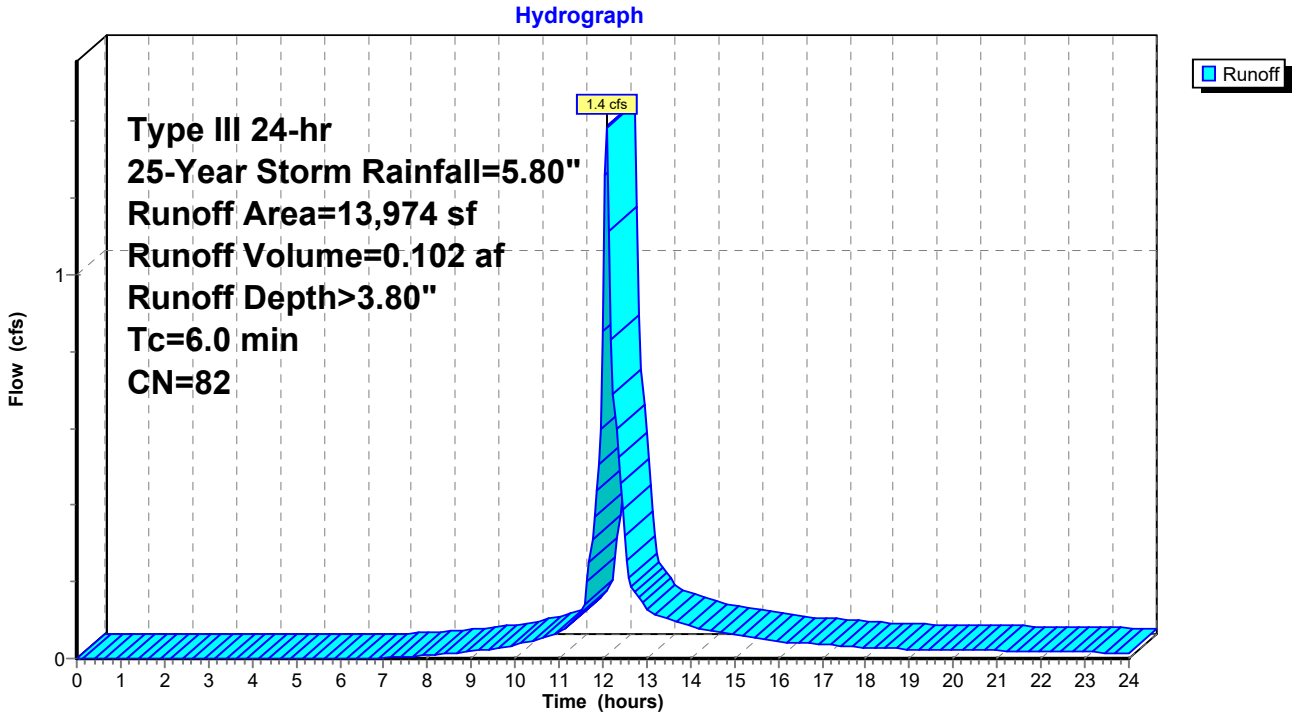
Runoff = 1.4 cfs @ 12.09 hrs, Volume= 0.102 af, Depth> 3.80"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Type III 24-hr 25-Year Storm Rainfall=5.80"

Area (sf)	CN	Description
10,235	98	Paved parking, HSG A
3,739	39	Grass cover, Good, HSG A
13,974	82	Weighted Average
3,739		26.76% Pervious Area
10,235		73.24% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					**Direct Entry,**

Subcatchment 7S: PRE-7



Summary for Subcatchment 8S: PRE-8

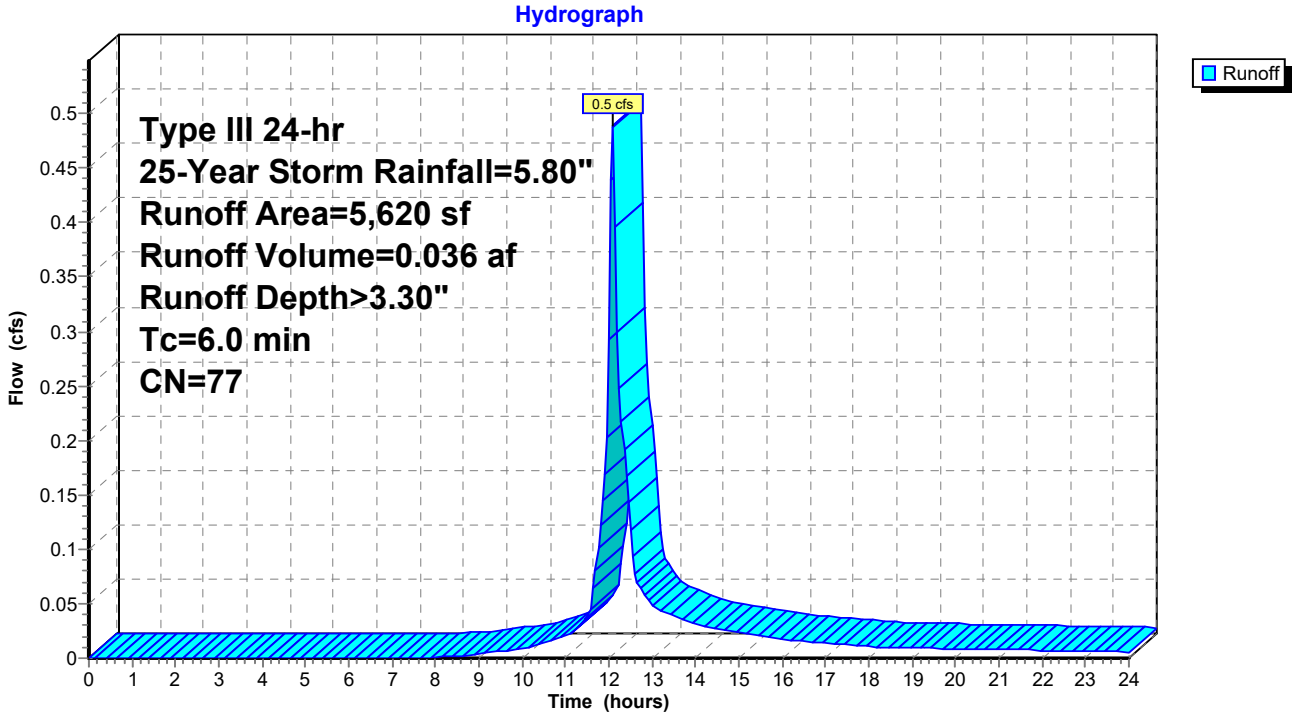
Runoff = 0.5 cfs @ 12.09 hrs, Volume= 0.036 af, Depth> 3.30"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Type III 24-hr 25-Year Storm Rainfall=5.80"

	Area (sf)	CN	Description
	3,664	98	Paved parking, HSG A
	1,857	39	Grass cover, Good, HSG A
*	99	40	Porous Pavement
	5,620	77	Weighted Average
	1,956		34.80% Pervious Area
	3,664		65.20% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					**Direct Entry,**

Subcatchment 8S: PRE-8



Summary for Pond 11P: Ex CB1

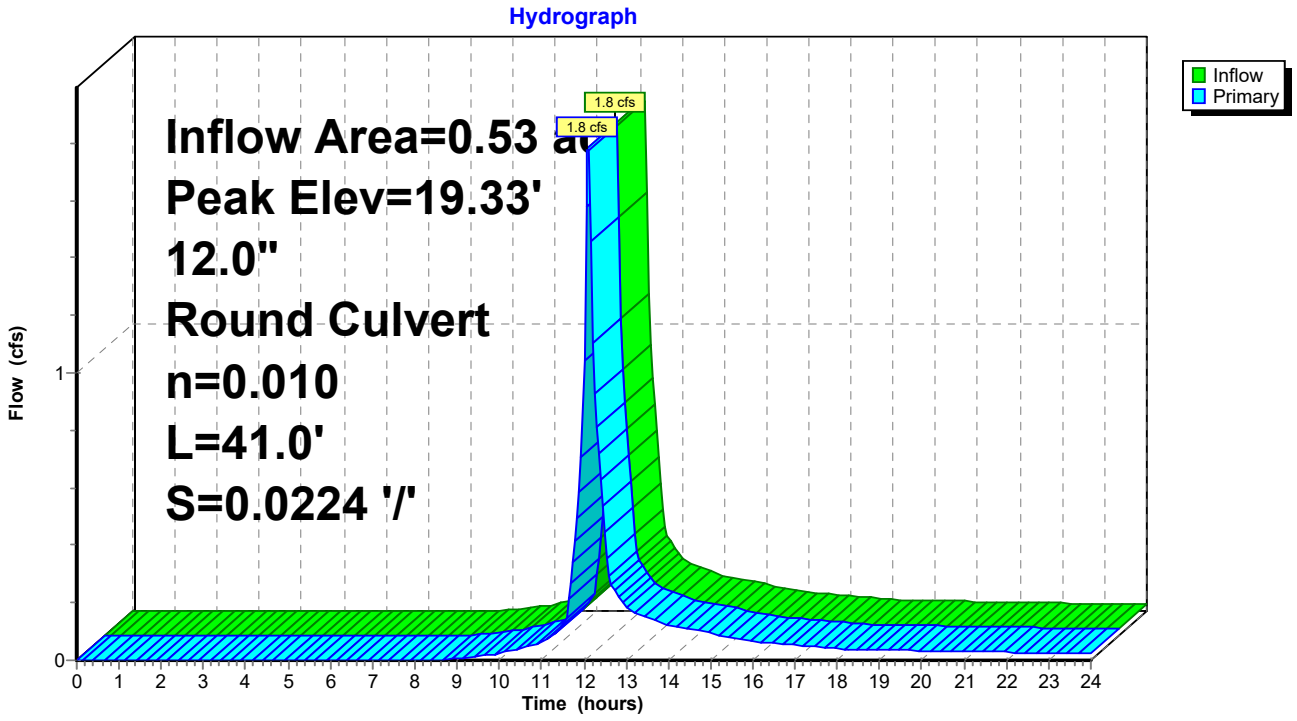
Inflow Area = 0.53 ac, 45.17% Impervious, Inflow Depth > 2.92" for 25-Year Storm event
Inflow = 1.8 cfs @ 12.09 hrs, Volume= 0.129 af
Outflow = 1.8 cfs @ 12.09 hrs, Volume= 0.129 af, Atten= 0%, Lag= 0.0 min
Primary = 1.8 cfs @ 12.09 hrs, Volume= 0.129 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Peak Elev= 19.33' @ 12.09 hrs
Flood Elev= 22.02'

Device	Routing	Invert	Outlet Devices
#1	Primary	18.47'	**12.0" Round Culvert** L= 41.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 18.47' / 17.55' S= 0.0224 '/' Cc= 0.900 n= 0.010 PVC, smooth interior, Flow Area= 0.79 sf

Primary OutFlow Max=1.8 cfs @ 12.09 hrs HW=19.32' TW=18.26' (Dynamic Tailwater)
1=Culvert (Inlet Controls 1.8 cfs @ 2.47 fps)

Pond 11P: Ex CB1



Summary for Pond 12P: Ex CB2

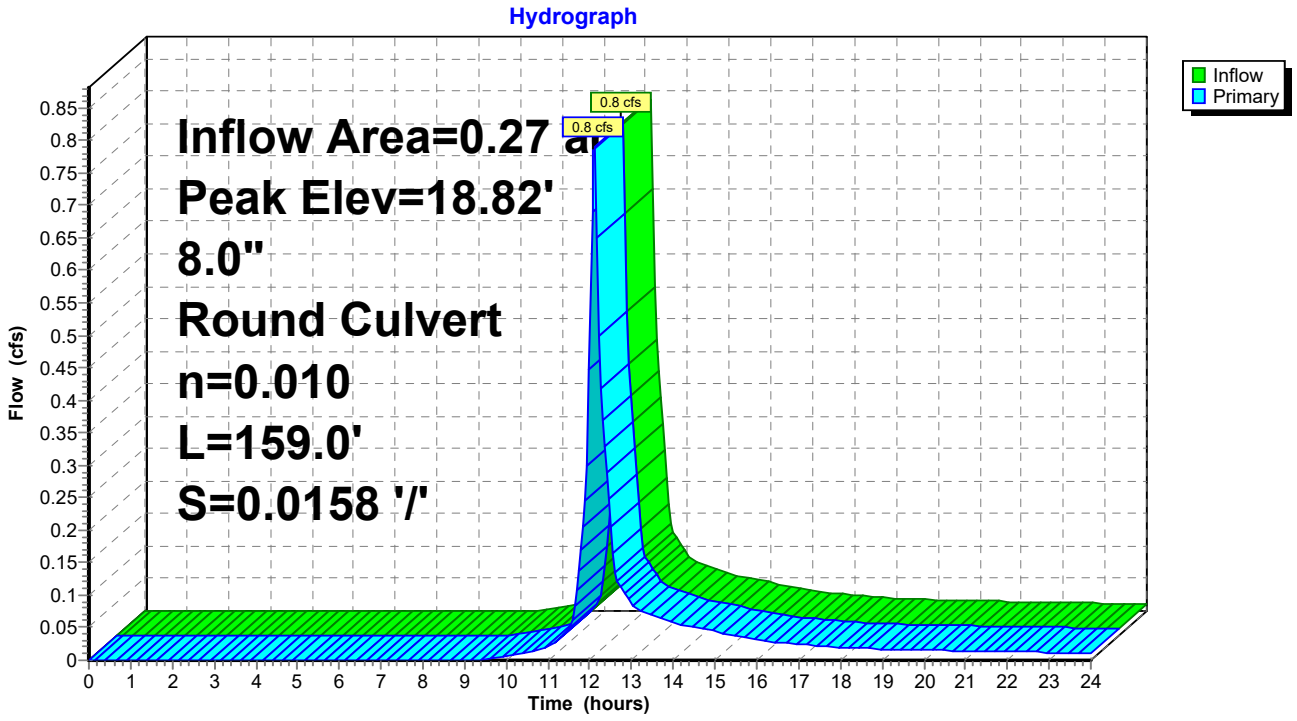
Inflow Area = 0.27 ac, 19.74% Impervious, Inflow Depth > 2.55" for 25-Year Storm event
Inflow = 0.8 cfs @ 12.10 hrs, Volume= 0.057 af
Outflow = 0.8 cfs @ 12.10 hrs, Volume= 0.057 af, Atten= 0%, Lag= 0.0 min
Primary = 0.8 cfs @ 12.10 hrs, Volume= 0.057 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Peak Elev= 18.82' @ 12.10 hrs
Flood Elev= 22.15'

Device	Routing	Invert	Outlet Devices
#1	Primary	18.14'	**8.0" Round Culvert** L= 159.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 18.14' / 15.62' S= 0.0158 '/' Cc= 0.900 n= 0.010 PVC, smooth interior, Flow Area= 0.35 sf

Primary OutFlow Max=0.8 cfs @ 12.10 hrs HW=18.82' TW=0.00' (Dynamic Tailwater)
1=Culvert (Inlet Controls 0.8 cfs @ 2.23 fps)

Pond 12P: Ex CB2



Summary for Pond 13P: Ex CB7

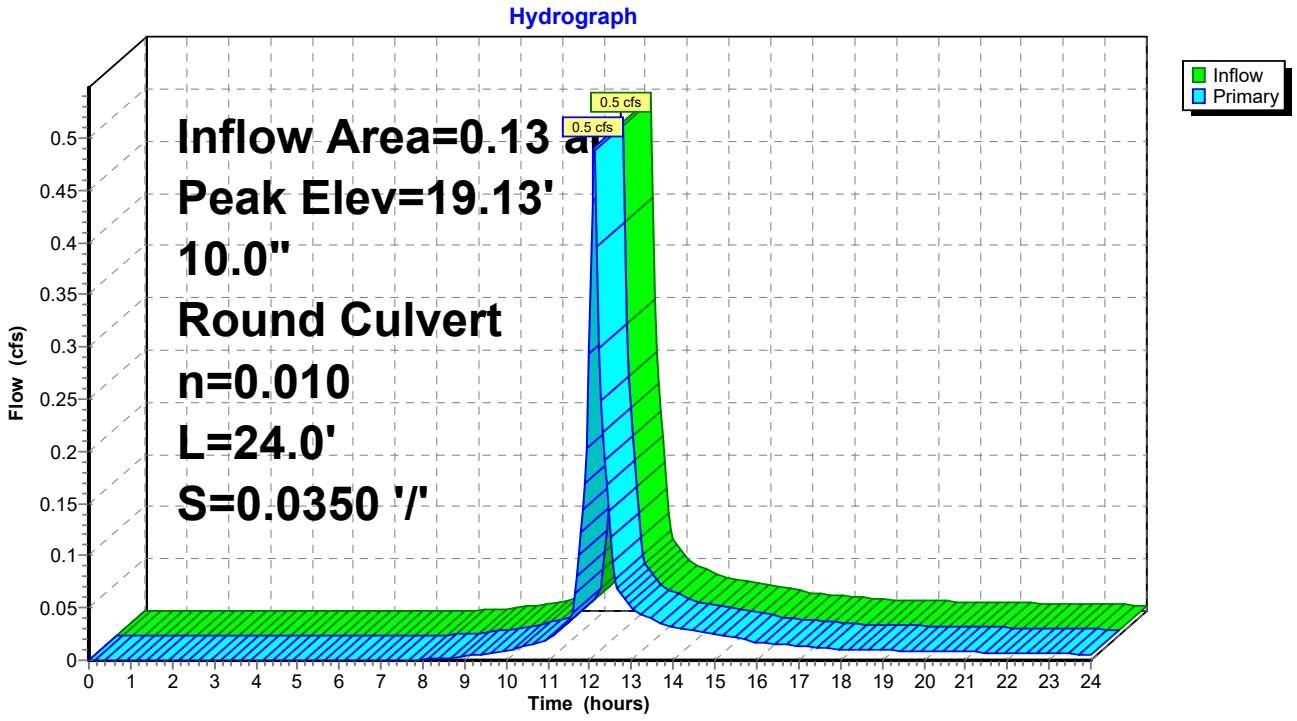
Inflow Area = 0.13 ac, 65.20% Impervious, Inflow Depth > 3.30" for 25-Year Storm event
Inflow = 0.5 cfs @ 12.09 hrs, Volume= 0.036 af
Outflow = 0.5 cfs @ 12.09 hrs, Volume= 0.036 af, Atten= 0%, Lag= 0.0 min
Primary = 0.5 cfs @ 12.09 hrs, Volume= 0.036 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Peak Elev= 19.13' @ 12.09 hrs
Flood Elev= 24.51'

Device	Routing	Invert	Outlet Devices
#1	Primary	18.70'	**10.0" Round Culvert** L= 24.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 18.70' / 17.86' S= 0.0350 '/' Cc= 0.900 n= 0.010 PVC, smooth interior, Flow Area= 0.55 sf

Primary OutFlow Max=0.5 cfs @ 12.09 hrs HW=19.12' TW=15.89' (Dynamic Tailwater)
1=Culvert (Inlet Controls 0.5 cfs @ 1.74 fps)

Pond 13P: Ex CB7



Summary for Pond 14P: Ex CB4

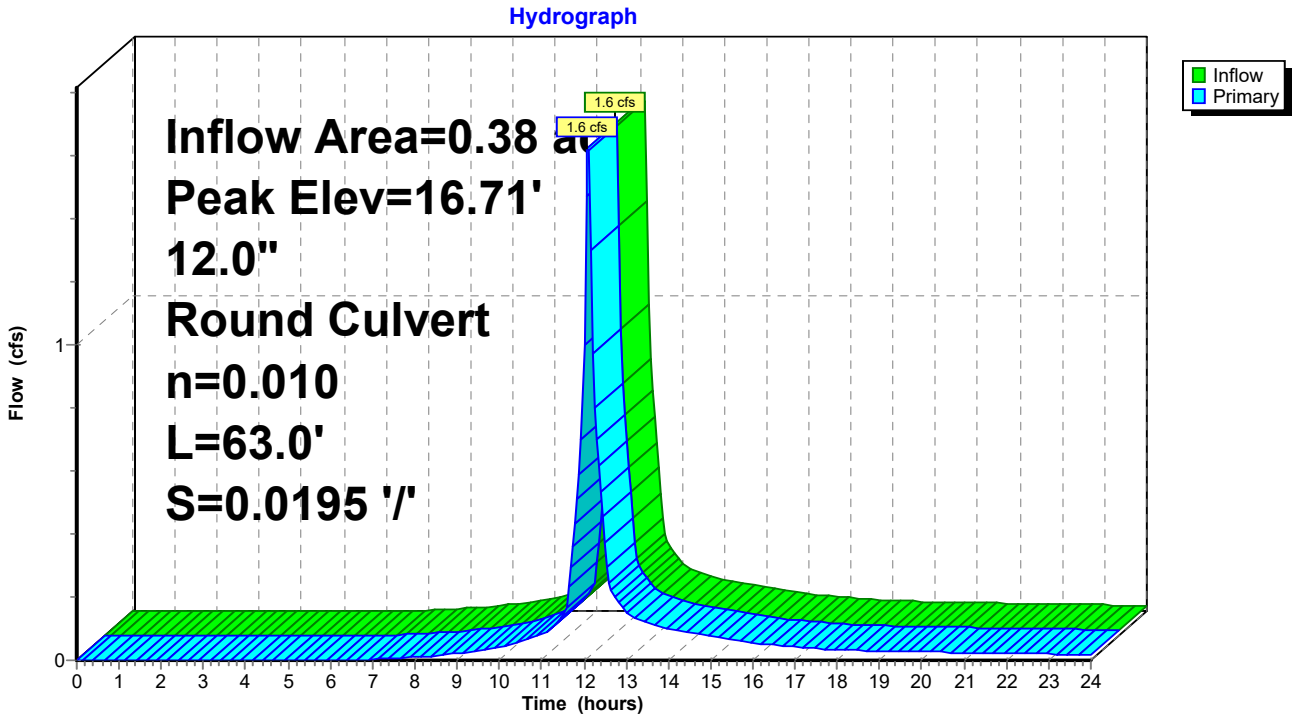
Inflow Area = 0.38 ac, 71.97% Impervious, Inflow Depth > 3.80" for 25-Year Storm event
Inflow = 1.6 cfs @ 12.09 hrs, Volume= 0.119 af
Outflow = 1.6 cfs @ 12.09 hrs, Volume= 0.119 af, Atten= 0%, Lag= 0.0 min
Primary = 1.6 cfs @ 12.09 hrs, Volume= 0.119 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Peak Elev= 16.71' @ 12.09 hrs
Flood Elev= 21.96'

Device	Routing	Invert	Outlet Devices
#1	Primary	15.91'	**12.0" Round Culvert** L= 63.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 15.91' / 14.68' S= 0.0195 '/' Cc= 0.900 n= 0.010 PVC, smooth interior, Flow Area= 0.79 sf

Primary OutFlow Max=1.6 cfs @ 12.09 hrs HW=16.70' TW=16.00' (Dynamic Tailwater)
1=Culvert (Inlet Controls 1.6 cfs @ 2.39 fps)

Pond 14P: Ex CB4



Summary for Pond 15P: Ex CB5

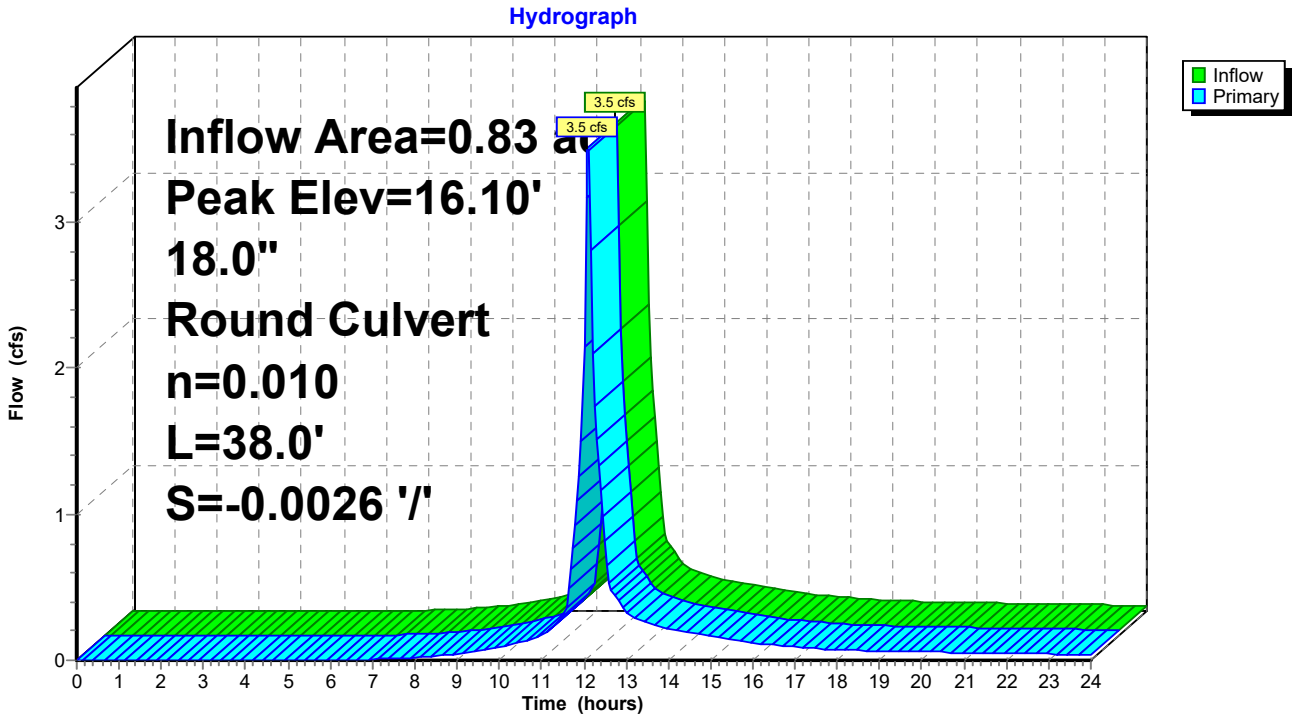
Inflow Area = 0.83 ac, 71.40% Impervious, Inflow Depth > 3.72" for 25-Year Storm event
Inflow = 3.5 cfs @ 12.09 hrs, Volume= 0.256 af
Outflow = 3.5 cfs @ 12.09 hrs, Volume= 0.256 af, Atten= 0%, Lag= 0.0 min
Primary = 3.5 cfs @ 12.09 hrs, Volume= 0.256 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Peak Elev= 16.10' @ 12.17 hrs
Flood Elev= 22.70'

Device	Routing	Invert	Outlet Devices
#1	Primary	14.80'	**18.0" Round Culvert** L= 38.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 14.70' / 14.80' S= -0.0026 '/' Cc= 0.900 n= 0.010 PVC, smooth interior, Flow Area= 1.77 sf

Primary OutFlow Max=2.2 cfs @ 12.09 hrs HW=16.00' TW=15.85' (Dynamic Tailwater)
1=Culvert (Inlet Controls 2.2 cfs @ 1.48 fps)

Pond 15P: Ex CB5



Summary for Pond 16P: Ex DMH8

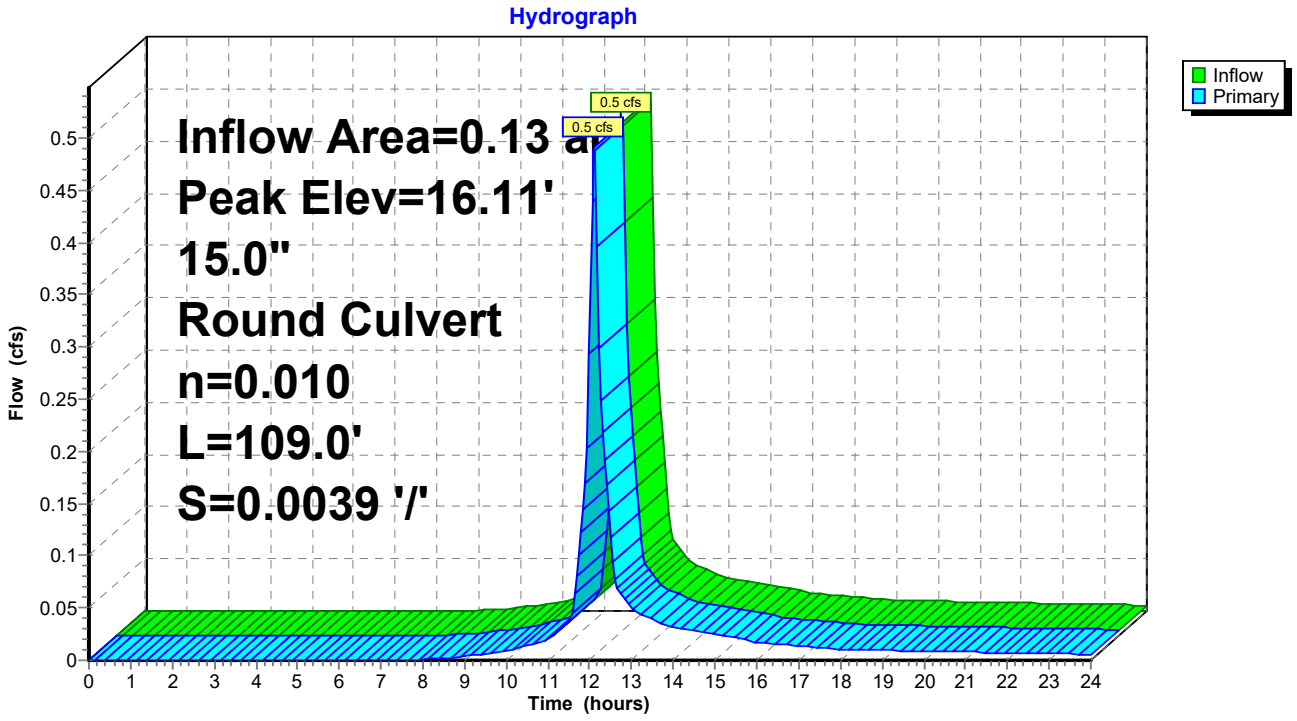
Inflow Area = 0.13 ac, 65.20% Impervious, Inflow Depth > 3.30" for 25-Year Storm event
Inflow = 0.5 cfs @ 12.09 hrs, Volume= 0.036 af
Outflow = 0.5 cfs @ 12.09 hrs, Volume= 0.036 af, Atten= 0%, Lag= 0.0 min
Primary = 0.5 cfs @ 12.09 hrs, Volume= 0.036 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Peak Elev= 16.11' @ 12.22 hrs
Flood Elev= 24.67'

Device	Routing	Invert	Outlet Devices
#1	Primary	15.08'	**15.0" Round Culvert** L= 109.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 15.08' / 14.65' S= 0.0039 '/' Cc= 0.900 n= 0.010 PVC, smooth interior, Flow Area= 1.23 sf

Primary OutFlow Max=0.0 cfs @ 12.09 hrs HW=15.89' TW=16.00' (Dynamic Tailwater)
↑**1=Culvert** (Controls 0.0 cfs)

Pond 16P: Ex DMH8



Summary for Pond 21P: Ex DMH9

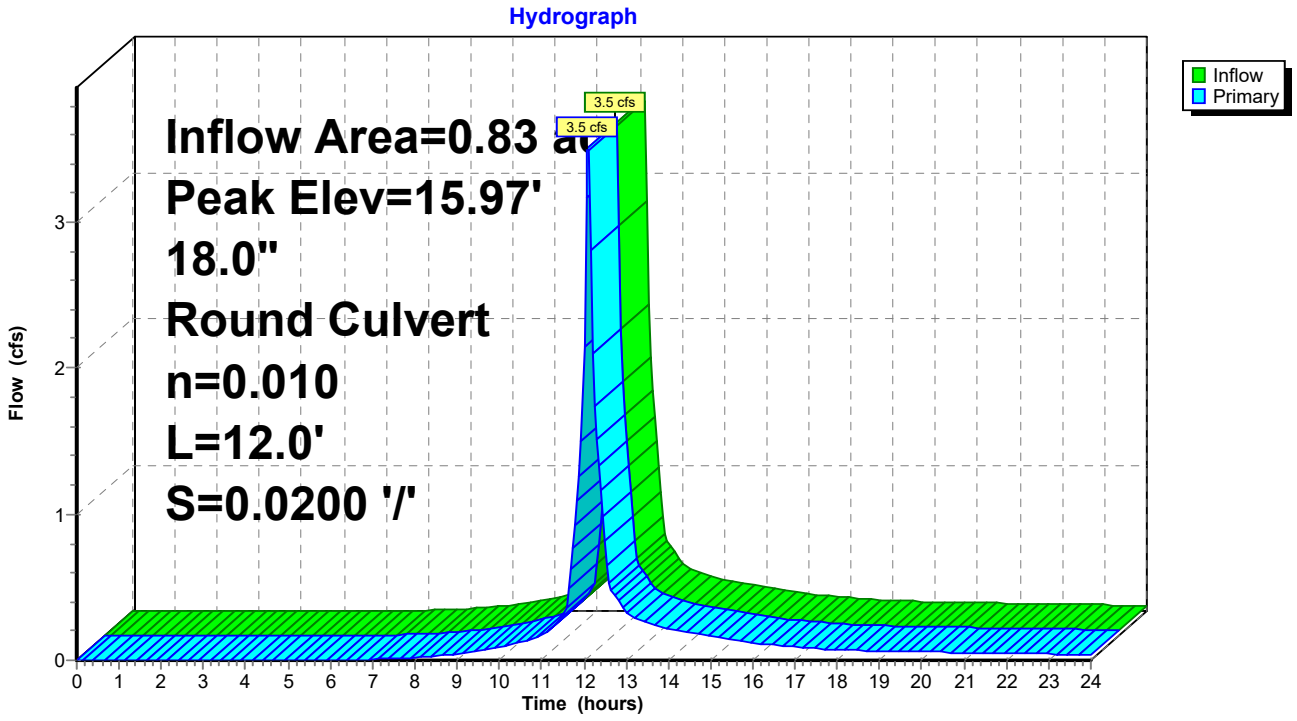
Inflow Area = 0.83 ac, 71.40% Impervious, Inflow Depth > 3.72" for 25-Year Storm event
Inflow = 3.5 cfs @ 12.09 hrs, Volume= 0.256 af
Outflow = 3.5 cfs @ 12.09 hrs, Volume= 0.256 af, Atten= 0%, Lag= 0.0 min
Primary = 3.5 cfs @ 12.09 hrs, Volume= 0.256 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Peak Elev= 15.97' @ 12.14 hrs
Flood Elev= 23.72'

Device	Routing	Invert	Outlet Devices
#1	Primary	14.62'	**18.0" Round Culvert** L= 12.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 14.62' / 14.38' S= 0.0200 '/' Cc= 0.900 n= 0.010 PVC, smooth interior, Flow Area= 1.77 sf

Primary OutFlow Max=2.0 cfs @ 12.09 hrs HW=15.85' TW=15.73' (Dynamic Tailwater)
1=Culvert (Inlet Controls 2.0 cfs @ 1.30 fps)

Pond 21P: Ex DMH9



Summary for Pond 22P: Ex DMH3

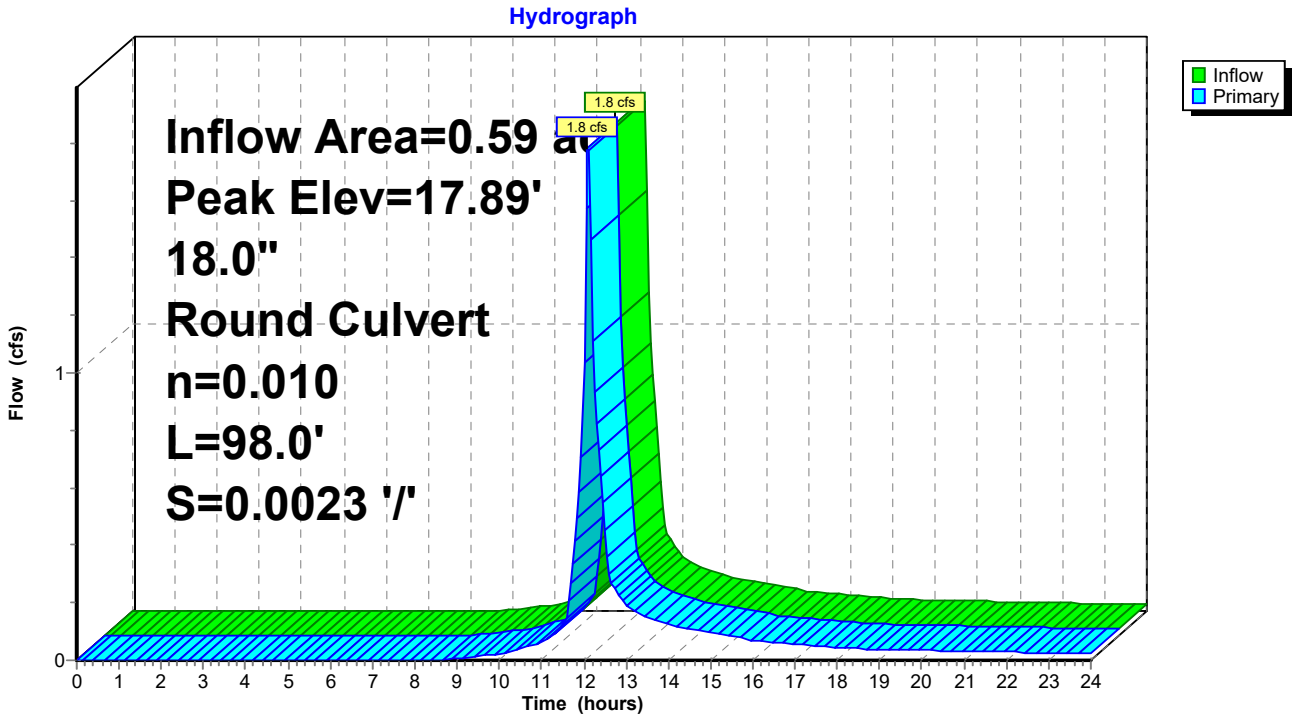
Inflow Area = 0.59 ac, 40.84% Impervious, Inflow Depth > 2.67" for 25-Year Storm event
Inflow = 1.8 cfs @ 12.09 hrs, Volume= 0.131 af
Outflow = 1.8 cfs @ 12.09 hrs, Volume= 0.131 af, Atten= 0%, Lag= 0.0 min
Primary = 1.8 cfs @ 12.09 hrs, Volume= 0.131 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Peak Elev= 17.89' @ 12.10 hrs
Flood Elev= 24.92'

Device	Routing	Invert	Outlet Devices
#1	Primary	17.12'	**18.0" Round Culvert** L= 98.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 17.12' / 16.89' S= 0.0023 '/' Cc= 0.900 n= 0.010 PVC, smooth interior, Flow Area= 1.77 sf

Primary OutFlow Max=1.6 cfs @ 12.09 hrs HW=17.88' TW=17.52' (Dynamic Tailwater)
1=Culvert (Outlet Controls 1.6 cfs @ 2.67 fps)

Pond 22P: Ex DMH3



Summary for Pond 23P: Ex CB3

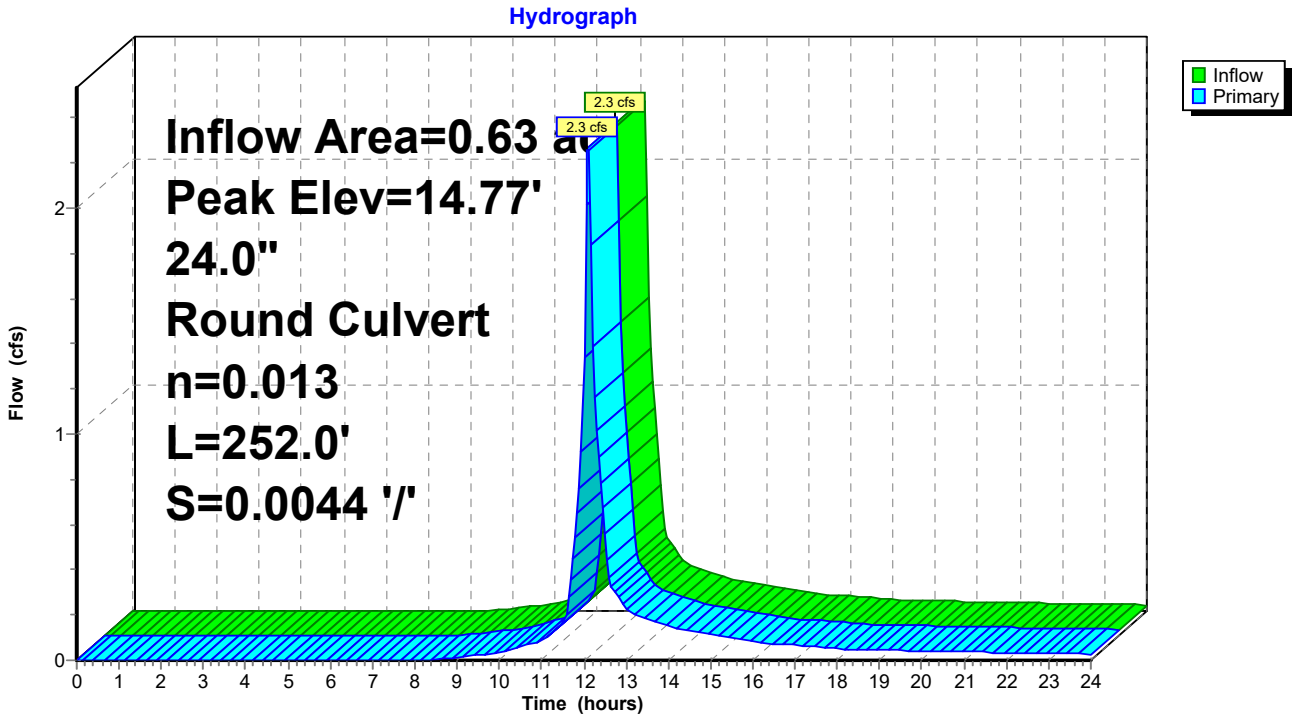
Inflow Area = 0.63 ac, 51.24% Impervious, Inflow Depth > 3.11" for 25-Year Storm event
Inflow = 2.3 cfs @ 12.09 hrs, Volume= 0.164 af
Outflow = 2.3 cfs @ 12.09 hrs, Volume= 0.164 af, Atten= 0%, Lag= 0.0 min
Primary = 2.3 cfs @ 12.09 hrs, Volume= 0.164 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Peak Elev= 14.77' @ 12.09 hrs
Flood Elev= 23.60'

Device	Routing	Invert	Outlet Devices
#1	Primary	14.05'	**24.0" Round Culvert** L= 252.0' CMP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 14.05' / 12.94' S= 0.0044 '/' Cc= 0.900 n= 0.013 Cast iron, coated, Flow Area= 3.14 sf

Primary OutFlow Max=2.2 cfs @ 12.09 hrs HW=14.77' TW=0.00' (Dynamic Tailwater)
1=Culvert (Barrel Controls 2.2 cfs @ 3.27 fps)

Pond 23P: Ex CB3



Summary for Pond 24P: Ex DMH2

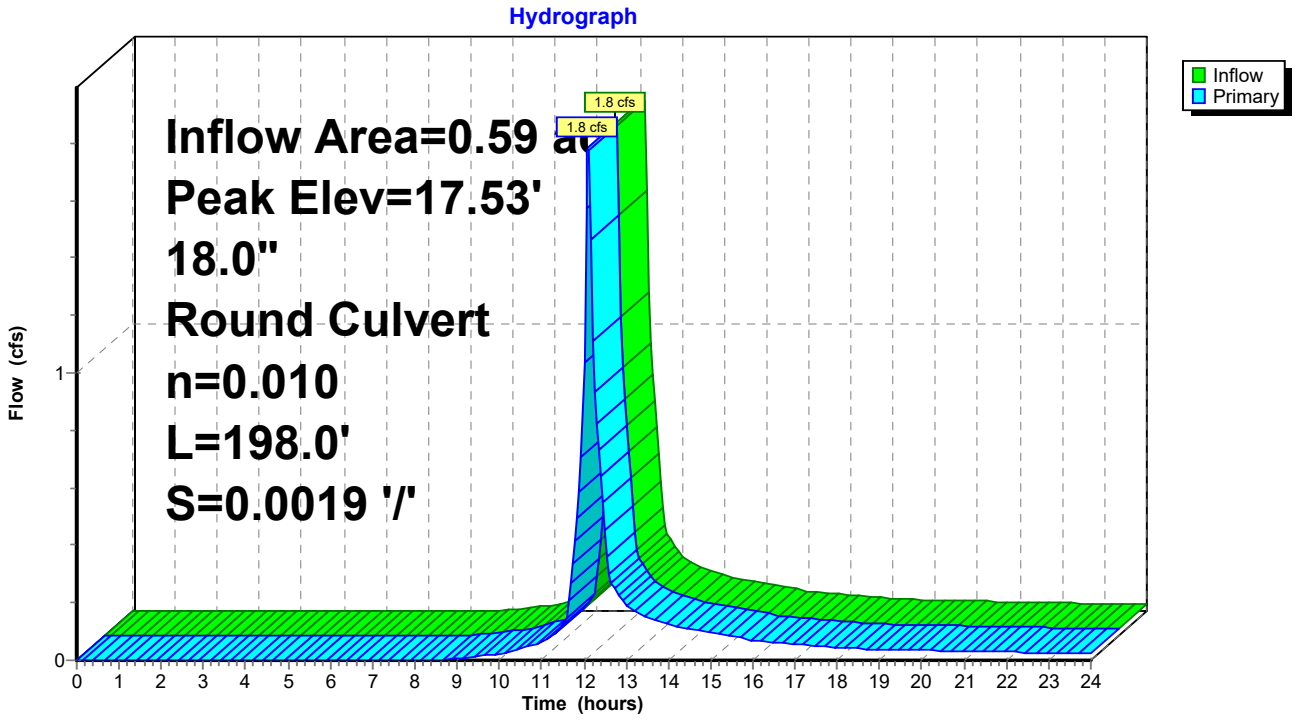
Inflow Area = 0.59 ac, 40.84% Impervious, Inflow Depth > 2.67" for 25-Year Storm event
Inflow = 1.8 cfs @ 12.09 hrs, Volume= 0.131 af
Outflow = 1.8 cfs @ 12.09 hrs, Volume= 0.131 af, Atten= 0%, Lag= 0.0 min
Primary = 1.8 cfs @ 12.09 hrs, Volume= 0.131 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Peak Elev= 17.53' @ 12.09 hrs
Flood Elev= 25.38'

Device	Routing	Invert	Outlet Devices
#1	Primary	16.75'	**18.0" Round Culvert** L= 198.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 16.75' / 16.38' S= 0.0019 '/' Cc= 0.900 n= 0.010 PVC, smooth interior, Flow Area= 1.77 sf

Primary OutFlow Max=1.8 cfs @ 12.09 hrs HW=17.52' TW=16.16' (Dynamic Tailwater)
1=Culvert (Barrel Controls 1.8 cfs @ 2.80 fps)

Pond 24P: Ex DMH2



Summary for Pond 25P: Ex DMH5

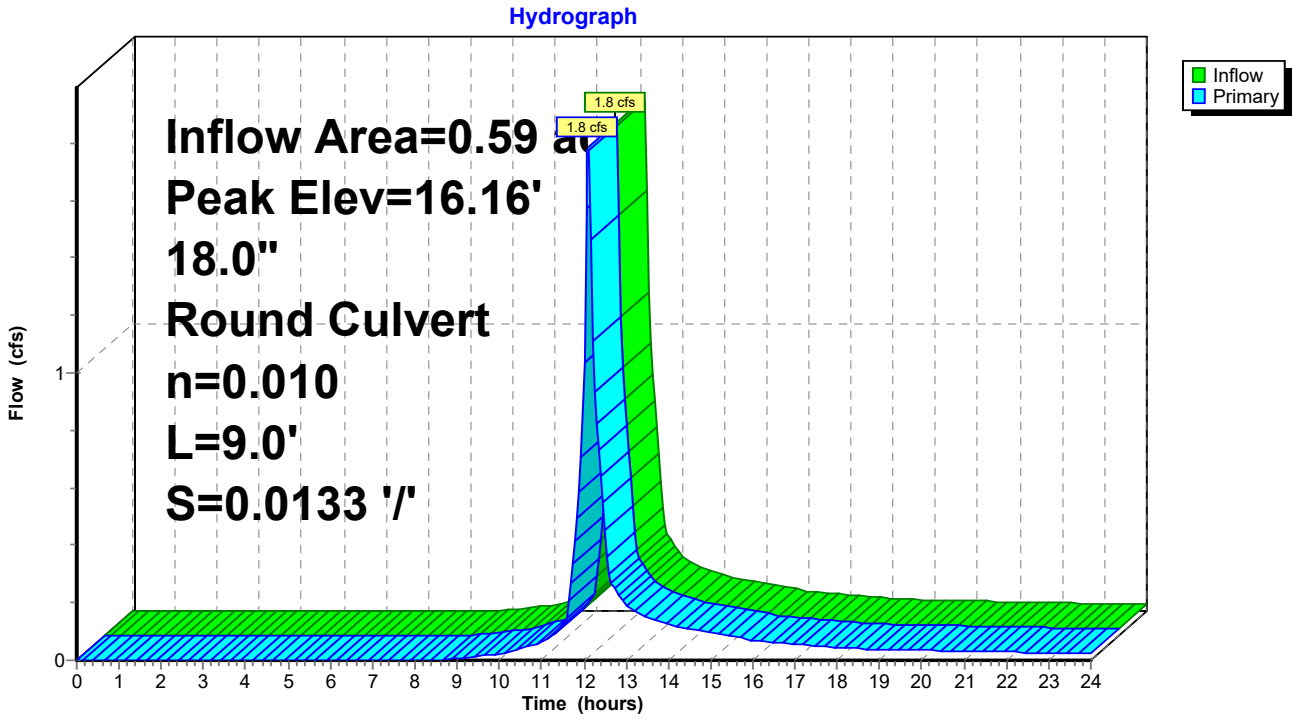
Inflow Area = 0.59 ac, 40.84% Impervious, Inflow Depth > 2.67" for 25-Year Storm event
Inflow = 1.8 cfs @ 12.09 hrs, Volume= 0.131 af
Outflow = 1.8 cfs @ 12.09 hrs, Volume= 0.131 af, Atten= 0%, Lag= 0.0 min
Primary = 1.8 cfs @ 12.09 hrs, Volume= 0.131 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Peak Elev= 16.16' @ 12.09 hrs
Flood Elev= 23.84'

Device	Routing	Invert	Outlet Devices
#1	Primary	15.44'	**18.0" Round Culvert** L= 9.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 15.44' / 15.32' S= 0.0133 '/' Cc= 0.900 n= 0.010 PVC, smooth interior, Flow Area= 1.77 sf

Primary OutFlow Max=1.8 cfs @ 12.09 hrs HW=16.16' TW=15.75' (Dynamic Tailwater)
1=Culvert (Barrel Controls 1.8 cfs @ 3.08 fps)

Pond 25P: Ex DMH5



Summary for Pond 26P: Ex DMH6

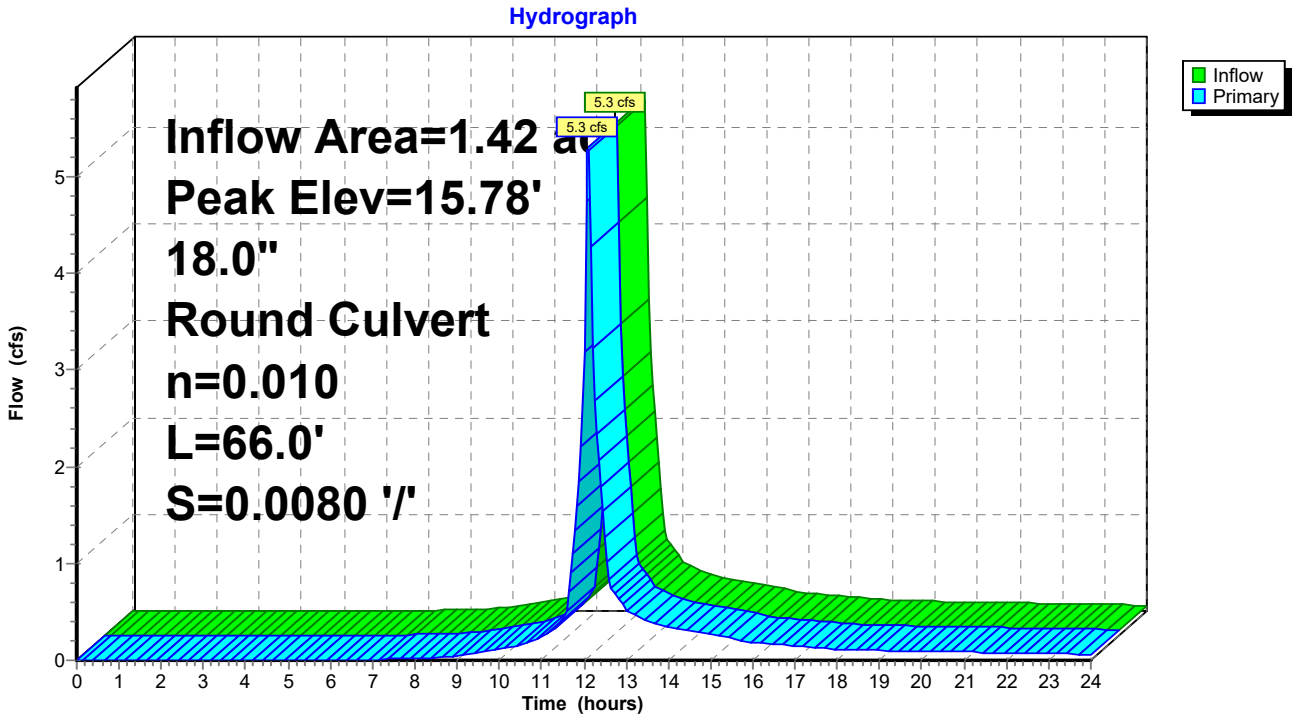
Inflow Area = 1.42 ac, 58.66% Impervious, Inflow Depth > 3.29" for 25-Year Storm event
Inflow = 5.3 cfs @ 12.09 hrs, Volume= 0.387 af
Outflow = 5.3 cfs @ 12.09 hrs, Volume= 0.387 af, Atten= 0%, Lag= 0.0 min
Primary = 5.3 cfs @ 12.09 hrs, Volume= 0.387 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Peak Elev= 15.78' @ 12.11 hrs
Flood Elev= 23.95'

Device	Routing	Invert	Outlet Devices
#1	Primary	14.30'	**18.0" Round Culvert** L= 66.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 14.30' / 13.77' S= 0.0080 '/' Cc= 0.900 n= 0.010 PVC, smooth interior, Flow Area= 1.77 sf

Primary OutFlow Max=4.7 cfs @ 12.09 hrs HW=15.74' TW=15.24' (Dynamic Tailwater)
1=Culvert (Inlet Controls 4.7 cfs @ 2.69 fps)

Pond 26P: Ex DMH6



Summary for Pond 27P: Ex DMH7

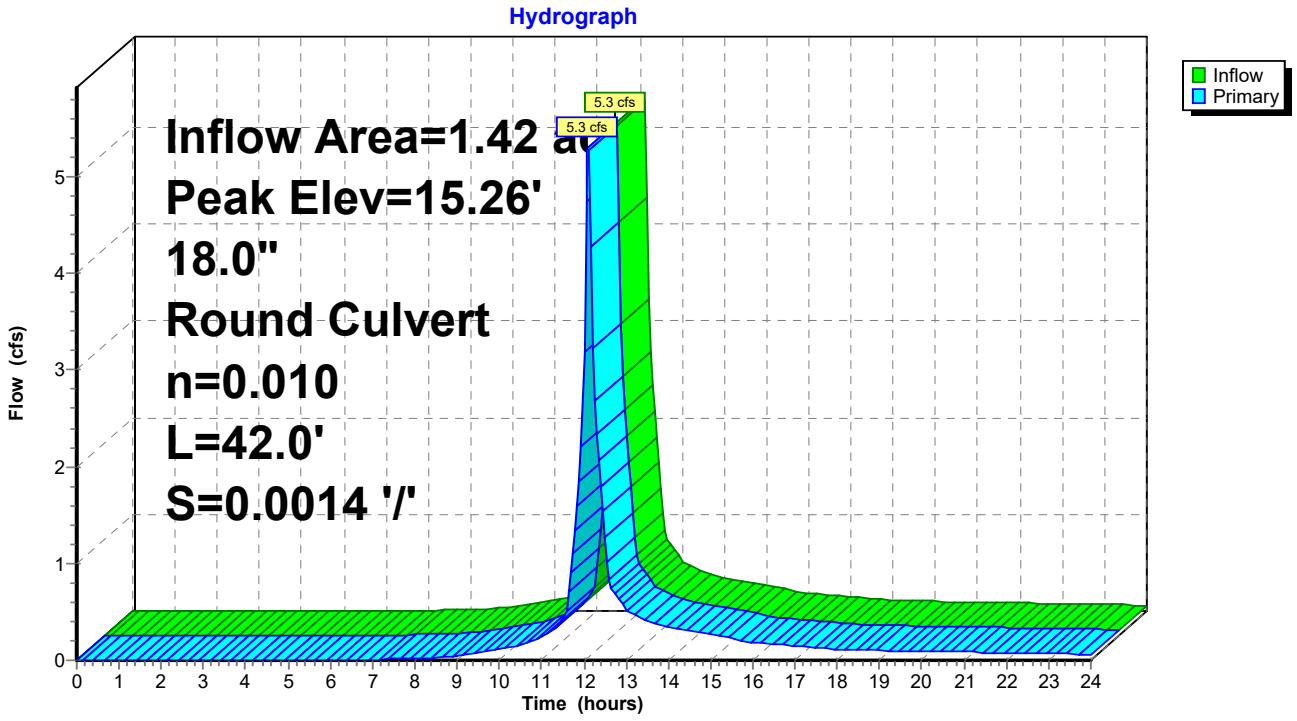
Inflow Area = 1.42 ac, 58.66% Impervious, Inflow Depth > 3.29" for 25-Year Storm event
Inflow = 5.3 cfs @ 12.09 hrs, Volume= 0.387 af
Outflow = 5.3 cfs @ 12.09 hrs, Volume= 0.387 af, Atten= 0%, Lag= 0.0 min
Primary = 5.3 cfs @ 12.09 hrs, Volume= 0.387 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Peak Elev= 15.26' @ 12.09 hrs
Flood Elev= 24.90'

Device	Routing	Invert	Outlet Devices
#1	Primary	13.70'	**18.0" Round Culvert** L= 42.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 13.70' / 13.64' S= 0.0014 '/' Cc= 0.900 n= 0.010 PVC, smooth interior, Flow Area= 1.77 sf

Primary OutFlow Max=5.2 cfs @ 12.09 hrs HW=15.24' TW=0.00' (Dynamic Tailwater)
1=Culvert (Barrel Controls 5.2 cfs @ 3.56 fps)

Pond 27P: Ex DMH7



Summary for Pond 29P: Ex DMH4

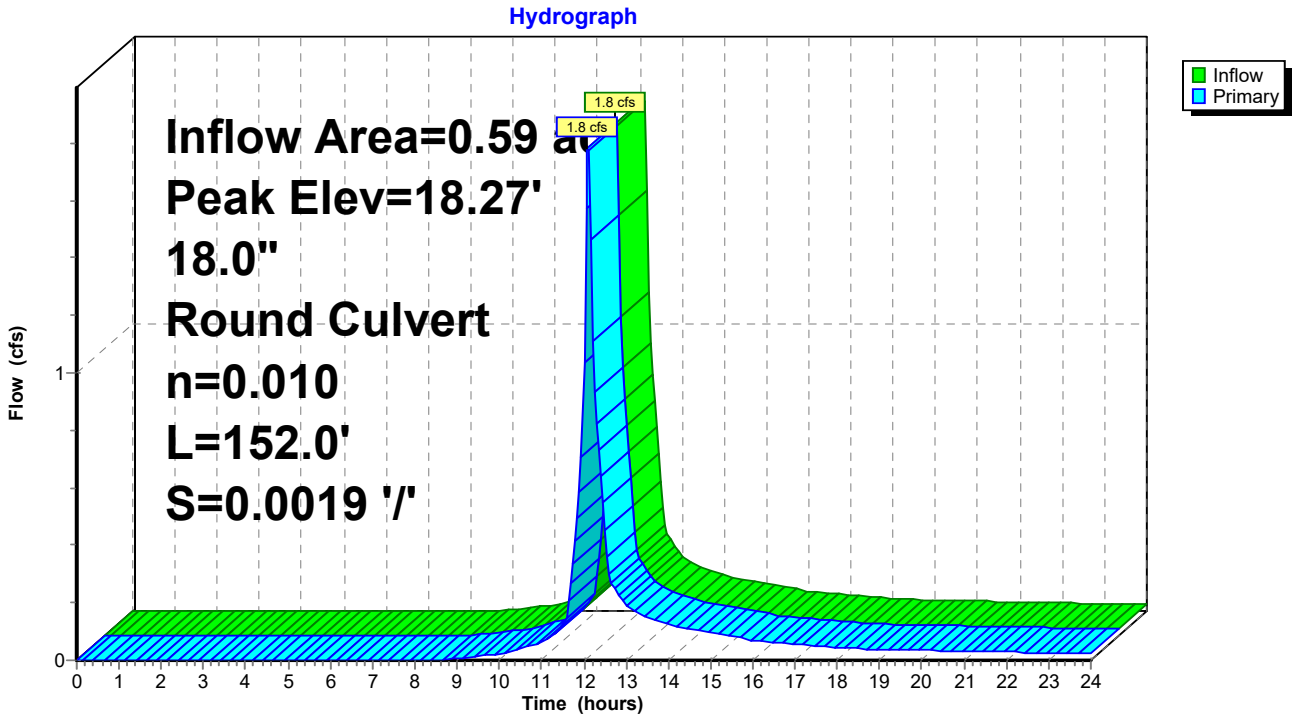
Inflow Area = 0.59 ac, 40.84% Impervious, Inflow Depth > 2.67" for 25-Year Storm event
Inflow = 1.8 cfs @ 12.09 hrs, Volume= 0.131 af
Outflow = 1.8 cfs @ 12.09 hrs, Volume= 0.131 af, Atten= 0%, Lag= 0.0 min
Primary = 1.8 cfs @ 12.09 hrs, Volume= 0.131 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Peak Elev= 18.27' @ 12.11 hrs
Flood Elev= 23.44'

Device	Routing	Invert	Outlet Devices
#1	Primary	17.46'	**18.0" Round Culvert** L= 152.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 17.46' / 17.17' S= 0.0019 '/' Cc= 0.900 n= 0.010 PVC, smooth interior, Flow Area= 1.77 sf

Primary OutFlow Max=1.6 cfs @ 12.09 hrs HW=18.26' TW=17.88' (Dynamic Tailwater)
1=Culvert (Outlet Controls 1.6 cfs @ 2.48 fps)

Pond 29P: Ex DMH4

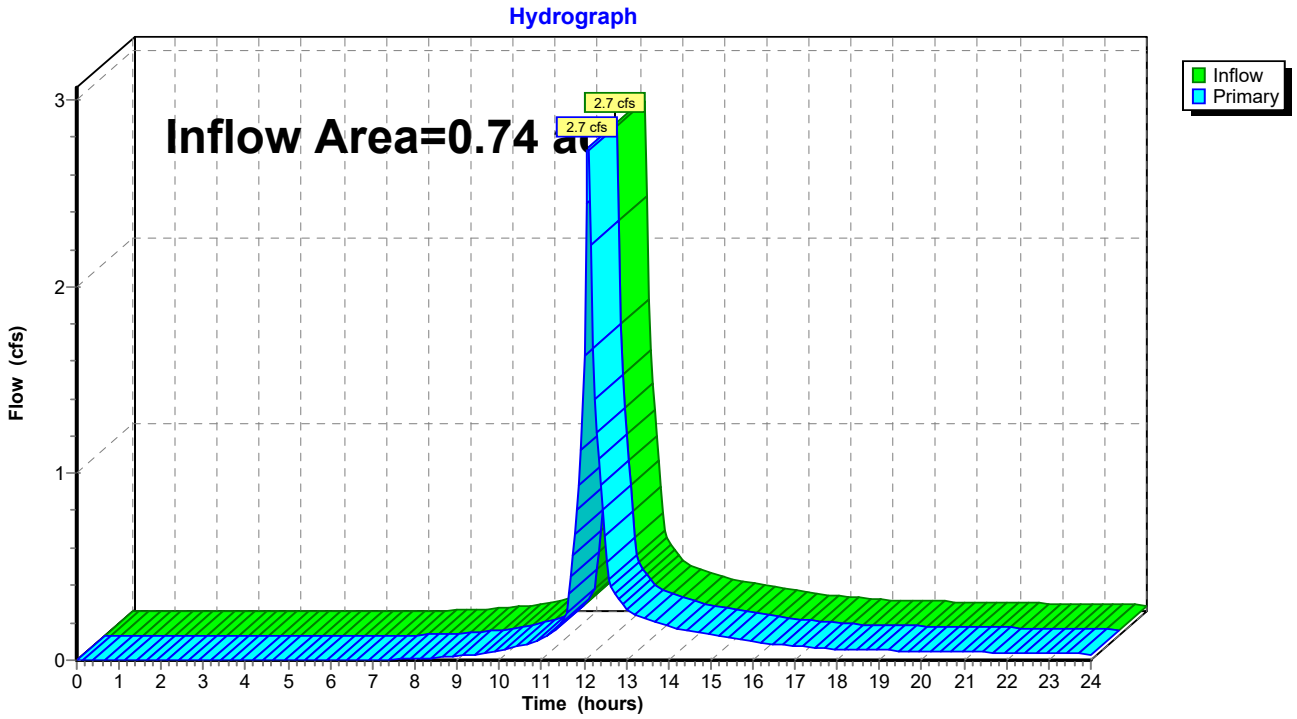


Summary for Link SP1: Forest Ave Storm Drain

Inflow Area = 0.74 ac, 39.80% Impervious, Inflow Depth > 3.22" for 25-Year Storm event
Inflow = 2.7 cfs @ 12.09 hrs, Volume= 0.200 af
Primary = 2.7 cfs @ 12.09 hrs, Volume= 0.200 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs

Link SP1: Forest Ave Storm Drain

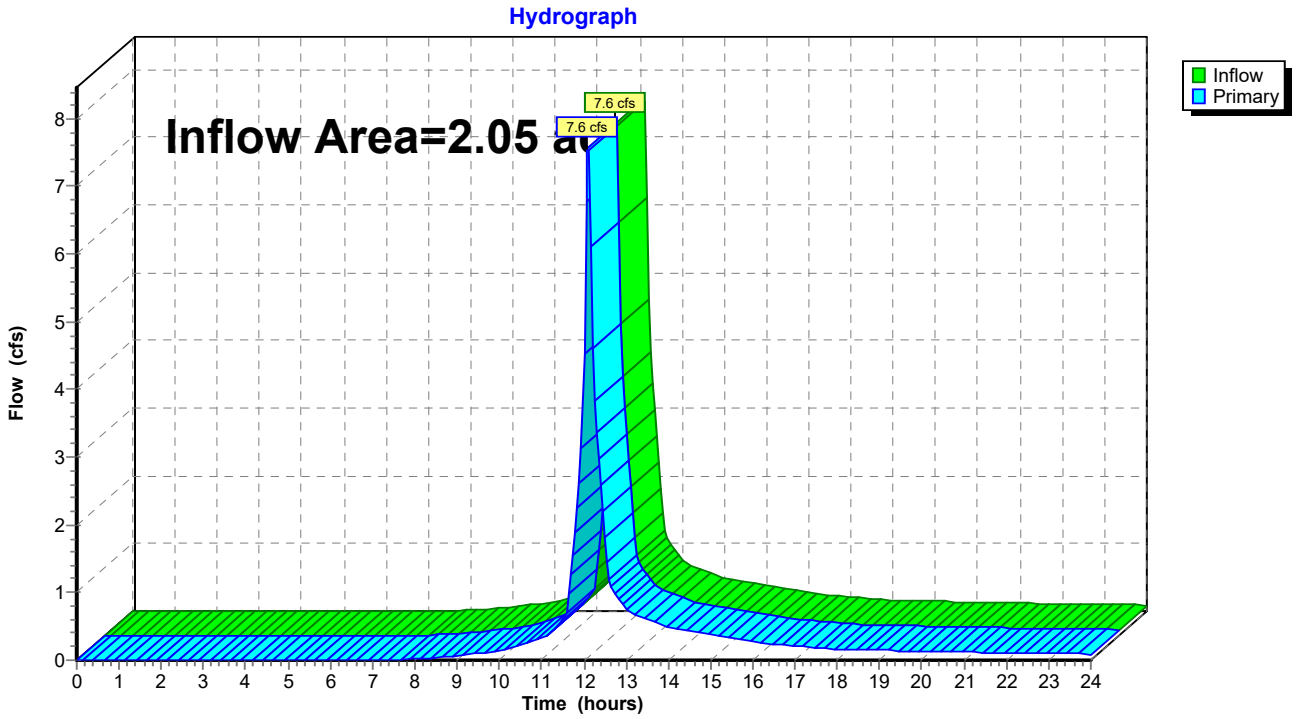


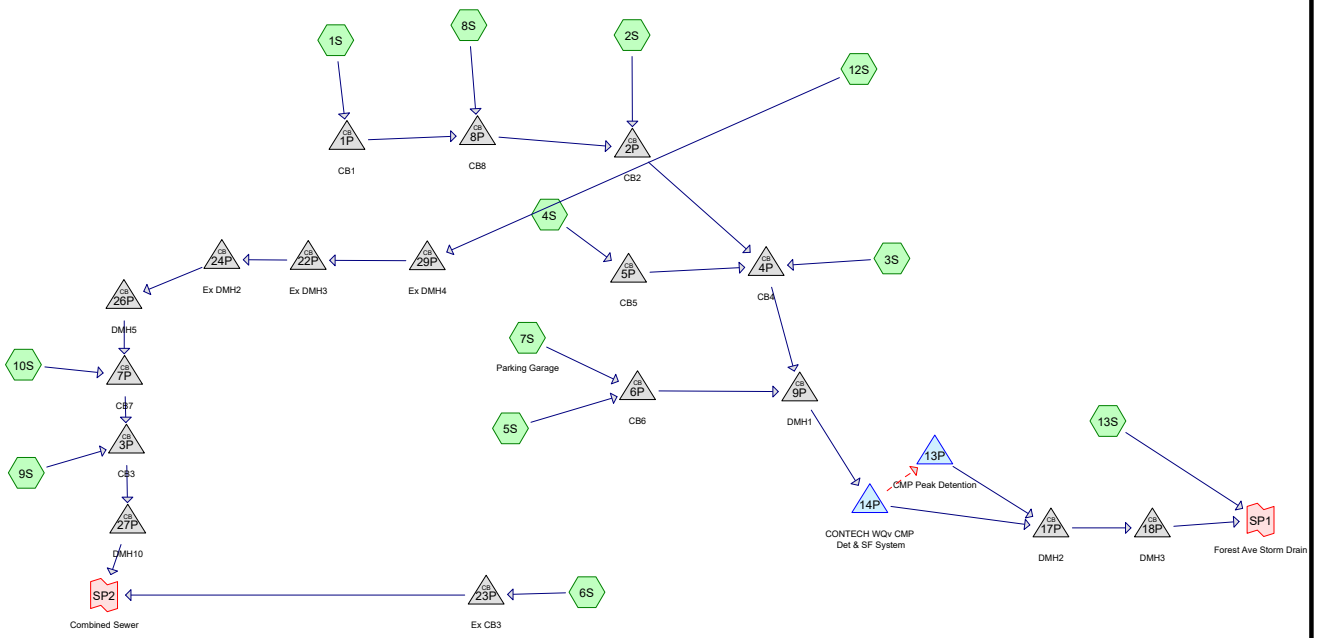
Summary for Link SP2: Combined Sewer

Inflow Area = 2.05 ac, 56.37% Impervious, Inflow Depth > 3.23" for 25-Year Storm event
Inflow = 7.6 cfs @ 12.09 hrs, Volume= 0.551 af
Primary = 7.6 cfs @ 12.09 hrs, Volume= 0.551 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs

Link SP2: Combined Sewer





Subcat Reach Pond Link

Routing Diagram for C2. Post
Prepared by Woodard Curran, Printed 7/28/2021
HydroCAD® 10.00-21 s/n 01204 © 2018 HydroCAD Software Solutions LLC

Area Listing (all nodes)

Area (acres)	CN	Description (subcatchment-numbers)
0.76	39	Grass cover, Good, HSG A (1S, 2S, 3S, 4S, 5S, 6S, 8S, 9S, 10S, 12S, 13S)
1.95	98	Impervious (1S, 2S, 3S, 4S, 5S, 6S, 7S, 8S, 9S, 10S, 12S, 13S)
0.08	40	Porous Pavement (1S, 2S, 8S, 12S)
2.79	**80**	**TOTAL AREA**

Summary for Subcatchment 1S:

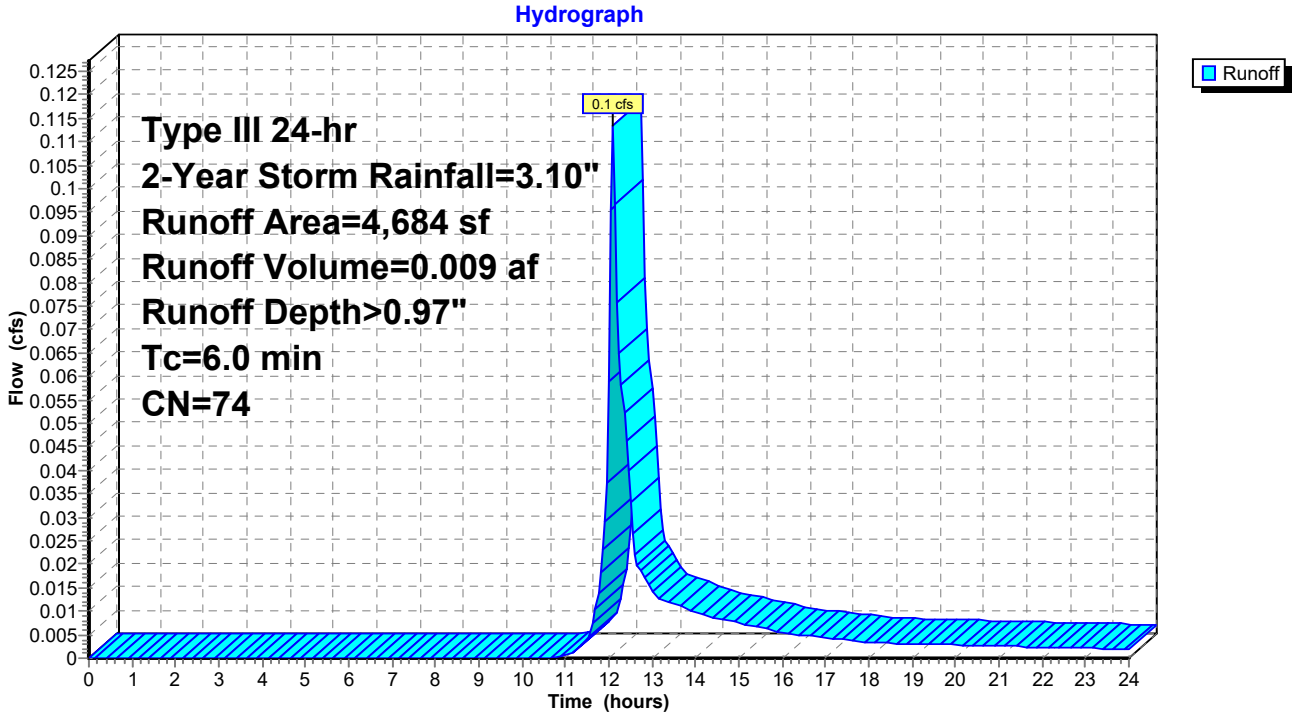
Runoff = 0.1 cfs @ 12.10 hrs, Volume= 0.009 af, Depth> 0.97"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Type III 24-hr 2-Year Storm Rainfall=3.10"

	Area (sf)	CN	Description
*	2,770	98	Impervious
	1,237	39	Grass cover, Good, HSG A
*	677	40	Porous Pavement
	4,684	74	Weighted Average
	1,914		40.86% Pervious Area
	2,770		59.14% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					**Direct Entry,**

Subcatchment 1S:



Summary for Subcatchment 2S:

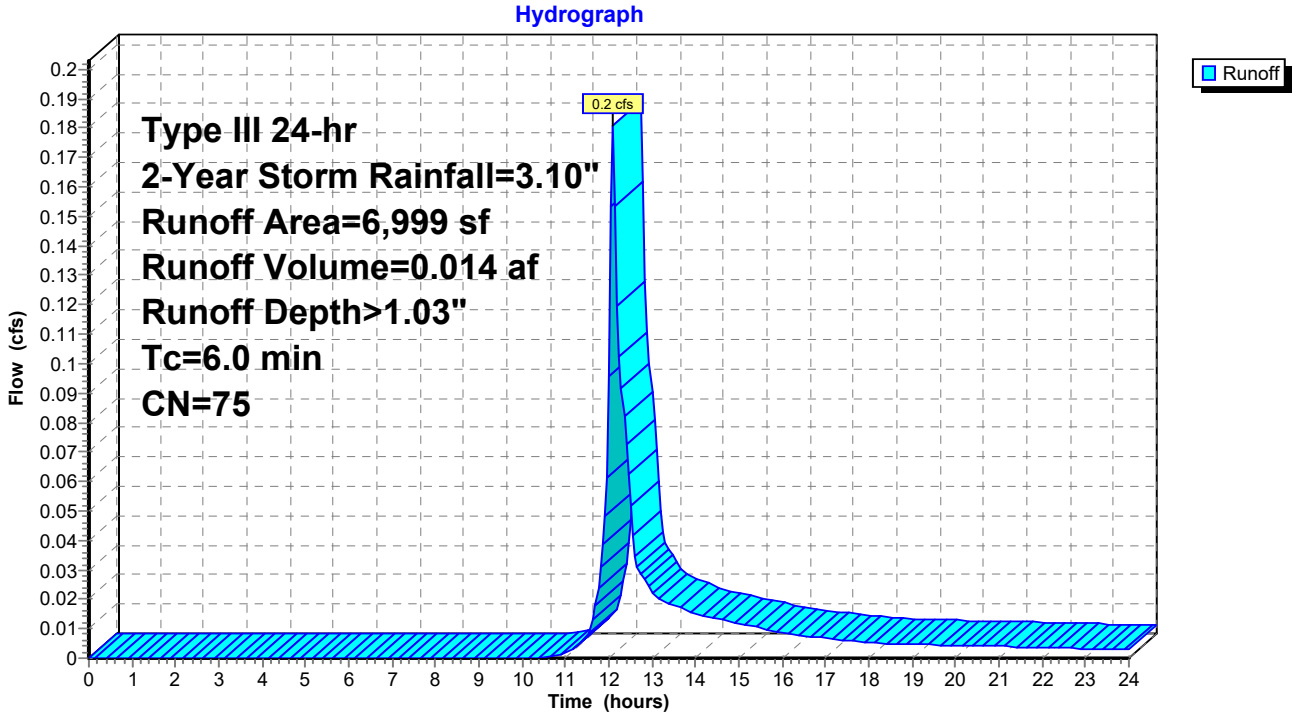
Runoff = 0.2 cfs @ 12.10 hrs, Volume= 0.014 af, Depth> 1.03"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Type III 24-hr 2-Year Storm Rainfall=3.10"

	Area (sf)	CN	Description
*	4,238	98	Impervious
	1,996	39	Grass cover, Good, HSG A
*	765	40	Porous Pavement
	6,999	75	Weighted Average
	2,761		39.45% Pervious Area
	4,238		60.55% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					**Direct Entry,**

Subcatchment 2S:



Summary for Subcatchment 3S:

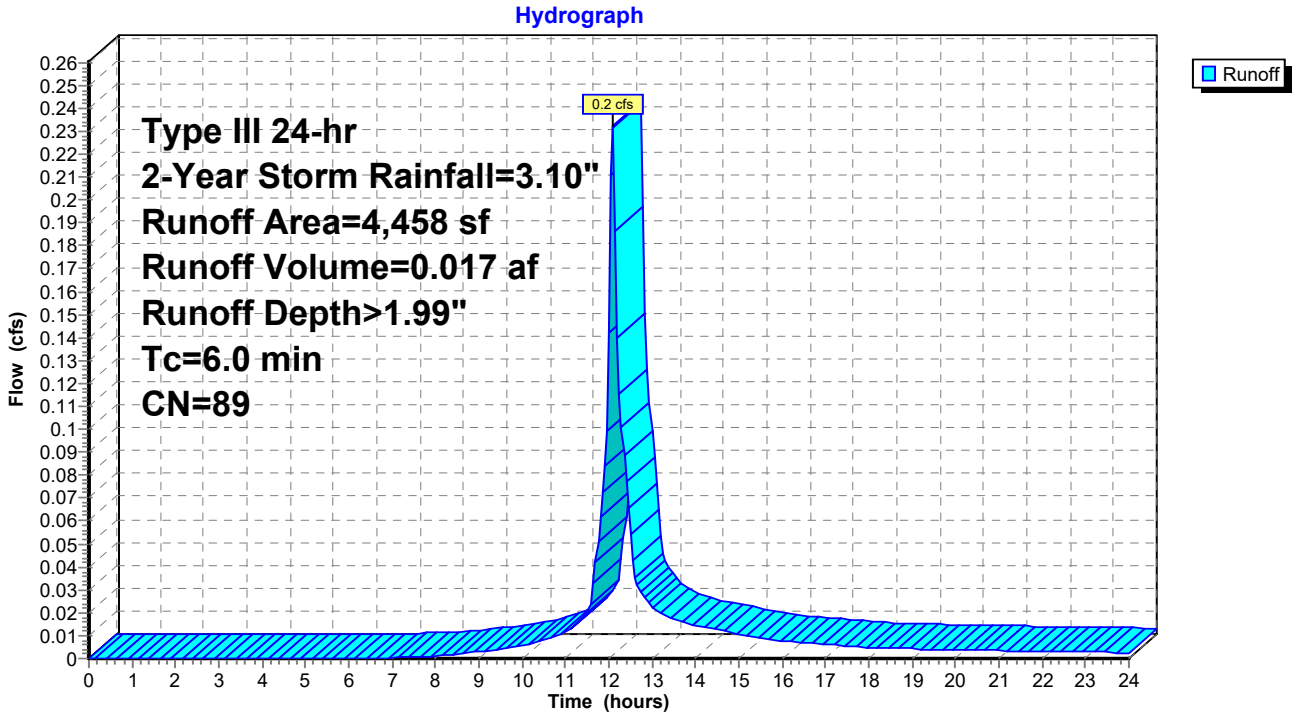
Runoff = 0.2 cfs @ 12.09 hrs, Volume= 0.017 af, Depth> 1.99"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Type III 24-hr 2-Year Storm Rainfall=3.10"

	Area (sf)	CN	Description
*	3,789	98	Impervious
	669	39	Grass cover, Good, HSG A
	4,458	89	Weighted Average
	669		15.01% Pervious Area
	3,789		84.99% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					**Direct Entry,**

Subcatchment 3S:



Summary for Subcatchment 4S:

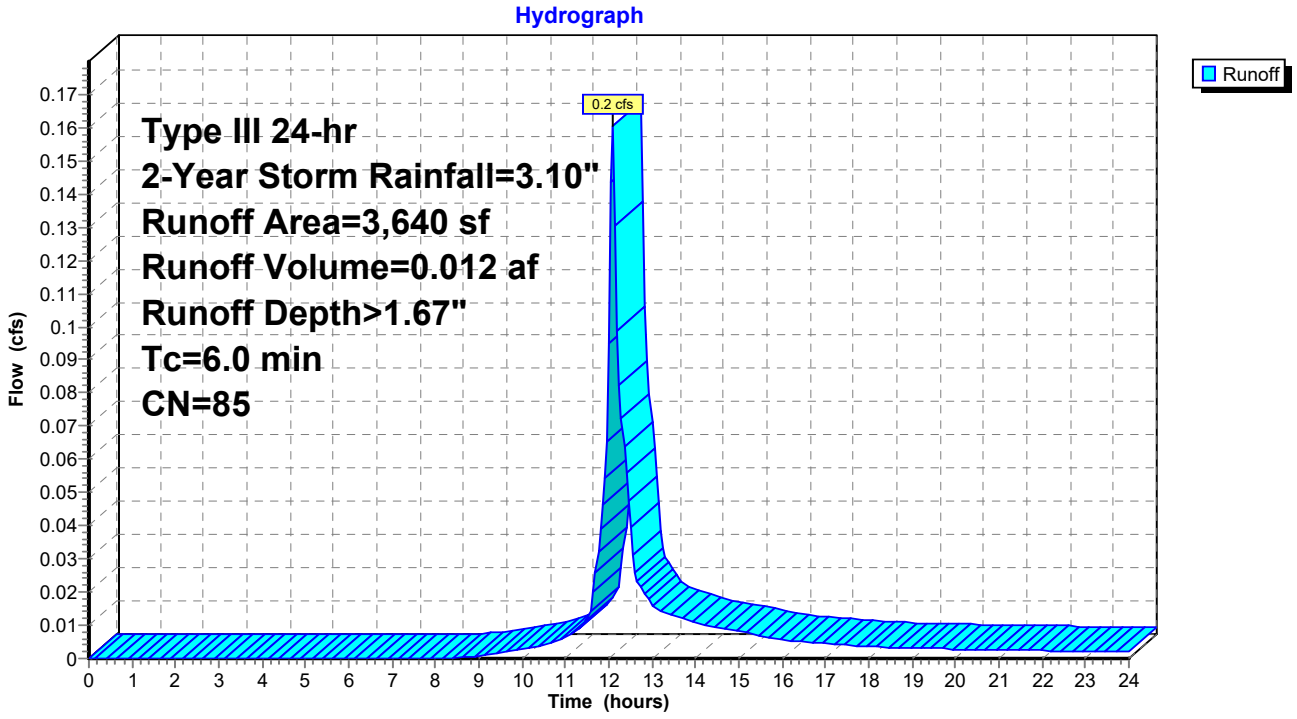
Runoff = 0.2 cfs @ 12.09 hrs, Volume= 0.012 af, Depth> 1.67"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Type III 24-hr 2-Year Storm Rainfall=3.10"

	Area (sf)	CN	Description
*	2,814	98	Impervious
	826	39	Grass cover, Good, HSG A
	3,640	85	Weighted Average
	826		22.69% Pervious Area
	2,814		77.31% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					**Direct Entry,**

Subcatchment 4S:



Summary for Subcatchment 5S:

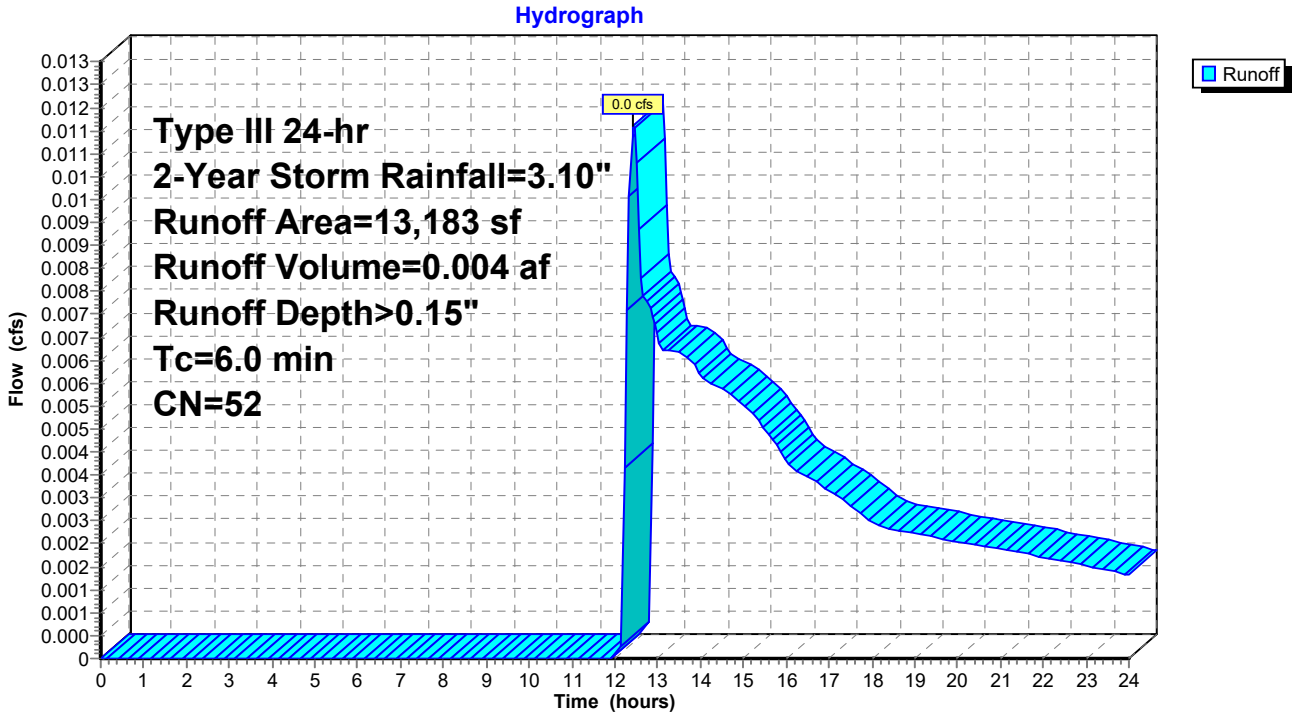
Runoff = 0.0 cfs @ 12.43 hrs, Volume= 0.004 af, Depth> 0.15"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Type III 24-hr 2-Year Storm Rainfall=3.10"

	Area (sf)	CN	Description
*	2,965	98	Impervious
	10,218	39	Grass cover, Good, HSG A
	13,183	52	Weighted Average
	10,218		77.51% Pervious Area
	2,965		22.49% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					**Direct Entry,**

Subcatchment 5S:



Summary for Subcatchment 6S:

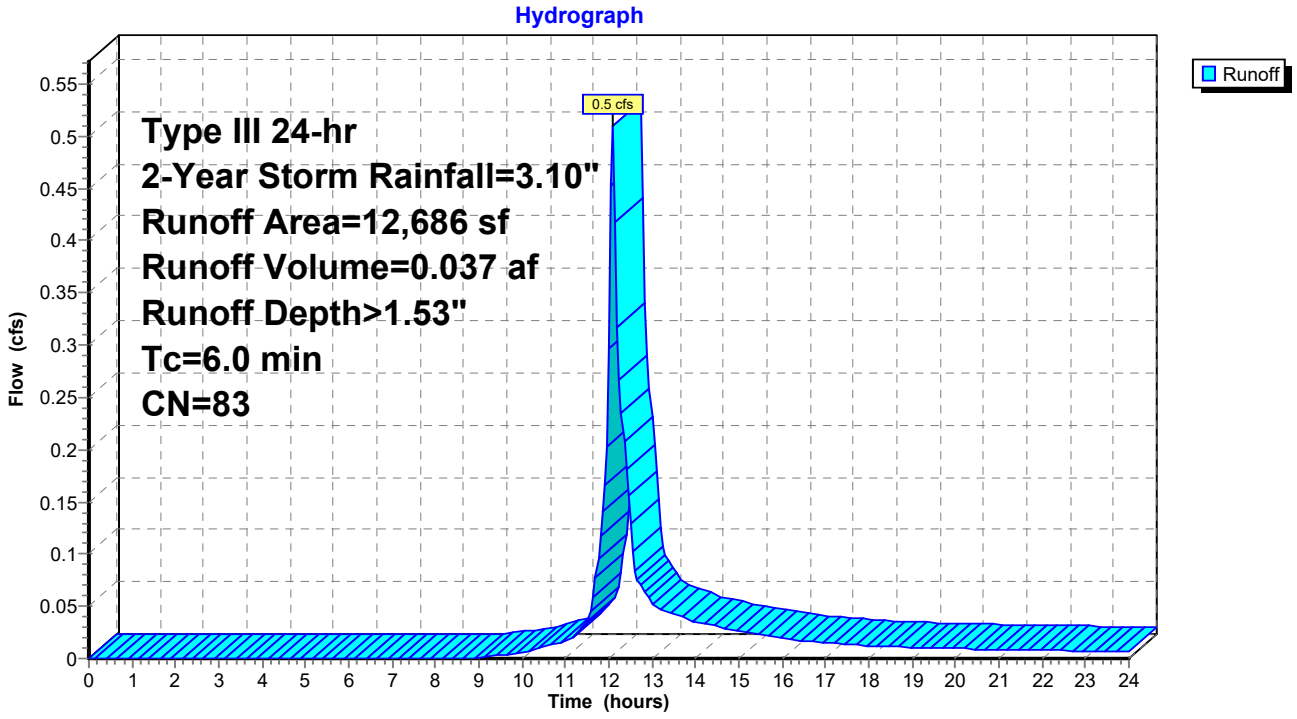
Runoff = 0.5 cfs @ 12.09 hrs, Volume= 0.037 af, Depth> 1.53"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Type III 24-hr 2-Year Storm Rainfall=3.10"

	Area (sf)	CN	Description
*	9,384	98	Impervious
	3,302	39	Grass cover, Good, HSG A
	12,686	83	Weighted Average
	3,302		26.03% Pervious Area
	9,384		73.97% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					**Direct Entry,**

Subcatchment 6S:



Summary for Subcatchment 7S: Parking Garage

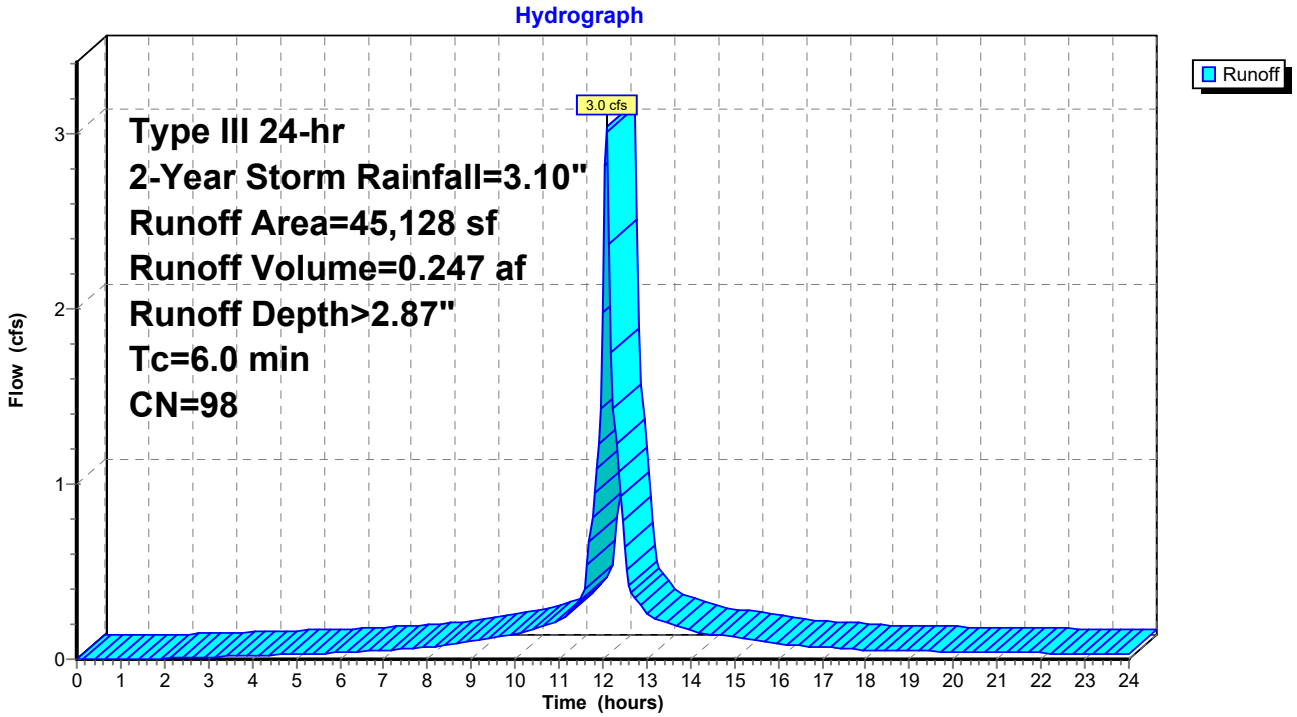
Runoff = 3.0 cfs @ 12.09 hrs, Volume= 0.247 af, Depth> 2.87"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Type III 24-hr 2-Year Storm Rainfall=3.10"

	Area (sf)	CN	Description
*	45,128	98	Impervious
	45,128		100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					**Direct Entry,**

Subcatchment 7S: Parking Garage



Summary for Subcatchment 8S:

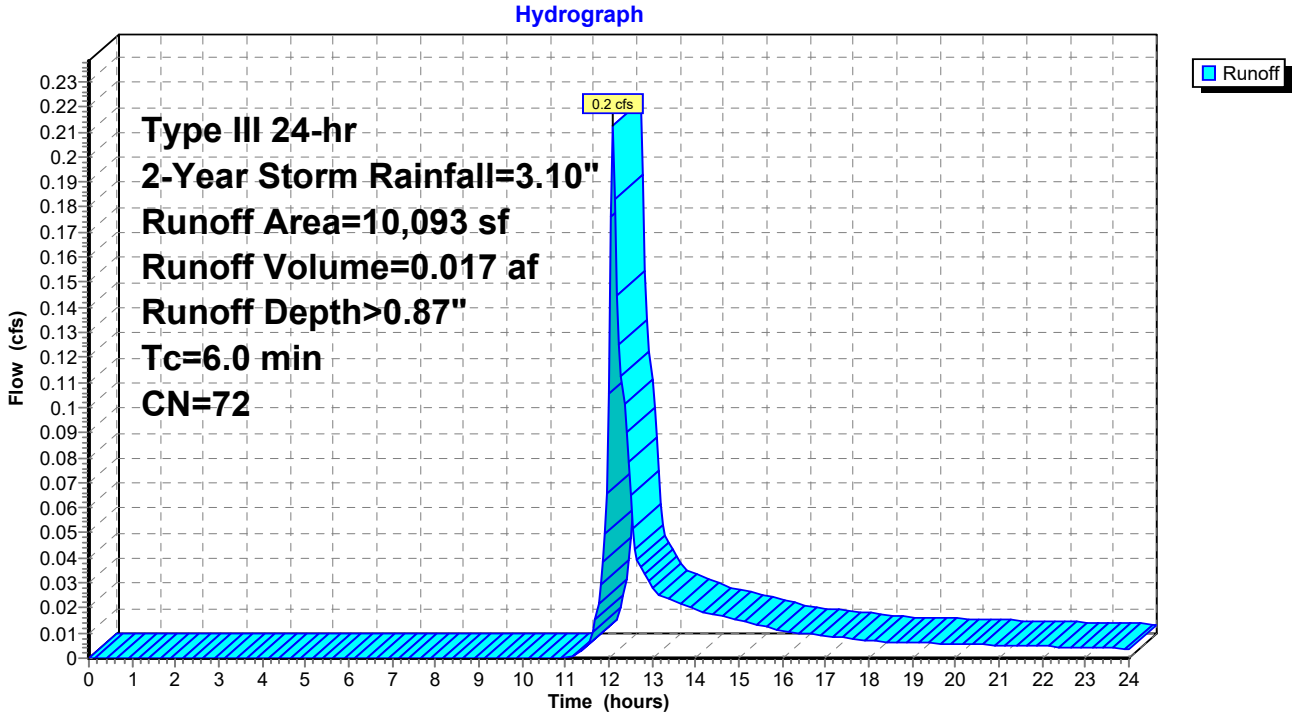
Runoff = 0.2 cfs @ 12.10 hrs, Volume= 0.017 af, Depth> 0.87"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Type III 24-hr 2-Year Storm Rainfall=3.10"

	Area (sf)	CN	Description
*	5,667	98	Impervious
	3,193	39	Grass cover, Good, HSG A
*	1,233	40	Porous Pavement
	10,093	72	Weighted Average
	4,426		43.85% Pervious Area
	5,667		56.15% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					**Direct Entry,**

Subcatchment 8S:



Summary for Subcatchment 9S:

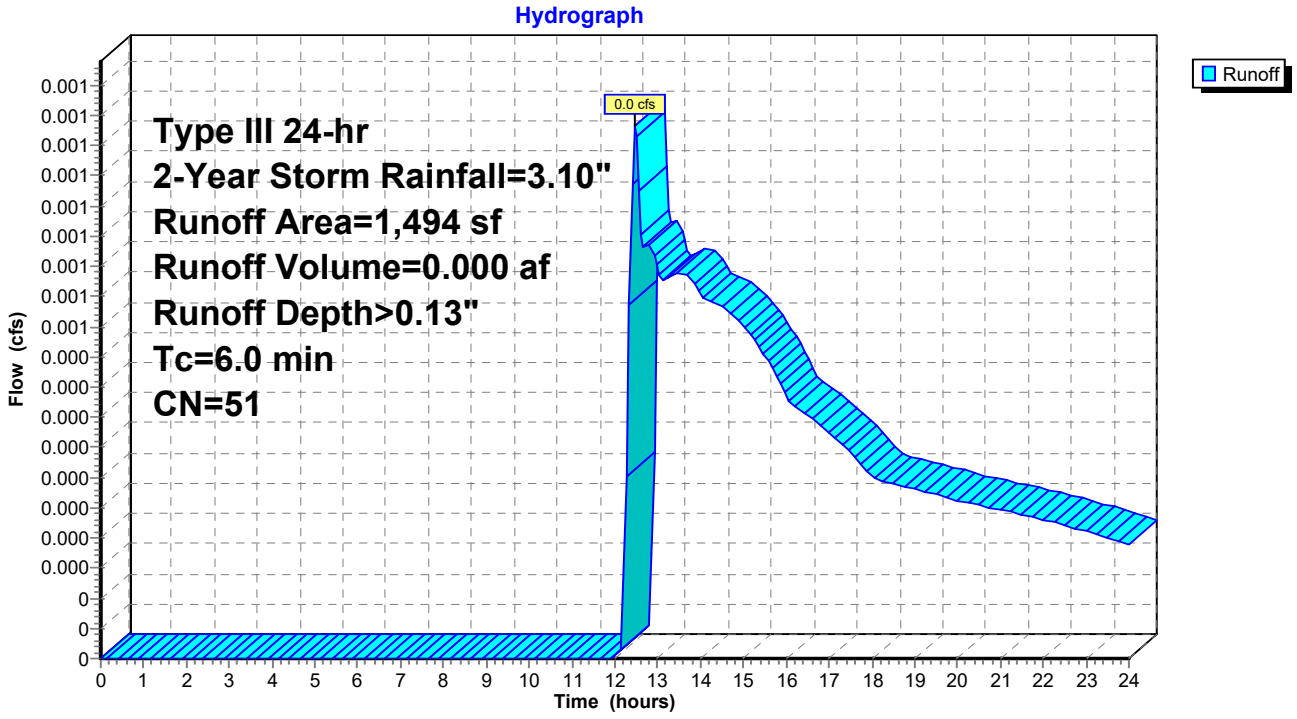
Runoff = 0.0 cfs @ 12.47 hrs, Volume= 0.000 af, Depth> 0.13"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Type III 24-hr 2-Year Storm Rainfall=3.10"

	Area (sf)	CN	Description
*	302	98	Impervious
	1,192	39	Grass cover, Good, HSG A
	1,494	51	Weighted Average
	1,192		79.79% Pervious Area
	302		20.21% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					**Direct Entry,**

Subcatchment 9S:



Summary for Subcatchment 10S:

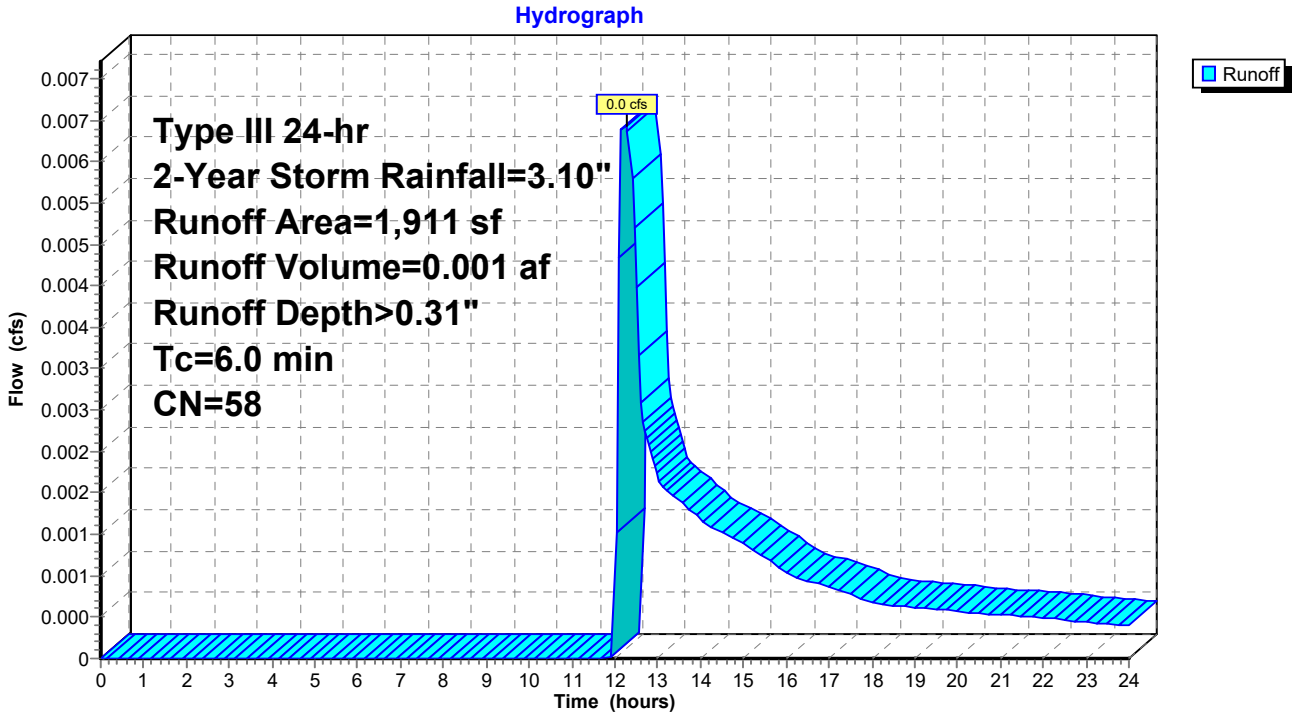
Runoff = 0.0 cfs @ 12.26 hrs, Volume= 0.001 af, Depth> 0.31"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Type III 24-hr 2-Year Storm Rainfall=3.10"

	Area (sf)	CN	Description
*	617	98	Impervious
	1,294	39	Grass cover, Good, HSG A
	1,911	58	Weighted Average
	1,294		67.71% Pervious Area
	617		32.29% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					**Direct Entry,**

Subcatchment 10S:



Summary for Subcatchment 12S:

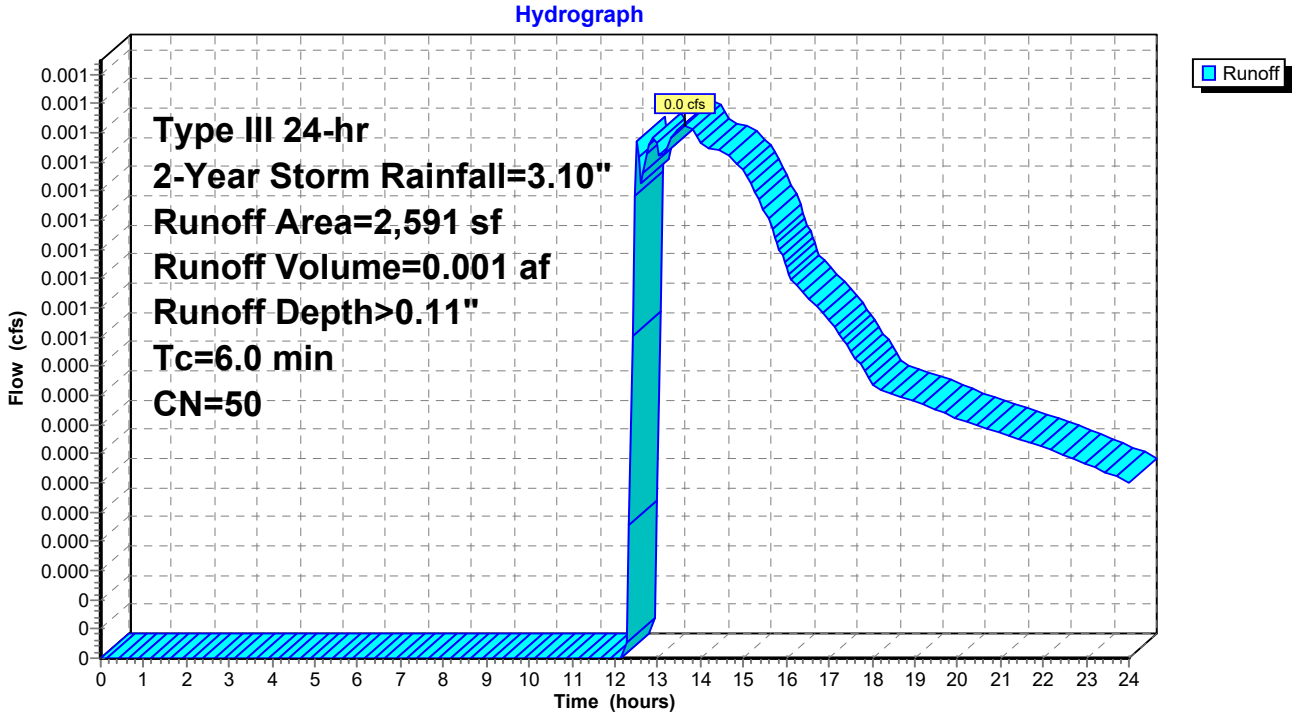
Runoff = 0.0 cfs @ 13.63 hrs, Volume= 0.001 af, Depth> 0.11"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Type III 24-hr 2-Year Storm Rainfall=3.10"

	Area (sf)	CN	Description
*	466	98	Impervious
	1,499	39	Grass cover, Good, HSG A
*	626	40	Porous Pavement
	2,591	50	Weighted Average
	2,125		82.01% Pervious Area
	466		17.99% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					**Direct Entry,**

Subcatchment 12S:



Summary for Subcatchment 13S:

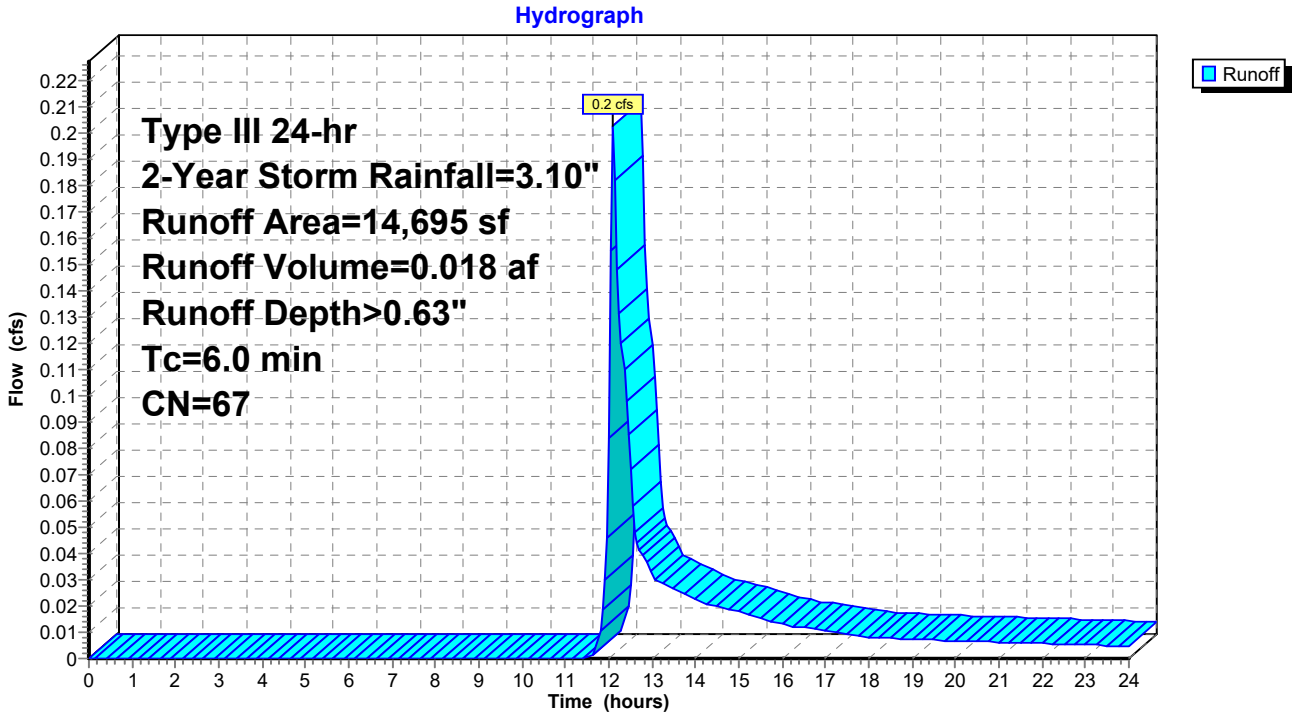
Runoff = 0.2 cfs @ 12.11 hrs, Volume= 0.018 af, Depth> 0.63"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Type III 24-hr 2-Year Storm Rainfall=3.10"

	Area (sf)	CN	Description
*	7,017	98	Impervious
	7,678	39	Grass cover, Good, HSG A
	14,695	67	Weighted Average
	7,678		52.25% Pervious Area
	7,017		47.75% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					**Direct Entry,**

Subcatchment 13S:



Summary for Pond 1P: CB1

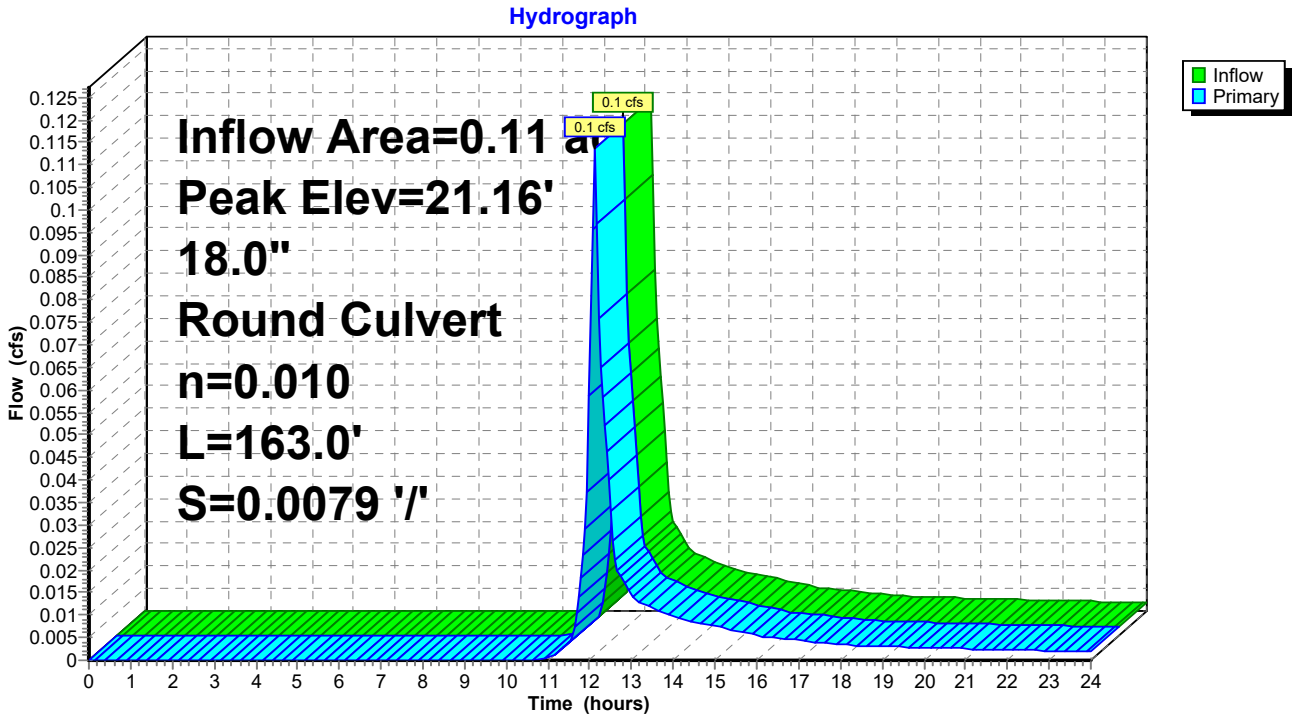
Inflow Area = 0.11 ac, 59.14% Impervious, Inflow Depth > 0.97" for 2-Year Storm event
Inflow = 0.1 cfs @ 12.10 hrs, Volume= 0.009 af
Outflow = 0.1 cfs @ 12.10 hrs, Volume= 0.009 af, Atten= 0%, Lag= 0.0 min
Primary = 0.1 cfs @ 12.10 hrs, Volume= 0.009 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Peak Elev= 21.16' @ 12.10 hrs
Flood Elev= 25.12'

Device	Routing	Invert	Outlet Devices
#1	Primary	21.00'	**18.0" Round Culvert** L= 163.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 21.00' / 19.71' S= 0.0079 '/' Cc= 0.900 n= 0.010 PVC, smooth interior, Flow Area= 1.77 sf

Primary OutFlow Max=0.1 cfs @ 12.10 hrs HW=21.16' TW=19.99' (Dynamic Tailwater)
1=Culvert (Inlet Controls 0.1 cfs @ 1.09 fps)

Pond 1P: CB1



Summary for Pond 2P: CB2

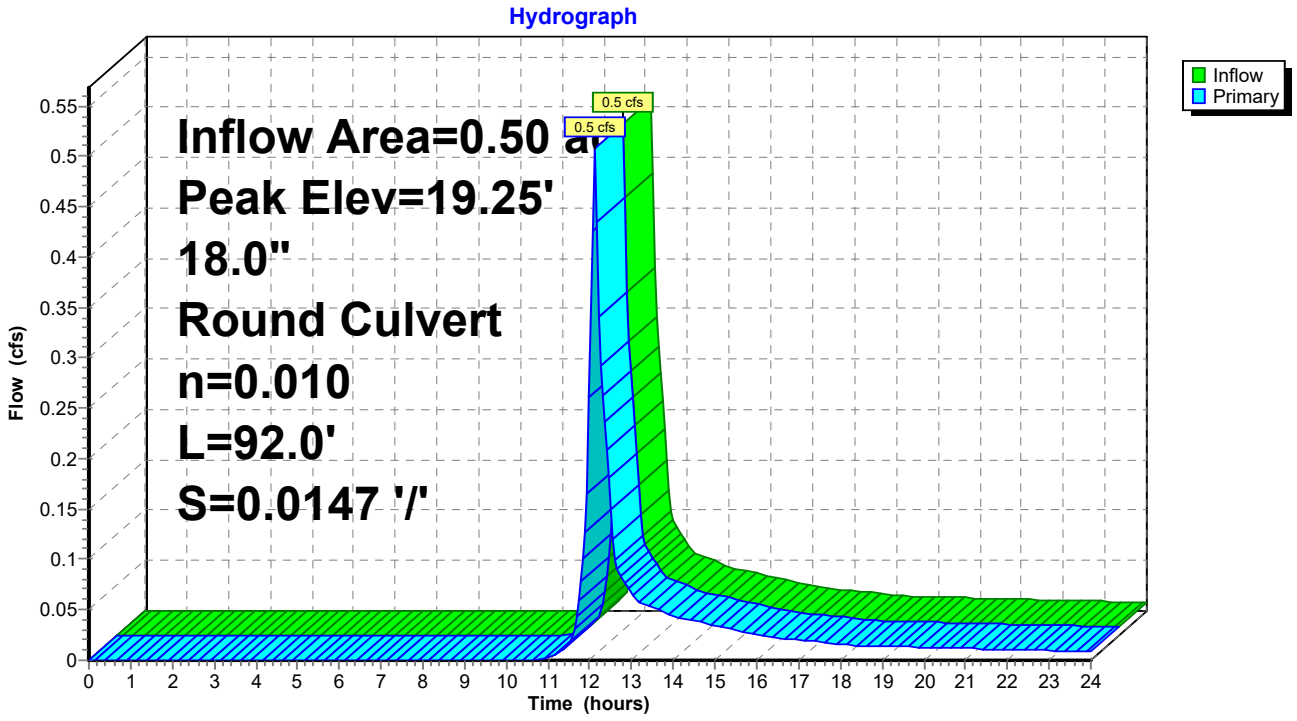
Inflow Area = 0.50 ac, 58.21% Impervious, Inflow Depth > 0.94" for 2-Year Storm event
Inflow = 0.5 cfs @ 12.10 hrs, Volume= 0.039 af
Outflow = 0.5 cfs @ 12.10 hrs, Volume= 0.039 af, Atten= 0%, Lag= 0.0 min
Primary = 0.5 cfs @ 12.10 hrs, Volume= 0.039 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Peak Elev= 19.25' @ 12.10 hrs
Flood Elev= 22.97'

Device	Routing	Invert	Outlet Devices
#1	Primary	18.90'	**18.0" Round Culvert** L= 92.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 18.90' / 17.55' S= 0.0147 '/' Cc= 0.900 n= 0.010 PVC, smooth interior, Flow Area= 1.77 sf

Primary OutFlow Max=0.5 cfs @ 12.10 hrs HW=19.25' TW=18.31' (Dynamic Tailwater)
1=Culvert (Inlet Controls 0.5 cfs @ 1.60 fps)

Pond 2P: CB2



Summary for Pond 3P: CB3

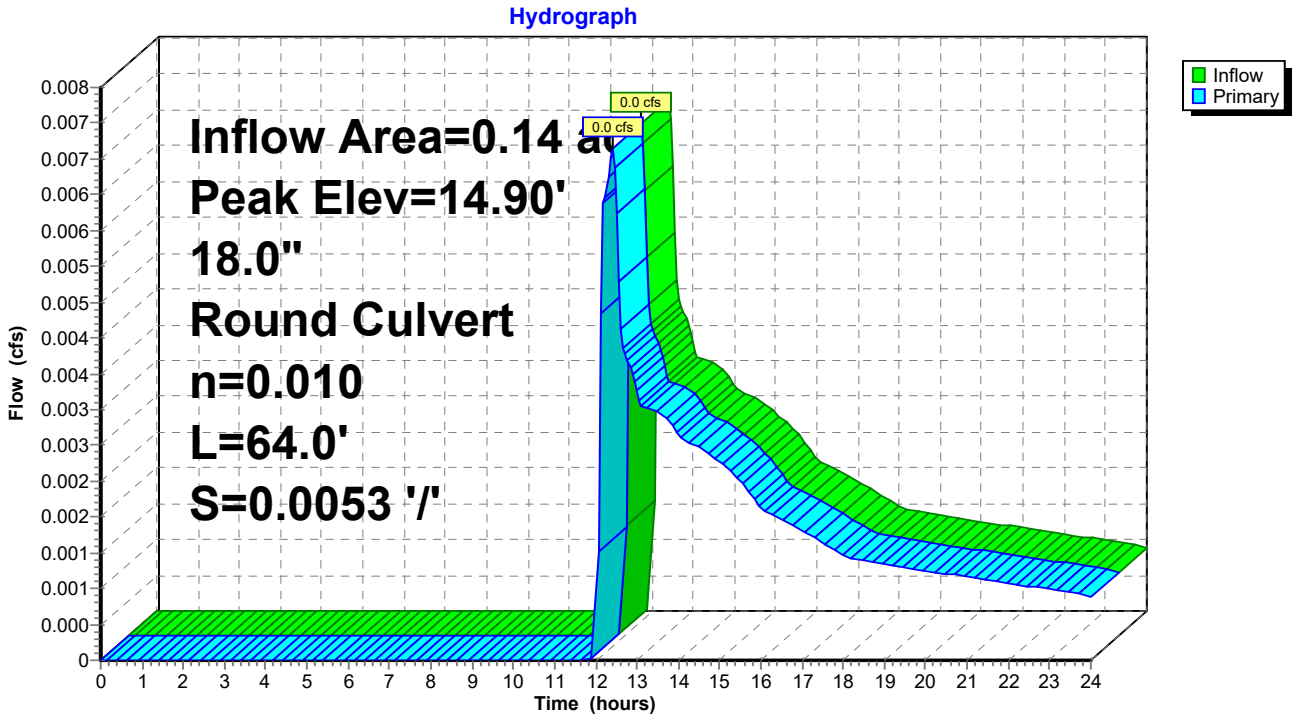
Inflow Area = 0.14 ac, 23.10% Impervious, Inflow Depth > 0.18" for 2-Year Storm event
Inflow = 0.0 cfs @ 12.39 hrs, Volume= 0.002 af
Outflow = 0.0 cfs @ 12.39 hrs, Volume= 0.002 af, Atten= 0%, Lag= 0.0 min
Primary = 0.0 cfs @ 12.39 hrs, Volume= 0.002 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Peak Elev= 14.90' @ 12.39 hrs
Flood Elev= 23.90'

Device	Routing	Invert	Outlet Devices
#1	Primary	14.86'	**18.0" Round Culvert** L= 64.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 14.86' / 14.52' S= 0.0053 '/' Cc= 0.900 n= 0.010 PVC, smooth interior, Flow Area= 1.77 sf

Primary OutFlow Max=0.0 cfs @ 12.39 hrs HW=14.90' TW=14.14' (Dynamic Tailwater)
↑**1=Culvert** (Barrel Controls 0.0 cfs @ 0.80 fps)

Pond 3P: CB3



Summary for Pond 4P: CB4

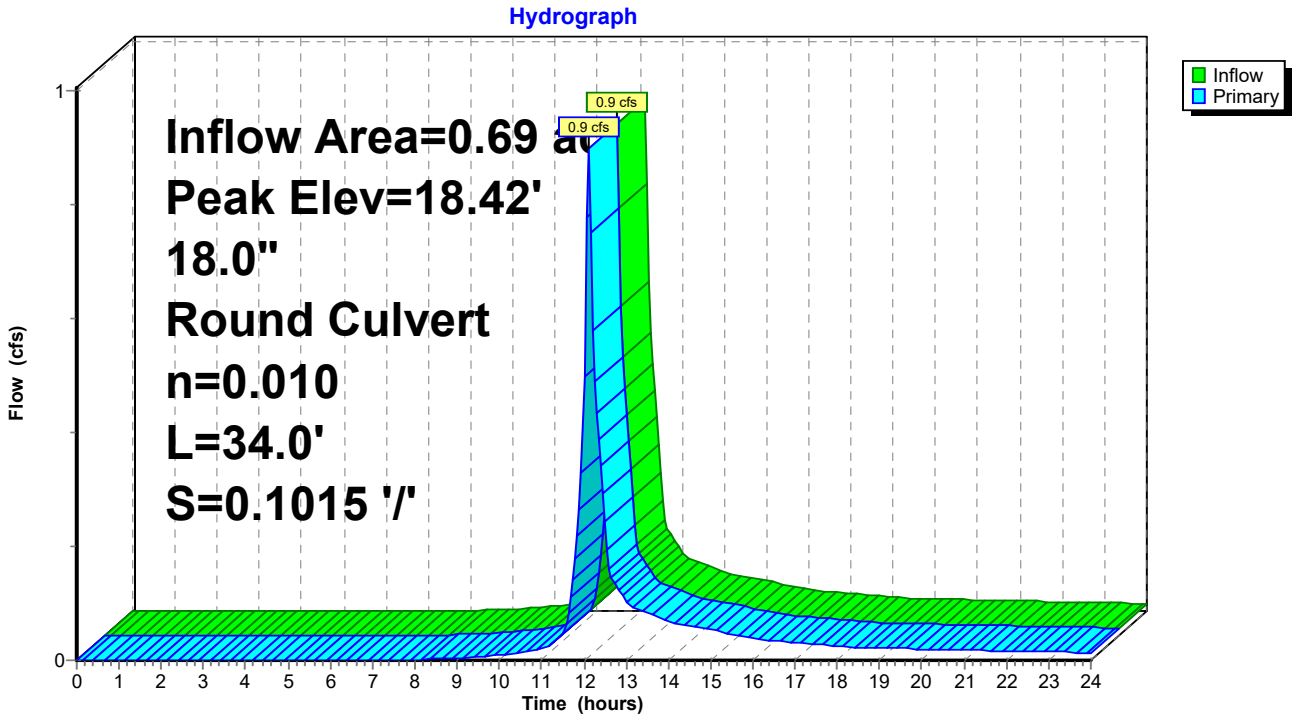
Inflow Area = 0.69 ac, 64.53% Impervious, Inflow Depth > 1.19" for 2-Year Storm event
Inflow = 0.9 cfs @ 12.10 hrs, Volume= 0.068 af
Outflow = 0.9 cfs @ 12.10 hrs, Volume= 0.068 af, Atten= 0%, Lag= 0.0 min
Primary = 0.9 cfs @ 12.10 hrs, Volume= 0.068 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Peak Elev= 18.42' @ 12.16 hrs
Flood Elev= 22.87'

Device	Routing	Invert	Outlet Devices
#1	Primary	17.45'	**18.0" Round Culvert** L= 34.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 17.45' / 14.00' S= 0.1015 '/' Cc= 0.900 n= 0.010 PVC, smooth interior, Flow Area= 1.77 sf

Primary OutFlow Max=0.0 cfs @ 12.10 hrs HW=18.29' TW=18.38' (Dynamic Tailwater)
1=Culvert (Controls 0.0 cfs)

Pond 4P: CB4



Summary for Pond 5P: CB5

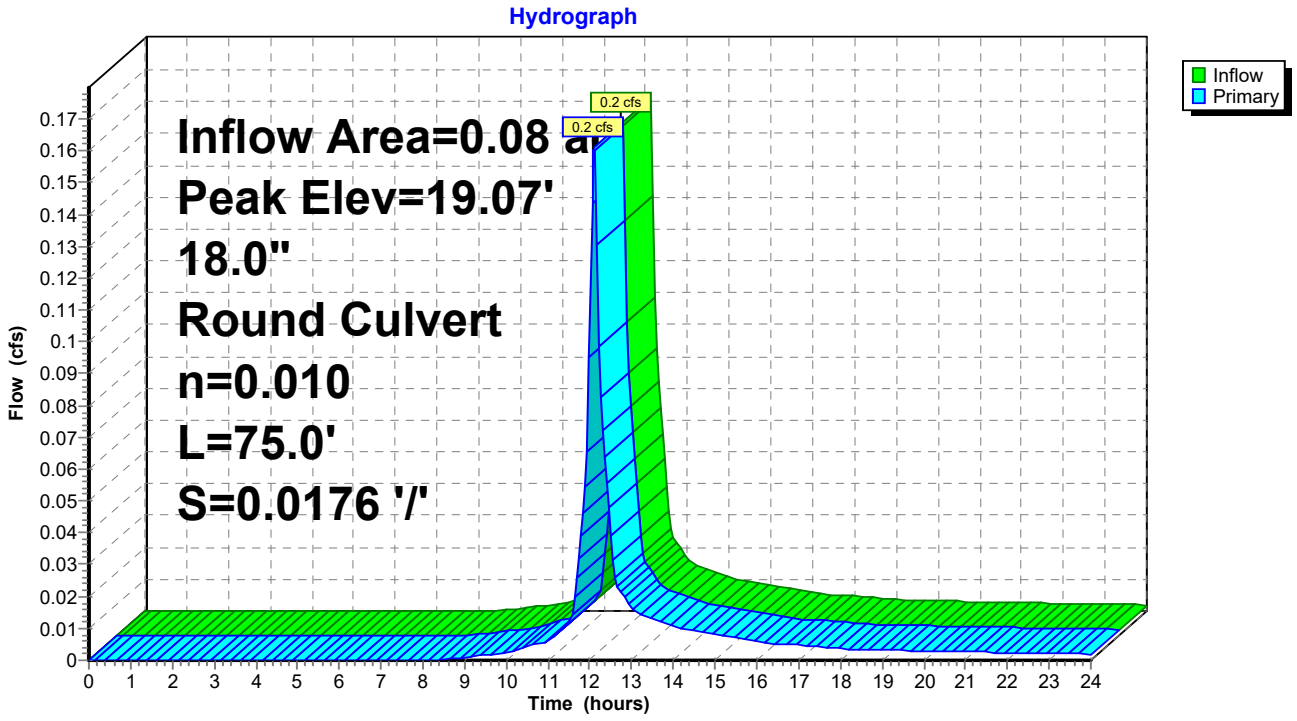
Inflow Area = 0.08 ac, 77.31% Impervious, Inflow Depth > 1.67" for 2-Year Storm event
Inflow = 0.2 cfs @ 12.09 hrs, Volume= 0.012 af
Outflow = 0.2 cfs @ 12.09 hrs, Volume= 0.012 af, Atten= 0%, Lag= 0.0 min
Primary = 0.2 cfs @ 12.09 hrs, Volume= 0.012 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Peak Elev= 19.07' @ 12.09 hrs
Flood Elev= 22.83'

Device	Routing	Invert	Outlet Devices
#1	Primary	18.87'	**18.0" Round Culvert** L= 75.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 18.87' / 17.55' S= 0.0176 '/' Cc= 0.900 n= 0.010 PVC, smooth interior, Flow Area= 1.77 sf

Primary OutFlow Max=0.2 cfs @ 12.09 hrs HW=19.06' TW=18.27' (Dynamic Tailwater)
1=Culvert (Inlet Controls 0.2 cfs @ 1.18 fps)

Pond 5P: CB5



Summary for Pond 6P: CB6

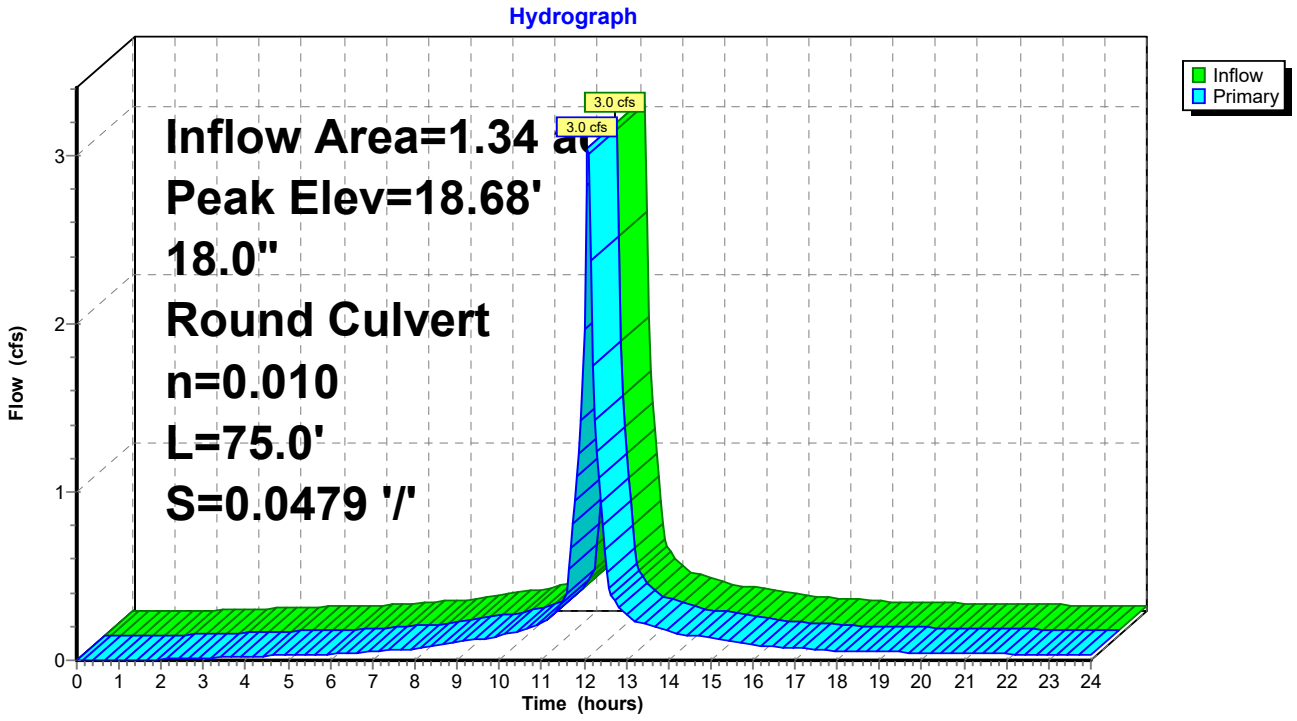
Inflow Area = 1.34 ac, 82.48% Impervious, Inflow Depth > 2.25" for 2-Year Storm event
Inflow = 3.0 cfs @ 12.09 hrs, Volume= 0.251 af
Outflow = 3.0 cfs @ 12.09 hrs, Volume= 0.251 af, Atten= 0%, Lag= 0.0 min
Primary = 3.0 cfs @ 12.09 hrs, Volume= 0.251 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Peak Elev= 18.68' @ 12.12 hrs
Flood Elev= 22.50'

Device	Routing	Invert	Outlet Devices
#1	Primary	17.59'	**18.0" Round Culvert** L= 75.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 17.59' / 14.00' S= 0.0479 '/' Cc= 0.900 n= 0.010 PVC, smooth interior, Flow Area= 1.77 sf

Primary OutFlow Max=2.3 cfs @ 12.09 hrs HW=18.61' TW=18.35' (Dynamic Tailwater)
1=Culvert (Outlet Controls 2.3 cfs @ 2.49 fps)

Pond 6P: CB6



Summary for Pond 7P: CB7

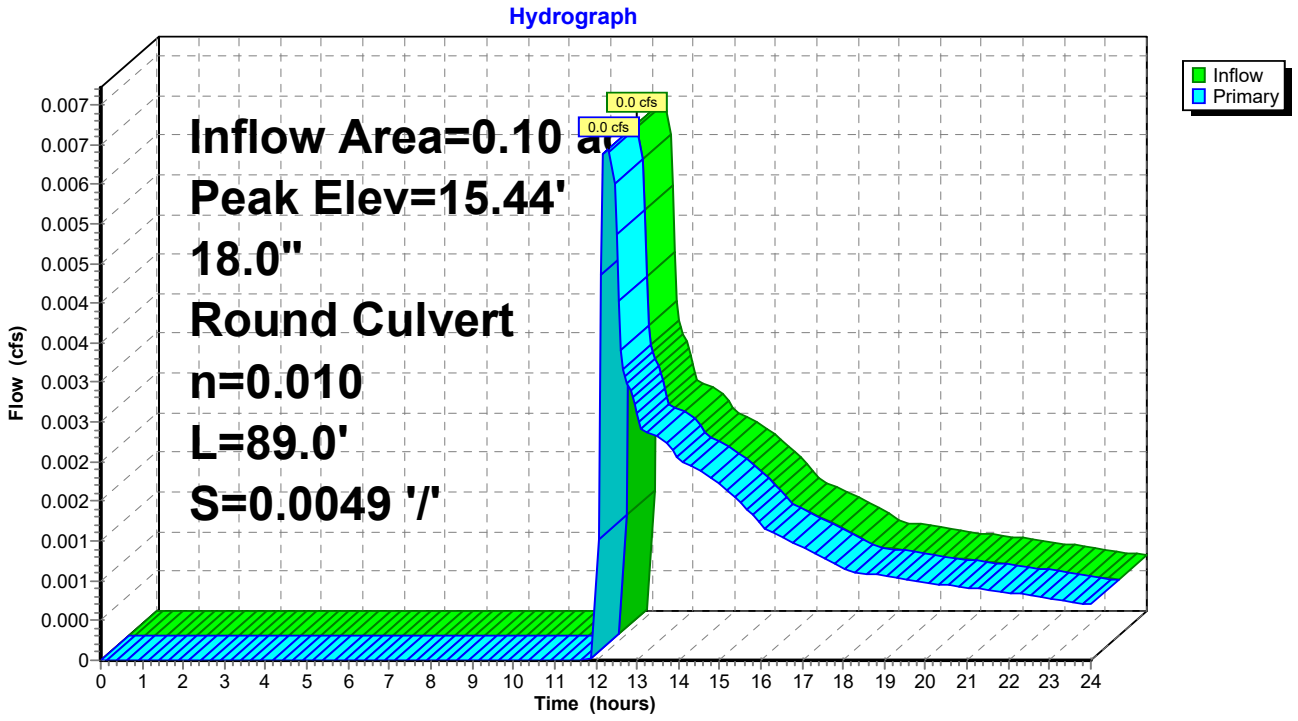
Inflow Area = 0.10 ac, 24.06% Impervious, Inflow Depth > 0.19" for 2-Year Storm event
Inflow = 0.0 cfs @ 12.30 hrs, Volume= 0.002 af
Outflow = 0.0 cfs @ 12.30 hrs, Volume= 0.002 af, Atten= 0%, Lag= 0.0 min
Primary = 0.0 cfs @ 12.30 hrs, Volume= 0.002 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Peak Elev= 15.44' @ 12.30 hrs
Flood Elev= 24.75'

Device	Routing	Invert	Outlet Devices
#1	Primary	15.40'	**18.0" Round Culvert** L= 89.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 15.40' / 14.96' S= 0.0049 '/' Cc= 0.900 n= 0.010 PVC, smooth interior, Flow Area= 1.77 sf

Primary OutFlow Max=0.0 cfs @ 12.30 hrs HW=15.44' TW=14.90' (Dynamic Tailwater)
↑**1=Culvert** (Barrel Controls 0.0 cfs @ 0.76 fps)

Pond 7P: CB7



Summary for Pond 8P: CB8

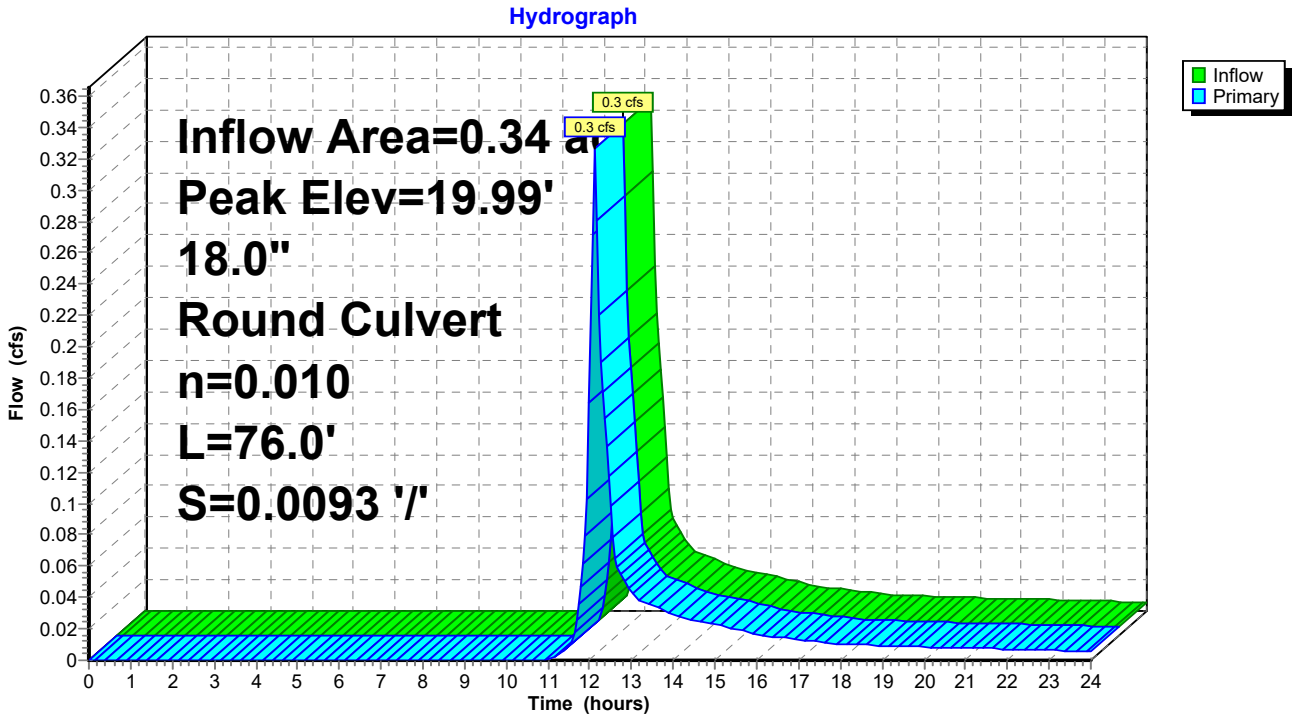
Inflow Area = 0.34 ac, 57.10% Impervious, Inflow Depth > 0.90" for 2-Year Storm event
Inflow = 0.3 cfs @ 12.10 hrs, Volume= 0.025 af
Outflow = 0.3 cfs @ 12.10 hrs, Volume= 0.025 af, Atten= 0%, Lag= 0.0 min
Primary = 0.3 cfs @ 12.10 hrs, Volume= 0.025 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Peak Elev= 19.99' @ 12.10 hrs
Flood Elev= 23.60'

Device	Routing	Invert	Outlet Devices
#1	Primary	19.71'	**18.0" Round Culvert** L= 76.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 19.71' / 19.00' S= 0.0093 '/' Cc= 0.900 n= 0.010 PVC, smooth interior, Flow Area= 1.77 sf

Primary OutFlow Max=0.3 cfs @ 12.10 hrs HW=19.99' TW=19.25' (Dynamic Tailwater)
1=Culvert (Inlet Controls 0.3 cfs @ 1.42 fps)

Pond 8P: CB8



Summary for Pond 9P: DMH1

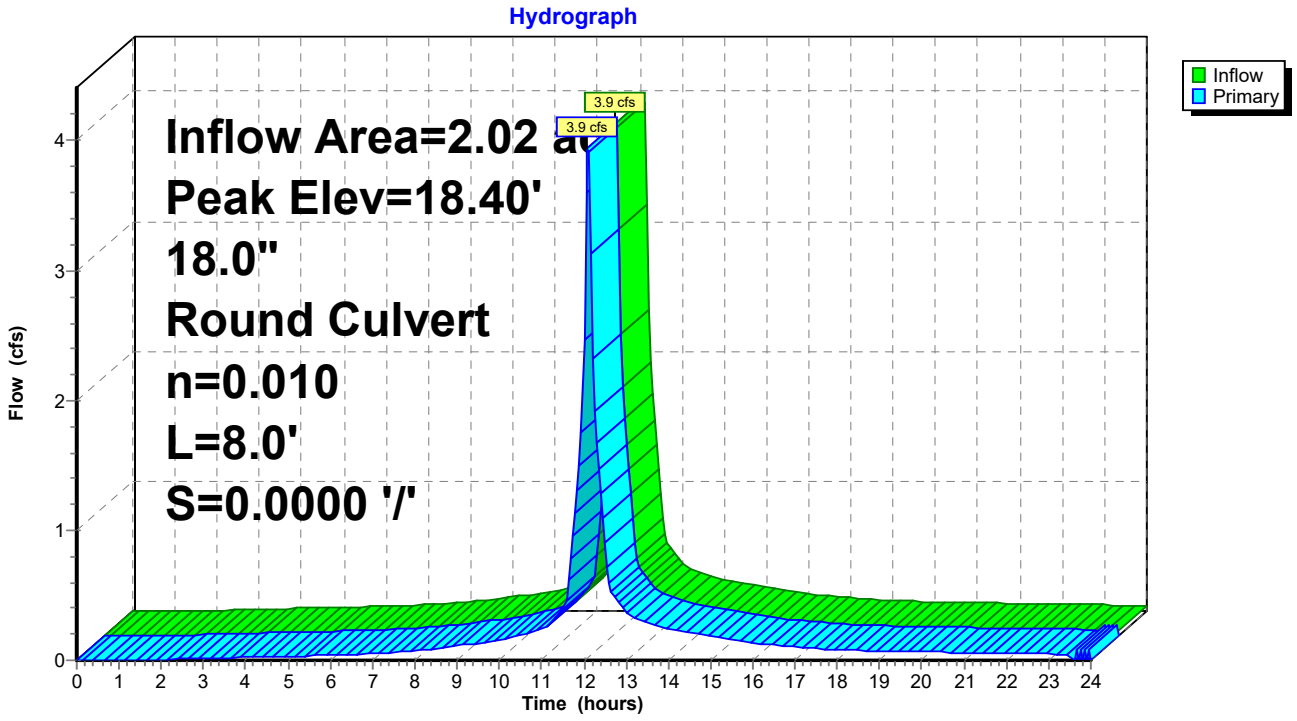
Inflow Area = 2.02 ac, 76.40% Impervious, Inflow Depth > 1.89" for 2-Year Storm event
Inflow = 3.9 cfs @ 12.09 hrs, Volume= 0.319 af
Outflow = 3.9 cfs @ 12.09 hrs, Volume= 0.319 af, Atten= 0%, Lag= 0.0 min
Primary = 3.9 cfs @ 12.09 hrs, Volume= 0.319 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Peak Elev= 18.40' @ 12.11 hrs
Flood Elev= 22.50'

Device	Routing	Invert	Outlet Devices
#1	Primary	13.58'	**18.0" Round Culvert** L= 8.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 13.58' / 13.58' S= 0.0000 '/' Cc= 0.900 n= 0.010 PVC, smooth interior, Flow Area= 1.77 sf

Primary OutFlow Max=3.4 cfs @ 12.09 hrs HW=18.36' TW=18.10' (Dynamic Tailwater)
1=Culvert (Inlet Controls 3.4 cfs @ 1.94 fps)

Pond 9P: DMH1



Summary for Pond 13P: CMP Peak Detention

Inflow	=	3.9 cfs @	12.10 hrs, Volume=	0.178 af
Outflow	=	1.5 cfs @	12.34 hrs, Volume=	0.178 af, Atten= 60%, Lag= 14.2 min
Primary	=	1.5 cfs @	12.34 hrs, Volume=	0.178 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Peak Elev= 15.33' @ 12.34 hrs Surf.Area= 1,224 sf Storage= 1,904 cf
Flood Elev= 20.87' Surf.Area= 1,224 sf Storage= 4,269 cf

Plug-Flow detention time= 12.7 min calculated for 0.178 af (100% of inflow)
Center-of-Mass det. time= 12.7 min (809.1 - 796.4)

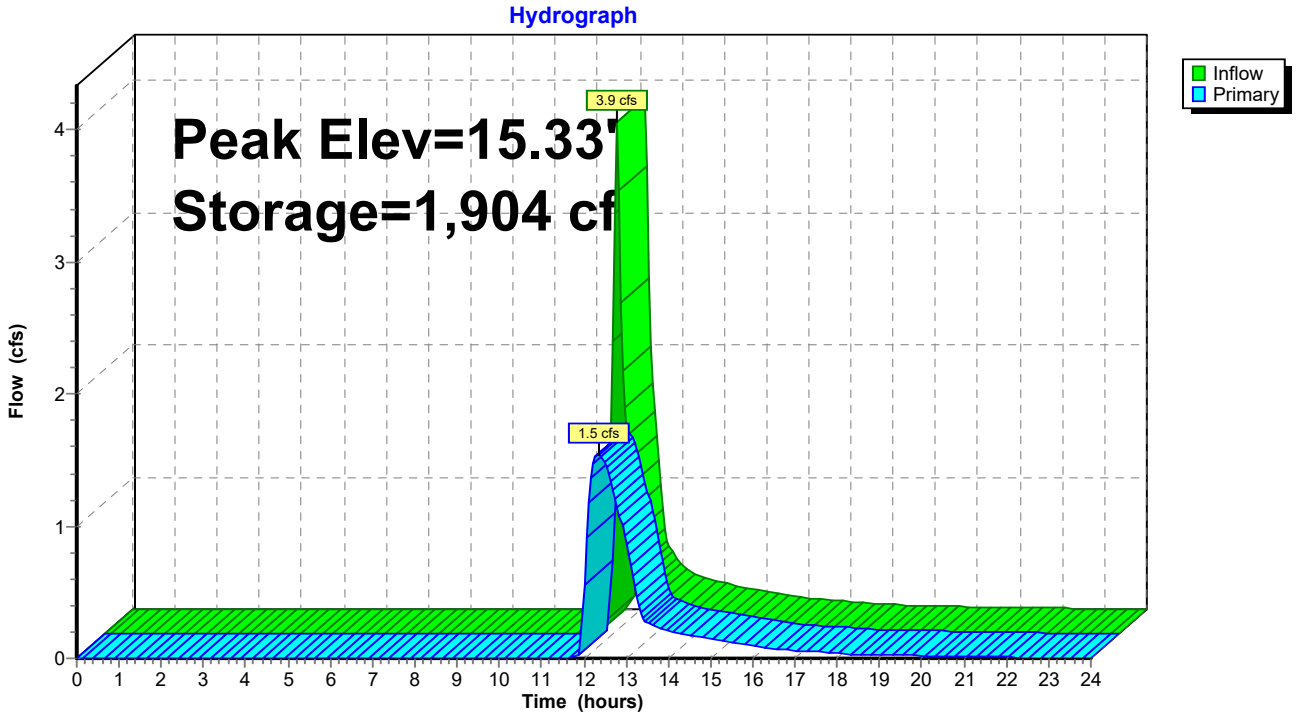
Volume	Invert	Avail.Storage	Storage Description
#1A	12.58'	0 cf	**8.00'W x 153.00'L x 6.00'H Field A** 7,344 cf Overall - 4,268 cf Embedded = 3,076 cf x 0.0% Voids
#2A	12.58'	4,268 cf	**CMP Round 72** x 7 Inside #1 Effective Size= 72.0"W x 72.0"H => 28.26 sf x 20.00'L = 565.2 cf Overall Size= 72.0"W x 72.0"H x 20.00'L Row Length Adjustment= +11.00' x 28.26 sf x 1 rows
		4,268 cf	Total Available Storage

Storage Group A created with Chamber Wizard

Device	Routing	Invert	Outlet Devices
#1	Primary	12.58'	**18.0" Round Culvert** L= 20.0' CMP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 12.58' / 12.20' S= 0.0190 '/' Cc= 0.900 n= 0.010 PVC, smooth interior, Flow Area= 1.77 sf
#2	Device 1	12.58'	**6.1" Vert. Orifice/Grate** C= 0.600
#3	Device 1	15.58'	**5.7" Vert. Orifice/Grate** C= 0.600
#4	Device 1	16.66'	**4.8" Vert. Orifice/Grate** C= 0.600
#5	Device 1	17.92'	**Custom Weir/Orifice, Cv= 2.62 (C= 3.28)** Head (feet) 3.21 3.27 3.33 3.39 3.45 3.51 3.57 3.63 3.69 3.75 3.81 3.87 Width (feet) 3.75 3.60 3.43 3.26 3.06 2.85 2.62 2.35 2.05 1.68 1.19 0.00

Primary OutFlow Max=1.5 cfs @ 12.34 hrs HW=15.32' TW=12.66' (Dynamic Tailwater)
- **1=Culvert** (Passes 1.5 cfs of 12.0 cfs potential flow)
  - **2=Orifice/Grate** (Orifice Controls 1.5 cfs @ 7.59 fps)
  - **3=Orifice/Grate** (Controls 0.0 cfs)
  - **4=Orifice/Grate** (Controls 0.0 cfs)
  - **5=Custom Weir/Orifice** (Controls 0.0 cfs)

Pond 13P: CMP Peak Detention



Summary for Pond 14P: CONTECH WQv CMP Det & SF System

Inflow Area = 2.02 ac, 76.40% Impervious, Inflow Depth > 1.89" for 2-Year Storm event
Inflow = 3.9 cfs @ 12.09 hrs, Volume= 0.319 af
Outflow = 3.9 cfs @ 12.10 hrs, Volume= 0.240 af, Atten= 0%, Lag= 0.9 min
Primary = 0.0 cfs @ 12.10 hrs, Volume= 0.061 af
Secondary = 3.9 cfs @ 12.10 hrs, Volume= 0.178 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Starting Elev= 13.58' Surf.Area= 1,313 sf Storage= 186 cf
Peak Elev= 18.11' @ 12.10 hrs Surf.Area= 1,313 sf Storage= 3,942 cf (3,756 cf above start)
Flood Elev= 20.87' Surf.Area= 1,313 sf Storage= 4,110 cf (3,924 cf above start)

Plug-Flow detention time= 157.5 min calculated for 0.235 af (74% of inflow)
Center-of-Mass det. time= 55.9 min (833.8 - 777.9)

Volume	Invert	Avail.Storage	Storage Description
#1A	13.08'	0 cf	**7.50'W x 175.00'L x 5.50'H Field A** 7,219 cf Overall - 4,108 cf Embedded = 3,110 cf x 0.0% Voids
#2A	13.08'	4,108 cf	**CMP Round 66** x 8 Inside #1 Effective Size= 66.0"W x 66.0"H => 23.75 sf x 20.00'L = 475.0 cf Overall Size= 66.0"W x 66.0"H x 20.00'L Row Length Adjustment= +13.00' x 23.75 sf x 1 rows
		4,108 cf	Total Available Storage

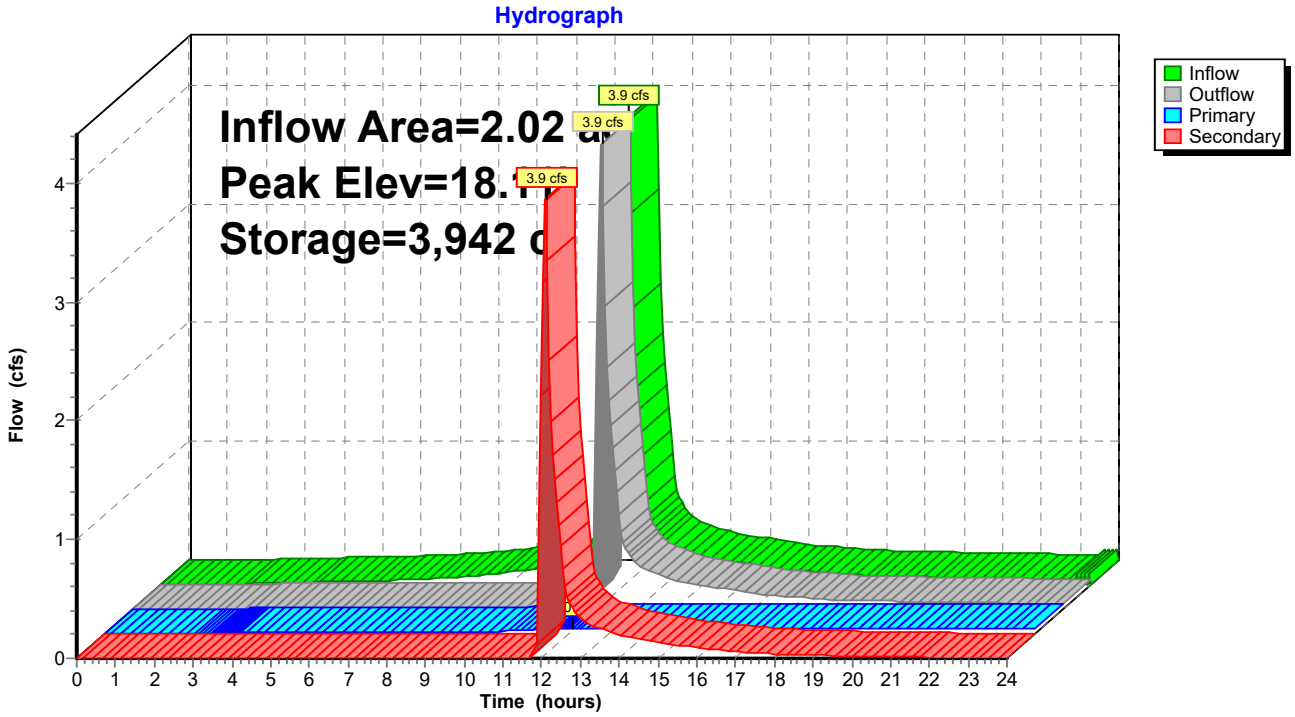
Storage Group A created with Chamber Wizard

Device	Routing	Invert	Outlet Devices
#1	Device 2	13.58'	**12.0" Round Culvert** L= 3.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 13.58' / 13.56' S= 0.0067 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.79 sf
#2	Primary	12.58'	**Tube/Siphon/Float Valve X 7.00** Starts@15.33' Breaks@13.25' 0.336" Diameter, C= 0.600, 0.263" Trickle Diameter
#3	Secondary	17.65'	**Custom Weir/Orifice, Cv= 2.62 (C= 3.28)** Head (feet) 2.44 2.49 2.54 2.60 2.66 2.71 2.76 2.82 2.87 2.93 2.99 3.04 3.09 3.15 3.20 3.26 3.32 3.37 Width (feet) 4.13 4.03 3.93 3.82 3.70 3.57 3.44 3.30 3.15 2.98 2.81 2.61 2.40 2.16 1.88 1.54 1.09 0.00

Primary OutFlow Max=0.0 cfs @ 12.10 hrs HW=18.11' TW=12.59' (Dynamic Tailwater)
└─**2=Tube/Siphon/Float Valve** (Orifice Controls 0.0 cfs @ 11.32 fps)
└─**1=Culvert** (Passes 0.0 cfs of 7.6 cfs potential flow)

Secondary OutFlow Max=3.8 cfs @ 12.10 hrs HW=18.11' TW=14.33' (Dynamic Tailwater)
└─**3=Custom Weir/Orifice** (Weir Controls 3.8 cfs @ 2.29 fps)

Pond 14P: CONTECH WQv CMP Det & SF System



Summary for Pond 17P: DMH2

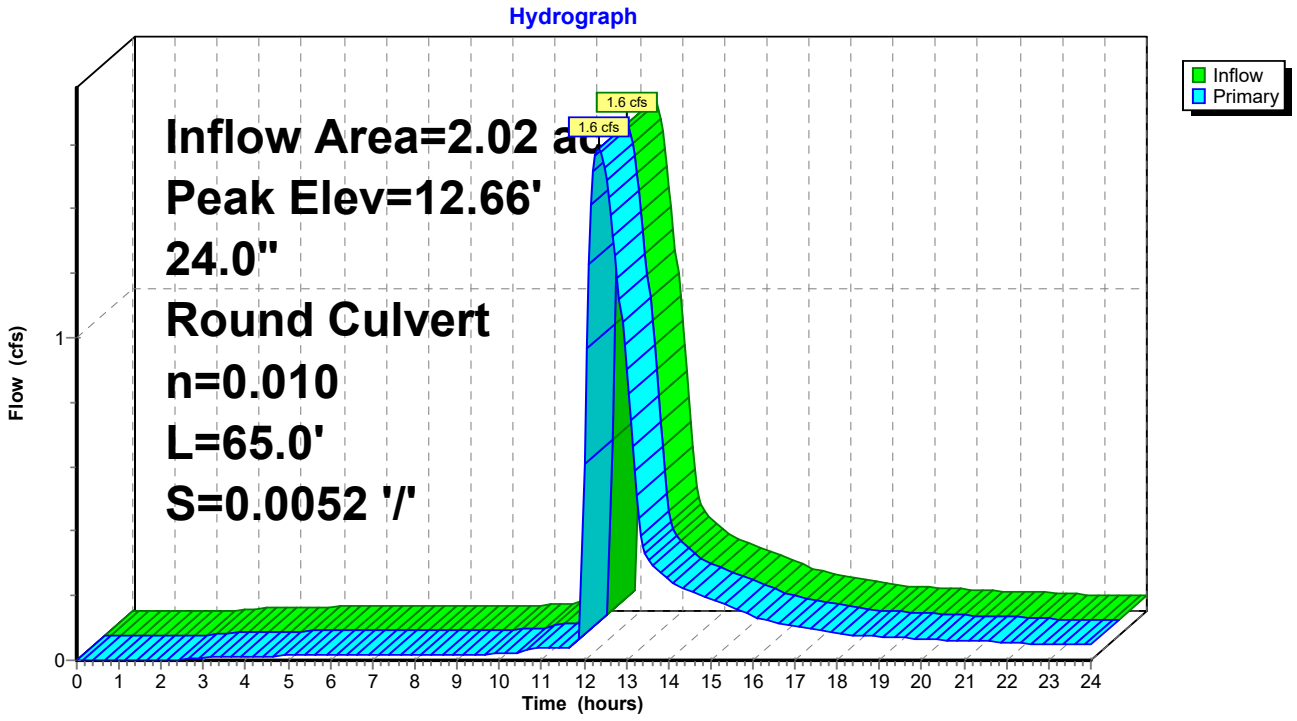
Inflow Area = 2.02 ac, 76.40% Impervious, Inflow Depth > 1.42" for 2-Year Storm event
Inflow = 1.6 cfs @ 12.34 hrs, Volume= 0.240 af
Outflow = 1.6 cfs @ 12.34 hrs, Volume= 0.240 af, Atten= 0%, Lag= 0.0 min
Primary = 1.6 cfs @ 12.34 hrs, Volume= 0.240 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Peak Elev= 12.66' @ 12.35 hrs
Flood Elev= 21.65'

Device	Routing	Invert	Outlet Devices
#1	Primary	12.07'	**24.0" Round Culvert** L= 65.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 12.07' / 11.73' S= 0.0052 '/' Cc= 0.900 n= 0.010 PVC, smooth interior, Flow Area= 3.14 sf

Primary OutFlow Max=1.6 cfs @ 12.34 hrs HW=12.66' TW=12.22' (Dynamic Tailwater)
1=Culvert (Outlet Controls 1.6 cfs @ 3.07 fps)

Pond 17P: DMH2



Summary for Pond 18P: DMH3

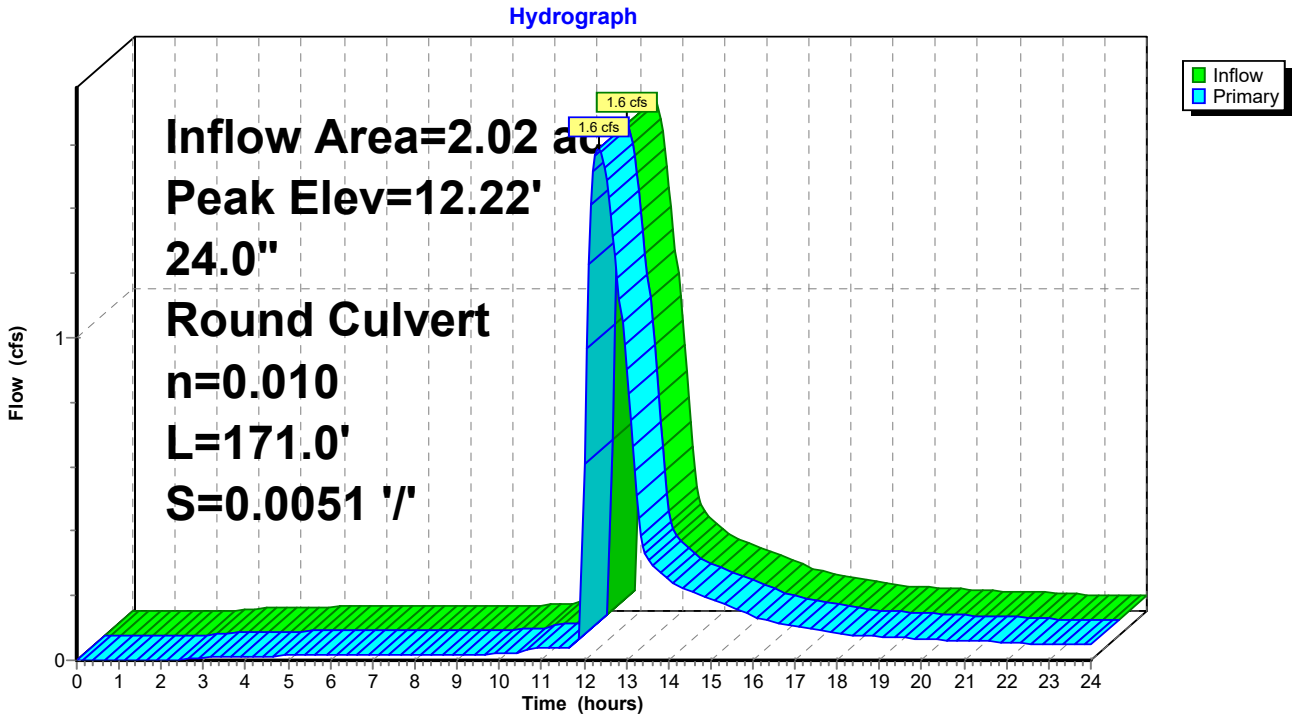
Inflow Area = 2.02 ac, 76.40% Impervious, Inflow Depth > 1.42" for 2-Year Storm event
Inflow = 1.6 cfs @ 12.34 hrs, Volume= 0.240 af
Outflow = 1.6 cfs @ 12.34 hrs, Volume= 0.240 af, Atten= 0%, Lag= 0.0 min
Primary = 1.6 cfs @ 12.34 hrs, Volume= 0.240 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Peak Elev= 12.22' @ 12.34 hrs
Flood Elev= 20.85'

Device	Routing	Invert	Outlet Devices
#1	Primary	11.63'	**24.0" Round Culvert** L= 171.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 11.63' / 10.75' S= 0.0051 '/' Cc= 0.900 n= 0.010 PVC, smooth interior, Flow Area= 3.14 sf

Primary OutFlow Max=1.6 cfs @ 12.34 hrs HW=12.22' TW=0.00' (Dynamic Tailwater)
1=Culvert (Inlet Controls 1.6 cfs @ 2.06 fps)

Pond 18P: DMH3



Summary for Pond 22P: Ex DMH3

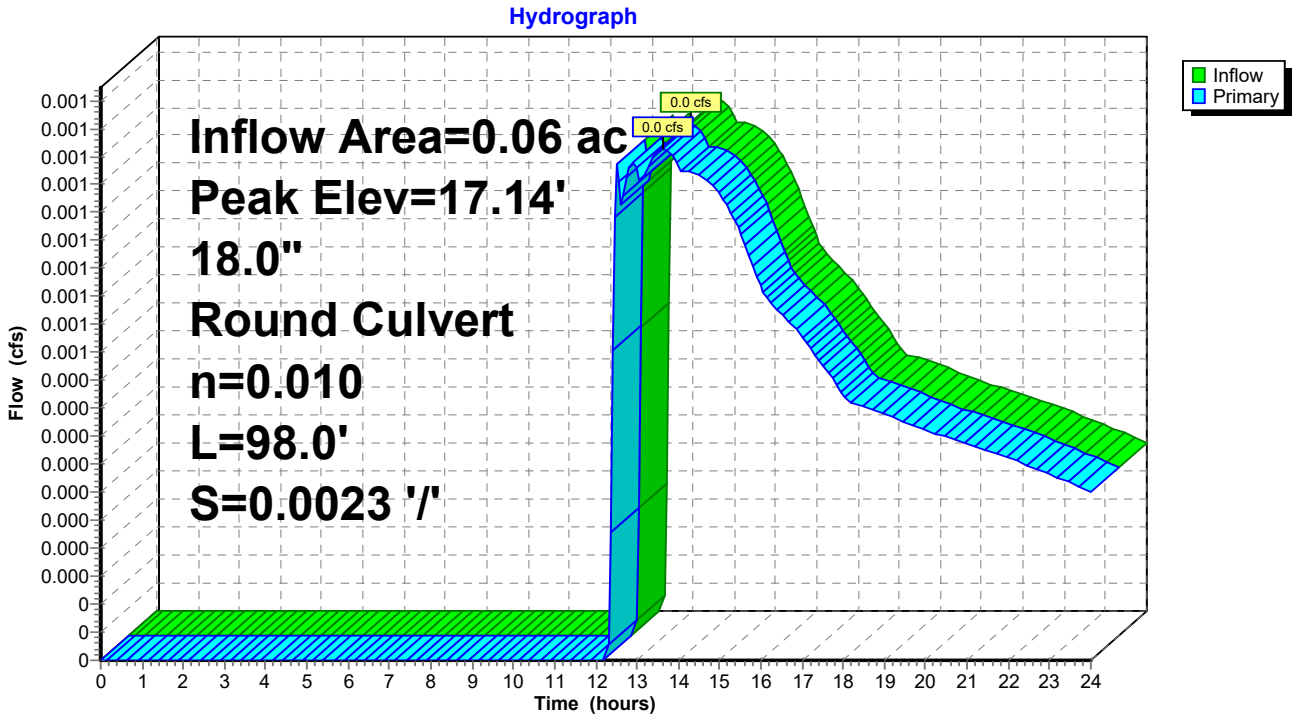
Inflow Area = 0.06 ac, 17.99% Impervious, Inflow Depth > 0.11" for 2-Year Storm event
Inflow = 0.0 cfs @ 13.61 hrs, Volume= 0.001 af
Outflow = 0.0 cfs @ 13.61 hrs, Volume= 0.001 af, Atten= 0%, Lag= 0.0 min
Primary = 0.0 cfs @ 13.61 hrs, Volume= 0.001 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Peak Elev= 17.14' @ 13.61 hrs
Flood Elev= 24.92'

Device	Routing	Invert	Outlet Devices
#1	Primary	17.12'	**18.0" Round Culvert** L= 98.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 17.12' / 16.89' S= 0.0023 '/' Cc= 0.900 n= 0.010 PVC, smooth interior, Flow Area= 1.77 sf

Primary OutFlow Max=0.0 cfs @ 13.61 hrs HW=17.14' TW=16.77' (Dynamic Tailwater)
1=Culvert (Barrel Controls 0.0 cfs @ 0.32 fps)

Pond 22P: Ex DMH3



Summary for Pond 23P: Ex CB3

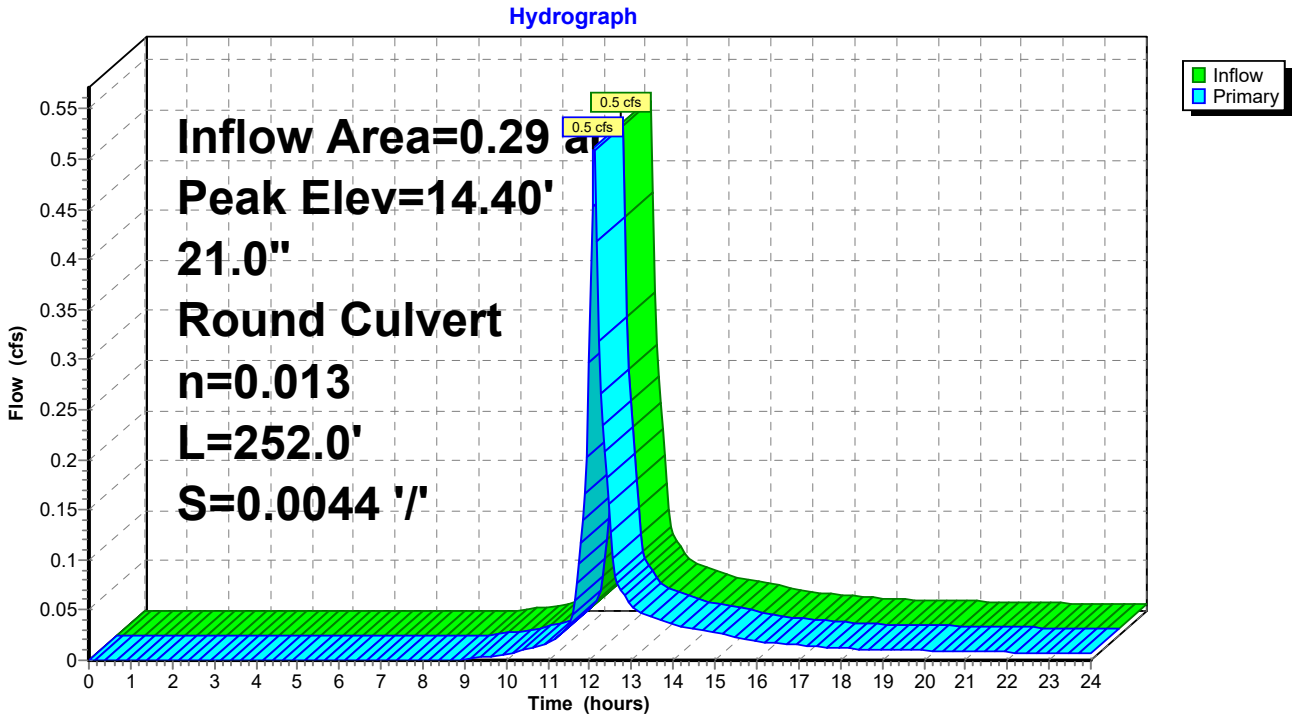
Inflow Area = 0.29 ac, 73.97% Impervious, Inflow Depth > 1.53" for 2-Year Storm event
Inflow = 0.5 cfs @ 12.09 hrs, Volume= 0.037 af
Outflow = 0.5 cfs @ 12.09 hrs, Volume= 0.037 af, Atten= 0%, Lag= 0.0 min
Primary = 0.5 cfs @ 12.09 hrs, Volume= 0.037 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Peak Elev= 14.40' @ 12.09 hrs
Flood Elev= 23.60'

Device	Routing	Invert	Outlet Devices
#1	Primary	14.05'	**21.0" Round Culvert** L= 252.0' CMP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 14.05' / 12.94' S= 0.0044 '/' Cc= 0.900 n= 0.013 Cast iron, coated, Flow Area= 2.41 sf

Primary OutFlow Max=0.5 cfs @ 12.09 hrs HW=14.40' TW=0.00' (Dynamic Tailwater)
1=Culvert (Barrel Controls 0.5 cfs @ 2.21 fps)

Pond 23P: Ex CB3



Summary for Pond 24P: Ex DMH2

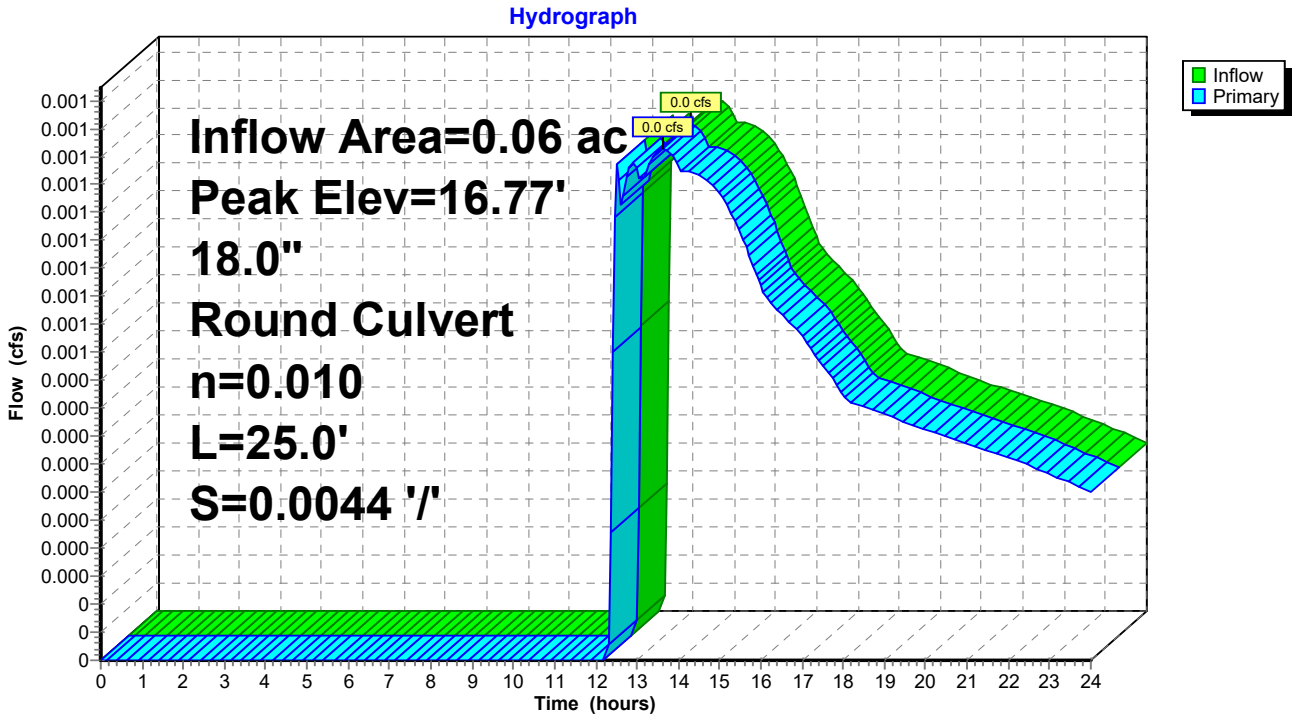
Inflow Area = 0.06 ac, 17.99% Impervious, Inflow Depth > 0.11" for 2-Year Storm event
Inflow = 0.0 cfs @ 13.61 hrs, Volume= 0.001 af
Outflow = 0.0 cfs @ 13.62 hrs, Volume= 0.001 af, Atten= 0%, Lag= 0.3 min
Primary = 0.0 cfs @ 13.62 hrs, Volume= 0.001 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Peak Elev= 16.77' @ 13.62 hrs
Flood Elev= 25.38'

Device	Routing	Invert	Outlet Devices
#1	Primary	16.75'	**18.0" Round Culvert** L= 25.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 16.75' / 16.64' S= 0.0044 '/' Cc= 0.900 n= 0.010 PVC, smooth interior, Flow Area= 1.77 sf

Primary OutFlow Max=0.0 cfs @ 13.62 hrs HW=16.77' TW=16.55' (Dynamic Tailwater)
1=Culvert (Barrel Controls 0.0 cfs @ 0.40 fps)

Pond 24P: Ex DMH2



Summary for Pond 26P: DMH5

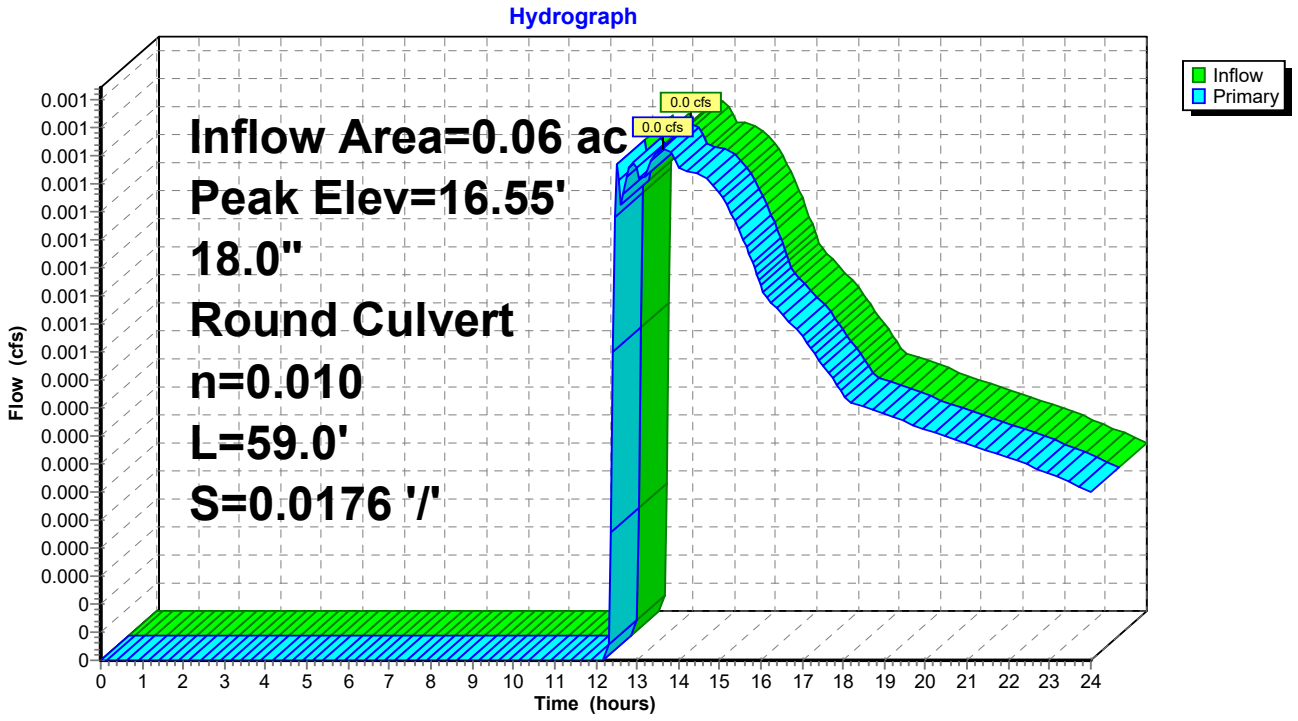
Inflow Area = 0.06 ac, 17.99% Impervious, Inflow Depth > 0.11" for 2-Year Storm event
Inflow = 0.0 cfs @ 13.62 hrs, Volume= 0.001 af
Outflow = 0.0 cfs @ 13.62 hrs, Volume= 0.001 af, Atten= 0%, Lag= 0.5 min
Primary = 0.0 cfs @ 13.62 hrs, Volume= 0.001 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Peak Elev= 16.55' @ 13.62 hrs
Flood Elev= 25.90'

Device	Routing	Invert	Outlet Devices
#1	Primary	16.54'	**18.0" Round Culvert** L= 59.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 16.54' / 15.50' S= 0.0176 '/' Cc= 0.900 n= 0.010 PVC, smooth interior, Flow Area= 1.77 sf

Primary OutFlow Max=0.0 cfs @ 13.62 hrs HW=16.55' TW=15.43' (Dynamic Tailwater)
1=Culvert (Inlet Controls 0.0 cfs @ 0.32 fps)

Pond 26P: DMH5



Summary for Pond 27P: DMH10

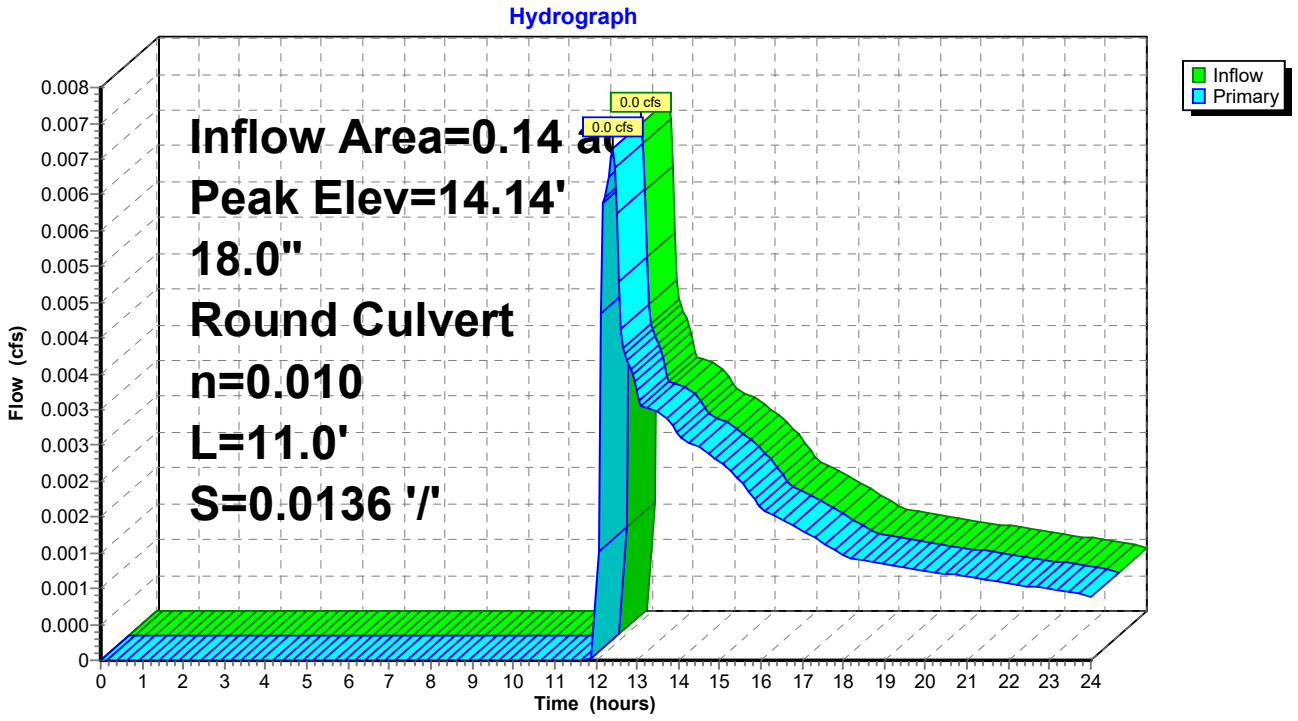
Inflow Area = 0.14 ac, 23.10% Impervious, Inflow Depth > 0.18" for 2-Year Storm event
Inflow = 0.0 cfs @ 12.39 hrs, Volume= 0.002 af
Outflow = 0.0 cfs @ 12.39 hrs, Volume= 0.002 af, Atten= 0%, Lag= 0.0 min
Primary = 0.0 cfs @ 12.39 hrs, Volume= 0.002 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Peak Elev= 14.14' @ 12.39 hrs
Flood Elev= 24.17'

Device	Routing	Invert	Outlet Devices
#1	Primary	14.10'	**18.0" Round Culvert** L= 11.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 14.10' / 13.95' S= 0.0136 '/' Cc= 0.900 n= 0.010 PVC, smooth interior, Flow Area= 1.77 sf

Primary OutFlow Max=0.0 cfs @ 12.39 hrs HW=14.14' TW=0.00' (Dynamic Tailwater)
1=Culvert (Inlet Controls 0.0 cfs @ 0.54 fps)

Pond 27P: DMH10



Summary for Pond 29P: Ex DMH4

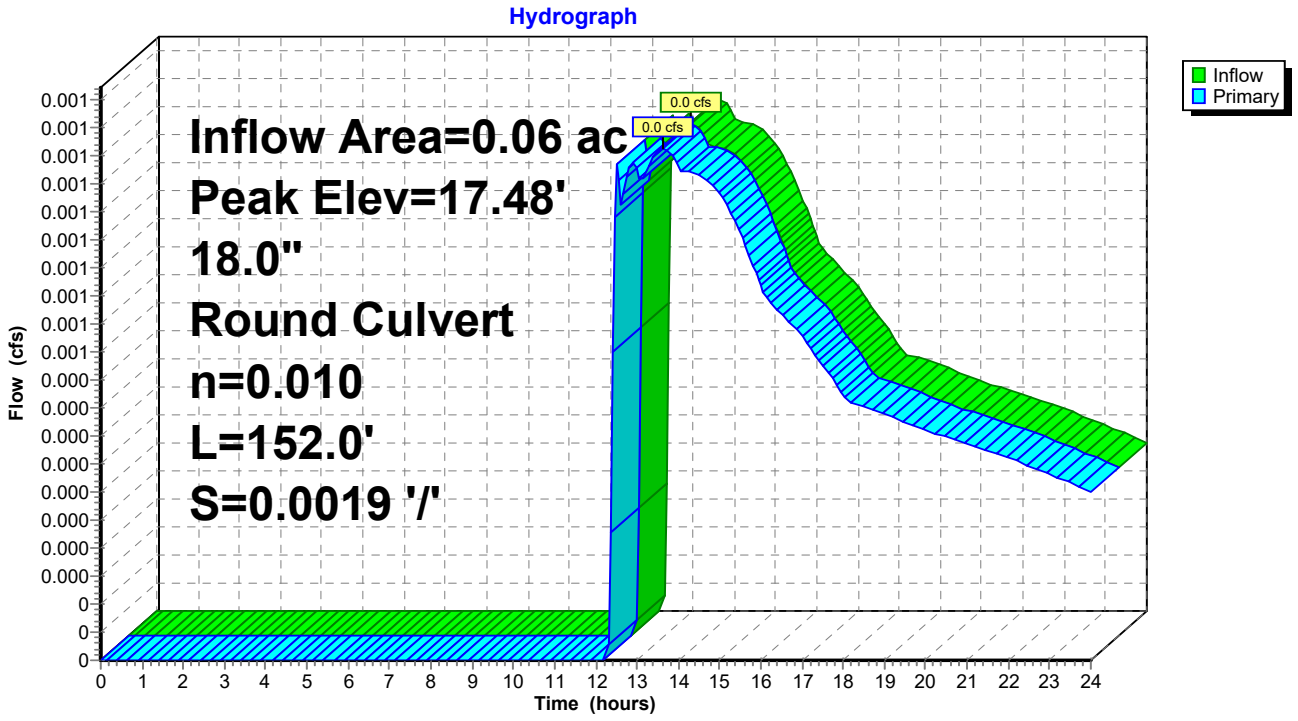
Inflow Area = 0.06 ac, 17.99% Impervious, Inflow Depth > 0.11" for 2-Year Storm event
Inflow = 0.0 cfs @ 13.63 hrs, Volume= 0.001 af
Outflow = 0.0 cfs @ 13.61 hrs, Volume= 0.001 af, Atten= 0%, Lag= 0.0 min
Primary = 0.0 cfs @ 13.61 hrs, Volume= 0.001 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Peak Elev= 17.48' @ 13.61 hrs
Flood Elev= 23.44'

Device	Routing	Invert	Outlet Devices
#1	Primary	17.46'	**18.0" Round Culvert** L= 152.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 17.46' / 17.17' S= 0.0019 '/' Cc= 0.900 n= 0.010 PVC, smooth interior, Flow Area= 1.77 sf

Primary OutFlow Max=0.0 cfs @ 13.61 hrs HW=17.48' TW=17.14' (Dynamic Tailwater)
1=Culvert (Barrel Controls 0.0 cfs @ 0.30 fps)

Pond 29P: Ex DMH4

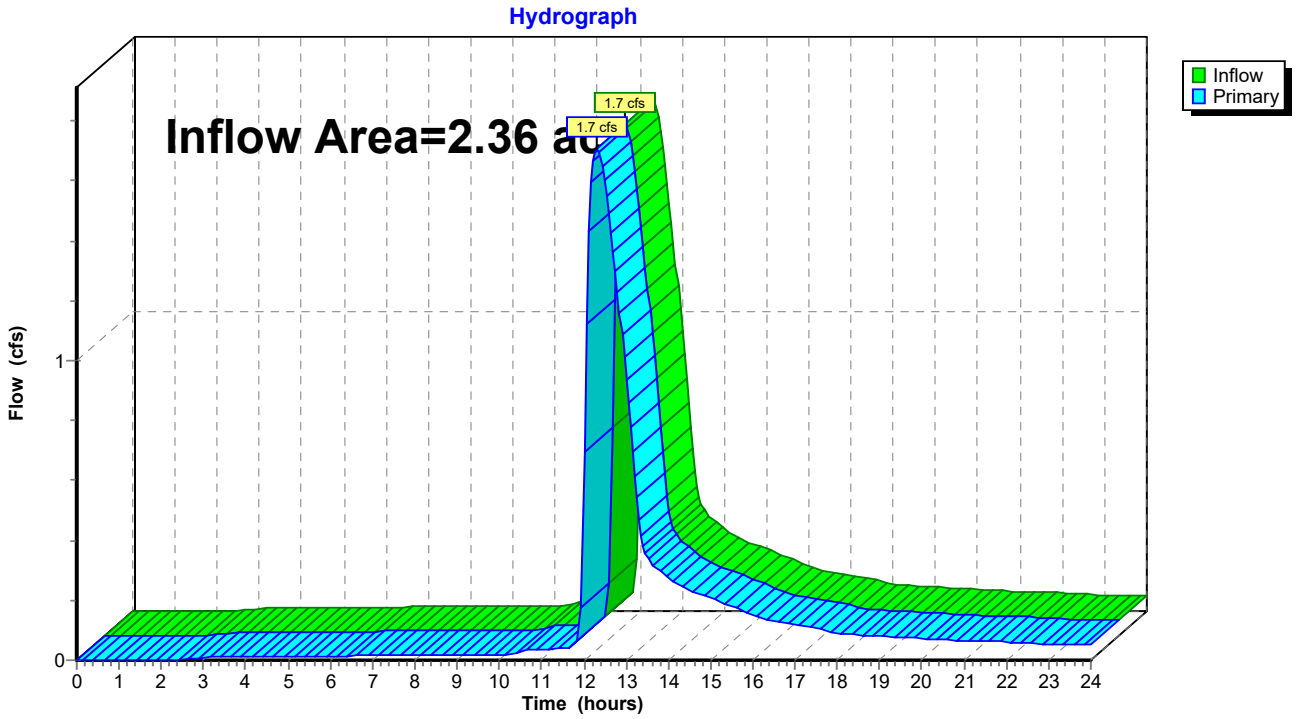


Summary for Link SP1: Forest Ave Storm Drain

Inflow Area = 2.36 ac, 72.31% Impervious, Inflow Depth > 1.31" for 2-Year Storm event
Inflow = 1.7 cfs @ 12.30 hrs, Volume= 0.257 af
Primary = 1.7 cfs @ 12.30 hrs, Volume= 0.257 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs

Link SP1: Forest Ave Storm Drain

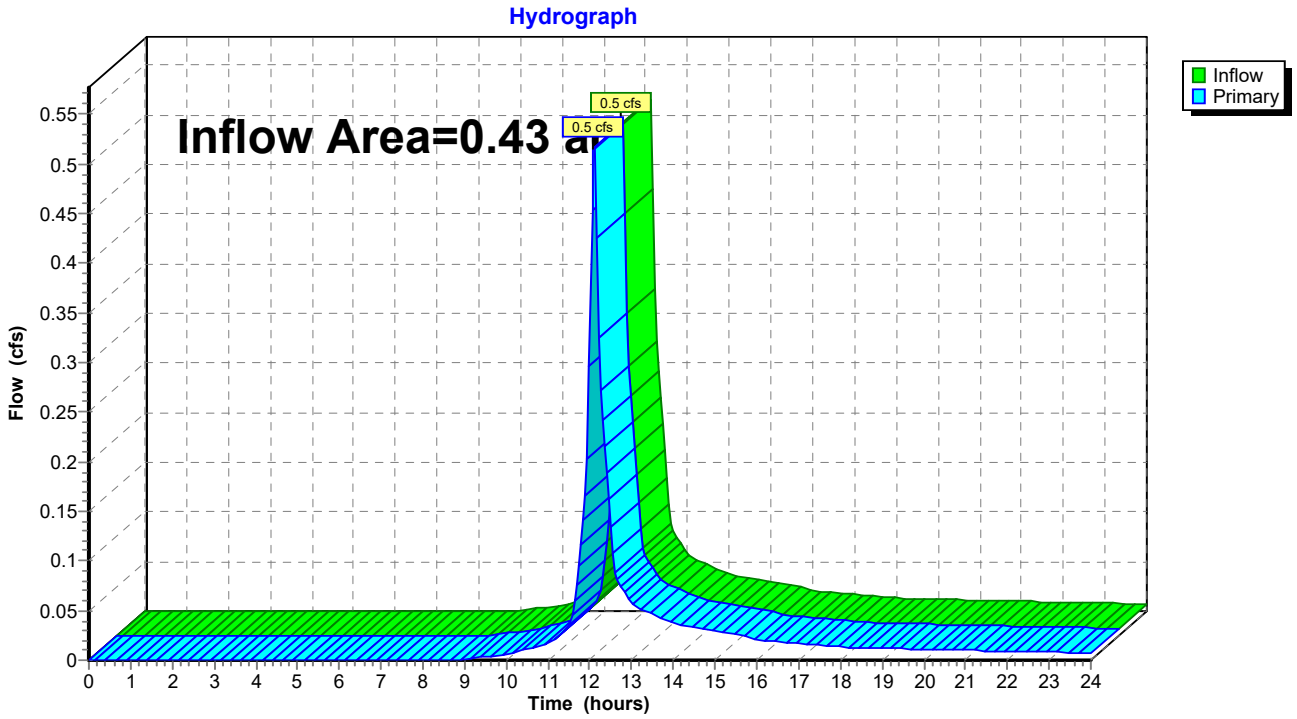


Summary for Link SP2: Combined Sewer

Inflow Area = 0.43 ac, 57.64% Impervious, Inflow Depth > 1.09" for 2-Year Storm event
Inflow = 0.5 cfs @ 12.10 hrs, Volume= 0.039 af
Primary = 0.5 cfs @ 12.10 hrs, Volume= 0.039 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs

Link SP2: Combined Sewer



Summary for Subcatchment 1S:

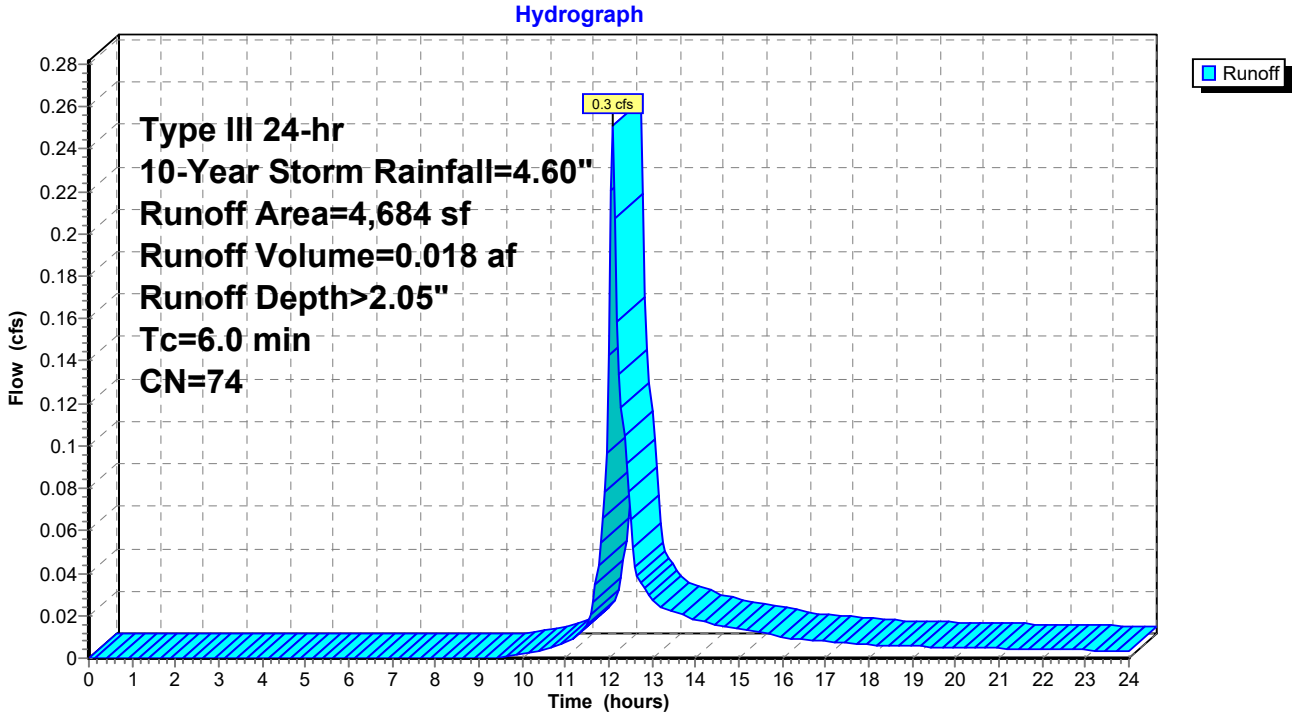
Runoff = 0.3 cfs @ 12.10 hrs, Volume= 0.018 af, Depth> 2.05"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Type III 24-hr 10-Year Storm Rainfall=4.60"

	Area (sf)	CN	Description
*	2,770	98	Impervious
	1,237	39	Grass cover, Good, HSG A
*	677	40	Porous Pavement
	4,684	74	Weighted Average
	1,914		40.86% Pervious Area
	2,770		59.14% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					**Direct Entry,**

Subcatchment 1S:



Summary for Subcatchment 2S:

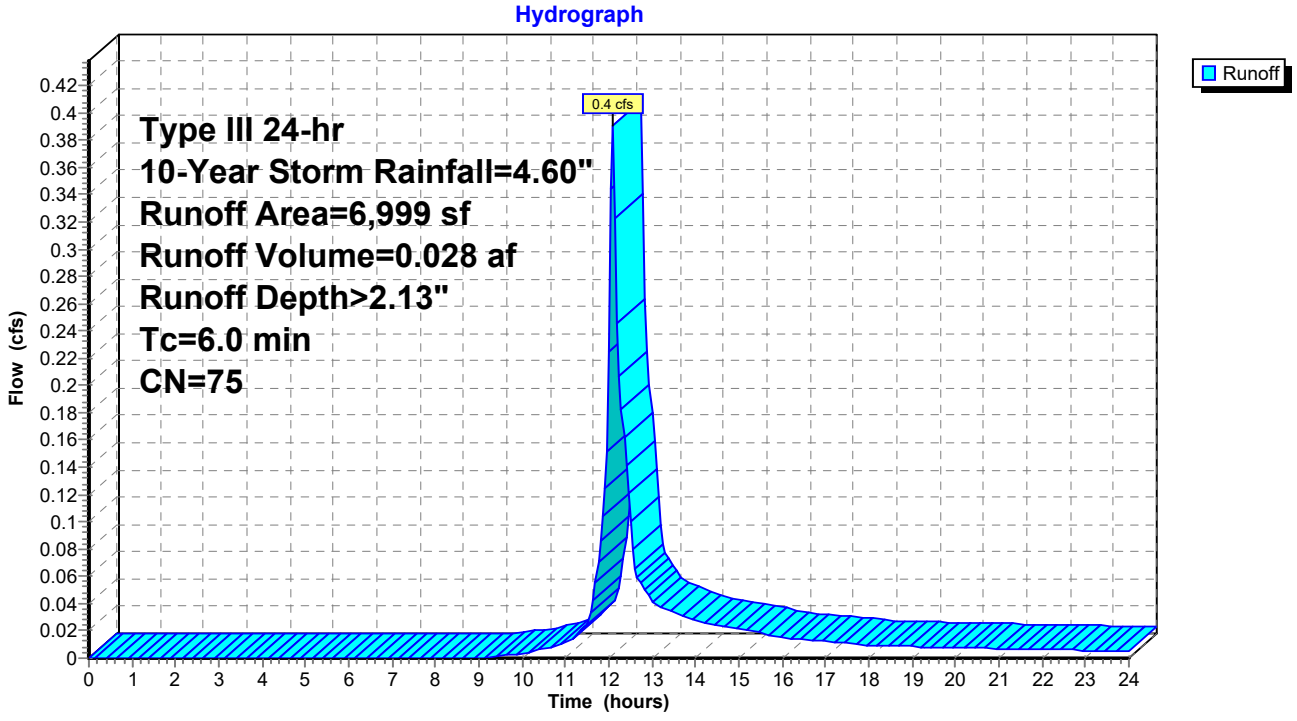
Runoff = 0.4 cfs @ 12.10 hrs, Volume= 0.028 af, Depth> 2.13"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Type III 24-hr 10-Year Storm Rainfall=4.60"

	Area (sf)	CN	Description
*	4,238	98	Impervious
	1,996	39	Grass cover, Good, HSG A
*	765	40	Porous Pavement
	6,999	75	Weighted Average
	2,761		39.45% Pervious Area
	4,238		60.55% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					**Direct Entry,**

Subcatchment 2S:



Summary for Subcatchment 3S:

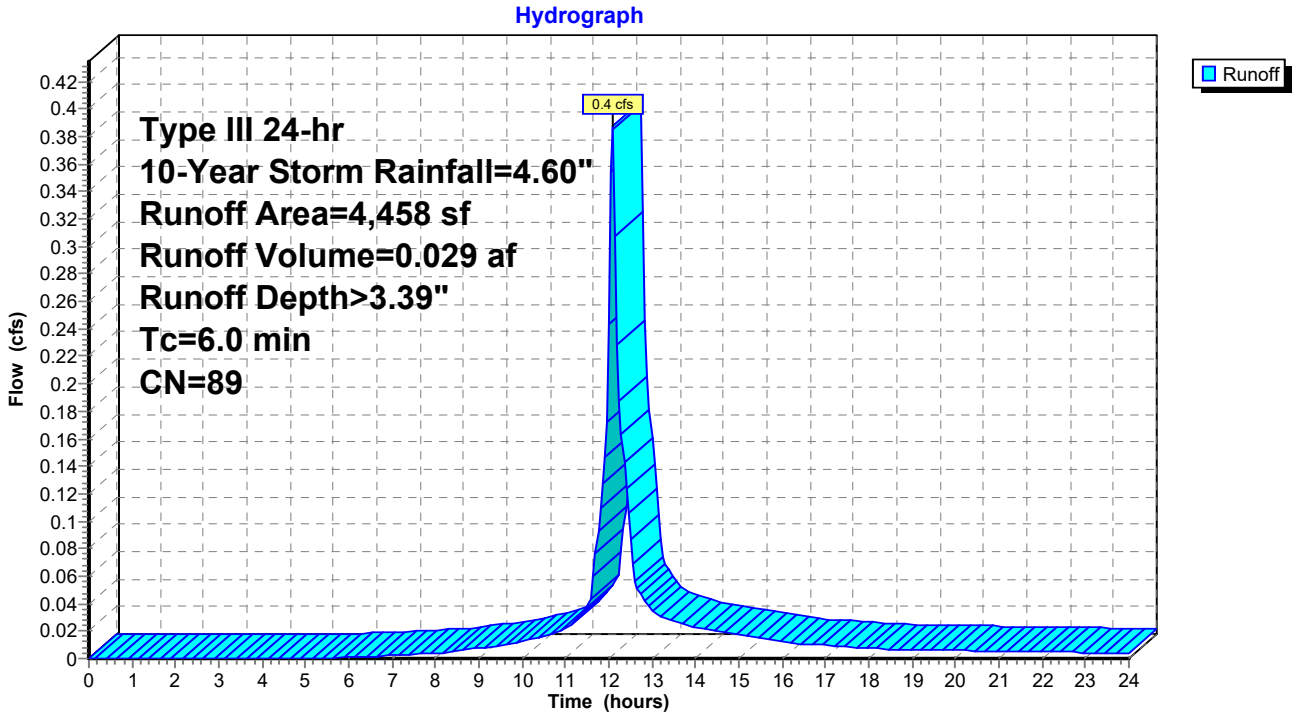
Runoff = 0.4 cfs @ 12.09 hrs, Volume= 0.029 af, Depth> 3.39"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Type III 24-hr 10-Year Storm Rainfall=4.60"

	Area (sf)	CN	Description
*	3,789	98	Impervious
	669	39	Grass cover, Good, HSG A
	4,458	89	Weighted Average
	669		15.01% Pervious Area
	3,789		84.99% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					**Direct Entry,**

Subcatchment 3S:



Summary for Subcatchment 4S:

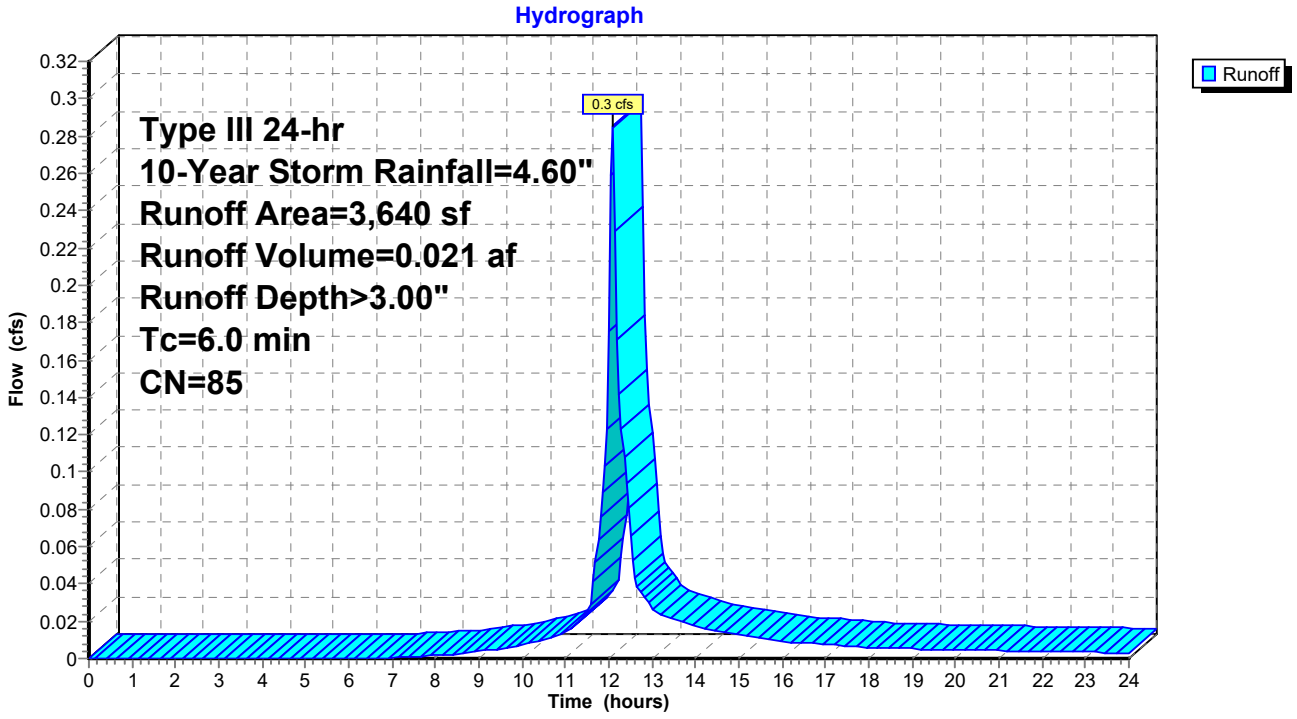
Runoff = 0.3 cfs @ 12.09 hrs, Volume= 0.021 af, Depth> 3.00"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Type III 24-hr 10-Year Storm Rainfall=4.60"

	Area (sf)	CN	Description
*	2,814	98	Impervious
	826	39	Grass cover, Good, HSG A
	3,640	85	Weighted Average
	826		22.69% Pervious Area
	2,814		77.31% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					**Direct Entry,**

Subcatchment 4S:



Summary for Subcatchment 5S:

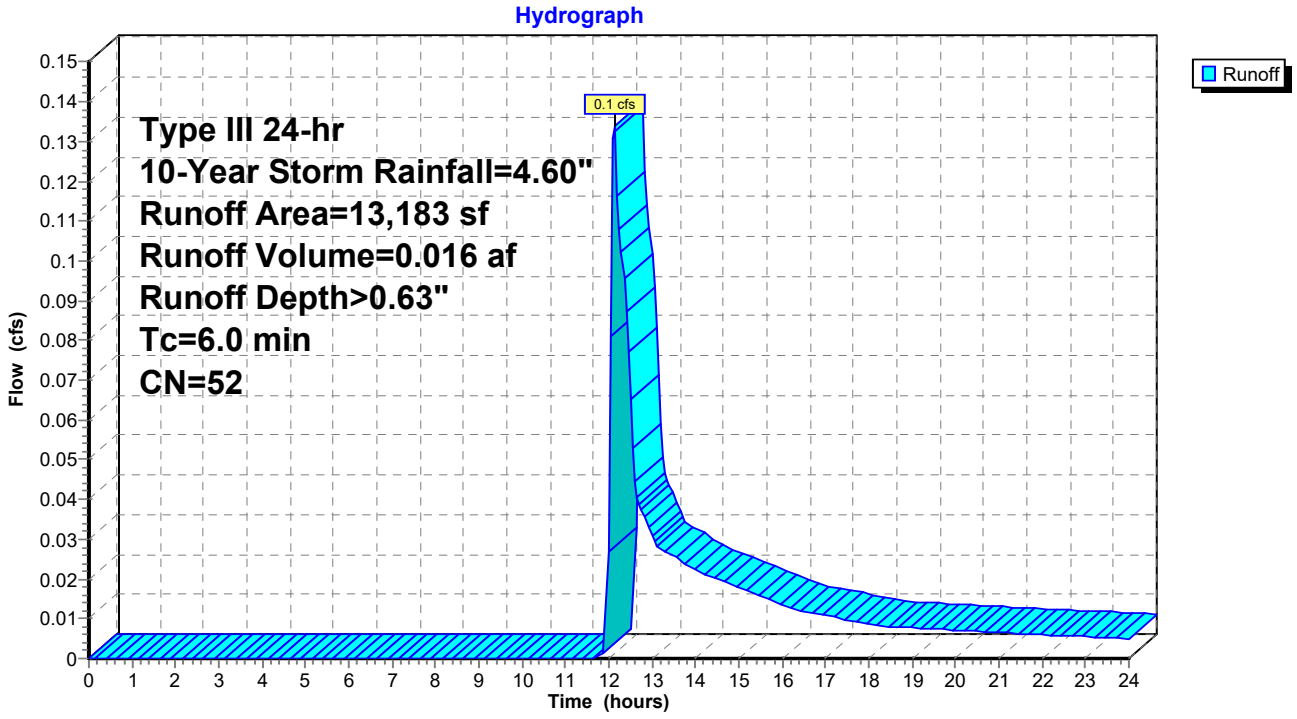
Runoff = 0.1 cfs @ 12.13 hrs, Volume= 0.016 af, Depth> 0.63"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Type III 24-hr 10-Year Storm Rainfall=4.60"

	Area (sf)	CN	Description
*	2,965	98	Impervious
	10,218	39	Grass cover, Good, HSG A
	13,183	52	Weighted Average
	10,218		77.51% Pervious Area
	2,965		22.49% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					**Direct Entry,**

Subcatchment 5S:



Summary for Subcatchment 6S:

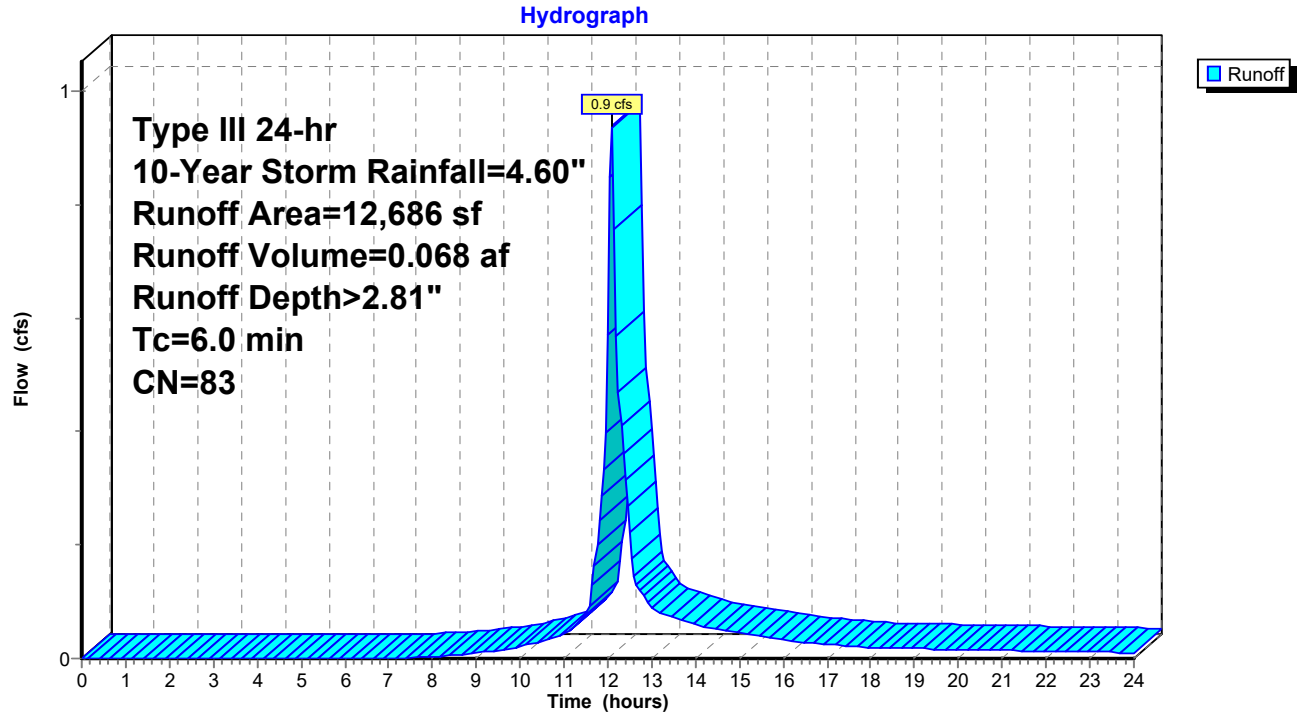
Runoff = 0.9 cfs @ 12.09 hrs, Volume= 0.068 af, Depth> 2.81"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Type III 24-hr 10-Year Storm Rainfall=4.60"

	Area (sf)	CN	Description
*	9,384	98	Impervious
	3,302	39	Grass cover, Good, HSG A
	12,686	83	Weighted Average
	3,302		26.03% Pervious Area
	9,384		73.97% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					**Direct Entry,**

Subcatchment 6S:



Summary for Subcatchment 7S: Parking Garage

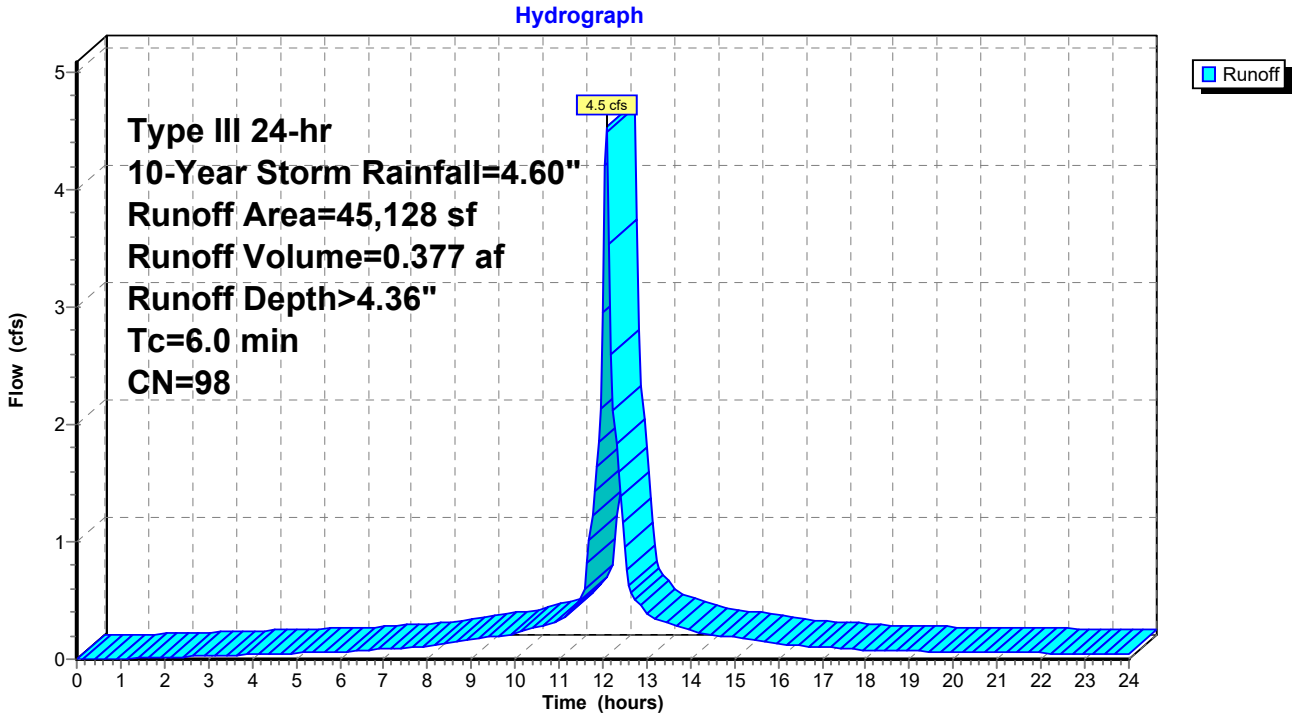
Runoff = 4.5 cfs @ 12.09 hrs, Volume= 0.377 af, Depth> 4.36"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Type III 24-hr 10-Year Storm Rainfall=4.60"

	Area (sf)	CN	Description
*	45,128	98	Impervious
	45,128		100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					**Direct Entry,**

Subcatchment 7S: Parking Garage



Summary for Subcatchment 8S:

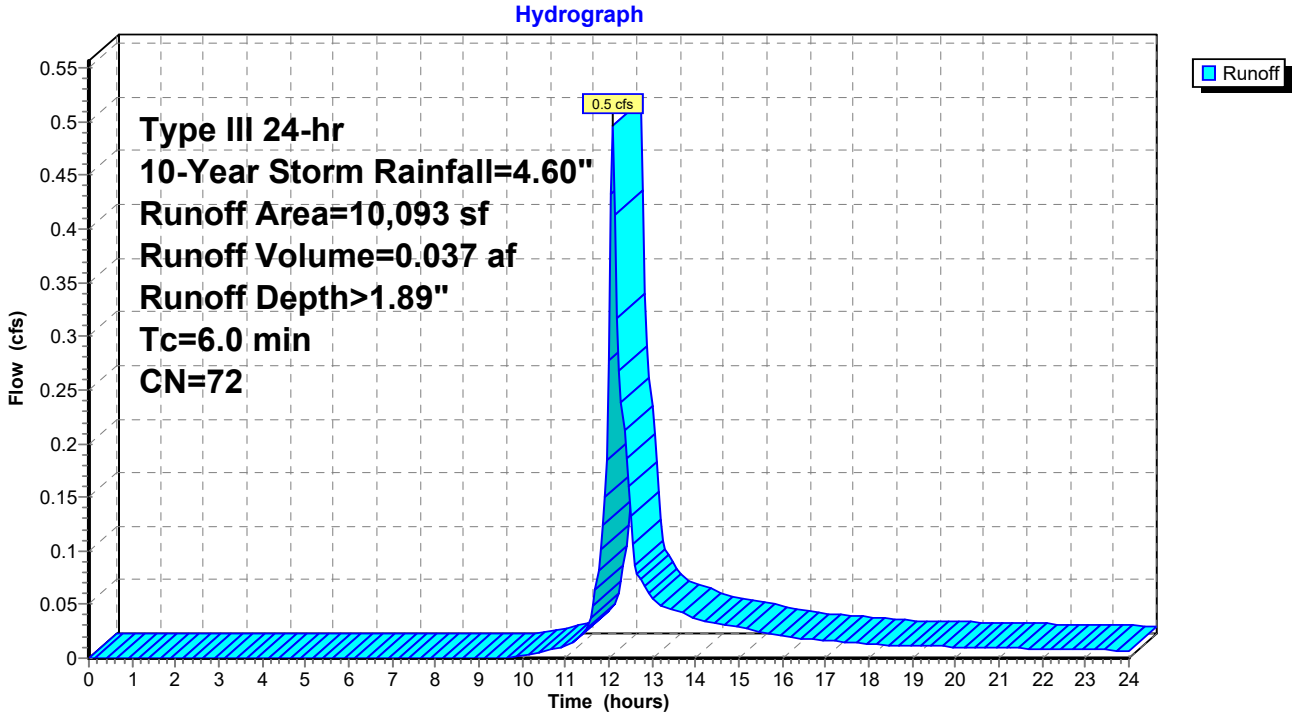
Runoff = 0.5 cfs @ 12.10 hrs, Volume= 0.037 af, Depth> 1.89"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Type III 24-hr 10-Year Storm Rainfall=4.60"

	Area (sf)	CN	Description
*	5,667	98	Impervious
	3,193	39	Grass cover, Good, HSG A
*	1,233	40	Porous Pavement
	10,093	72	Weighted Average
	4,426		43.85% Pervious Area
	5,667		56.15% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					**Direct Entry,**

Subcatchment 8S:



Summary for Subcatchment 9S:

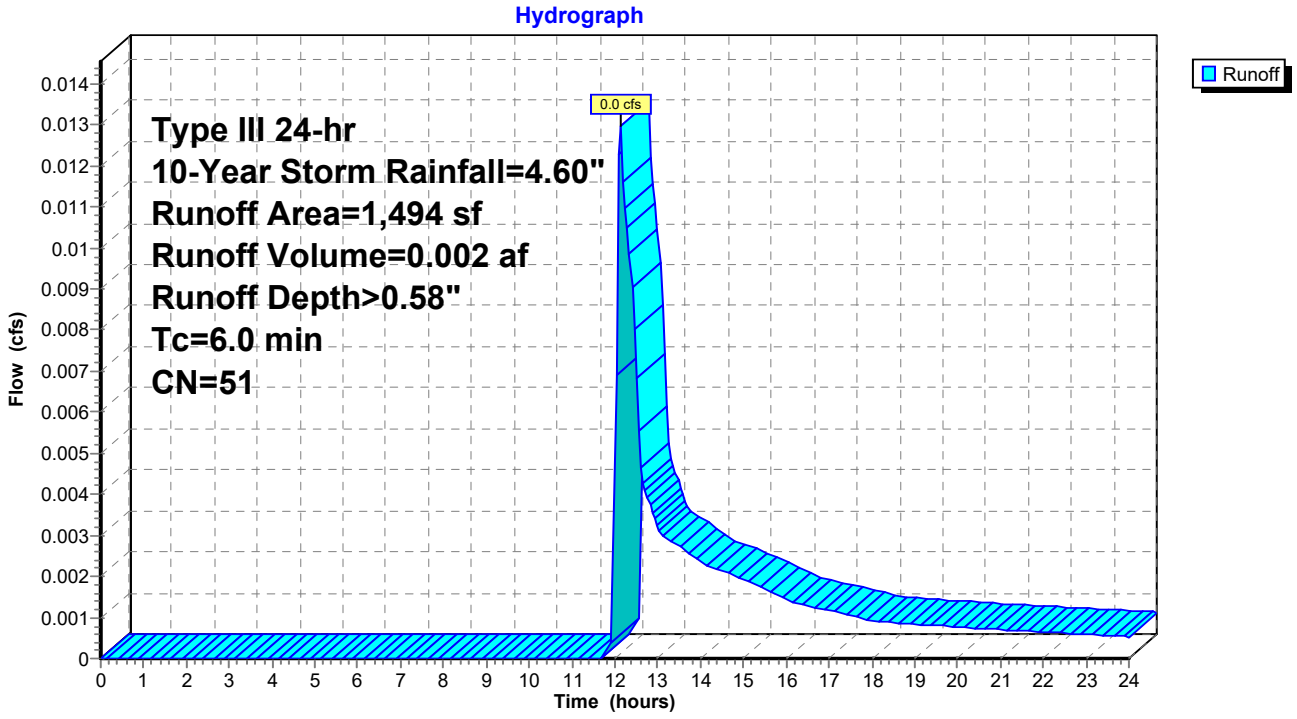
Runoff = 0.0 cfs @ 12.14 hrs, Volume= 0.002 af, Depth> 0.58"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Type III 24-hr 10-Year Storm Rainfall=4.60"

	Area (sf)	CN	Description
*	302	98	Impervious
	1,192	39	Grass cover, Good, HSG A
	1,494	51	Weighted Average
	1,192		79.79% Pervious Area
	302		20.21% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					**Direct Entry,**

Subcatchment 9S:



Summary for Subcatchment 10S:

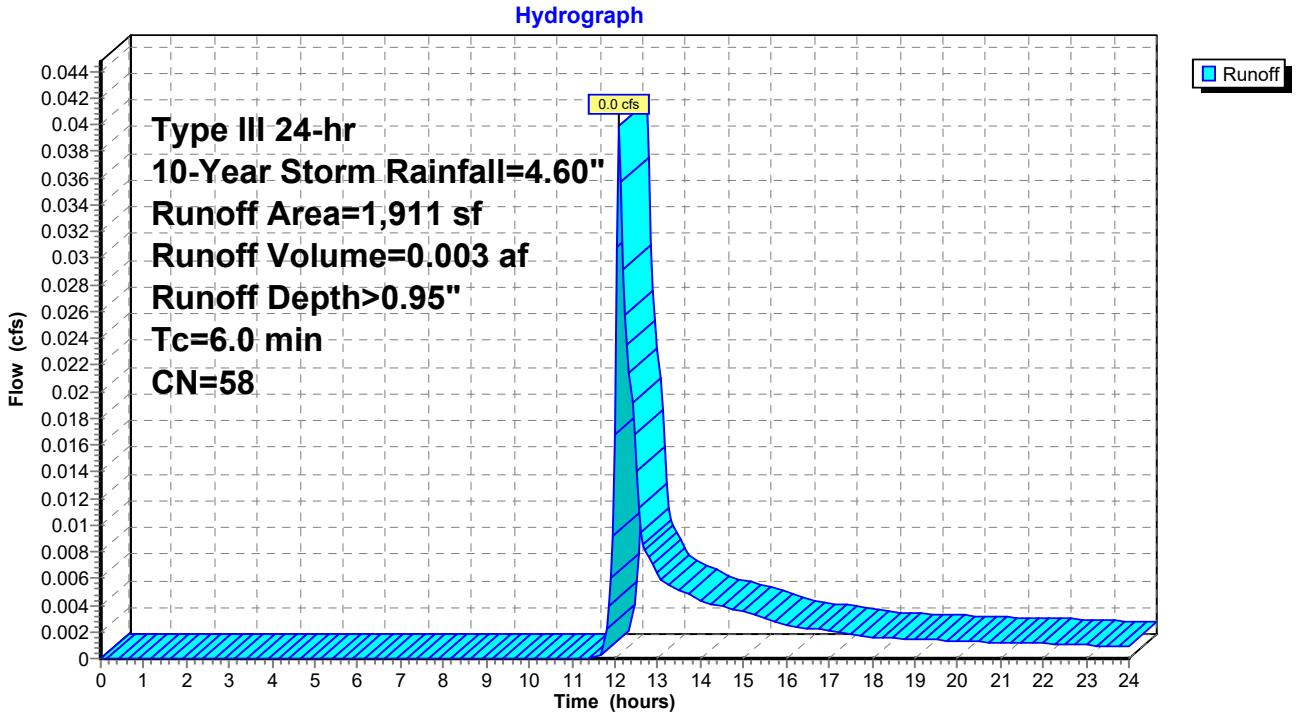
Runoff = 0.0 cfs @ 12.11 hrs, Volume= 0.003 af, Depth> 0.95"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Type III 24-hr 10-Year Storm Rainfall=4.60"

	Area (sf)	CN	Description
*	617	98	Impervious
	1,294	39	Grass cover, Good, HSG A
	1,911	58	Weighted Average
	1,294		67.71% Pervious Area
	617		32.29% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					**Direct Entry,**

Subcatchment 10S:



Summary for Subcatchment 12S:

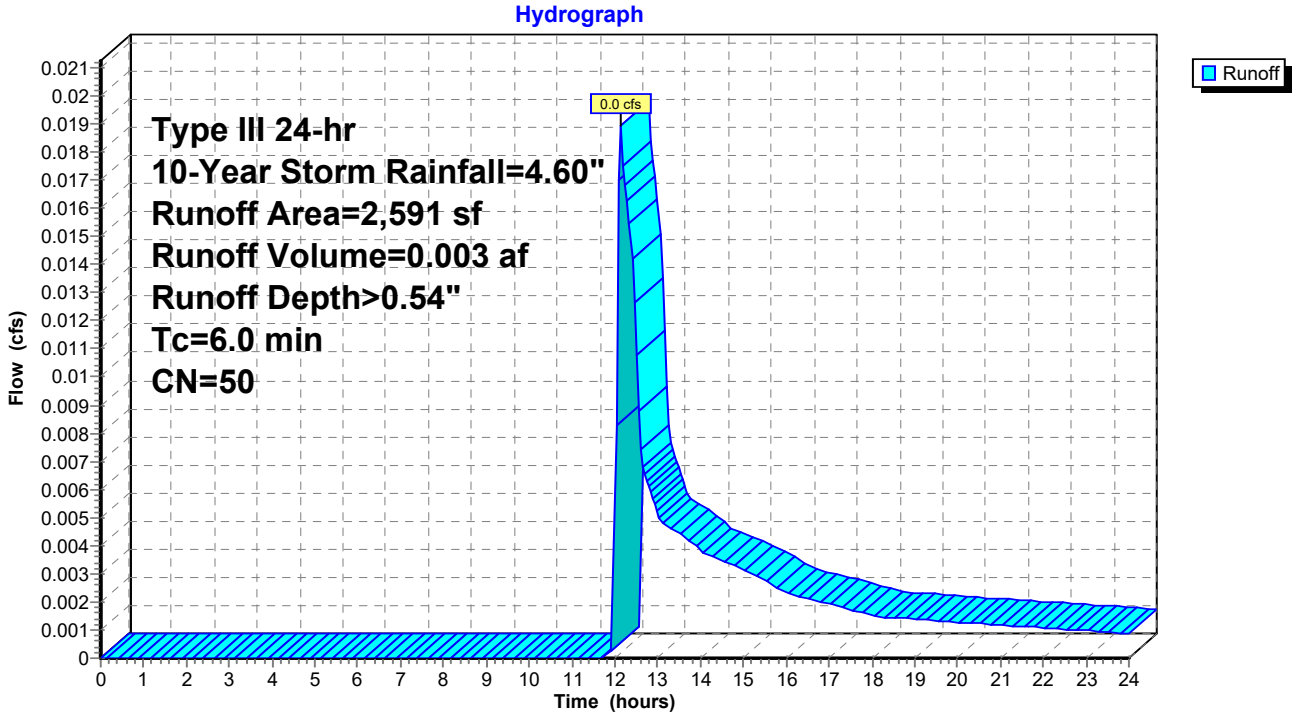
Runoff = 0.0 cfs @ 12.15 hrs, Volume= 0.003 af, Depth> 0.54"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Type III 24-hr 10-Year Storm Rainfall=4.60"

	Area (sf)	CN	Description
*	466	98	Impervious
	1,499	39	Grass cover, Good, HSG A
*	626	40	Porous Pavement
	2,591	50	Weighted Average
	2,125		82.01% Pervious Area
	466		17.99% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					**Direct Entry,**

Subcatchment 12S:



Summary for Subcatchment 13S:

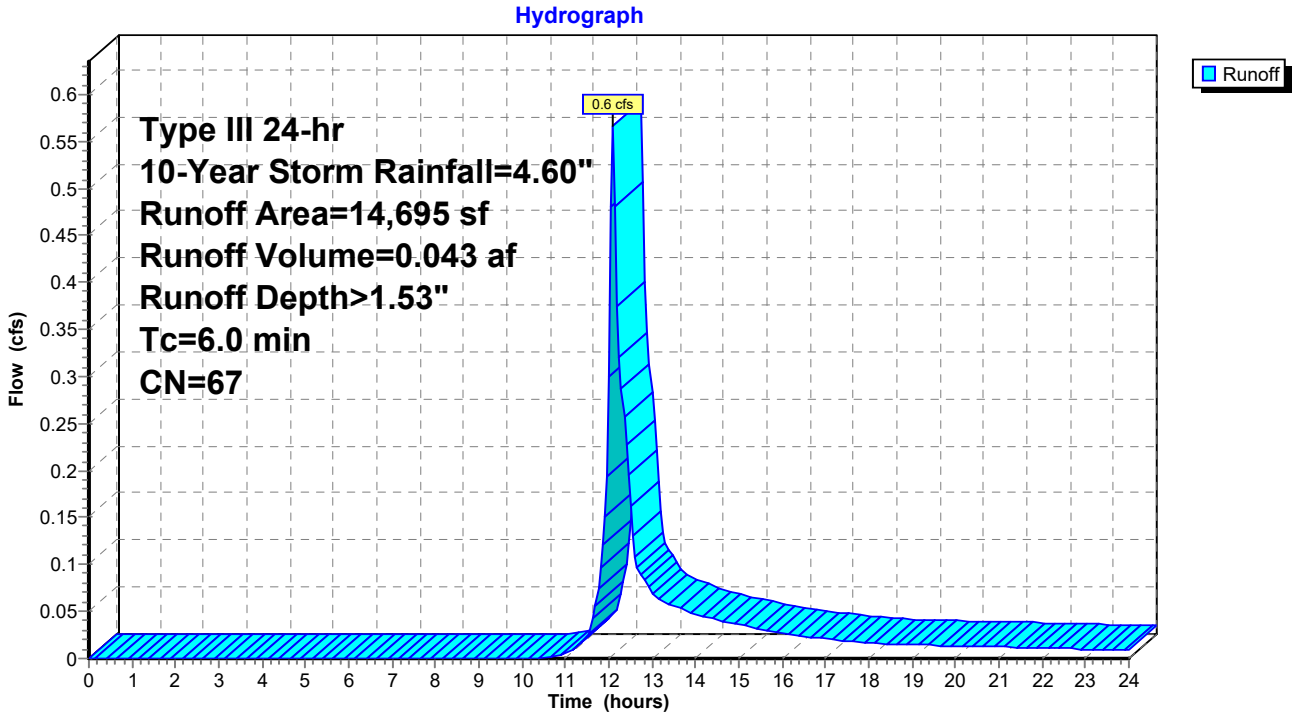
Runoff = 0.6 cfs @ 12.10 hrs, Volume= 0.043 af, Depth> 1.53"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Type III 24-hr 10-Year Storm Rainfall=4.60"

	Area (sf)	CN	Description
*	7,017	98	Impervious
	7,678	39	Grass cover, Good, HSG A
	14,695	67	Weighted Average
	7,678		52.25% Pervious Area
	7,017		47.75% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					**Direct Entry,**

Subcatchment 13S:



Summary for Pond 1P: CB1

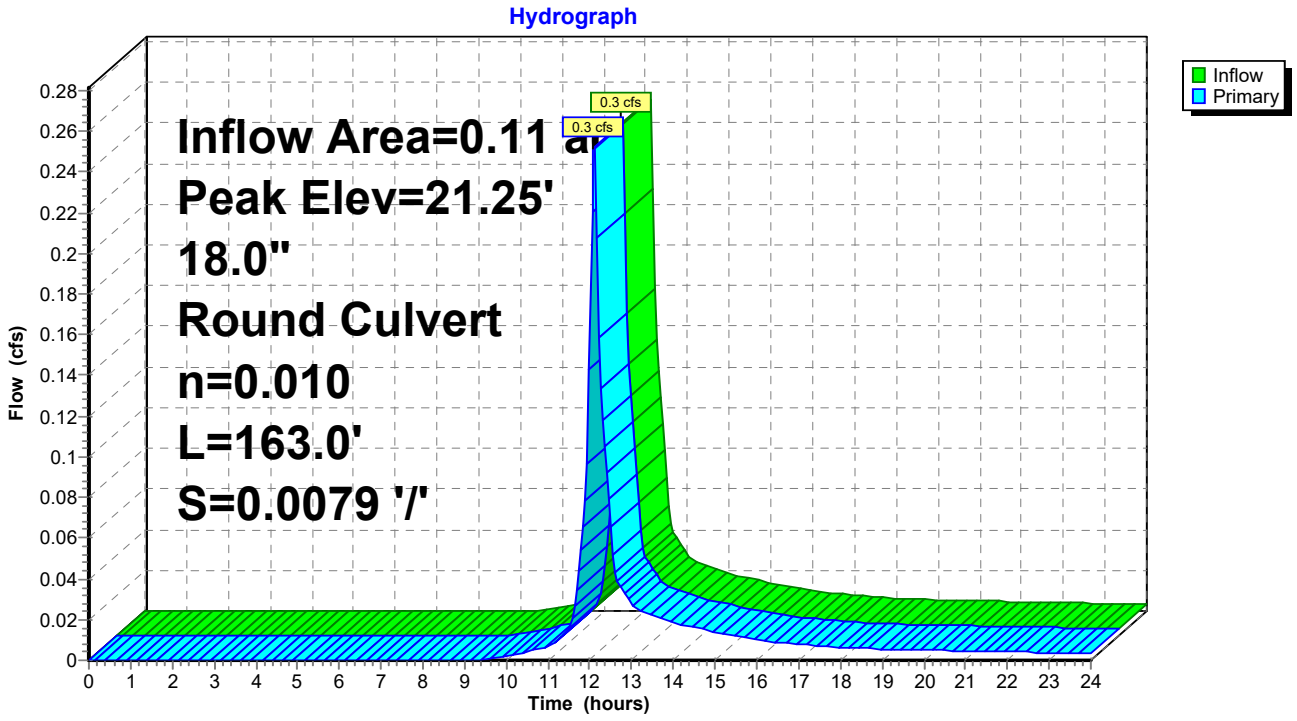
Inflow Area = 0.11 ac, 59.14% Impervious, Inflow Depth > 2.05" for 10-Year Storm event
Inflow = 0.3 cfs @ 12.10 hrs, Volume= 0.018 af
Outflow = 0.3 cfs @ 12.10 hrs, Volume= 0.018 af, Atten= 0%, Lag= 0.0 min
Primary = 0.3 cfs @ 12.10 hrs, Volume= 0.018 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Peak Elev= 21.25' @ 12.10 hrs
Flood Elev= 25.12'

Device	Routing	Invert	Outlet Devices
#1	Primary	21.00'	**18.0" Round Culvert** L= 163.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 21.00' / 19.71' S= 0.0079 '/' Cc= 0.900 n= 0.010 PVC, smooth interior, Flow Area= 1.77 sf

Primary OutFlow Max=0.2 cfs @ 12.10 hrs HW=21.24' TW=20.14' (Dynamic Tailwater)
1=Culvert (Inlet Controls 0.2 cfs @ 1.33 fps)

Pond 1P: CB1



Summary for Pond 2P: CB2

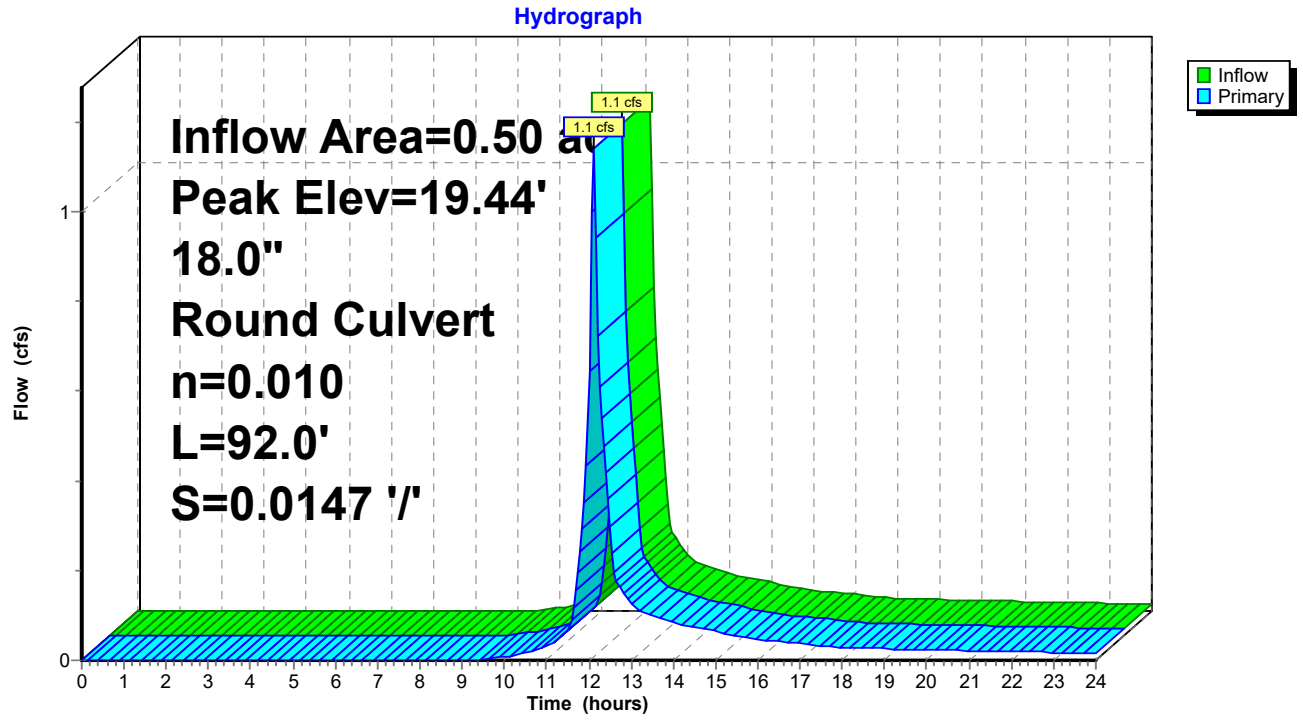
Inflow Area = 0.50 ac, 58.21% Impervious, Inflow Depth > 2.00" for 10-Year Storm event
Inflow = 1.1 cfs @ 12.10 hrs, Volume= 0.083 af
Outflow = 1.1 cfs @ 12.10 hrs, Volume= 0.083 af, Atten= 0%, Lag= 0.0 min
Primary = 1.1 cfs @ 12.10 hrs, Volume= 0.083 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Peak Elev= 19.44' @ 12.10 hrs
Flood Elev= 22.97'

Device	Routing	Invert	Outlet Devices
#1	Primary	18.90'	**18.0" Round Culvert** L= 92.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 18.90' / 17.55' S= 0.0147 '/' Cc= 0.900 n= 0.010 PVC, smooth interior, Flow Area= 1.77 sf

Primary OutFlow Max=1.1 cfs @ 12.10 hrs HW=19.44' TW=18.90' (Dynamic Tailwater)
1=Culvert (Inlet Controls 1.1 cfs @ 1.97 fps)

Pond 2P: CB2



Summary for Pond 3P: CB3

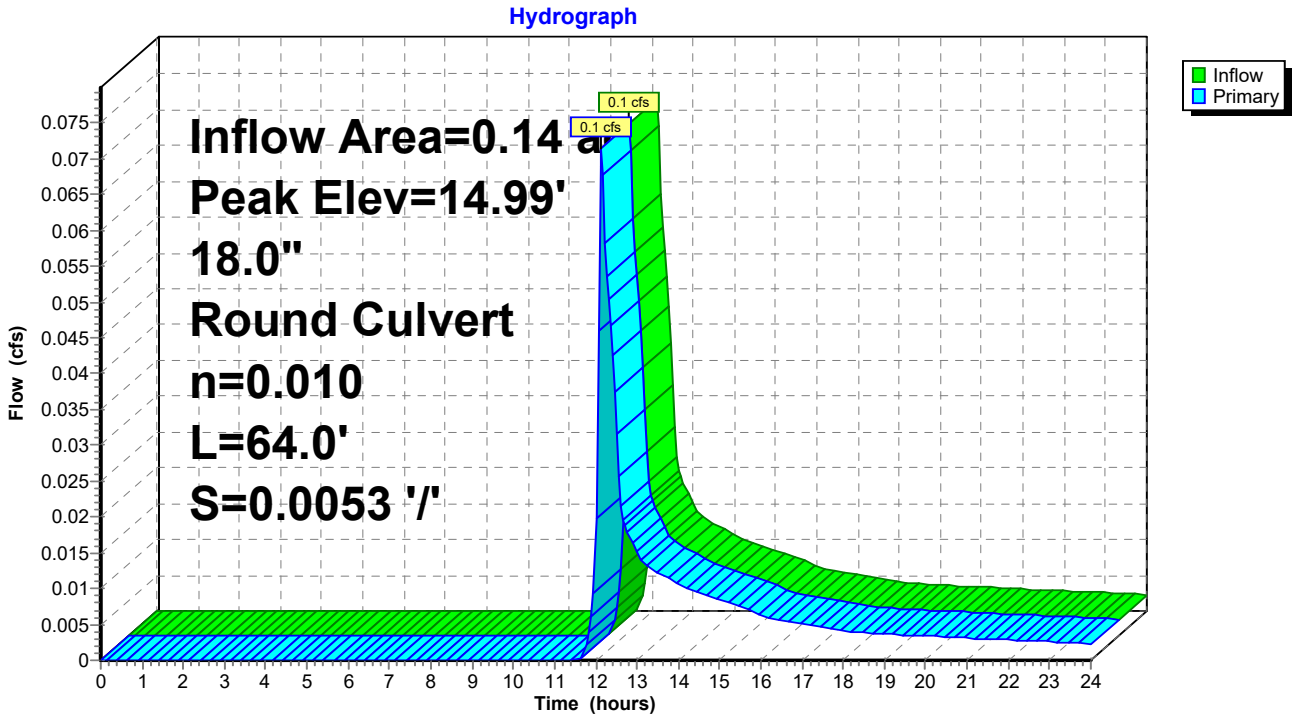
Inflow Area = 0.14 ac, 23.10% Impervious, Inflow Depth > 0.68" for 10-Year Storm event
Inflow = 0.1 cfs @ 12.12 hrs, Volume= 0.008 af
Outflow = 0.1 cfs @ 12.12 hrs, Volume= 0.008 af, Atten= 0%, Lag= 0.0 min
Primary = 0.1 cfs @ 12.12 hrs, Volume= 0.008 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Peak Elev= 14.99' @ 12.12 hrs
Flood Elev= 23.90'

Device	Routing	Invert	Outlet Devices
#1	Primary	14.86'	**18.0" Round Culvert** L= 64.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 14.86' / 14.52' S= 0.0053 '/' Cc= 0.900 n= 0.010 PVC, smooth interior, Flow Area= 1.77 sf

Primary OutFlow Max=0.1 cfs @ 12.12 hrs HW=14.99' TW=14.23' (Dynamic Tailwater)
1=Culvert (Inlet Controls 0.1 cfs @ 0.96 fps)

Pond 3P: CB3



Summary for Pond 4P: CB4

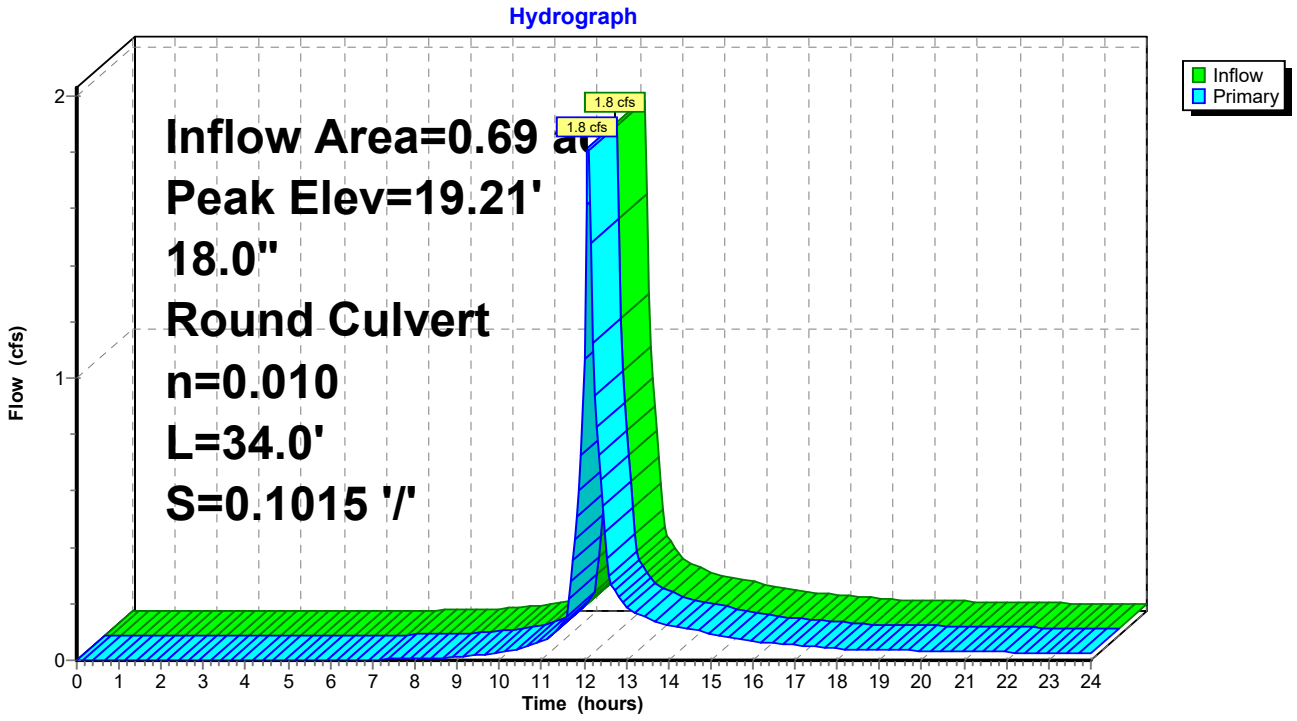
Inflow Area = 0.69 ac, 64.53% Impervious, Inflow Depth > 2.33" for 10-Year Storm event
Inflow = 1.8 cfs @ 12.09 hrs, Volume= 0.133 af
Outflow = 1.8 cfs @ 12.09 hrs, Volume= 0.133 af, Atten= 0%, Lag= 0.0 min
Primary = 1.8 cfs @ 12.09 hrs, Volume= 0.133 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Peak Elev= 19.21' @ 12.15 hrs
Flood Elev= 22.87'

Device	Routing	Invert	Outlet Devices
#1	Primary	17.45'	**18.0" Round Culvert** L= 34.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 17.45' / 14.00' S= 0.1015 '/' Cc= 0.900 n= 0.010 PVC, smooth interior, Flow Area= 1.77 sf

Primary OutFlow Max=0.0 cfs @ 12.09 hrs HW=18.88' TW=19.13' (Dynamic Tailwater)
1=Culvert (Controls 0.0 cfs)

Pond 4P: CB4



Summary for Pond 5P: CB5

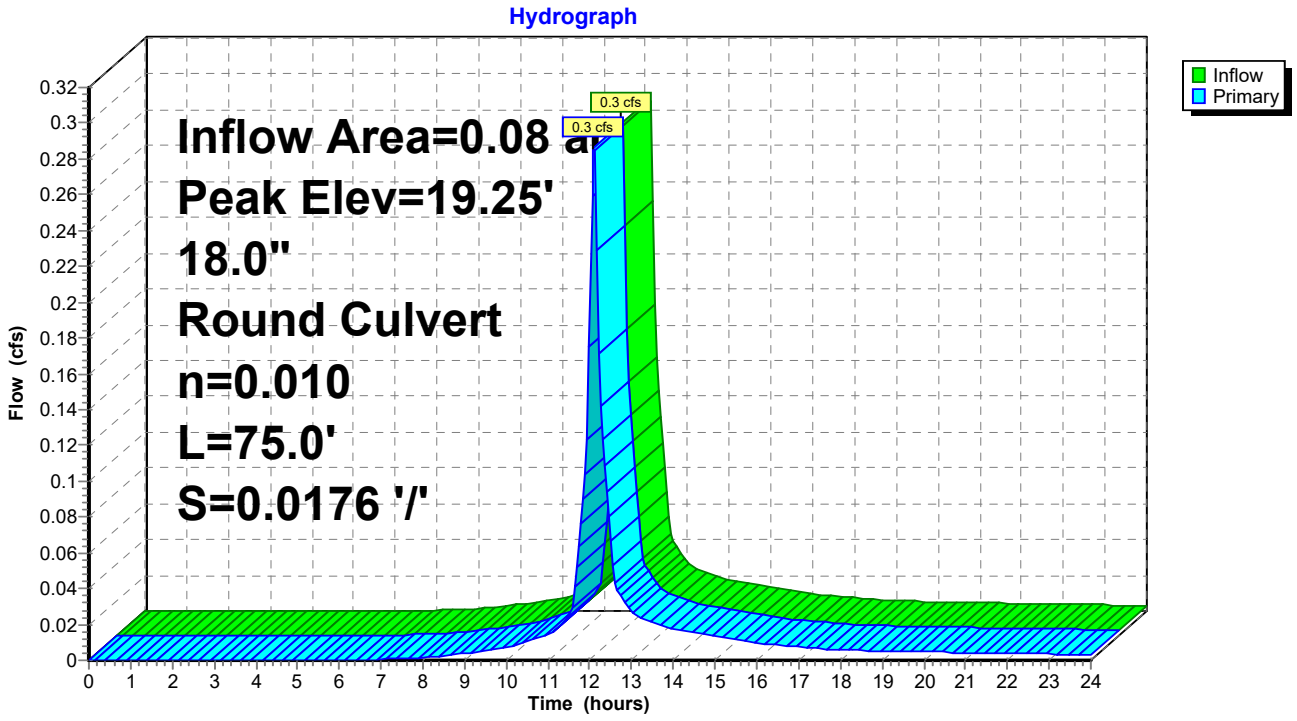
Inflow Area = 0.08 ac, 77.31% Impervious, Inflow Depth > 3.00" for 10-Year Storm event
Inflow = 0.3 cfs @ 12.09 hrs, Volume= 0.021 af
Outflow = 0.3 cfs @ 12.09 hrs, Volume= 0.021 af, Atten= 0%, Lag= 0.0 min
Primary = 0.3 cfs @ 12.09 hrs, Volume= 0.021 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Peak Elev= 19.25' @ 12.20 hrs
Flood Elev= 22.83'

Device	Routing	Invert	Outlet Devices
#1	Primary	18.87'	**18.0" Round Culvert** L= 75.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 18.87' / 17.55' S= 0.0176 '/' Cc= 0.900 n= 0.010 PVC, smooth interior, Flow Area= 1.77 sf

Primary OutFlow Max=0.2 cfs @ 12.09 hrs HW=19.13' TW=18.85' (Dynamic Tailwater)
1=Culvert (Outlet Controls 0.2 cfs @ 1.79 fps)

Pond 5P: CB5



Summary for Pond 6P: CB6

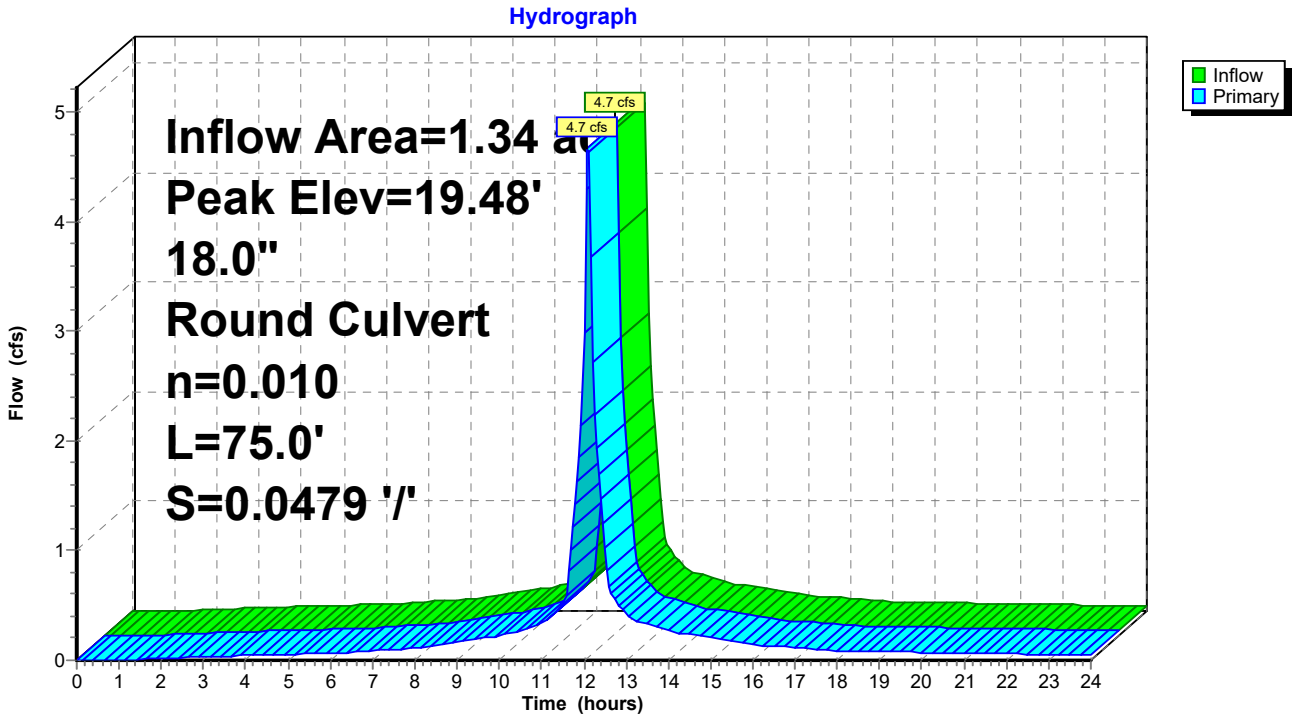
Inflow Area = 1.34 ac, 82.48% Impervious, Inflow Depth > 3.52" for 10-Year Storm event
Inflow = 4.7 cfs @ 12.09 hrs, Volume= 0.392 af
Outflow = 4.7 cfs @ 12.09 hrs, Volume= 0.392 af, Atten= 0%, Lag= 0.0 min
Primary = 4.7 cfs @ 12.09 hrs, Volume= 0.392 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Peak Elev= 19.48' @ 12.14 hrs
Flood Elev= 22.50'

Device	Routing	Invert	Outlet Devices
#1	Primary	17.59'	**18.0" Round Culvert** L= 75.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 17.59' / 14.00' S= 0.0479 '/' Cc= 0.900 n= 0.010 PVC, smooth interior, Flow Area= 1.77 sf

Primary OutFlow Max=2.5 cfs @ 12.09 hrs HW=19.23' TW=19.09' (Dynamic Tailwater)
1=Culvert (Inlet Controls 2.5 cfs @ 1.42 fps)

Pond 6P: CB6



Summary for Pond 7P: CB7

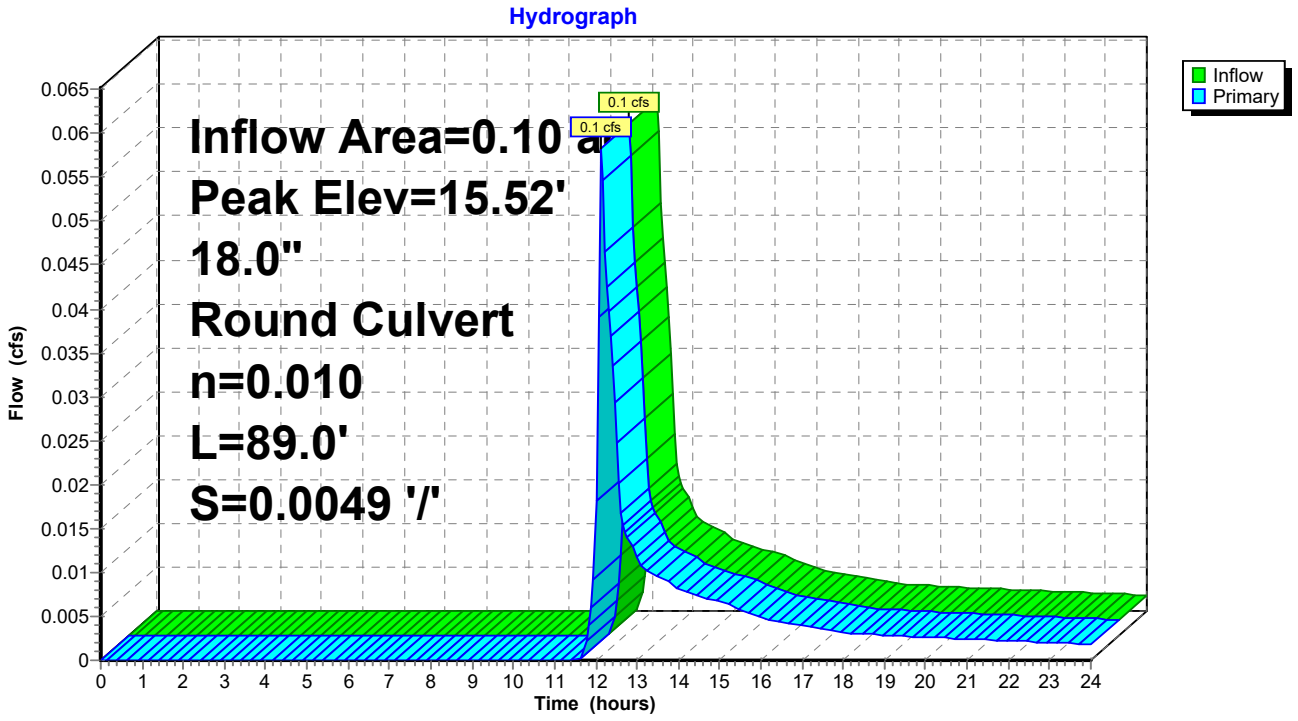
Inflow Area = 0.10 ac, 24.06% Impervious, Inflow Depth > 0.71" for 10-Year Storm event
Inflow = 0.1 cfs @ 12.12 hrs, Volume= 0.006 af
Outflow = 0.1 cfs @ 12.12 hrs, Volume= 0.006 af, Atten= 0%, Lag= 0.0 min
Primary = 0.1 cfs @ 12.12 hrs, Volume= 0.006 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Peak Elev= 15.52' @ 12.12 hrs
Flood Elev= 24.75'

Device	Routing	Invert	Outlet Devices
#1	Primary	15.40'	**18.0" Round Culvert** L= 89.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 15.40' / 14.96' S= 0.0049 '/' Cc= 0.900 n= 0.010 PVC, smooth interior, Flow Area= 1.77 sf

Primary OutFlow Max=0.1 cfs @ 12.12 hrs HW=15.51' TW=14.99' (Dynamic Tailwater)
1=Culvert (Inlet Controls 0.1 cfs @ 0.91 fps)

Pond 7P: CB7



Summary for Pond 8P: CB8

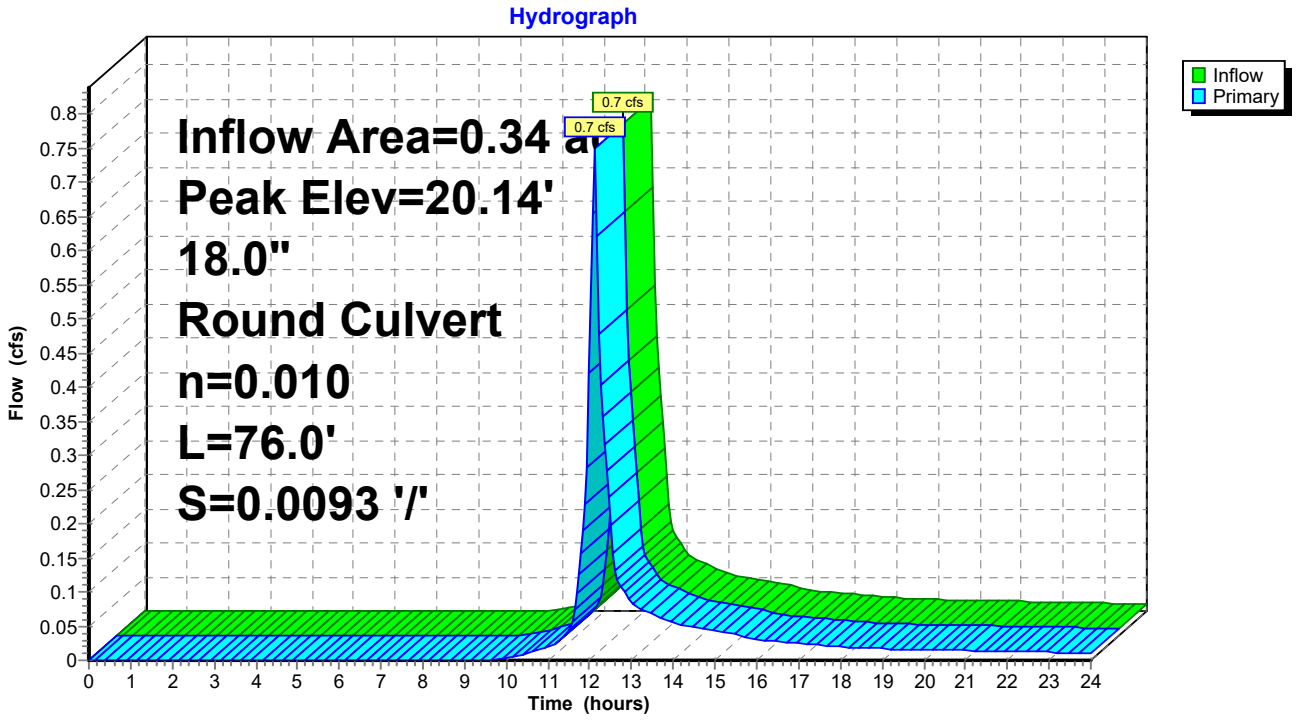
Inflow Area = 0.34 ac, 57.10% Impervious, Inflow Depth > 1.94" for 10-Year Storm event
Inflow = 0.7 cfs @ 12.10 hrs, Volume= 0.055 af
Outflow = 0.7 cfs @ 12.10 hrs, Volume= 0.055 af, Atten= 0%, Lag= 0.0 min
Primary = 0.7 cfs @ 12.10 hrs, Volume= 0.055 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Peak Elev= 20.14' @ 12.10 hrs
Flood Elev= 23.60'

Device	Routing	Invert	Outlet Devices
#1	Primary	19.71'	**18.0" Round Culvert** L= 76.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 19.71' / 19.00' S= 0.0093 '/' Cc= 0.900 n= 0.010 PVC, smooth interior, Flow Area= 1.77 sf

Primary OutFlow Max=0.7 cfs @ 12.10 hrs HW=20.14' TW=19.44' (Dynamic Tailwater)
1=Culvert (Inlet Controls 0.7 cfs @ 1.76 fps)

Pond 8P: CB8



Summary for Pond 9P: DMH1

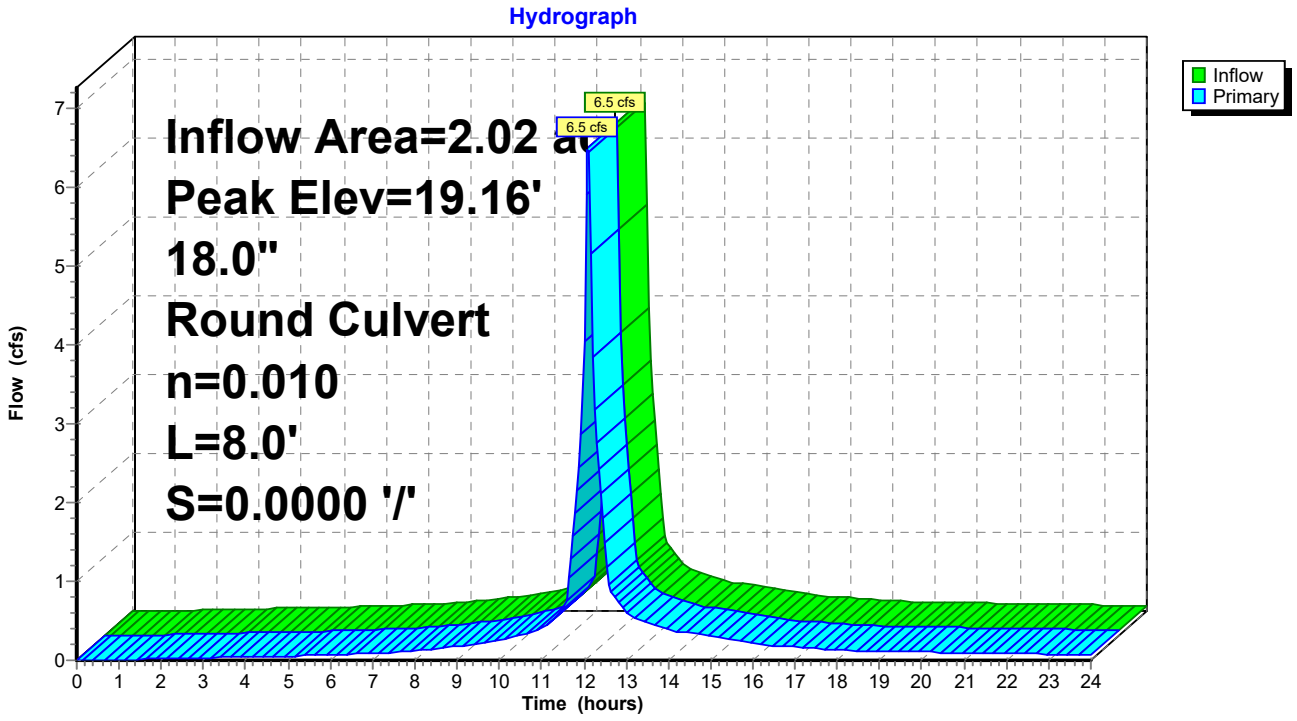
Inflow Area = 2.02 ac, 76.40% Impervious, Inflow Depth > 3.12" for 10-Year Storm event
Inflow = 6.5 cfs @ 12.09 hrs, Volume= 0.526 af
Outflow = 6.5 cfs @ 12.09 hrs, Volume= 0.526 af, Atten= 0%, Lag= 0.0 min
Primary = 6.5 cfs @ 12.09 hrs, Volume= 0.526 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Peak Elev= 19.16' @ 12.10 hrs
Flood Elev= 22.50'

Device	Routing	Invert	Outlet Devices
#1	Primary	13.58'	**18.0" Round Culvert** L= 8.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 13.58' / 13.58' S= 0.0000 '/' Cc= 0.900 n= 0.010 PVC, smooth interior, Flow Area= 1.77 sf

Primary OutFlow Max=6.0 cfs @ 12.09 hrs HW=19.10' TW=18.31' (Dynamic Tailwater)
1=Culvert (Inlet Controls 6.0 cfs @ 3.38 fps)

Pond 9P: DMH1



Summary for Pond 13P: CMP Peak Detention

Inflow	=	6.4 cfs @	12.10 hrs, Volume=	0.380 af
Outflow	=	3.5 cfs @	12.24 hrs, Volume=	0.379 af, Atten= 46%, Lag= 8.2 min
Primary	=	3.5 cfs @	12.24 hrs, Volume=	0.379 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Peak Elev= 17.32' @ 12.24 hrs Surf.Area= 1,224 sf Storage= 3,616 cf
Flood Elev= 20.87' Surf.Area= 1,224 sf Storage= 4,269 cf

Plug-Flow detention time= 13.7 min calculated for 0.378 af (100% of inflow)
Center-of-Mass det. time= 13.2 min (815.4 - 802.2)

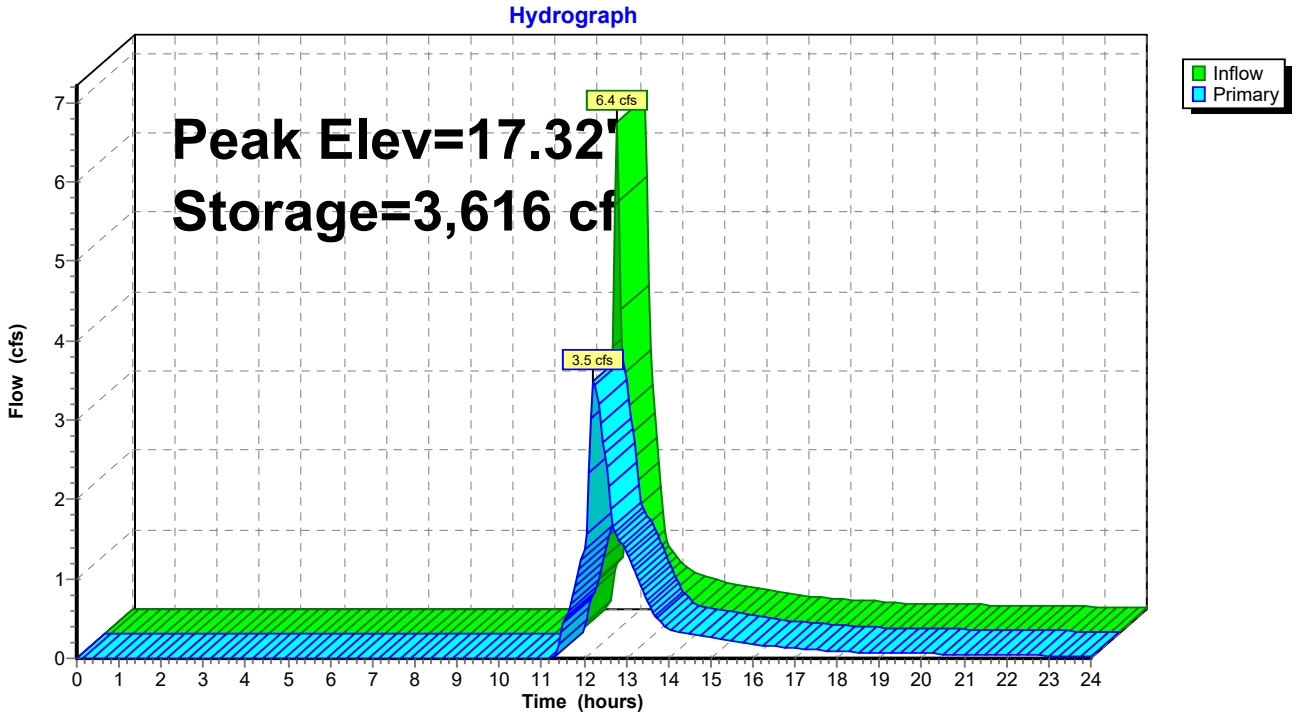
Volume	Invert	Avail.Storage	Storage Description
#1A	12.58'	0 cf	**8.00'W x 153.00'L x 6.00'H Field A** 7,344 cf Overall - 4,268 cf Embedded = 3,076 cf x 0.0% Voids
#2A	12.58'	4,268 cf	**CMP Round 72** x 7 Inside #1 Effective Size= 72.0"W x 72.0"H => 28.26 sf x 20.00'L = 565.2 cf Overall Size= 72.0"W x 72.0"H x 20.00'L Row Length Adjustment= +11.00' x 28.26 sf x 1 rows
		4,268 cf	Total Available Storage

Storage Group A created with Chamber Wizard

Device	Routing	Invert	Outlet Devices
#1	Primary	12.58'	**18.0" Round Culvert** L= 20.0' CMP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 12.58' / 12.20' S= 0.0190 '/' Cc= 0.900 n= 0.010 PVC, smooth interior, Flow Area= 1.77 sf
#2	Device 1	12.58'	**6.1" Vert. Orifice/Grate** C= 0.600
#3	Device 1	15.58'	**5.7" Vert. Orifice/Grate** C= 0.600
#4	Device 1	16.66'	**4.8" Vert. Orifice/Grate** C= 0.600
#5	Device 1	17.92'	**Custom Weir/Orifice, Cv= 2.62 (C= 3.28)** Head (feet) 3.21 3.27 3.33 3.39 3.45 3.51 3.57 3.63 3.69 3.75 3.81 3.87 Width (feet) 3.75 3.60 3.43 3.26 3.06 2.85 2.62 2.35 2.05 1.68 1.19 0.00

Primary OutFlow Max=3.5 cfs @ 12.24 hrs HW=17.30' TW=13.01' (Dynamic Tailwater)
- **1=Culvert** (Passes 3.5 cfs of 17.0 cfs potential flow)
  - **2=Orifice/Grate** (Orifice Controls 2.0 cfs @ 9.97 fps)
  - **3=Orifice/Grate** (Orifice Controls 1.0 cfs @ 5.87 fps)
  - **4=Orifice/Grate** (Orifice Controls 0.4 cfs @ 3.20 fps)
  - **5=Custom Weir/Orifice** (Controls 0.0 cfs)

Pond 13P: CMP Peak Detention



Summary for Pond 14P: CONTECH WQv CMP Det & SF System

Inflow Area = 2.02 ac, 76.40% Impervious, Inflow Depth > 3.12" for 10-Year Storm event
Inflow = 6.5 cfs @ 12.09 hrs, Volume= 0.526 af
Outflow = 6.5 cfs @ 12.10 hrs, Volume= 0.446 af, Atten= 0%, Lag= 0.7 min
Primary = 0.0 cfs @ 12.08 hrs, Volume= 0.066 af
Secondary = 6.4 cfs @ 12.10 hrs, Volume= 0.380 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Starting Elev= 13.58' Surf.Area= 1,313 sf Storage= 186 cf
Peak Elev= 18.33' @ 12.10 hrs Surf.Area= 1,313 sf Storage= 4,043 cf (3,857 cf above start)
Flood Elev= 20.87' Surf.Area= 1,313 sf Storage= 4,110 cf (3,924 cf above start)

Plug-Flow detention time= 118.8 min calculated for 0.442 af (84% of inflow)
Center-of-Mass det. time= 44.0 min (817.9 - 773.9)

Volume	Invert	Avail.Storage	Storage Description
#1A	13.08'	0 cf	**7.50'W x 175.00'L x 5.50'H Field A** 7,219 cf Overall - 4,108 cf Embedded = 3,110 cf x 0.0% Voids
#2A	13.08'	4,108 cf	**CMP Round 66** x 8 Inside #1 Effective Size= 66.0"W x 66.0"H => 23.75 sf x 20.00'L = 475.0 cf Overall Size= 66.0"W x 66.0"H x 20.00'L Row Length Adjustment= +13.00' x 23.75 sf x 1 rows
		4,108 cf	Total Available Storage

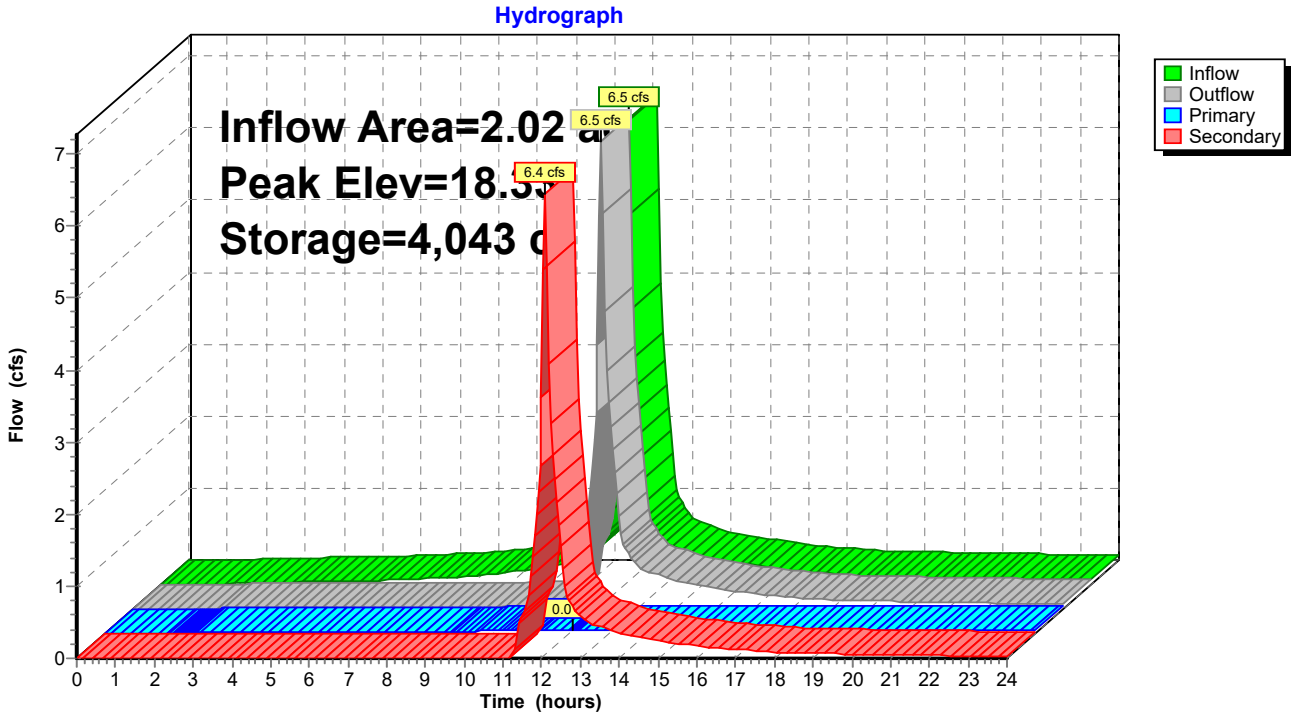
Storage Group A created with Chamber Wizard

Device	Routing	Invert	Outlet Devices
#1	Device 2	13.58'	**12.0" Round Culvert** L= 3.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 13.58' / 13.56' S= 0.0067 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.79 sf
#2	Primary	12.58'	**Tube/Siphon/Float Valve X 7.00** Starts@15.33' Breaks@13.25' 0.336" Diameter, C= 0.600, 0.263" Trickle Diameter
#3	Secondary	17.65'	**Custom Weir/Orifice, Cv= 2.62 (C= 3.28)** Head (feet) 2.44 2.49 2.54 2.60 2.66 2.71 2.76 2.82 2.87 2.93 2.99 3.04 3.09 3.15 3.20 3.26 3.32 3.37 Width (feet) 4.13 4.03 3.93 3.82 3.70 3.57 3.44 3.30 3.15 2.98 2.81 2.61 2.40 2.16 1.88 1.54 1.09 0.00

Primary OutFlow Max=0.0 cfs @ 12.08 hrs HW=18.30' TW=12.76' (Dynamic Tailwater)
└─**2=Tube/Siphon/Float Valve** (Orifice Controls 0.0 cfs @ 11.34 fps)
└─**1=Culvert** (Passes 0.0 cfs of 7.8 cfs potential flow)

Secondary OutFlow Max=6.4 cfs @ 12.10 hrs HW=18.33' TW=16.23' (Dynamic Tailwater)
└─**3=Custom Weir/Orifice** (Weir Controls 6.4 cfs @ 2.84 fps)

Pond 14P: CONTECH WQv CMP Det & SF System



Summary for Pond 17P: DMH2

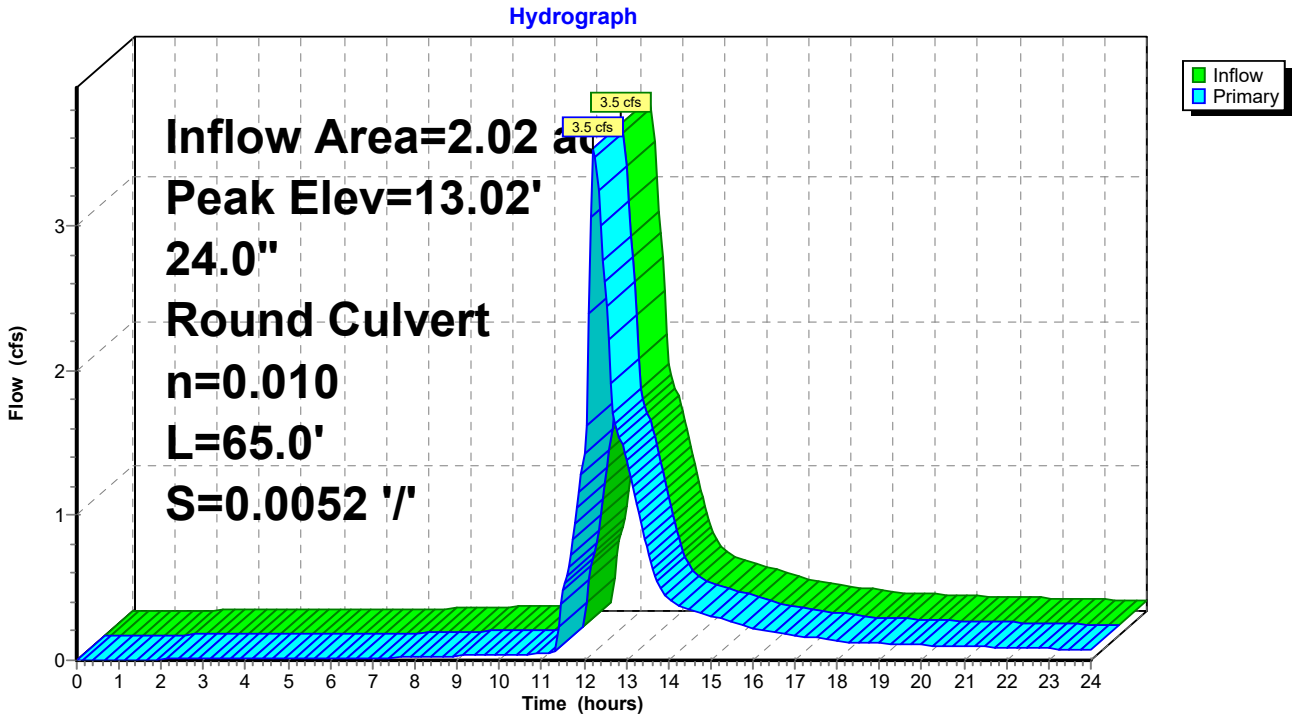
Inflow Area = 2.02 ac, 76.40% Impervious, Inflow Depth > 2.64" for 10-Year Storm event
Inflow = 3.5 cfs @ 12.24 hrs, Volume= 0.446 af
Outflow = 3.5 cfs @ 12.24 hrs, Volume= 0.446 af, Atten= 0%, Lag= 0.0 min
Primary = 3.5 cfs @ 12.24 hrs, Volume= 0.446 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Peak Elev= 13.02' @ 12.26 hrs
Flood Elev= 21.65'

Device	Routing	Invert	Outlet Devices
#1	Primary	12.07'	**24.0" Round Culvert** L= 65.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 12.07' / 11.73' S= 0.0052 '/' Cc= 0.900 n= 0.010 PVC, smooth interior, Flow Area= 3.14 sf

Primary OutFlow Max=3.5 cfs @ 12.24 hrs HW=13.01' TW=12.53' (Dynamic Tailwater)
1=Culvert (Outlet Controls 3.5 cfs @ 3.47 fps)

Pond 17P: DMH2



Summary for Pond 18P: DMH3

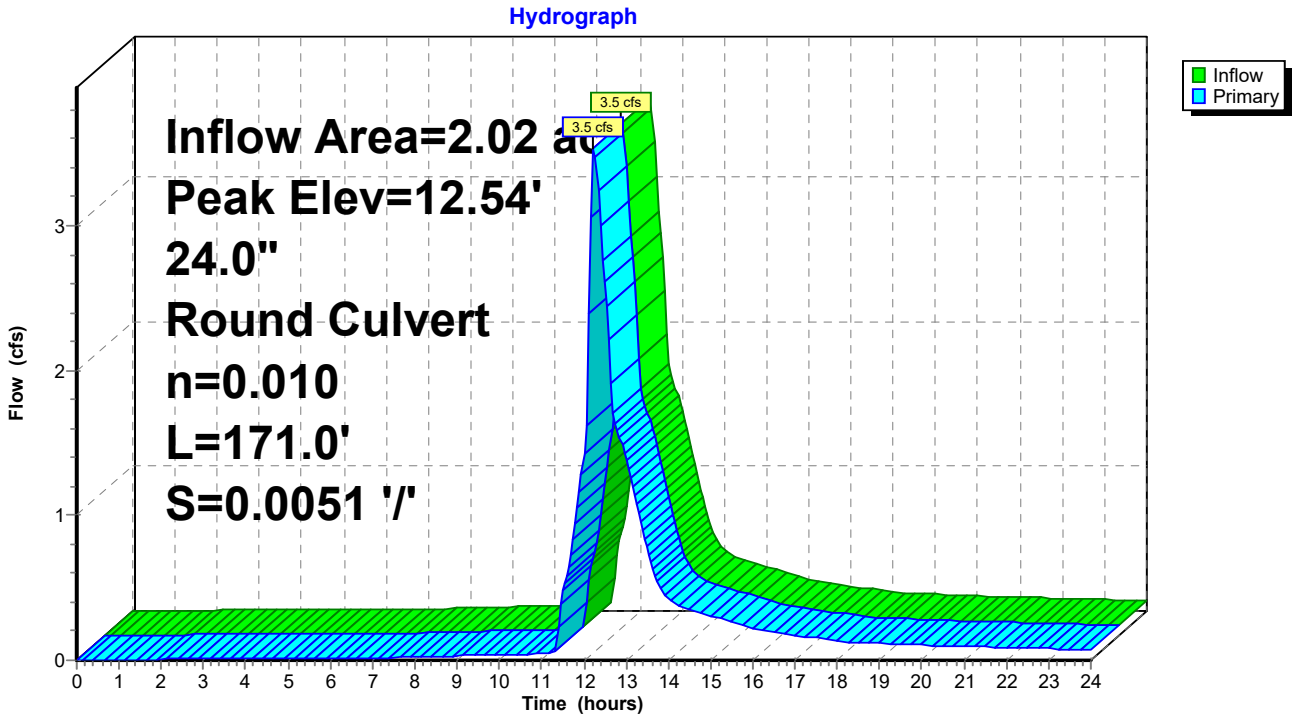
Inflow Area = 2.02 ac, 76.40% Impervious, Inflow Depth > 2.64" for 10-Year Storm event
Inflow = 3.5 cfs @ 12.24 hrs, Volume= 0.446 af
Outflow = 3.5 cfs @ 12.24 hrs, Volume= 0.446 af, Atten= 0%, Lag= 0.0 min
Primary = 3.5 cfs @ 12.24 hrs, Volume= 0.446 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Peak Elev= 12.54' @ 12.24 hrs
Flood Elev= 20.85'

Device	Routing	Invert	Outlet Devices
#1	Primary	11.63'	**24.0" Round Culvert** L= 171.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 11.63' / 10.75' S= 0.0051 '/' Cc= 0.900 n= 0.010 PVC, smooth interior, Flow Area= 3.14 sf

Primary OutFlow Max=3.5 cfs @ 12.24 hrs HW=12.53' TW=0.00' (Dynamic Tailwater)
1=Culvert (Inlet Controls 3.5 cfs @ 2.56 fps)

Pond 18P: DMH3



Summary for Pond 22P: Ex DMH3

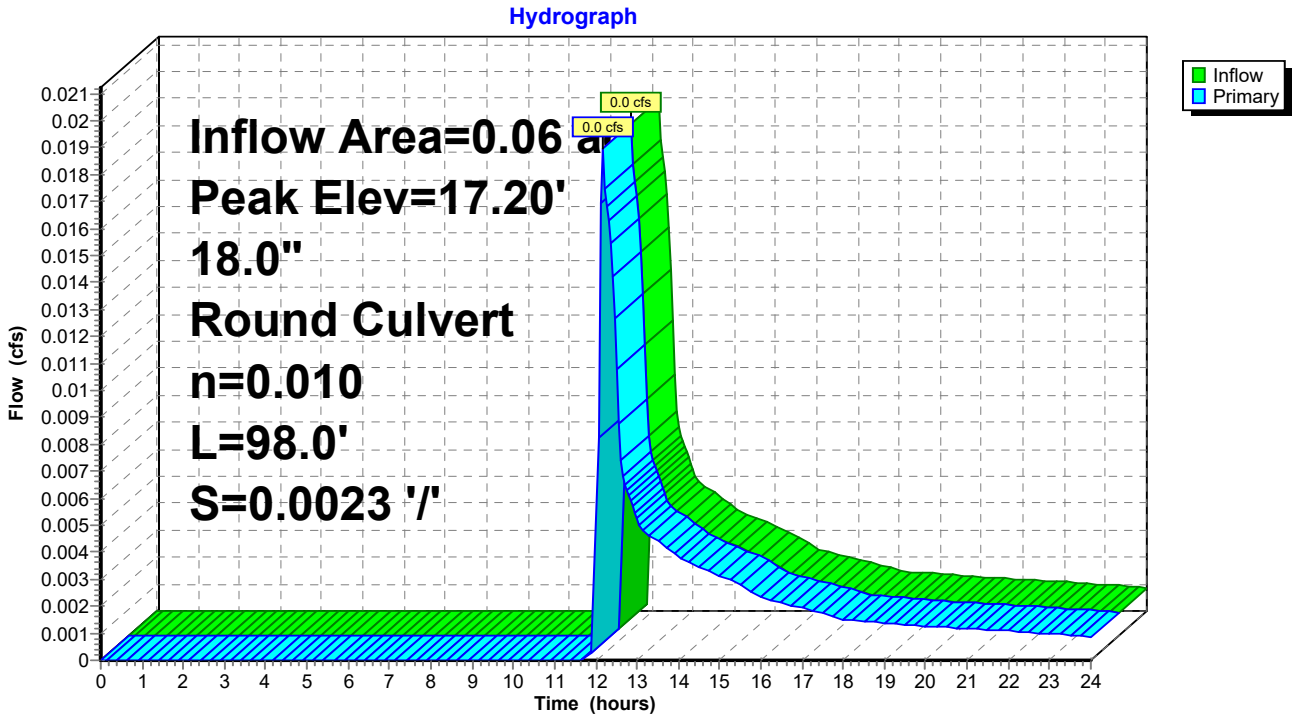
Inflow Area = 0.06 ac, 17.99% Impervious, Inflow Depth > 0.54" for 10-Year Storm event
Inflow = 0.0 cfs @ 12.15 hrs, Volume= 0.003 af
Outflow = 0.0 cfs @ 12.15 hrs, Volume= 0.003 af, Atten= 0%, Lag= 0.0 min
Primary = 0.0 cfs @ 12.15 hrs, Volume= 0.003 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Peak Elev= 17.20' @ 12.15 hrs
Flood Elev= 24.92'

Device	Routing	Invert	Outlet Devices
#1	Primary	17.12'	**18.0" Round Culvert** L= 98.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 17.12' / 16.89' S= 0.0023 '/' Cc= 0.900 n= 0.010 PVC, smooth interior, Flow Area= 1.77 sf

Primary OutFlow Max=0.0 cfs @ 12.15 hrs HW=17.20' TW=16.82' (Dynamic Tailwater)
1=Culvert (Barrel Controls 0.0 cfs @ 0.82 fps)

Pond 22P: Ex DMH3



Summary for Pond 23P: Ex CB3

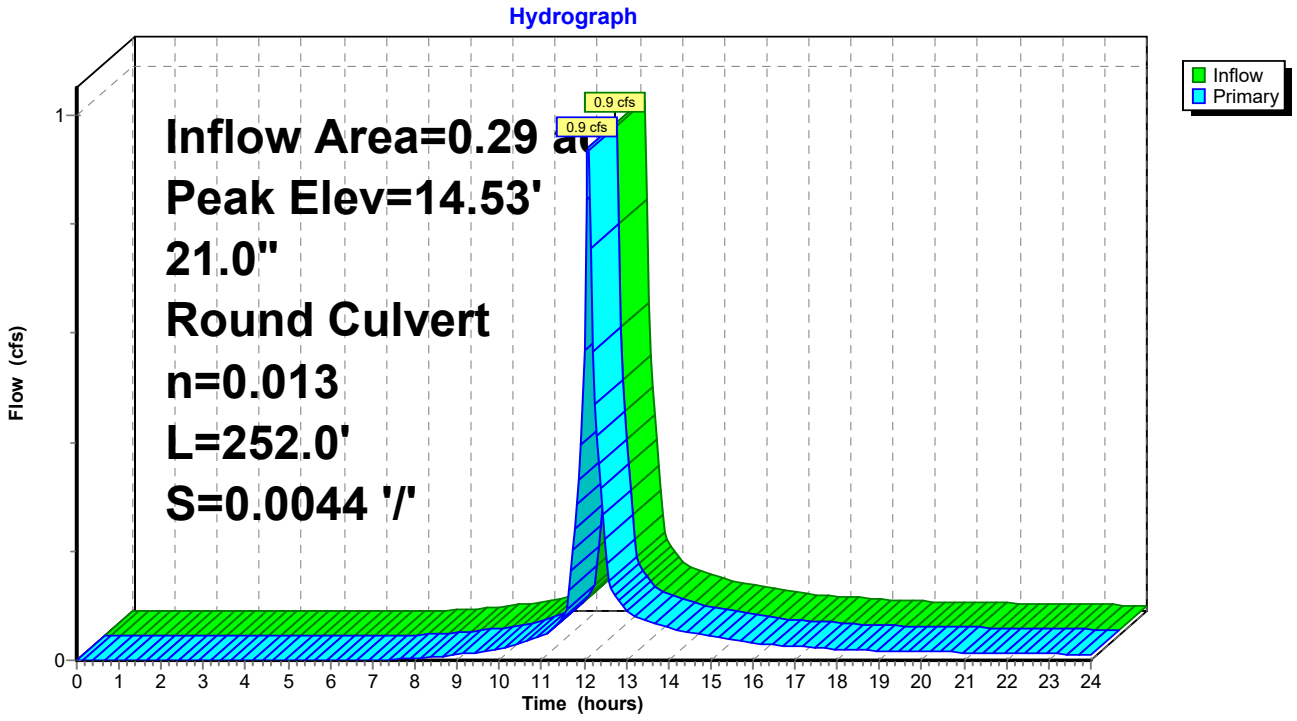
Inflow Area = 0.29 ac, 73.97% Impervious, Inflow Depth > 2.81" for 10-Year Storm event
Inflow = 0.9 cfs @ 12.09 hrs, Volume= 0.068 af
Outflow = 0.9 cfs @ 12.09 hrs, Volume= 0.068 af, Atten= 0%, Lag= 0.0 min
Primary = 0.9 cfs @ 12.09 hrs, Volume= 0.068 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Peak Elev= 14.53' @ 12.09 hrs
Flood Elev= 23.60'

Device	Routing	Invert	Outlet Devices
#1	Primary	14.05'	**21.0" Round Culvert** L= 252.0' CMP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 14.05' / 12.94' S= 0.0044 '/' Cc= 0.900 n= 0.013 Cast iron, coated, Flow Area= 2.41 sf

Primary OutFlow Max=0.9 cfs @ 12.09 hrs HW=14.53' TW=0.00' (Dynamic Tailwater)
1=Culvert (Barrel Controls 0.9 cfs @ 2.61 fps)

Pond 23P: Ex CB3



Summary for Pond 24P: Ex DMH2

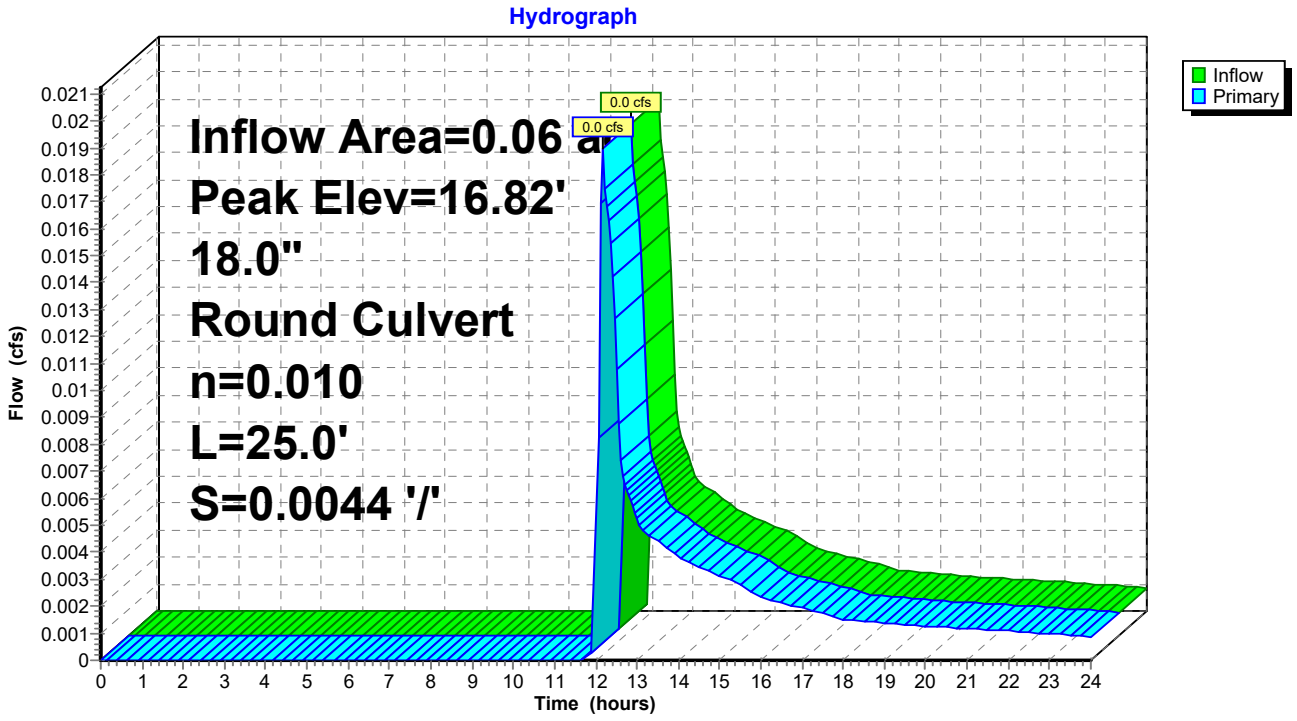
Inflow Area = 0.06 ac, 17.99% Impervious, Inflow Depth > 0.54" for 10-Year Storm event
Inflow = 0.0 cfs @ 12.15 hrs, Volume= 0.003 af
Outflow = 0.0 cfs @ 12.15 hrs, Volume= 0.003 af, Atten= 0%, Lag= 0.0 min
Primary = 0.0 cfs @ 12.15 hrs, Volume= 0.003 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Peak Elev= 16.82' @ 12.15 hrs
Flood Elev= 25.38'

Device	Routing	Invert	Outlet Devices
#1	Primary	16.75'	**18.0" Round Culvert** L= 25.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 16.75' / 16.64' S= 0.0044 '/' Cc= 0.900 n= 0.010 PVC, smooth interior, Flow Area= 1.77 sf

Primary OutFlow Max=0.0 cfs @ 12.15 hrs HW=16.82' TW=16.61' (Dynamic Tailwater)
1=Culvert (Barrel Controls 0.0 cfs @ 0.98 fps)

Pond 24P: Ex DMH2



Summary for Pond 26P: DMH5

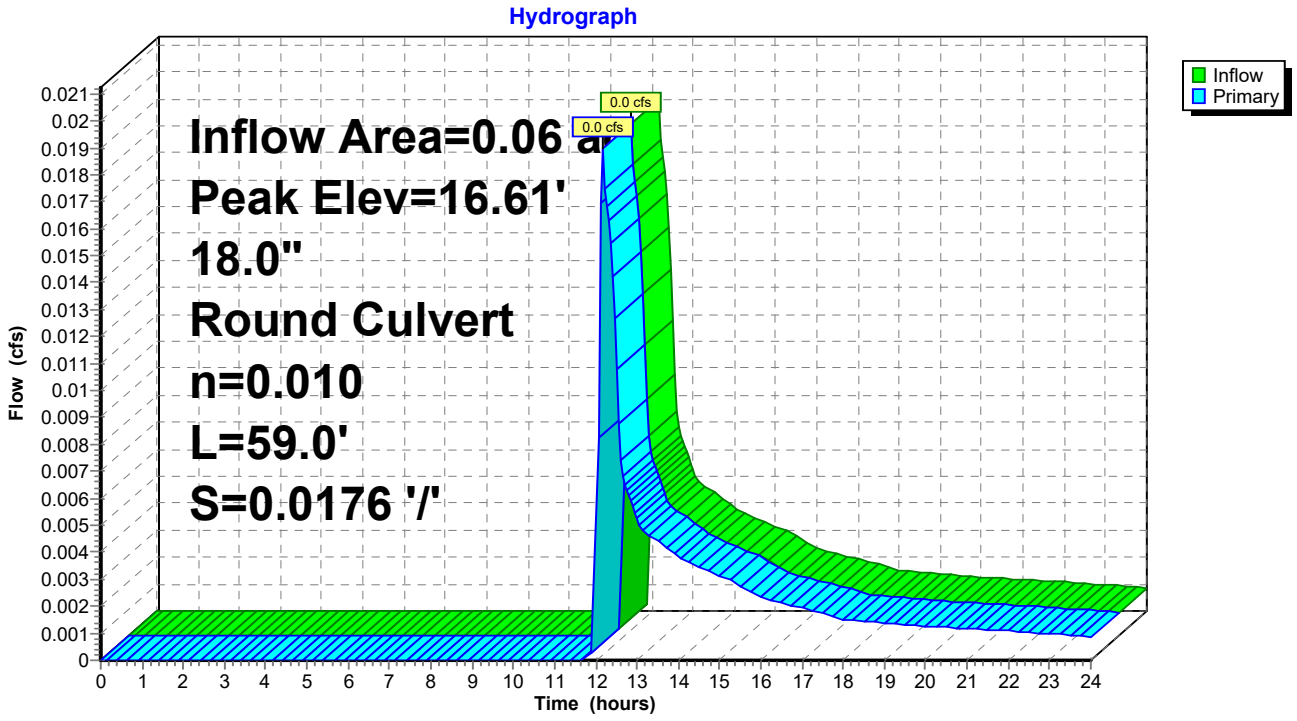
Inflow Area = 0.06 ac, 17.99% Impervious, Inflow Depth > 0.54" for 10-Year Storm event
Inflow = 0.0 cfs @ 12.15 hrs, Volume= 0.003 af
Outflow = 0.0 cfs @ 12.15 hrs, Volume= 0.003 af, Atten= 0%, Lag= 0.0 min
Primary = 0.0 cfs @ 12.15 hrs, Volume= 0.003 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Peak Elev= 16.61' @ 12.15 hrs
Flood Elev= 25.90'

Device	Routing	Invert	Outlet Devices
#1	Primary	16.54'	**18.0" Round Culvert** L= 59.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 16.54' / 15.50' S= 0.0176 '/' Cc= 0.900 n= 0.010 PVC, smooth interior, Flow Area= 1.77 sf

Primary OutFlow Max=0.0 cfs @ 12.15 hrs HW=16.61' TW=15.51' (Dynamic Tailwater)
1=Culvert (Inlet Controls 0.0 cfs @ 0.69 fps)

Pond 26P: DMH5



Summary for Pond 27P: DMH10

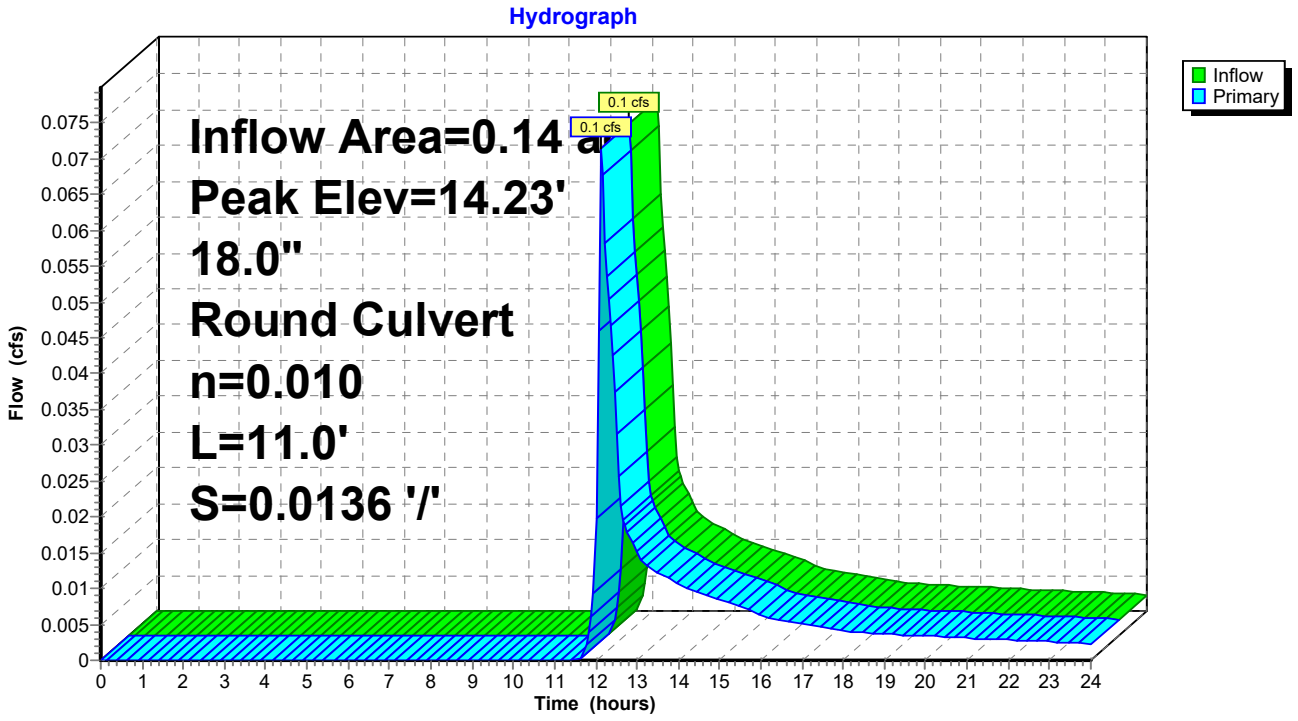
Inflow Area = 0.14 ac, 23.10% Impervious, Inflow Depth > 0.68" for 10-Year Storm event
Inflow = 0.1 cfs @ 12.12 hrs, Volume= 0.008 af
Outflow = 0.1 cfs @ 12.12 hrs, Volume= 0.008 af, Atten= 0%, Lag= 0.0 min
Primary = 0.1 cfs @ 12.12 hrs, Volume= 0.008 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Peak Elev= 14.23' @ 12.12 hrs
Flood Elev= 24.17'

Device	Routing	Invert	Outlet Devices
#1	Primary	14.10'	**18.0" Round Culvert** L= 11.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 14.10' / 13.95' S= 0.0136 '/' Cc= 0.900 n= 0.010 PVC, smooth interior, Flow Area= 1.77 sf

Primary OutFlow Max=0.1 cfs @ 12.12 hrs HW=14.23' TW=0.00' (Dynamic Tailwater)
1=Culvert (Inlet Controls 0.1 cfs @ 0.96 fps)

Pond 27P: DMH10



Summary for Pond 29P: Ex DMH4

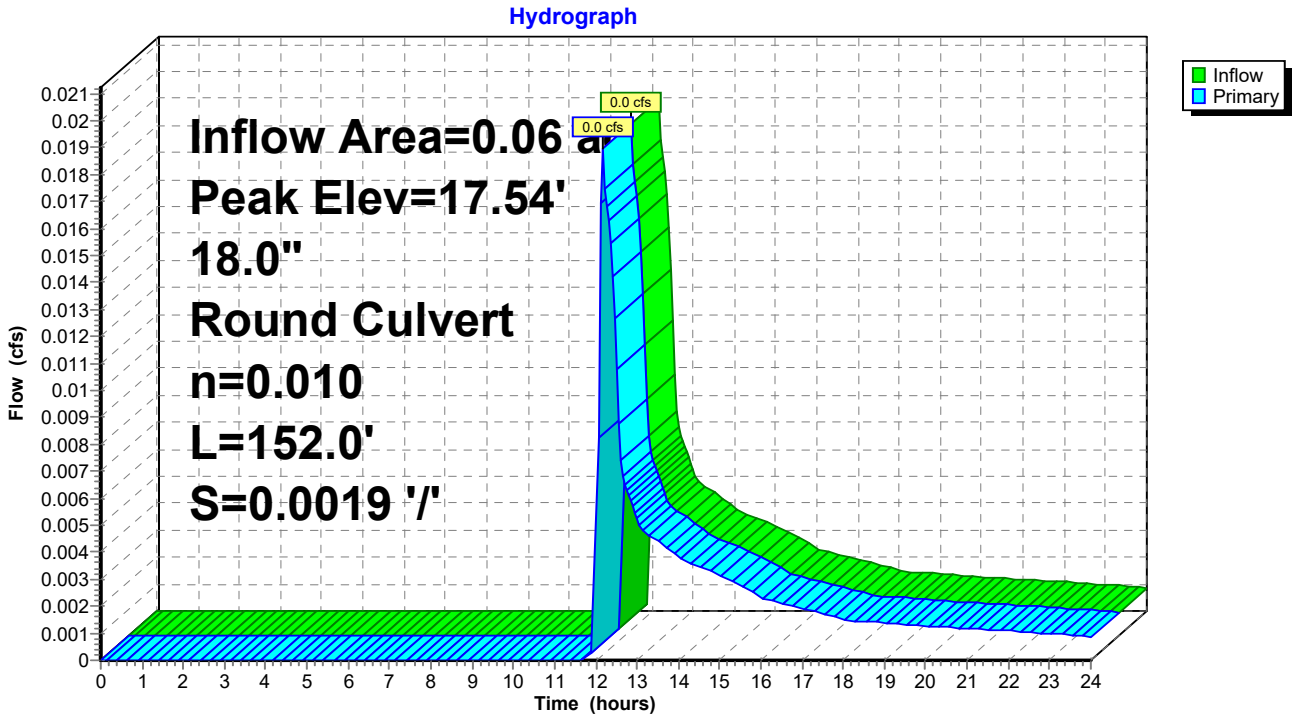
Inflow Area = 0.06 ac, 17.99% Impervious, Inflow Depth > 0.54" for 10-Year Storm event
Inflow = 0.0 cfs @ 12.15 hrs, Volume= 0.003 af
Outflow = 0.0 cfs @ 12.15 hrs, Volume= 0.003 af, Atten= 0%, Lag= 0.0 min
Primary = 0.0 cfs @ 12.15 hrs, Volume= 0.003 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Peak Elev= 17.54' @ 12.15 hrs
Flood Elev= 23.44'

Device	Routing	Invert	Outlet Devices
#1	Primary	17.46'	**18.0" Round Culvert** L= 152.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 17.46' / 17.17' S= 0.0019 '/' Cc= 0.900 n= 0.010 PVC, smooth interior, Flow Area= 1.77 sf

Primary OutFlow Max=0.0 cfs @ 12.15 hrs HW=17.54' TW=17.20' (Dynamic Tailwater)
1=Culvert (Barrel Controls 0.0 cfs @ 0.77 fps)

Pond 29P: Ex DMH4

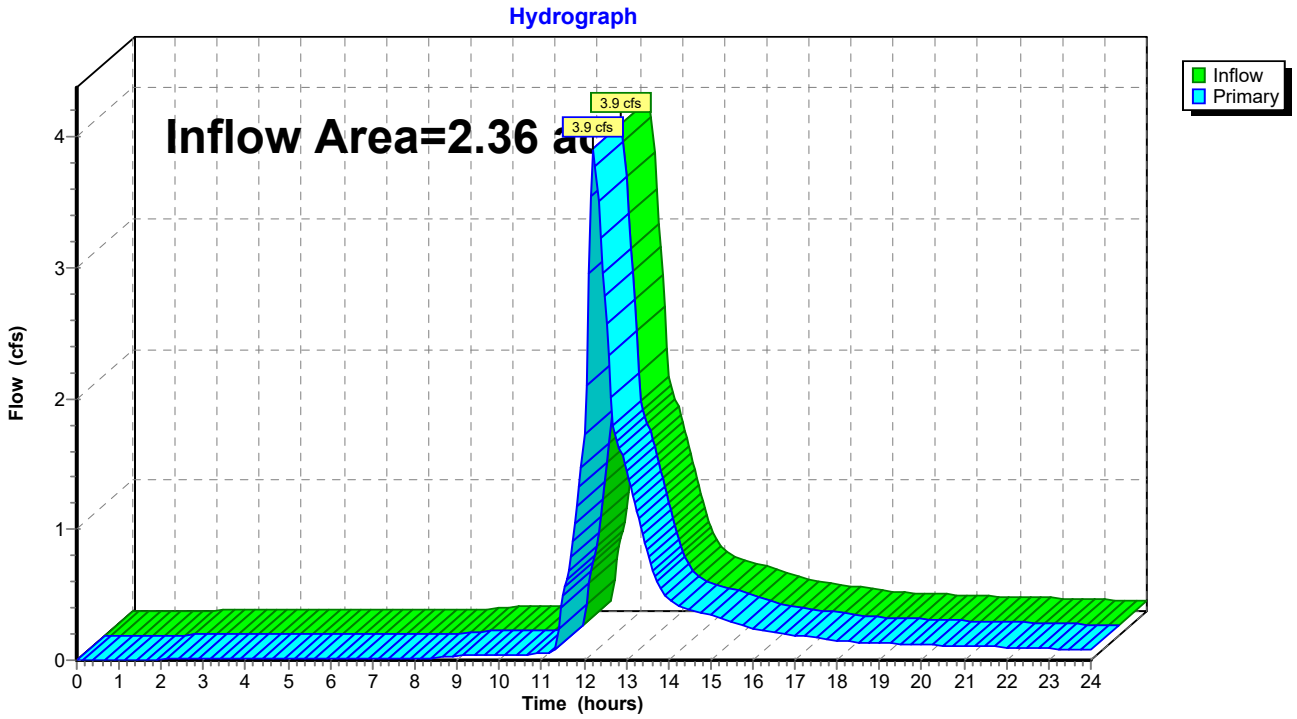


Summary for Link SP1: Forest Ave Storm Drain

Inflow Area = 2.36 ac, 72.31% Impervious, Inflow Depth > 2.48" for 10-Year Storm event
Inflow = 3.9 cfs @ 12.22 hrs, Volume= 0.489 af
Primary = 3.9 cfs @ 12.22 hrs, Volume= 0.489 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs

Link SP1: Forest Ave Storm Drain

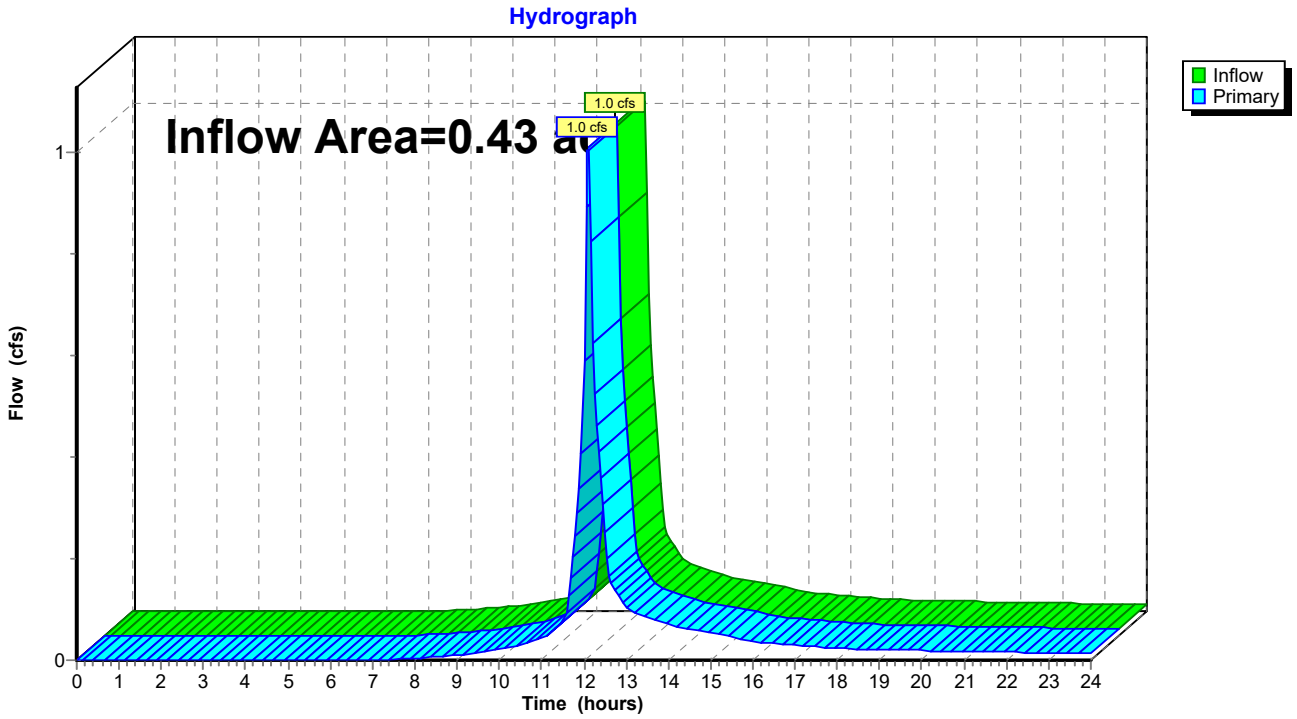


Summary for Link SP2: Combined Sewer

Inflow Area = 0.43 ac, 57.64% Impervious, Inflow Depth > 2.13" for 10-Year Storm event
Inflow = 1.0 cfs @ 12.09 hrs, Volume= 0.076 af
Primary = 1.0 cfs @ 12.09 hrs, Volume= 0.076 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs

Link SP2: Combined Sewer



Summary for Subcatchment 1S:

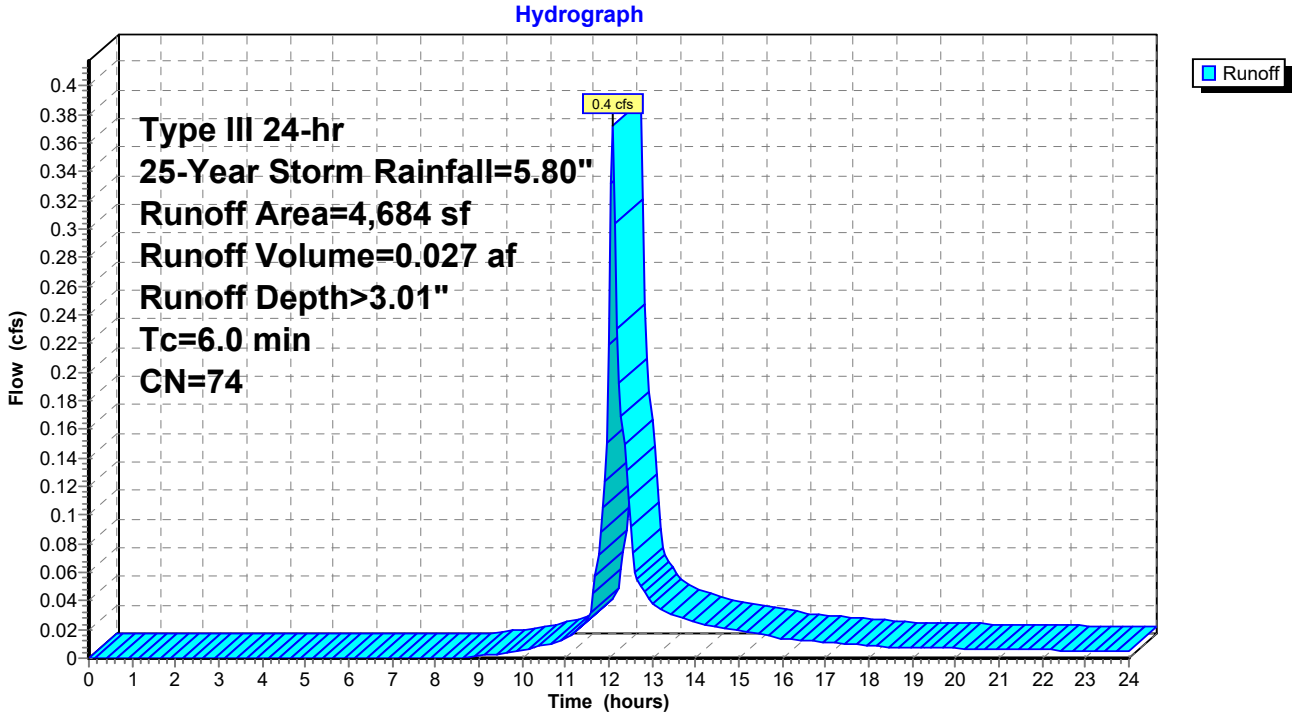
Runoff = 0.4 cfs @ 12.09 hrs, Volume= 0.027 af, Depth> 3.01"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Type III 24-hr 25-Year Storm Rainfall=5.80"

	Area (sf)	CN	Description
*	2,770	98	Impervious
	1,237	39	Grass cover, Good, HSG A
*	677	40	Porous Pavement
	4,684	74	Weighted Average
	1,914		40.86% Pervious Area
	2,770		59.14% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					**Direct Entry,**

Subcatchment 1S:



Summary for Subcatchment 2S:

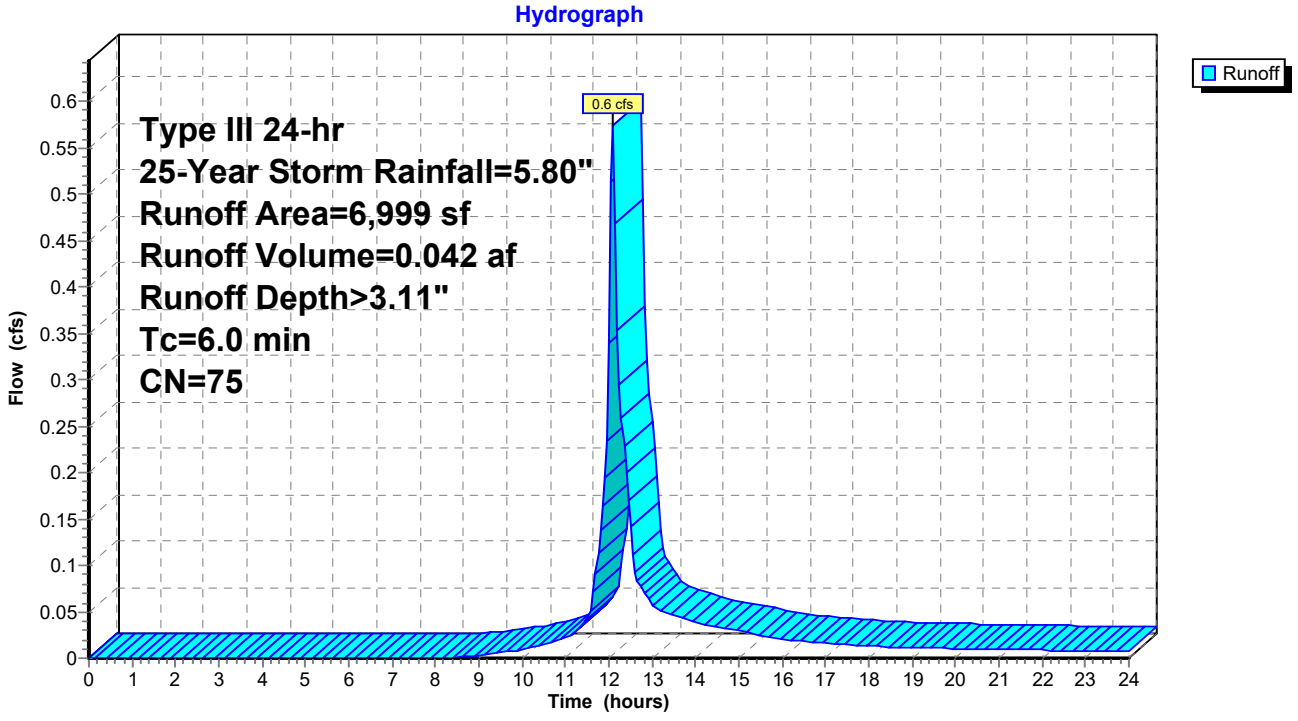
Runoff = 0.6 cfs @ 12.09 hrs, Volume= 0.042 af, Depth> 3.11"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Type III 24-hr 25-Year Storm Rainfall=5.80"

	Area (sf)	CN	Description
*	4,238	98	Impervious
	1,996	39	Grass cover, Good, HSG A
*	765	40	Porous Pavement
	6,999	75	Weighted Average
	2,761		39.45% Pervious Area
	4,238		60.55% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					**Direct Entry,**

Subcatchment 2S:



Summary for Subcatchment 3S:

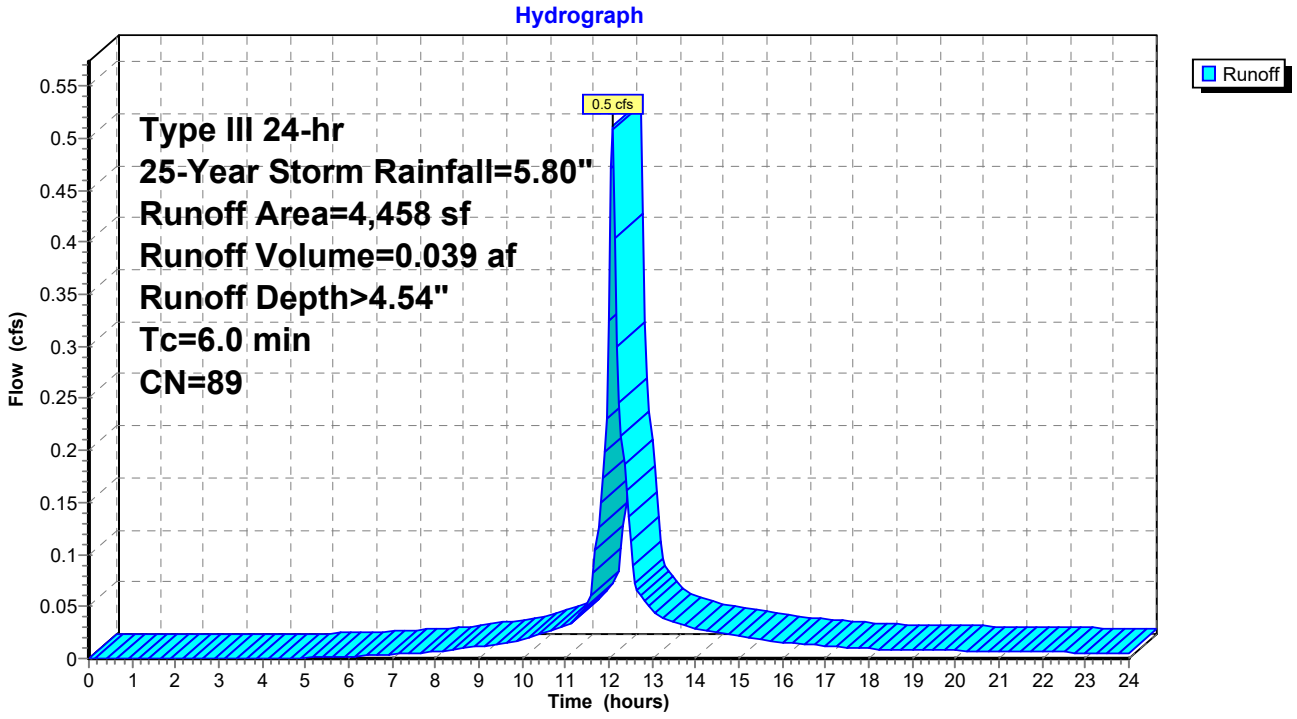
Runoff = 0.5 cfs @ 12.09 hrs, Volume= 0.039 af, Depth> 4.54"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Type III 24-hr 25-Year Storm Rainfall=5.80"

	Area (sf)	CN	Description
*	3,789	98	Impervious
	669	39	Grass cover, Good, HSG A
	4,458	89	Weighted Average
	669		15.01% Pervious Area
	3,789		84.99% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					**Direct Entry,**

Subcatchment 3S:



Summary for Subcatchment 4S:

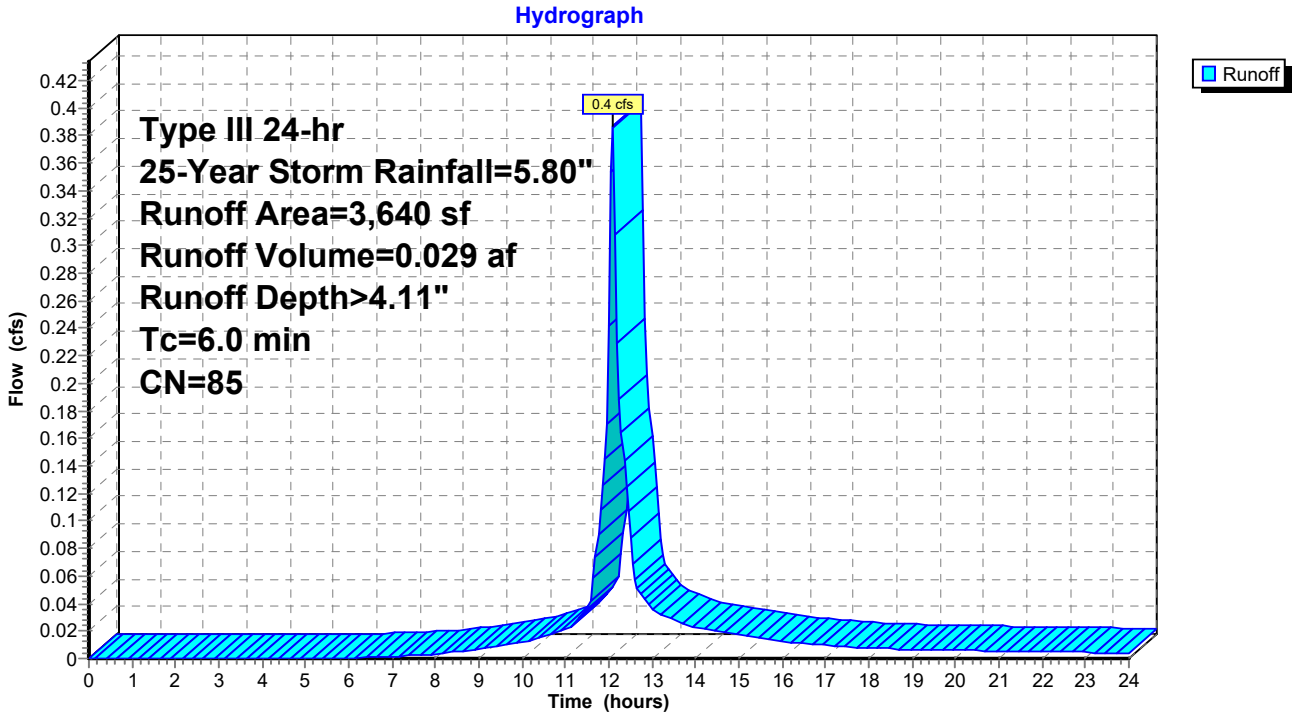
Runoff = 0.4 cfs @ 12.09 hrs, Volume= 0.029 af, Depth> 4.11"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Type III 24-hr 25-Year Storm Rainfall=5.80"

	Area (sf)	CN	Description
*	2,814	98	Impervious
	826	39	Grass cover, Good, HSG A
	3,640	85	Weighted Average
	826		22.69% Pervious Area
	2,814		77.31% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					**Direct Entry,**

Subcatchment 4S:



Summary for Subcatchment 5S:

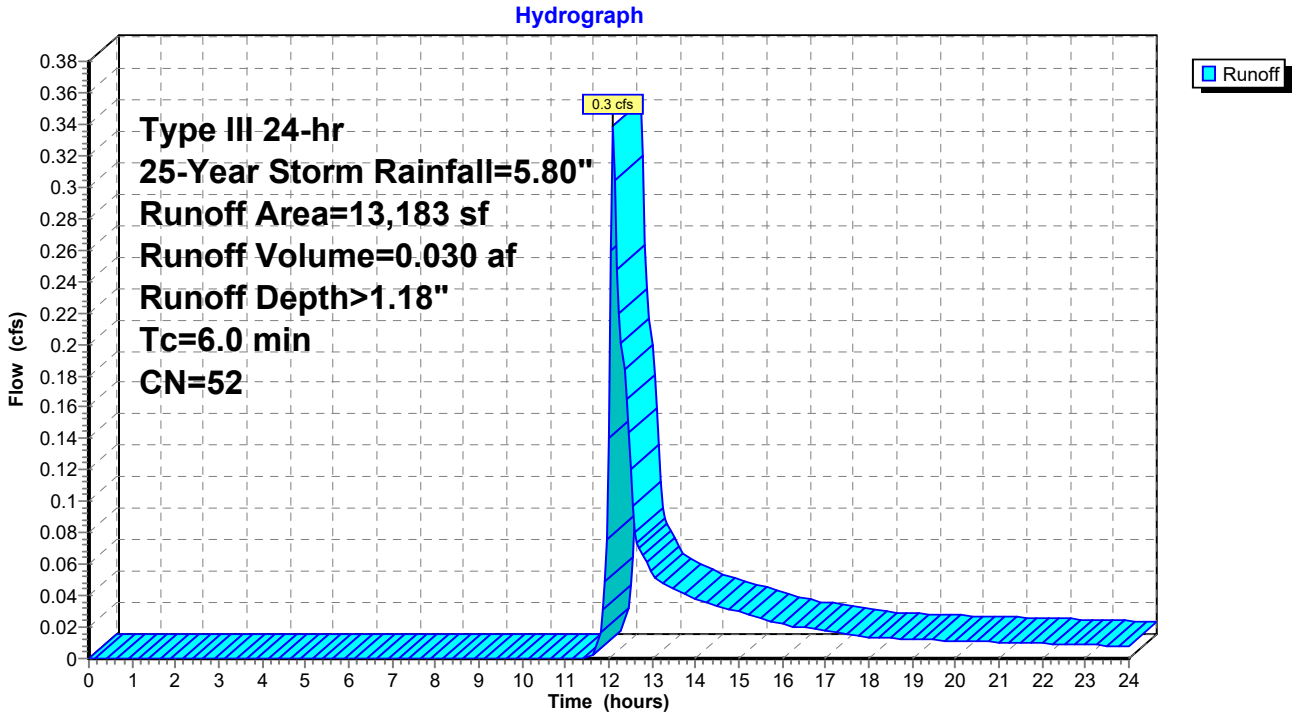
Runoff = 0.3 cfs @ 12.11 hrs, Volume= 0.030 af, Depth> 1.18"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Type III 24-hr 25-Year Storm Rainfall=5.80"

	Area (sf)	CN	Description
*	2,965	98	Impervious
	10,218	39	Grass cover, Good, HSG A
	13,183	52	Weighted Average
	10,218		77.51% Pervious Area
	2,965		22.49% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					**Direct Entry,**

Subcatchment 5S:



Summary for Subcatchment 6S:

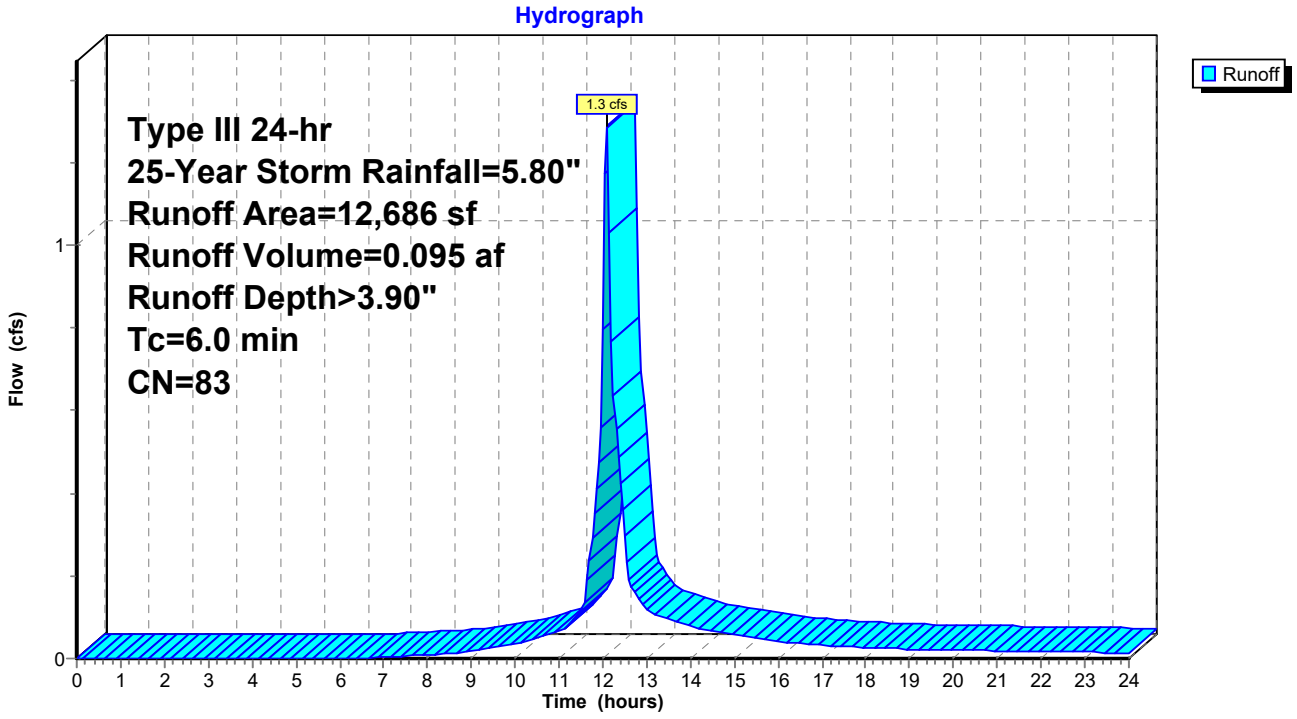
Runoff = 1.3 cfs @ 12.09 hrs, Volume= 0.095 af, Depth> 3.90"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Type III 24-hr 25-Year Storm Rainfall=5.80"

	Area (sf)	CN	Description
*	9,384	98	Impervious
	3,302	39	Grass cover, Good, HSG A
	12,686	83	Weighted Average
	3,302		26.03% Pervious Area
	9,384		73.97% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					**Direct Entry,**

Subcatchment 6S:



Summary for Subcatchment 7S: Parking Garage

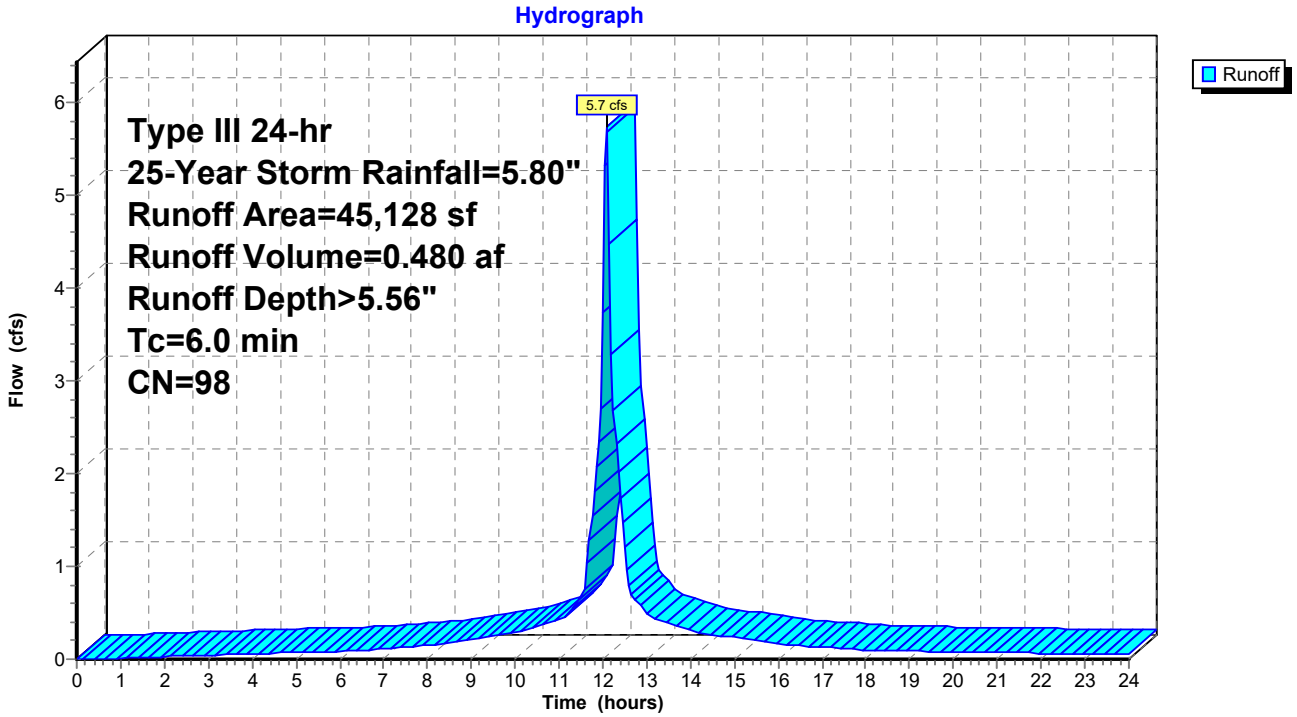
Runoff = 5.7 cfs @ 12.09 hrs, Volume= 0.480 af, Depth> 5.56"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Type III 24-hr 25-Year Storm Rainfall=5.80"

	Area (sf)	CN	Description
*	45,128	98	Impervious
	45,128		100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					**Direct Entry,**

Subcatchment 7S: Parking Garage



Summary for Subcatchment 8S:

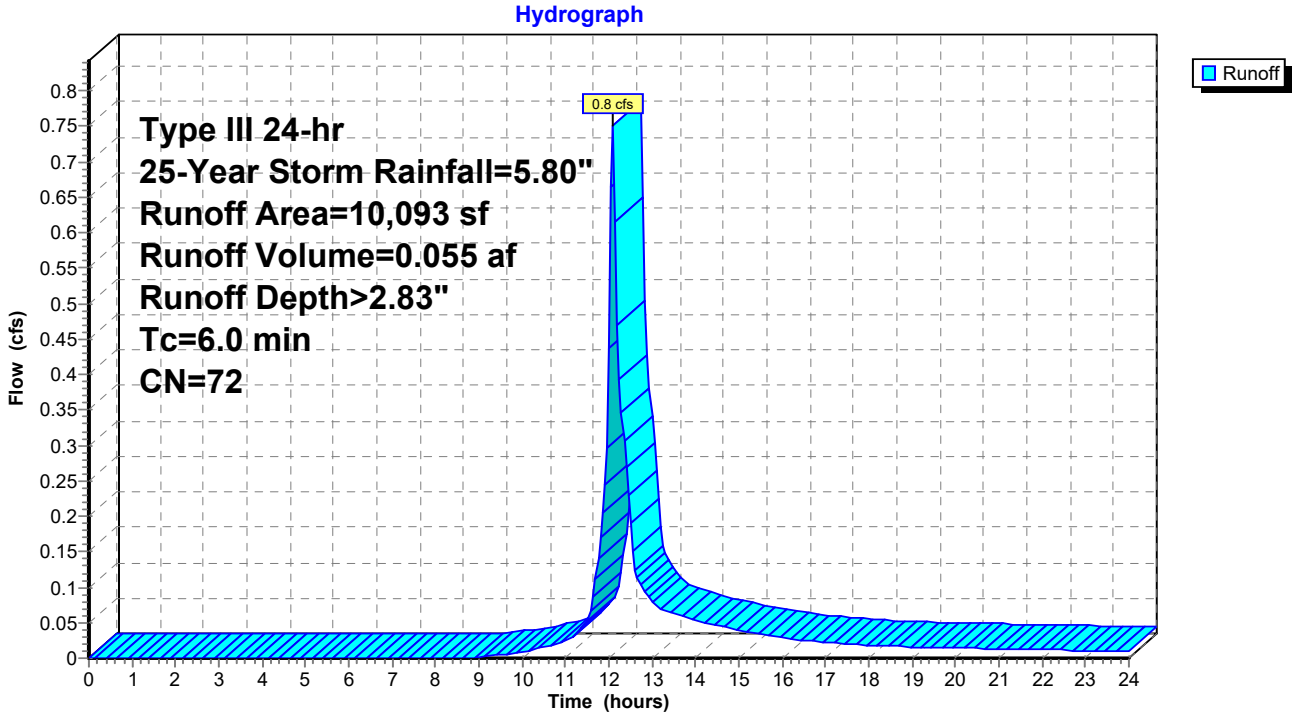
Runoff = 0.8 cfs @ 12.09 hrs, Volume= 0.055 af, Depth> 2.83"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Type III 24-hr 25-Year Storm Rainfall=5.80"

	Area (sf)	CN	Description
*	5,667	98	Impervious
	3,193	39	Grass cover, Good, HSG A
*	1,233	40	Porous Pavement
	10,093	72	Weighted Average
	4,426		43.85% Pervious Area
	5,667		56.15% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					**Direct Entry,**

Subcatchment 8S:



Summary for Subcatchment 9S:

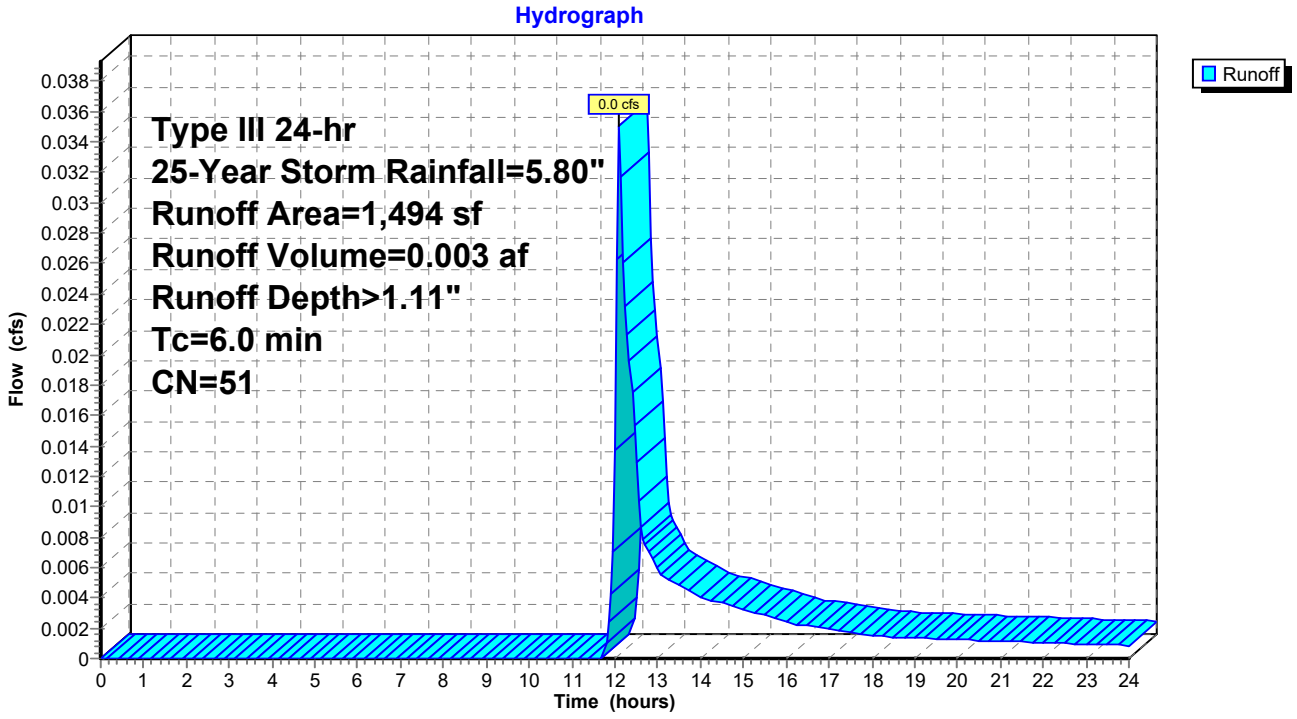
Runoff = 0.0 cfs @ 12.11 hrs, Volume= 0.003 af, Depth> 1.11"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Type III 24-hr 25-Year Storm Rainfall=5.80"

	Area (sf)	CN	Description
*	302	98	Impervious
	1,192	39	Grass cover, Good, HSG A
	1,494	51	Weighted Average
	1,192		79.79% Pervious Area
	302		20.21% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					**Direct Entry,**

Subcatchment 9S:



Summary for Subcatchment 10S:

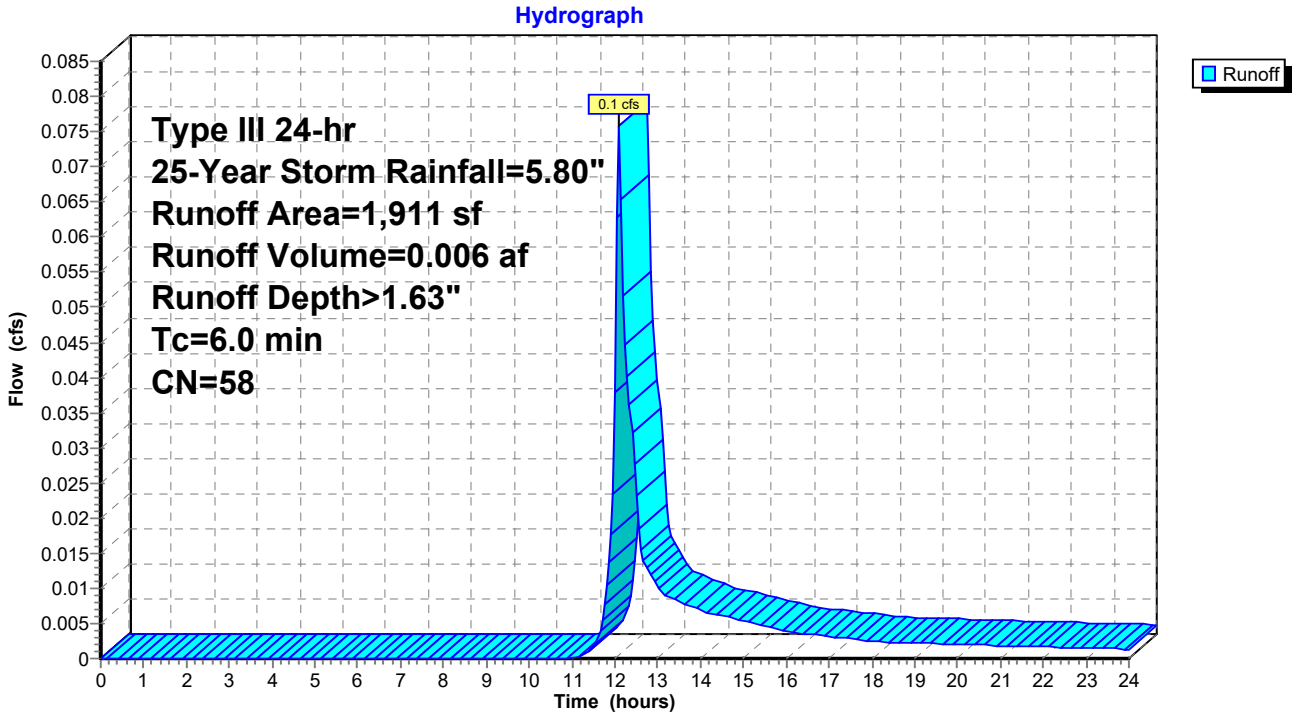
Runoff = 0.1 cfs @ 12.10 hrs, Volume= 0.006 af, Depth> 1.63"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Type III 24-hr 25-Year Storm Rainfall=5.80"

	Area (sf)	CN	Description
*	617	98	Impervious
	1,294	39	Grass cover, Good, HSG A
	1,911	58	Weighted Average
	1,294		67.71% Pervious Area
	617		32.29% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					**Direct Entry,**

Subcatchment 10S:



Summary for Subcatchment 12S:

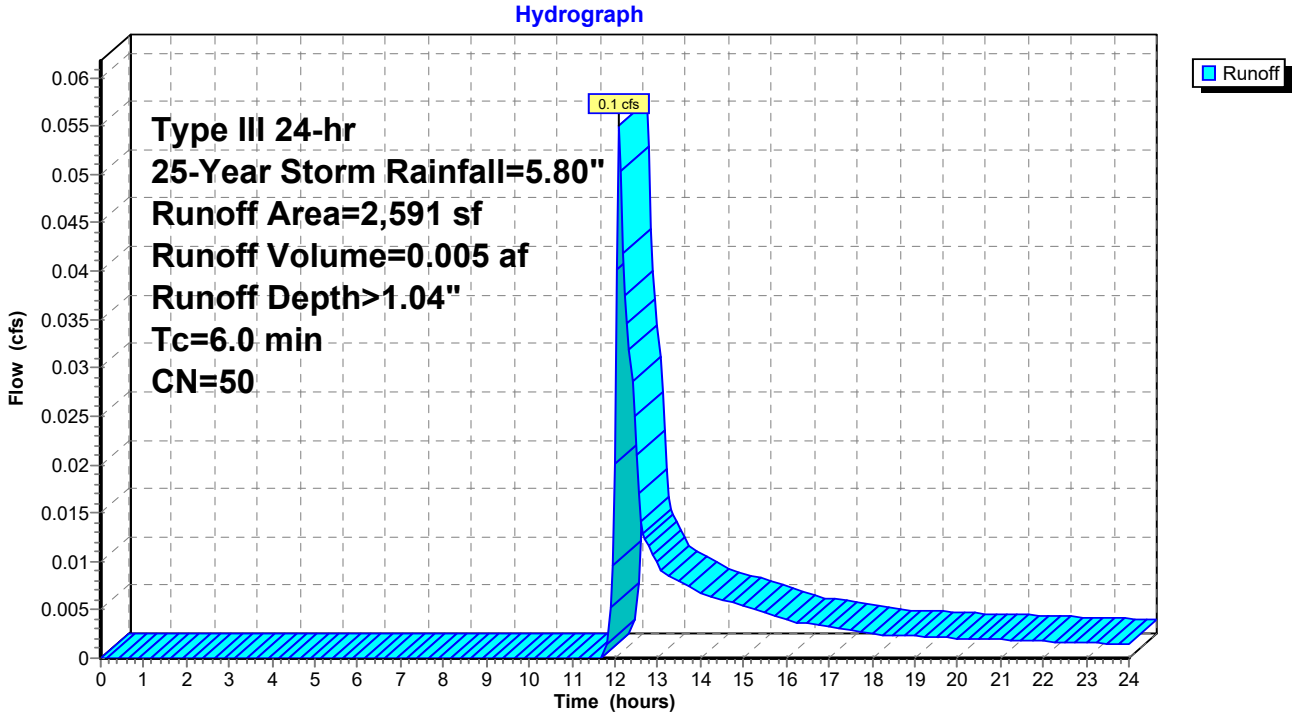
Runoff = 0.1 cfs @ 12.11 hrs, Volume= 0.005 af, Depth> 1.04"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Type III 24-hr 25-Year Storm Rainfall=5.80"

	Area (sf)	CN	Description
*	466	98	Impervious
	1,499	39	Grass cover, Good, HSG A
*	626	40	Porous Pavement
	2,591	50	Weighted Average
	2,125		82.01% Pervious Area
	466		17.99% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					**Direct Entry,**

Subcatchment 12S:



Summary for Subcatchment 13S:

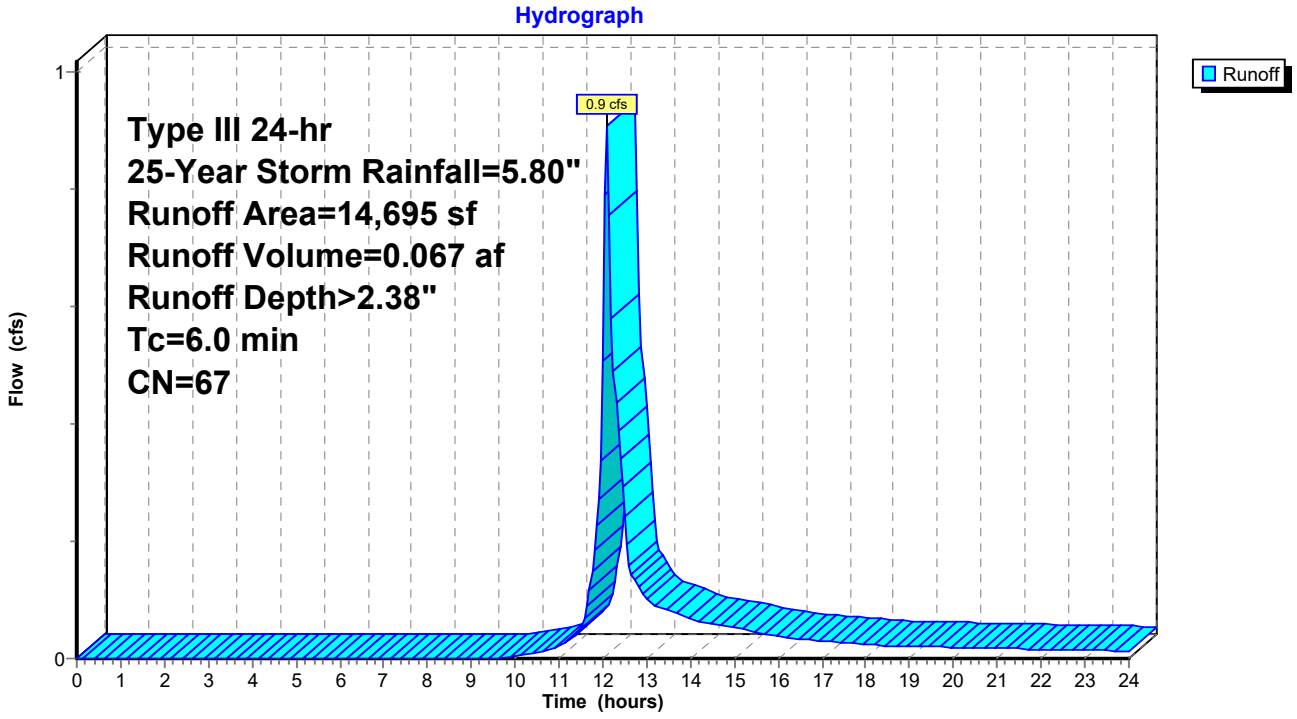
Runoff = 0.9 cfs @ 12.10 hrs, Volume= 0.067 af, Depth> 2.38"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Type III 24-hr 25-Year Storm Rainfall=5.80"

	Area (sf)	CN	Description
*	7,017	98	Impervious
	7,678	39	Grass cover, Good, HSG A
	14,695	67	Weighted Average
	7,678		52.25% Pervious Area
	7,017		47.75% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					**Direct Entry,**

Subcatchment 13S:



Summary for Pond 1P: CB1

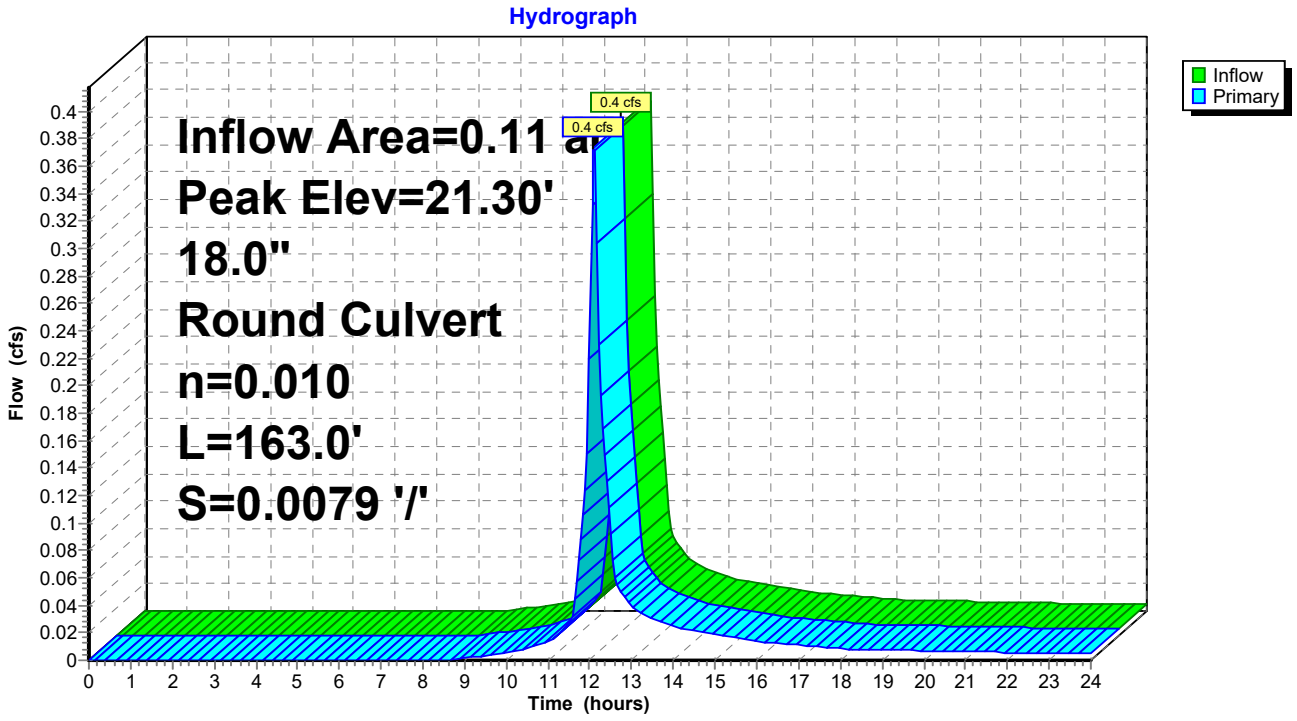
Inflow Area = 0.11 ac, 59.14% Impervious, Inflow Depth > 3.01" for 25-Year Storm event
Inflow = 0.4 cfs @ 12.09 hrs, Volume= 0.027 af
Outflow = 0.4 cfs @ 12.09 hrs, Volume= 0.027 af, Atten= 0%, Lag= 0.0 min
Primary = 0.4 cfs @ 12.09 hrs, Volume= 0.027 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Peak Elev= 21.30' @ 12.09 hrs
Flood Elev= 25.12'

Device	Routing	Invert	Outlet Devices
#1	Primary	21.00'	**18.0" Round Culvert** L= 163.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 21.00' / 19.71' S= 0.0079 '/' Cc= 0.900 n= 0.010 PVC, smooth interior, Flow Area= 1.77 sf

Primary OutFlow Max=0.4 cfs @ 12.09 hrs HW=21.30' TW=20.24' (Dynamic Tailwater)
1=Culvert (Inlet Controls 0.4 cfs @ 1.47 fps)

Pond 1P: CB1



Summary for Pond 2P: CB2

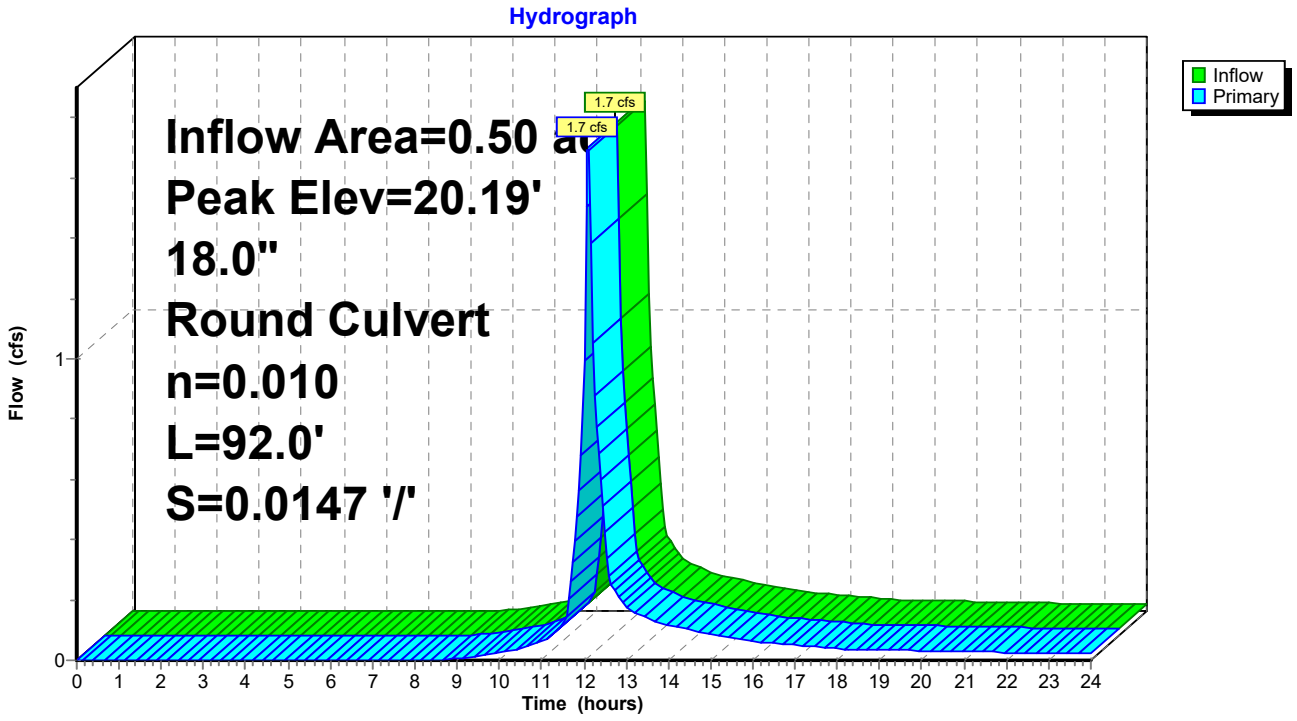
Inflow Area = 0.50 ac, 58.21% Impervious, Inflow Depth > 2.96" for 25-Year Storm event
Inflow = 1.7 cfs @ 12.09 hrs, Volume= 0.123 af
Outflow = 1.7 cfs @ 12.09 hrs, Volume= 0.123 af, Atten= 0%, Lag= 0.0 min
Primary = 1.7 cfs @ 12.09 hrs, Volume= 0.123 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Peak Elev= 20.19' @ 12.19 hrs
Flood Elev= 22.97'

Device	Routing	Invert	Outlet Devices
#1	Primary	18.90'	**18.0" Round Culvert** L= 92.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 18.90' / 17.55' S= 0.0147 '/' Cc= 0.900 n= 0.010 PVC, smooth interior, Flow Area= 1.77 sf

Primary OutFlow Max=0.0 cfs @ 12.09 hrs HW=19.57' TW=19.64' (Dynamic Tailwater)
↑**1=Culvert** (Controls 0.0 cfs)

Pond 2P: CB2



Summary for Pond 3P: CB3

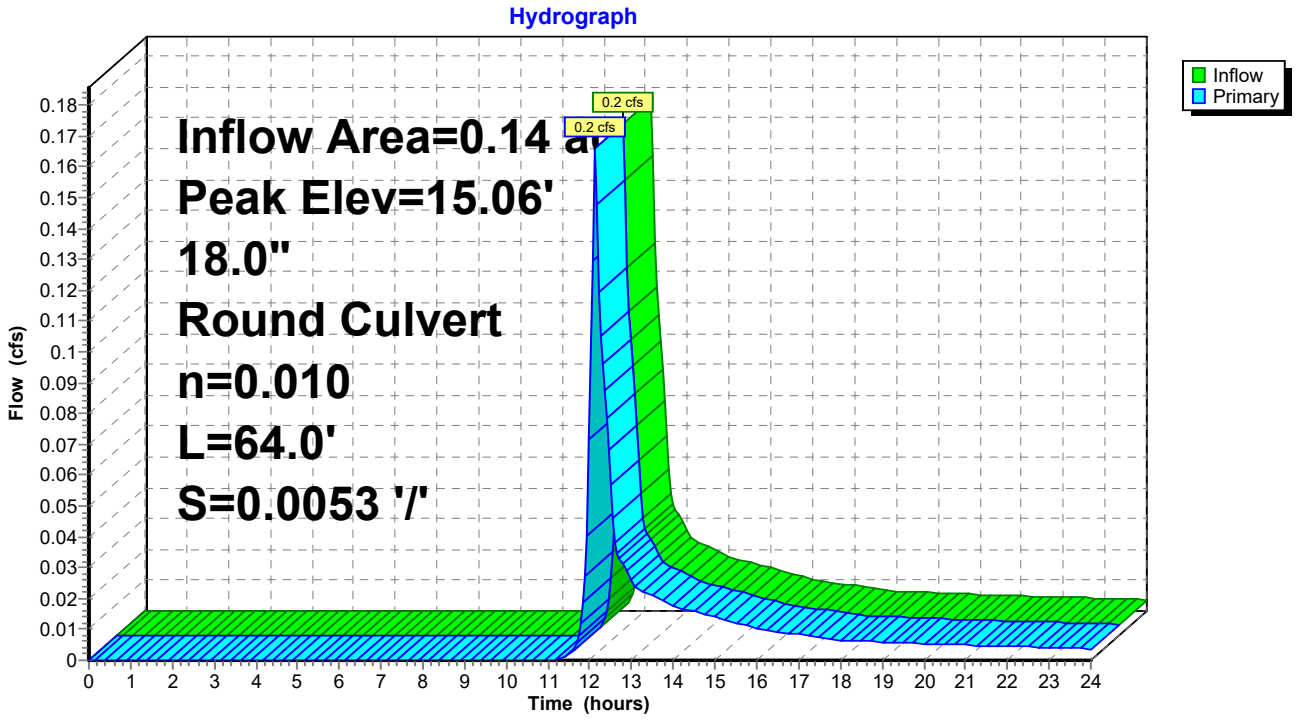
Inflow Area = 0.14 ac, 23.10% Impervious, Inflow Depth > 1.25" for 25-Year Storm event
Inflow = 0.2 cfs @ 12.11 hrs, Volume= 0.014 af
Outflow = 0.2 cfs @ 12.11 hrs, Volume= 0.014 af, Atten= 0%, Lag= 0.0 min
Primary = 0.2 cfs @ 12.11 hrs, Volume= 0.014 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Peak Elev= 15.06' @ 12.11 hrs
Flood Elev= 23.90'

Device	Routing	Invert	Outlet Devices
#1	Primary	14.86'	**18.0" Round Culvert** L= 64.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 14.86' / 14.52' S= 0.0053 '/' Cc= 0.900 n= 0.010 PVC, smooth interior, Flow Area= 1.77 sf

Primary OutFlow Max=0.2 cfs @ 12.11 hrs HW=15.06' TW=14.30' (Dynamic Tailwater)
1=Culvert (Inlet Controls 0.2 cfs @ 1.19 fps)

Pond 3P: CB3



Summary for Pond 4P: CB4

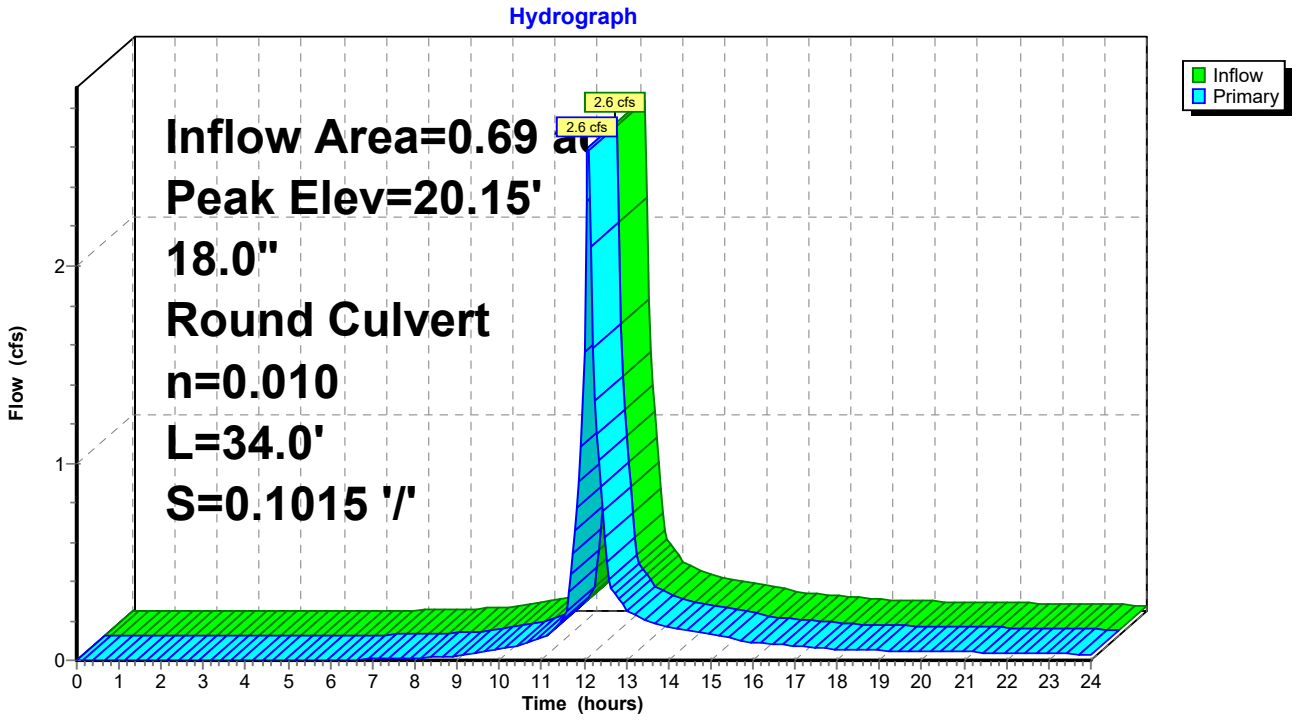
Inflow Area = 0.69 ac, 64.53% Impervious, Inflow Depth > 3.33" for 25-Year Storm event
Inflow = 2.6 cfs @ 12.09 hrs, Volume= 0.191 af
Outflow = 2.6 cfs @ 12.09 hrs, Volume= 0.191 af, Atten= 0%, Lag= 0.0 min
Primary = 2.6 cfs @ 12.09 hrs, Volume= 0.191 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Peak Elev= 20.15' @ 12.15 hrs
Flood Elev= 22.87'

Device	Routing	Invert	Outlet Devices
#1	Primary	17.45'	**18.0" Round Culvert** L= 34.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 17.45' / 14.00' S= 0.1015 '/' Cc= 0.900 n= 0.010 PVC, smooth interior, Flow Area= 1.77 sf

Primary OutFlow Max=0.0 cfs @ 12.09 hrs HW=19.61' TW=19.98' (Dynamic Tailwater)
↑**1=Culvert** (Controls 0.0 cfs)

Pond 4P: CB4



Summary for Pond 5P: CB5

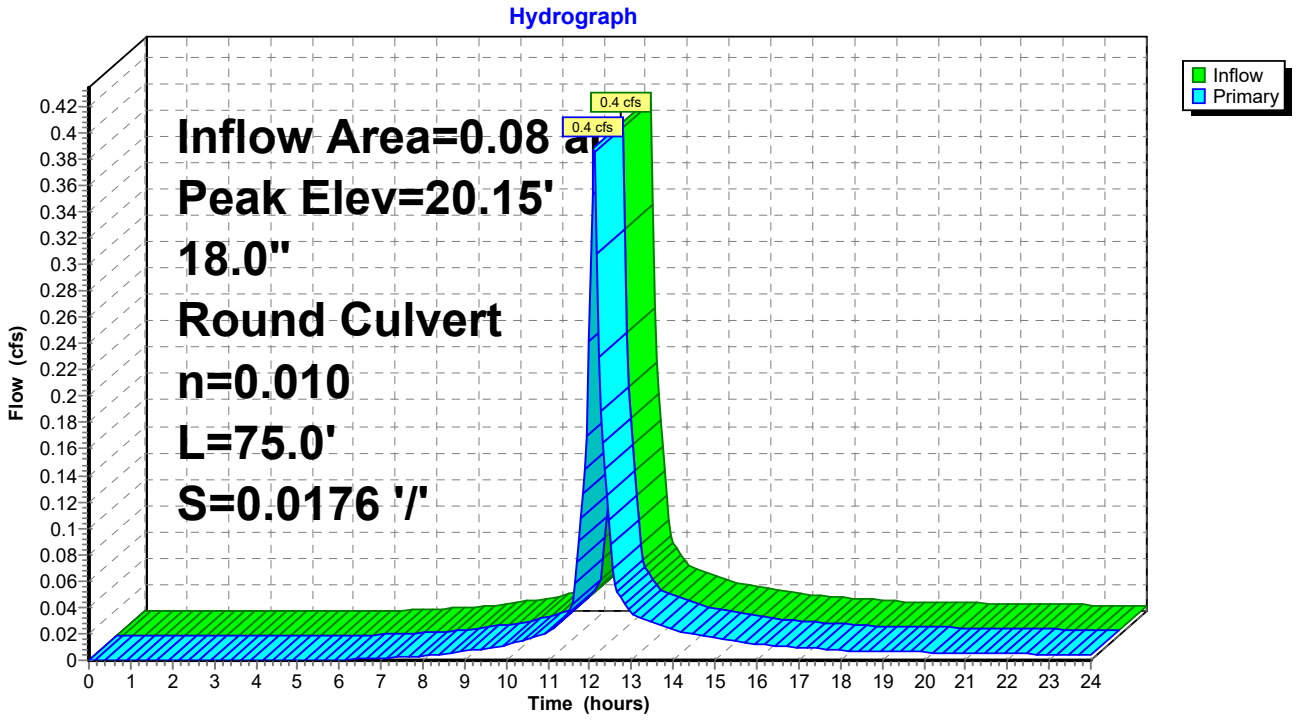
Inflow Area = 0.08 ac, 77.31% Impervious, Inflow Depth > 4.11" for 25-Year Storm event
Inflow = 0.4 cfs @ 12.09 hrs, Volume= 0.029 af
Outflow = 0.4 cfs @ 12.09 hrs, Volume= 0.029 af, Atten= 0%, Lag= 0.0 min
Primary = 0.4 cfs @ 12.09 hrs, Volume= 0.029 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Peak Elev= 20.15' @ 12.20 hrs
Flood Elev= 22.83'

Device	Routing	Invert	Outlet Devices
#1	Primary	18.87'	**18.0" Round Culvert** L= 75.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 18.87' / 17.55' S= 0.0176 '/' Cc= 0.900 n= 0.010 PVC, smooth interior, Flow Area= 1.77 sf

Primary OutFlow Max=0.0 cfs @ 12.09 hrs HW=19.19' TW=19.56' (Dynamic Tailwater)
↑**1=Culvert** (Controls 0.0 cfs)

Pond 5P: CB5



Summary for Pond 6P: CB6

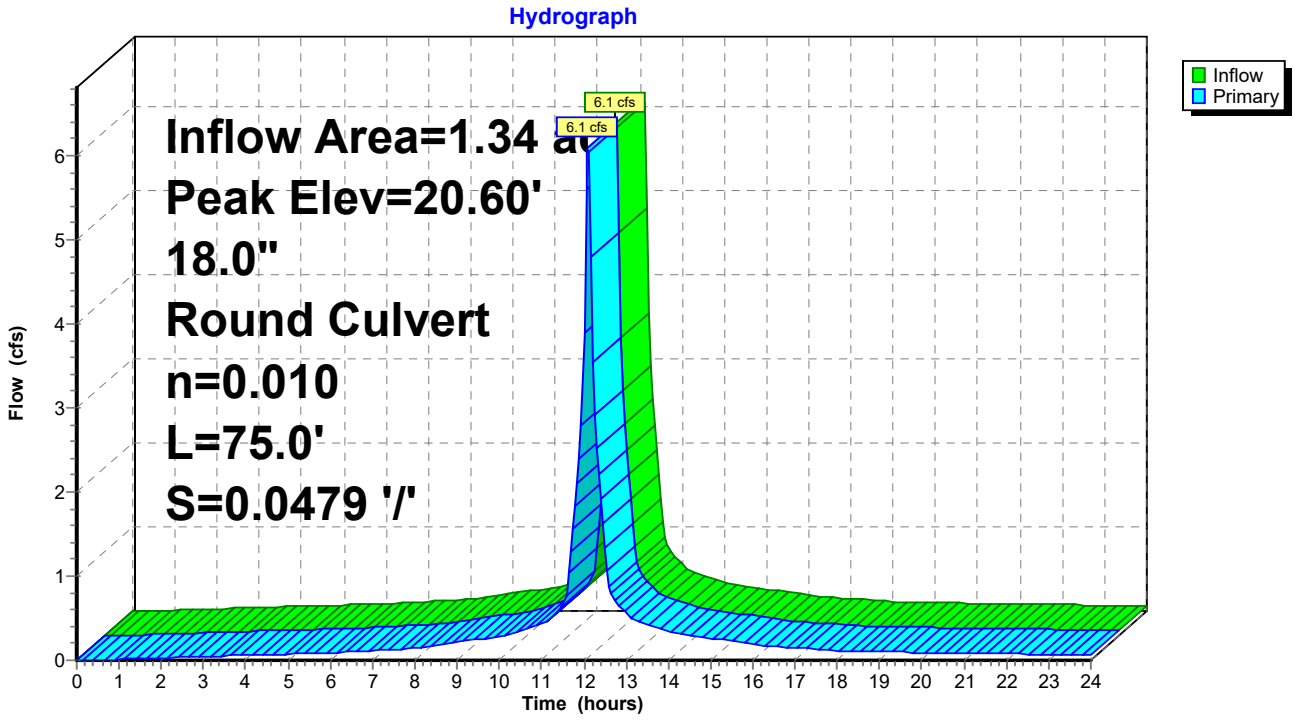
Inflow Area = 1.34 ac, 82.48% Impervious, Inflow Depth > 4.57" for 25-Year Storm event
Inflow = 6.1 cfs @ 12.09 hrs, Volume= 0.510 af
Outflow = 6.1 cfs @ 12.09 hrs, Volume= 0.510 af, Atten= 0%, Lag= 0.0 min
Primary = 6.1 cfs @ 12.09 hrs, Volume= 0.510 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Peak Elev= 20.60' @ 12.13 hrs
Flood Elev= 22.50'

Device	Routing	Invert	Outlet Devices
#1	Primary	17.59'	**18.0" Round Culvert** L= 75.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 17.59' / 14.00' S= 0.0479 '/' Cc= 0.900 n= 0.010 PVC, smooth interior, Flow Area= 1.77 sf

Primary OutFlow Max=3.2 cfs @ 12.09 hrs HW=20.17' TW=19.94' (Dynamic Tailwater)
1=Culvert (Inlet Controls 3.2 cfs @ 1.81 fps)

Pond 6P: CB6



Summary for Pond 7P: CB7

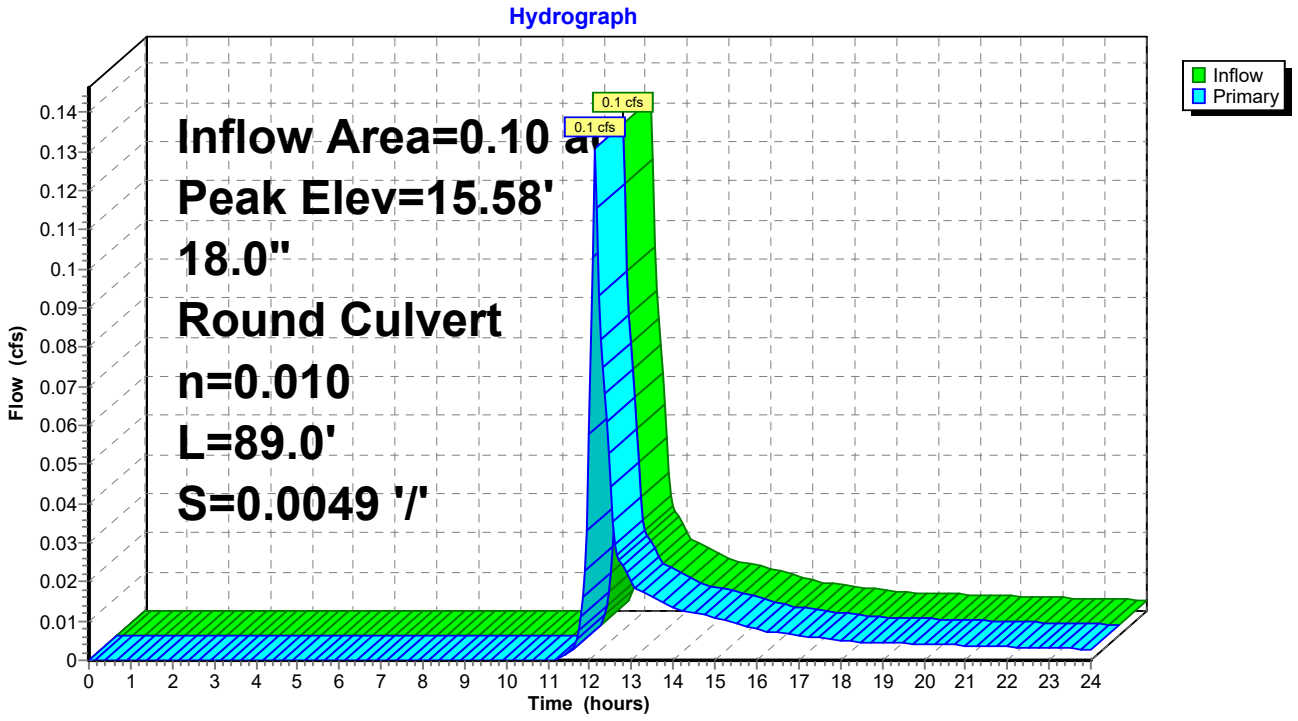
Inflow Area = 0.10 ac, 24.06% Impervious, Inflow Depth > 1.29" for 25-Year Storm event
Inflow = 0.1 cfs @ 12.11 hrs, Volume= 0.011 af
Outflow = 0.1 cfs @ 12.11 hrs, Volume= 0.011 af, Atten= 0%, Lag= 0.0 min
Primary = 0.1 cfs @ 12.11 hrs, Volume= 0.011 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Peak Elev= 15.58' @ 12.11 hrs
Flood Elev= 24.75'

Device	Routing	Invert	Outlet Devices
#1	Primary	15.40'	**18.0" Round Culvert** L= 89.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 15.40' / 14.96' S= 0.0049 '/' Cc= 0.900 n= 0.010 PVC, smooth interior, Flow Area= 1.77 sf

Primary OutFlow Max=0.1 cfs @ 12.11 hrs HW=15.57' TW=15.06' (Dynamic Tailwater)
1=Culvert (Inlet Controls 0.1 cfs @ 1.12 fps)

Pond 7P: CB7



Summary for Pond 8P: CB8

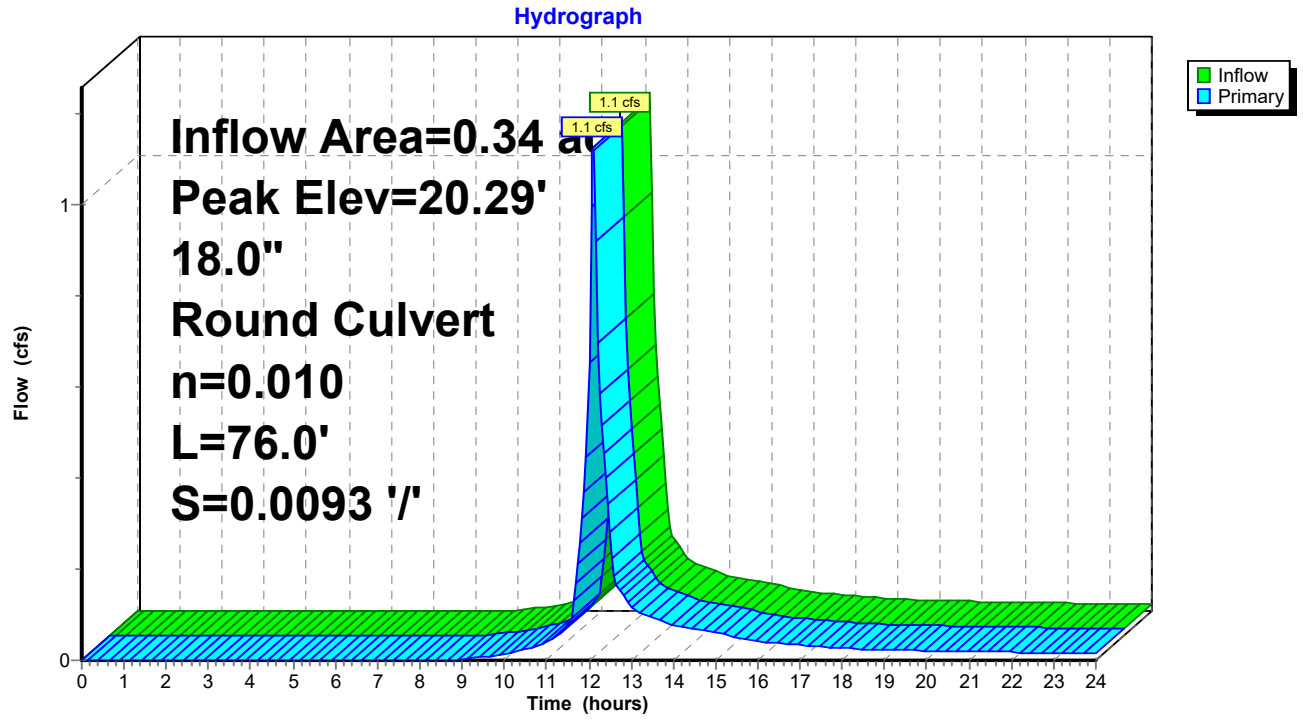
Inflow Area = 0.34 ac, 57.10% Impervious, Inflow Depth > 2.89" for 25-Year Storm event
Inflow = 1.1 cfs @ 12.09 hrs, Volume= 0.082 af
Outflow = 1.1 cfs @ 12.09 hrs, Volume= 0.082 af, Atten= 0%, Lag= 0.0 min
Primary = 1.1 cfs @ 12.09 hrs, Volume= 0.082 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Peak Elev= 20.29' @ 12.24 hrs
Flood Elev= 23.60'

Device	Routing	Invert	Outlet Devices
#1	Primary	19.71'	**18.0" Round Culvert** L= 76.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 19.71' / 19.00' S= 0.0093 '/' Cc= 0.900 n= 0.010 PVC, smooth interior, Flow Area= 1.77 sf

Primary OutFlow Max=1.1 cfs @ 12.09 hrs HW=20.24' TW=19.57' (Dynamic Tailwater)
1=Culvert (Inlet Controls 1.1 cfs @ 1.96 fps)

Pond 8P: CB8



Summary for Pond 9P: DMH1

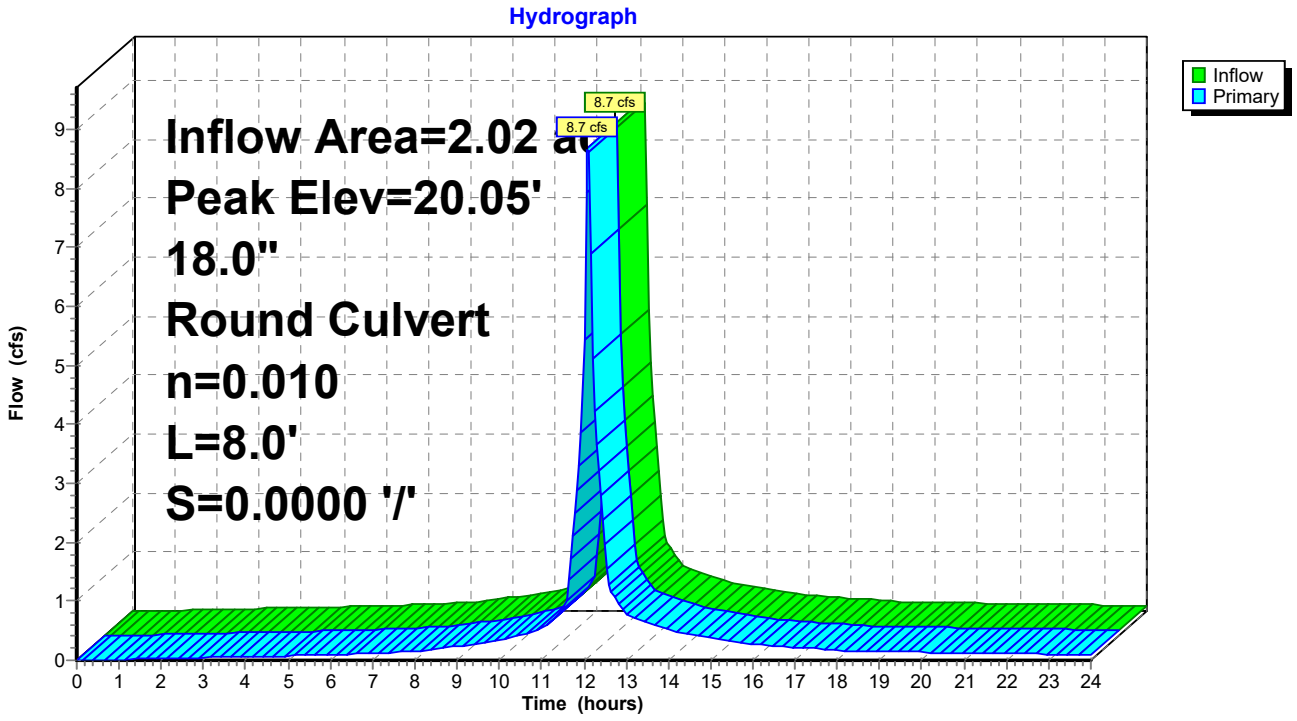
Inflow Area = 2.02 ac, 76.40% Impervious, Inflow Depth > 4.15" for 25-Year Storm event
Inflow = 8.7 cfs @ 12.09 hrs, Volume= 0.700 af
Outflow = 8.7 cfs @ 12.09 hrs, Volume= 0.700 af, Atten= 0%, Lag= 0.0 min
Primary = 8.7 cfs @ 12.09 hrs, Volume= 0.700 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Peak Elev= 20.05' @ 12.10 hrs
Flood Elev= 22.50'

Device	Routing	Invert	Outlet Devices
#1	Primary	13.58'	**18.0" Round Culvert** L= 8.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 13.58' / 13.58' S= 0.0000 '/' Cc= 0.900 n= 0.010 PVC, smooth interior, Flow Area= 1.77 sf

Primary OutFlow Max=8.1 cfs @ 12.09 hrs HW=19.95' TW=18.49' (Dynamic Tailwater)
1=Culvert (Inlet Controls 8.1 cfs @ 4.59 fps)

Pond 9P: DMH1



Summary for Pond 13P: CMP Peak Detention

Inflow	=	8.7 cfs @	12.10 hrs, Volume=	0.551 af
Outflow	=	7.6 cfs @	12.16 hrs, Volume=	0.551 af, Atten= 12%, Lag= 3.5 min
Primary	=	7.6 cfs @	12.16 hrs, Volume=	0.551 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Peak Elev= 18.41' @ 12.16 hrs Surf.Area= 1,224 sf Storage= 4,234 cf
Flood Elev= 20.87' Surf.Area= 1,224 sf Storage= 4,269 cf

Plug-Flow detention time= 12.7 min calculated for 0.549 af (100% of inflow)
Center-of-Mass det. time= 12.1 min (812.4 - 800.3)

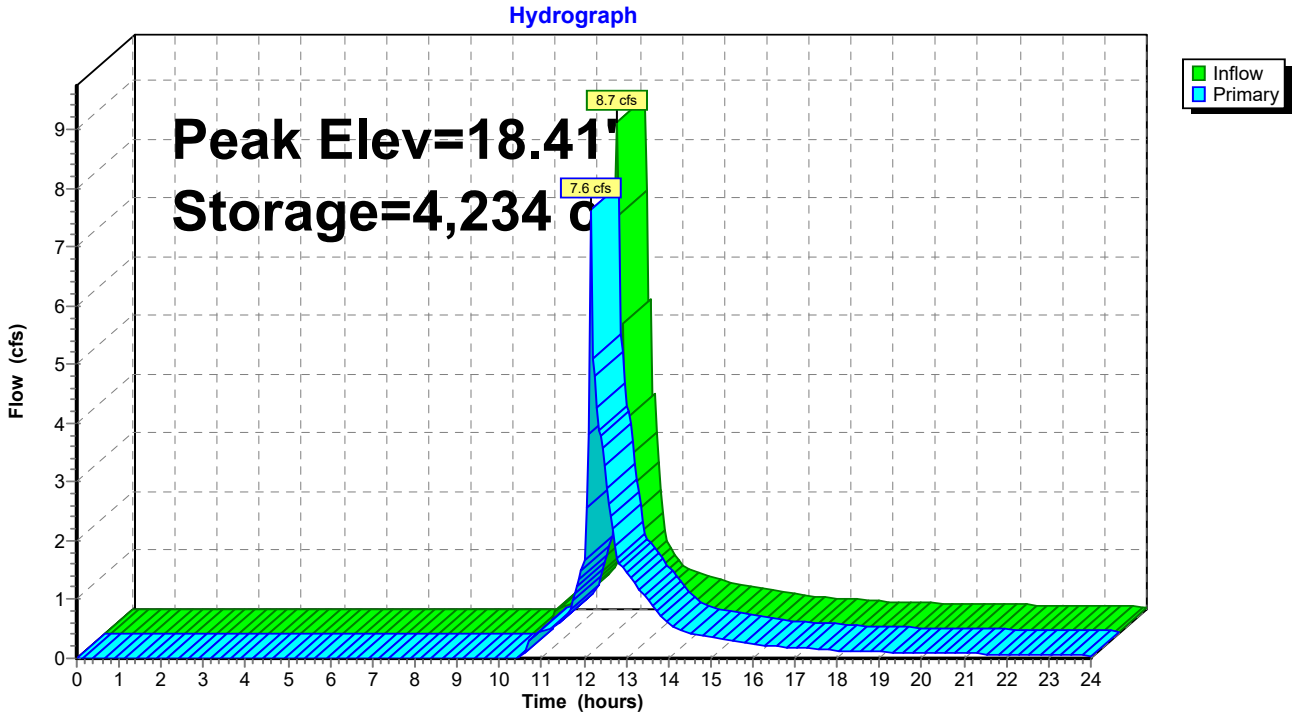
Volume	Invert	Avail.Storage	Storage Description
#1A	12.58'	0 cf	**8.00'W x 153.00'L x 6.00'H Field A** 7,344 cf Overall - 4,268 cf Embedded = 3,076 cf x 0.0% Voids
#2A	12.58'	4,268 cf	**CMP Round 72** x 7 Inside #1 Effective Size= 72.0"W x 72.0"H => 28.26 sf x 20.00'L = 565.2 cf Overall Size= 72.0"W x 72.0"H x 20.00'L Row Length Adjustment= +11.00' x 28.26 sf x 1 rows
		4,268 cf	Total Available Storage

Storage Group A created with Chamber Wizard

Device	Routing	Invert	Outlet Devices
#1	Primary	12.58'	**18.0" Round Culvert** L= 20.0' CMP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 12.58' / 12.20' S= 0.0190 '/' Cc= 0.900 n= 0.010 PVC, smooth interior, Flow Area= 1.77 sf
#2	Device 1	12.58'	**6.1" Vert. Orifice/Grate** C= 0.600
#3	Device 1	15.58'	**5.7" Vert. Orifice/Grate** C= 0.600
#4	Device 1	16.66'	**4.8" Vert. Orifice/Grate** C= 0.600
#5	Device 1	17.92'	**Custom Weir/Orifice, Cv= 2.62 (C= 3.28)** Head (feet) 3.21 3.27 3.33 3.39 3.45 3.51 3.57 3.63 3.69 3.75 3.81 3.87 Width (feet) 3.75 3.60 3.43 3.26 3.06 2.85 2.62 2.35 2.05 1.68 1.19 0.00

Primary OutFlow Max=7.2 cfs @ 12.16 hrs HW=18.35' TW=13.51' (Dynamic Tailwater)
- **1=Culvert** (Passes 7.2 cfs of 18.7 cfs potential flow)
  - **2=Orifice/Grate** (Orifice Controls 2.1 cfs @ 10.59 fps)
  - **3=Orifice/Grate** (Orifice Controls 1.4 cfs @ 7.66 fps)
  - **4=Orifice/Grate** (Orifice Controls 0.7 cfs @ 5.88 fps)
  - **5=Custom Weir/Orifice** (Weir Controls 3.0 cfs @ 2.25 fps)

Pond 13P: CMP Peak Detention



Summary for Pond 14P: CONTECH WQv CMP Det & SF System

Inflow Area = 2.02 ac, 76.40% Impervious, Inflow Depth > 4.15" for 25-Year Storm event
Inflow = 8.7 cfs @ 12.09 hrs, Volume= 0.700 af
Outflow = 8.8 cfs @ 12.10 hrs, Volume= 0.620 af, Atten= 0%, Lag= 0.5 min
Primary = 0.0 cfs @ 12.06 hrs, Volume= 0.069 af
Secondary = 8.7 cfs @ 12.10 hrs, Volume= 0.551 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Starting Elev= 13.58' Surf.Area= 1,313 sf Storage= 186 cf
Peak Elev= 18.52' @ 12.10 hrs Surf.Area= 1,313 sf Storage= 4,102 cf (3,916 cf above start)
Flood Elev= 20.87' Surf.Area= 1,313 sf Storage= 4,110 cf (3,924 cf above start)

Plug-Flow detention time= 100.2 min calculated for 0.616 af (88% of inflow)
Center-of-Mass det. time= 38.8 min (810.0 - 771.2)

Volume	Invert	Avail.Storage	Storage Description
#1A	13.08'	0 cf	**7.50'W x 175.00'L x 5.50'H Field A** 7,219 cf Overall - 4,108 cf Embedded = 3,110 cf x 0.0% Voids
#2A	13.08'	4,108 cf	**CMP Round 66** x 8 Inside #1 Effective Size= 66.0"W x 66.0"H => 23.75 sf x 20.00'L = 475.0 cf Overall Size= 66.0"W x 66.0"H x 20.00'L Row Length Adjustment= +13.00' x 23.75 sf x 1 rows
		4,108 cf	Total Available Storage

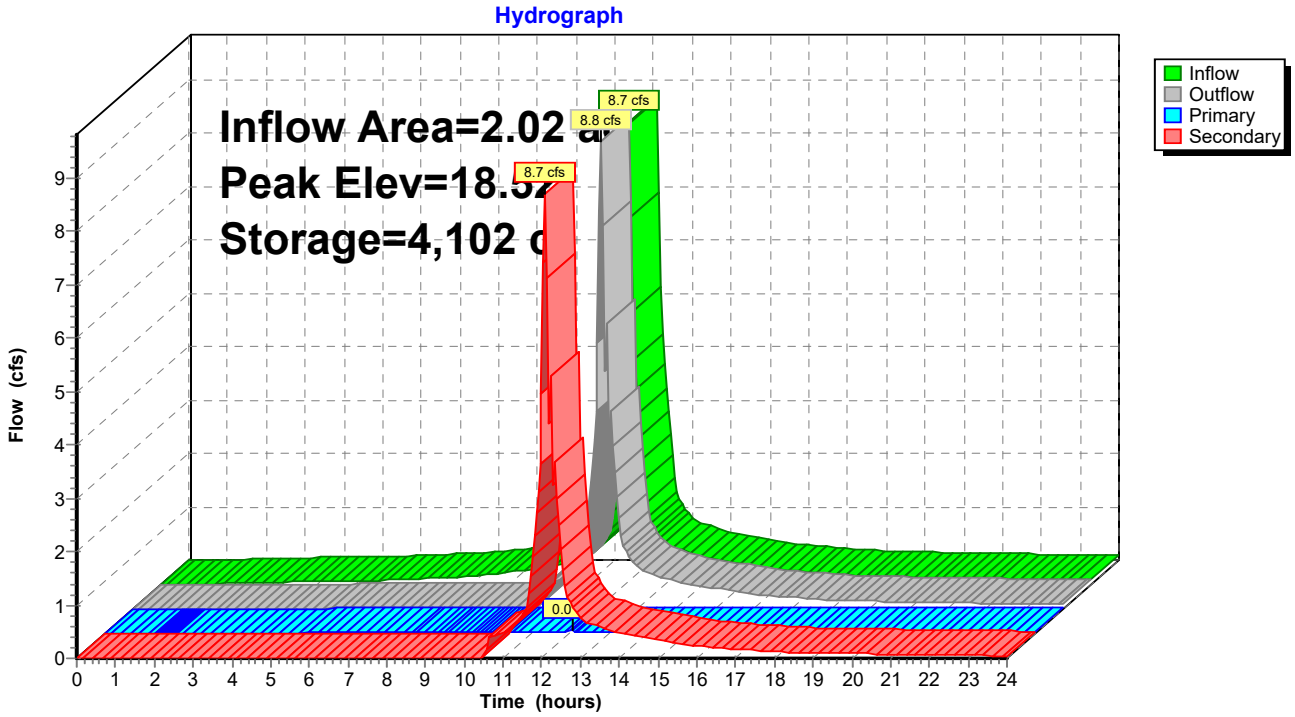
Storage Group A created with Chamber Wizard

Device	Routing	Invert	Outlet Devices
#1	Device 2	13.58'	**12.0" Round Culvert** L= 3.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 13.58' / 13.56' S= 0.0067 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.79 sf
#2	Primary	12.58'	**Tube/Siphon/Float Valve X 7.00** Starts@15.33' Breaks@13.25' 0.336" Diameter, C= 0.600, 0.263" Trickle Diameter
#3	Secondary	17.65'	**Custom Weir/Orifice, Cv= 2.62 (C= 3.28)** Head (feet) 2.44 2.49 2.54 2.60 2.66 2.71 2.76 2.82 2.87 2.93 2.99 3.04 3.09 3.15 3.20 3.26 3.32 3.37 Width (feet) 4.13 4.03 3.93 3.82 3.70 3.57 3.44 3.30 3.15 2.98 2.81 2.61 2.40 2.16 1.88 1.54 1.09 0.00

Primary OutFlow Max=0.0 cfs @ 12.06 hrs HW=18.44' TW=12.89' (Dynamic Tailwater)
└─**2=Tube/Siphon/Float Valve** (Orifice Controls 0.0 cfs @ 11.34 fps)
└─**1=Culvert** (Passes 0.0 cfs of 7.9 cfs potential flow)

Secondary OutFlow Max=8.6 cfs @ 12.10 hrs HW=18.51' TW=17.56' (Dynamic Tailwater)
└─**3=Custom Weir/Orifice** (Weir Controls 8.6 cfs @ 3.32 fps)

Pond 14P: CONTECH WQv CMP Det & SF System



Summary for Pond 17P: DMH2

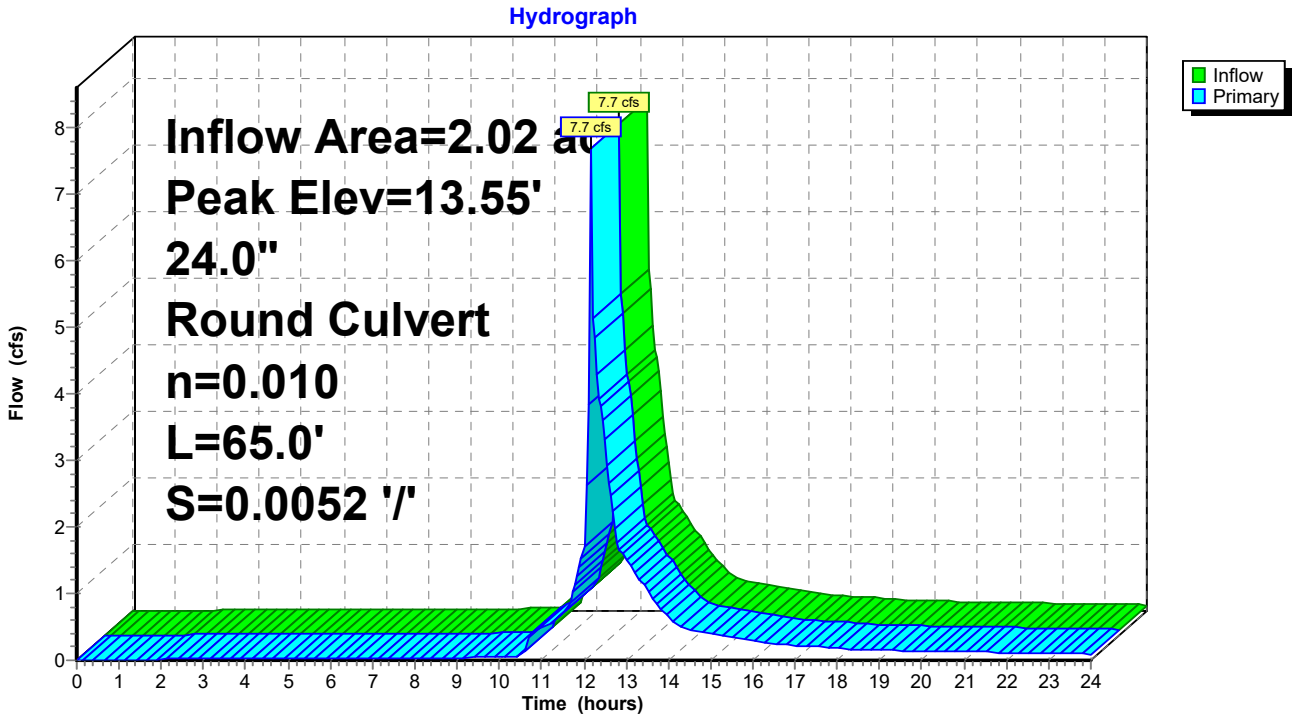
Inflow Area = 2.02 ac, 76.40% Impervious, Inflow Depth > 3.67" for 25-Year Storm event
Inflow = 7.7 cfs @ 12.16 hrs, Volume= 0.620 af
Outflow = 7.7 cfs @ 12.16 hrs, Volume= 0.620 af, Atten= 0%, Lag= 0.0 min
Primary = 7.7 cfs @ 12.16 hrs, Volume= 0.620 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Peak Elev= 13.55' @ 12.17 hrs
Flood Elev= 21.65'

Device	Routing	Invert	Outlet Devices
#1	Primary	12.07'	**24.0" Round Culvert** L= 65.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 12.07' / 11.73' S= 0.0052 '/' Cc= 0.900 n= 0.010 PVC, smooth interior, Flow Area= 3.14 sf

Primary OutFlow Max=6.3 cfs @ 12.16 hrs HW=13.51' TW=13.02' (Dynamic Tailwater)
1=Culvert (Outlet Controls 6.3 cfs @ 3.66 fps)

Pond 17P: DMH2



Summary for Pond 18P: DMH3

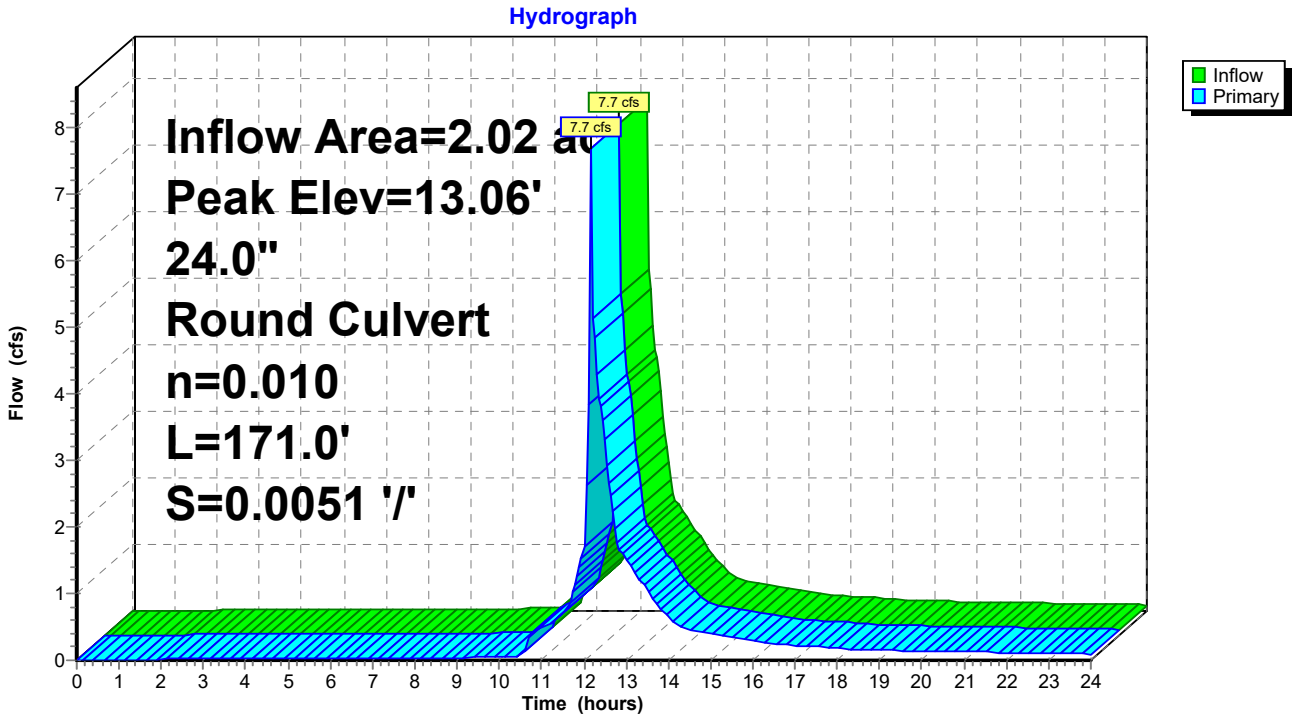
Inflow Area = 2.02 ac, 76.40% Impervious, Inflow Depth > 3.67" for 25-Year Storm event
Inflow = 7.7 cfs @ 12.16 hrs, Volume= 0.620 af
Outflow = 7.7 cfs @ 12.16 hrs, Volume= 0.620 af, Atten= 0%, Lag= 0.0 min
Primary = 7.7 cfs @ 12.16 hrs, Volume= 0.620 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Peak Elev= 13.06' @ 12.16 hrs
Flood Elev= 20.85'

Device	Routing	Invert	Outlet Devices
#1	Primary	11.63'	**24.0" Round Culvert** L= 171.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 11.63' / 10.75' S= 0.0051 '/' Cc= 0.900 n= 0.010 PVC, smooth interior, Flow Area= 3.14 sf

Primary OutFlow Max=7.4 cfs @ 12.16 hrs HW=13.02' TW=0.00' (Dynamic Tailwater)
1=Culvert (Inlet Controls 7.4 cfs @ 3.17 fps)

Pond 18P: DMH3



Summary for Pond 22P: Ex DMH3

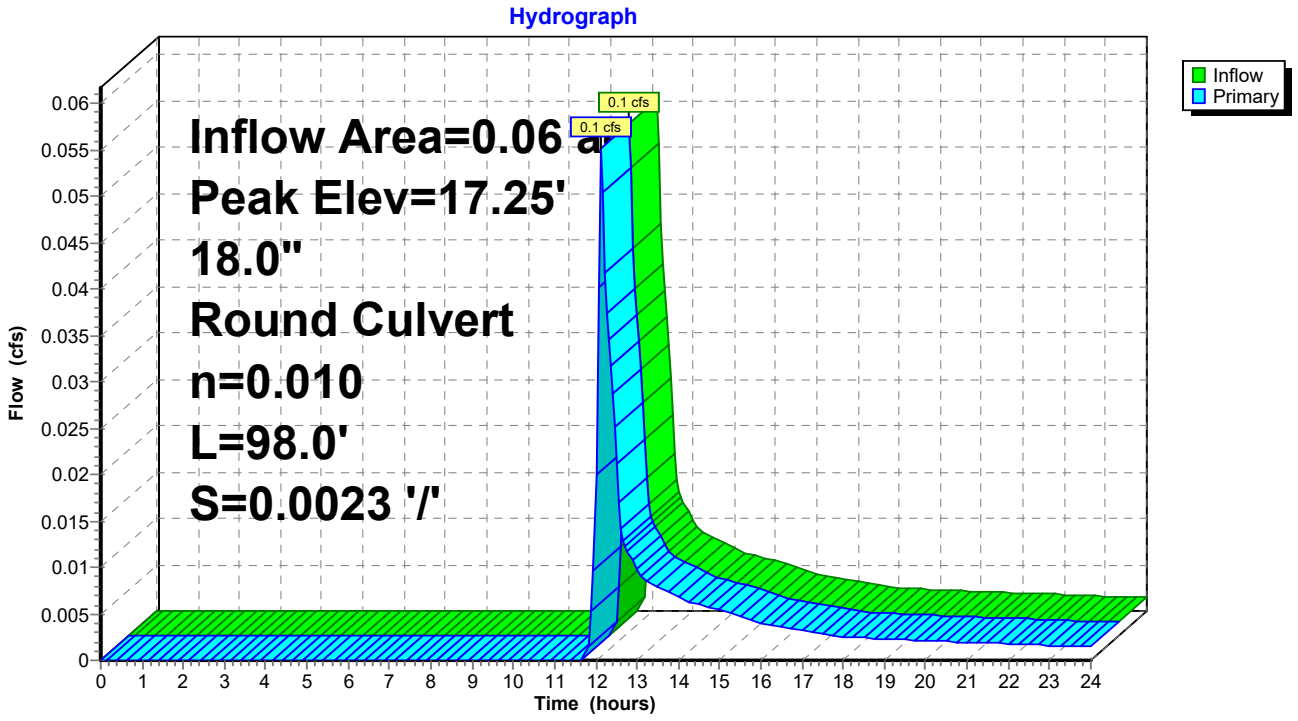
Inflow Area = 0.06 ac, 17.99% Impervious, Inflow Depth > 1.04" for 25-Year Storm event
Inflow = 0.1 cfs @ 12.11 hrs, Volume= 0.005 af
Outflow = 0.1 cfs @ 12.11 hrs, Volume= 0.005 af, Atten= 0%, Lag= 0.0 min
Primary = 0.1 cfs @ 12.11 hrs, Volume= 0.005 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Peak Elev= 17.25' @ 12.11 hrs
Flood Elev= 24.92'

Device	Routing	Invert	Outlet Devices
#1	Primary	17.12'	**18.0" Round Culvert** L= 98.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 17.12' / 16.89' S= 0.0023 '/' Cc= 0.900 n= 0.010 PVC, smooth interior, Flow Area= 1.77 sf

Primary OutFlow Max=0.1 cfs @ 12.11 hrs HW=17.25' TW=16.87' (Dynamic Tailwater)
1=Culvert (Barrel Controls 0.1 cfs @ 1.12 fps)

Pond 22P: Ex DMH3



Summary for Pond 23P: Ex CB3

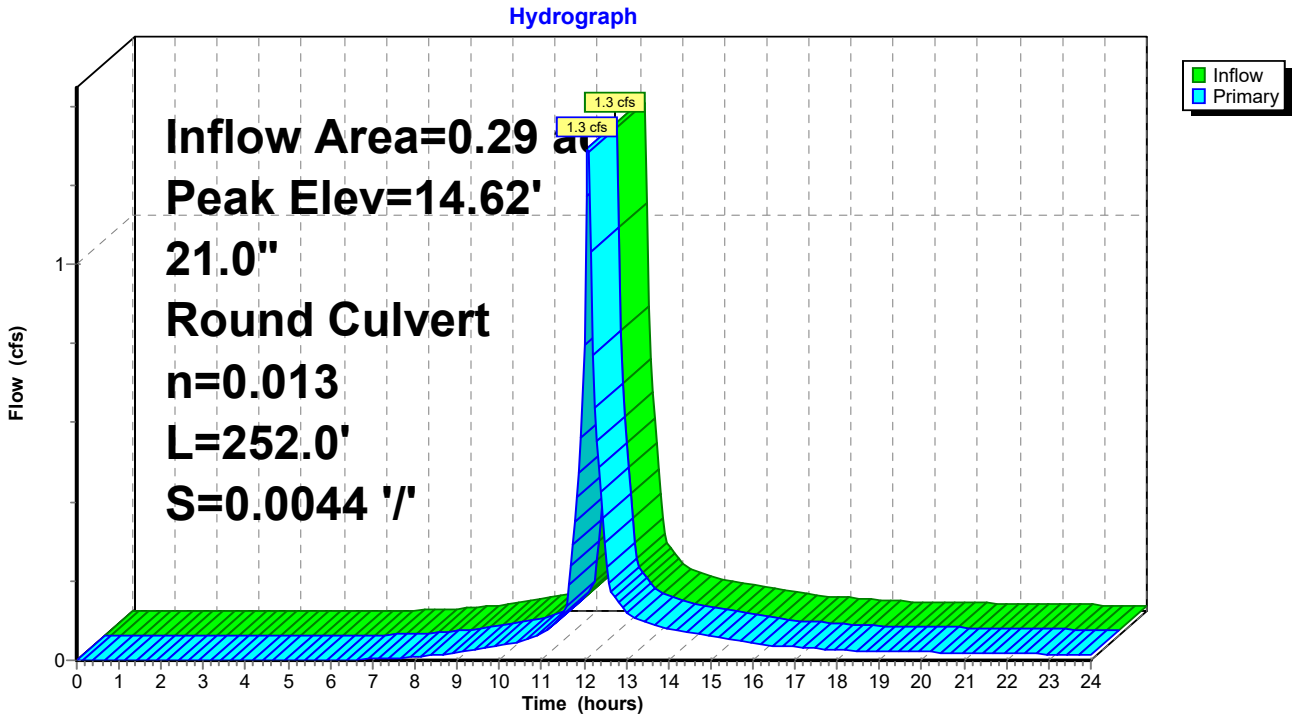
Inflow Area = 0.29 ac, 73.97% Impervious, Inflow Depth > 3.90" for 25-Year Storm event
Inflow = 1.3 cfs @ 12.09 hrs, Volume= 0.095 af
Outflow = 1.3 cfs @ 12.09 hrs, Volume= 0.095 af, Atten= 0%, Lag= 0.0 min
Primary = 1.3 cfs @ 12.09 hrs, Volume= 0.095 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Peak Elev= 14.62' @ 12.09 hrs
Flood Elev= 23.60'

Device	Routing	Invert	Outlet Devices
#1	Primary	14.05'	**21.0" Round Culvert** L= 252.0' CMP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 14.05' / 12.94' S= 0.0044 '/' Cc= 0.900 n= 0.013 Cast iron, coated, Flow Area= 2.41 sf

Primary OutFlow Max=1.3 cfs @ 12.09 hrs HW=14.61' TW=0.00' (Dynamic Tailwater)
1=Culvert (Barrel Controls 1.3 cfs @ 2.85 fps)

Pond 23P: Ex CB3



Summary for Pond 24P: Ex DMH2

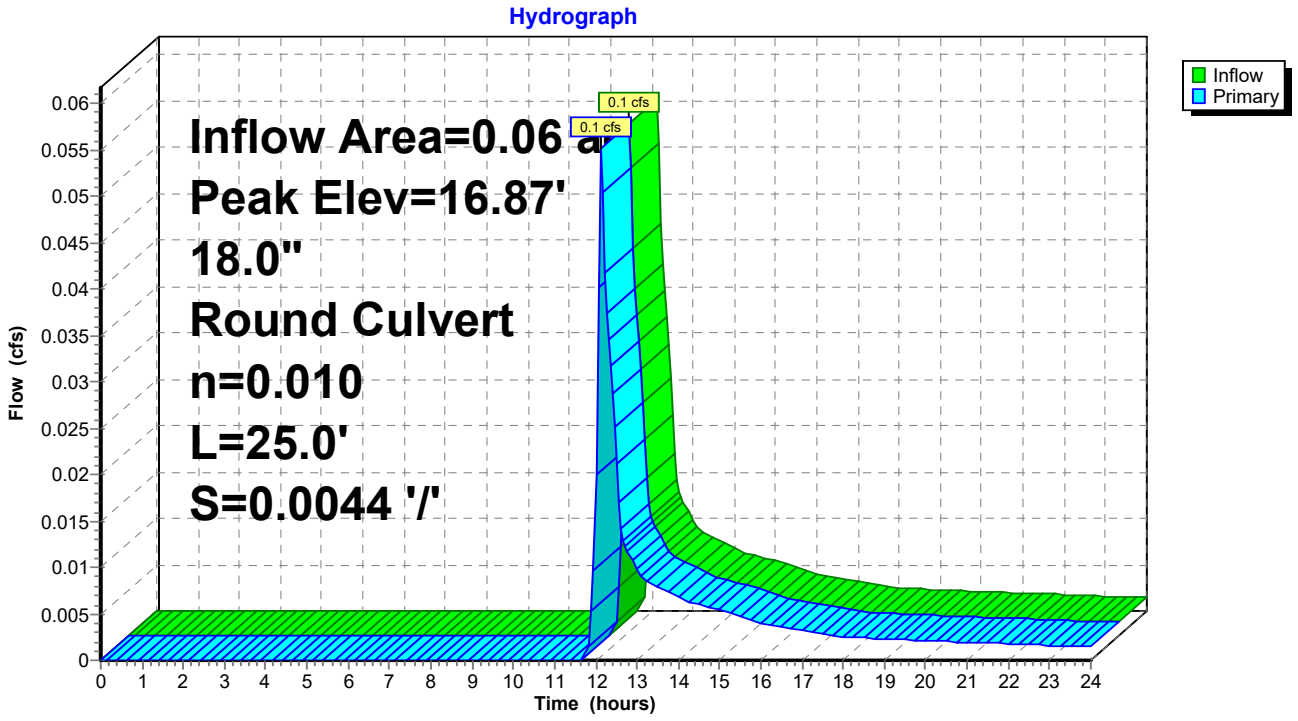
Inflow Area = 0.06 ac, 17.99% Impervious, Inflow Depth > 1.04" for 25-Year Storm event
Inflow = 0.1 cfs @ 12.11 hrs, Volume= 0.005 af
Outflow = 0.1 cfs @ 12.11 hrs, Volume= 0.005 af, Atten= 0%, Lag= 0.0 min
Primary = 0.1 cfs @ 12.11 hrs, Volume= 0.005 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Peak Elev= 16.87' @ 12.11 hrs
Flood Elev= 25.38'

Device	Routing	Invert	Outlet Devices
#1	Primary	16.75'	**18.0" Round Culvert** L= 25.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 16.75' / 16.64' S= 0.0044 '/' Cc= 0.900 n= 0.010 PVC, smooth interior, Flow Area= 1.77 sf

Primary OutFlow Max=0.1 cfs @ 12.11 hrs HW=16.87' TW=16.65' (Dynamic Tailwater)
1=Culvert (Barrel Controls 0.1 cfs @ 1.30 fps)

Pond 24P: Ex DMH2



Summary for Pond 26P: DMH5

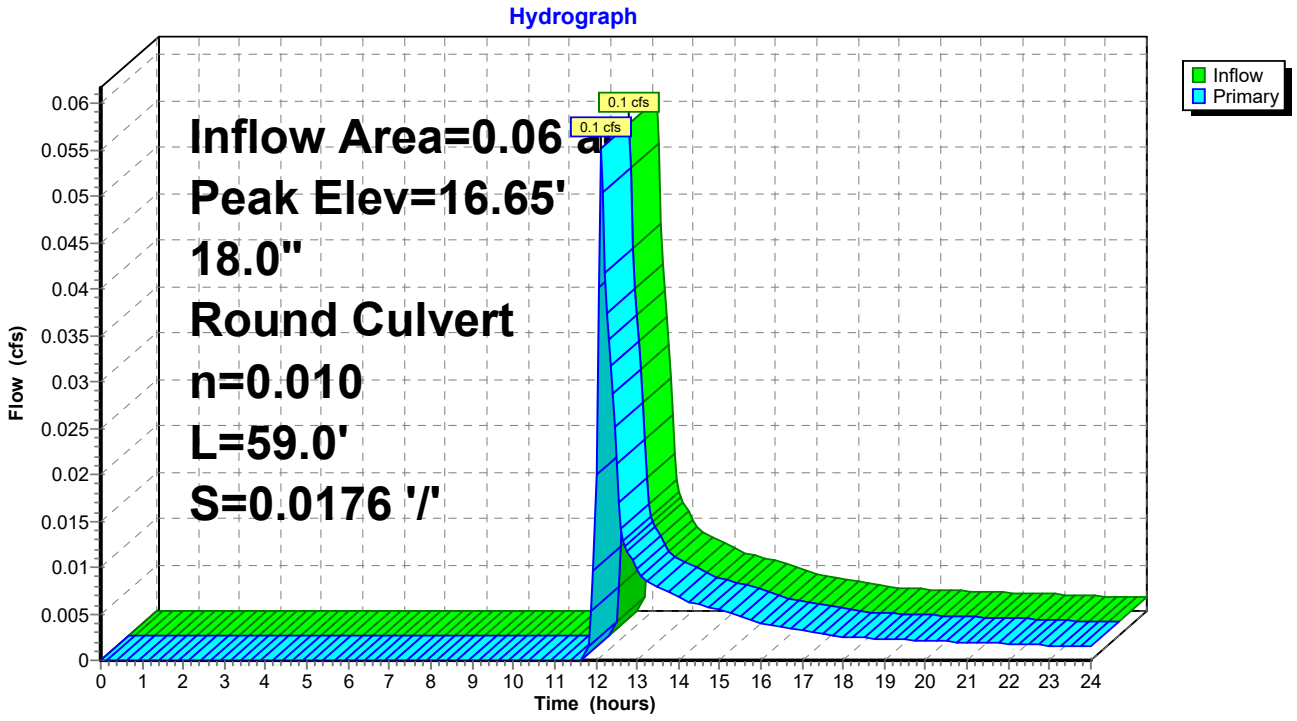
Inflow Area = 0.06 ac, 17.99% Impervious, Inflow Depth > 1.04" for 25-Year Storm event
Inflow = 0.1 cfs @ 12.11 hrs, Volume= 0.005 af
Outflow = 0.1 cfs @ 12.11 hrs, Volume= 0.005 af, Atten= 0%, Lag= 0.0 min
Primary = 0.1 cfs @ 12.11 hrs, Volume= 0.005 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Peak Elev= 16.65' @ 12.11 hrs
Flood Elev= 25.90'

Device	Routing	Invert	Outlet Devices
#1	Primary	16.54'	**18.0" Round Culvert** L= 59.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 16.54' / 15.50' S= 0.0176 '/' Cc= 0.900 n= 0.010 PVC, smooth interior, Flow Area= 1.77 sf

Primary OutFlow Max=0.1 cfs @ 12.11 hrs HW=16.65' TW=15.57' (Dynamic Tailwater)
1=Culvert (Inlet Controls 0.1 cfs @ 0.90 fps)

Pond 26P: DMH5



Summary for Pond 27P: DMH10

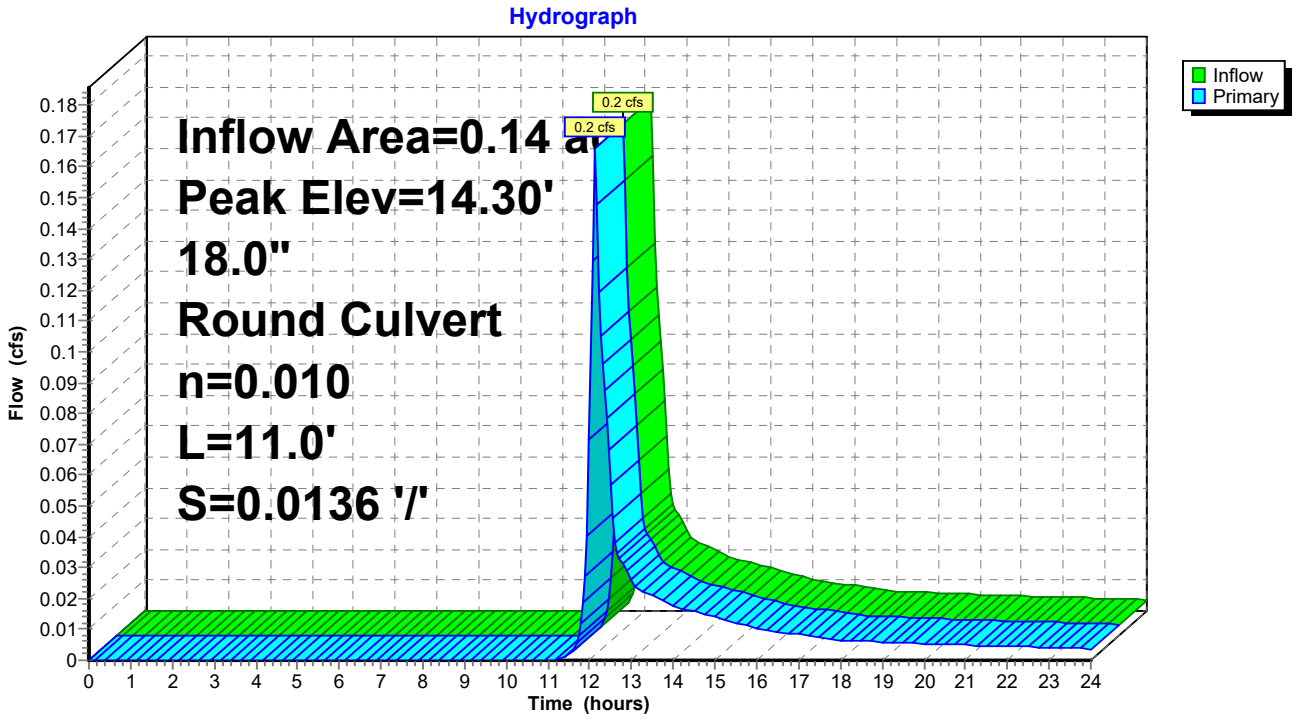
Inflow Area = 0.14 ac, 23.10% Impervious, Inflow Depth > 1.25" for 25-Year Storm event
Inflow = 0.2 cfs @ 12.11 hrs, Volume= 0.014 af
Outflow = 0.2 cfs @ 12.11 hrs, Volume= 0.014 af, Atten= 0%, Lag= 0.0 min
Primary = 0.2 cfs @ 12.11 hrs, Volume= 0.014 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Peak Elev= 14.30' @ 12.11 hrs
Flood Elev= 24.17'

Device	Routing	Invert	Outlet Devices
#1	Primary	14.10'	**18.0" Round Culvert** L= 11.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 14.10' / 13.95' S= 0.0136 '/' Cc= 0.900 n= 0.010 PVC, smooth interior, Flow Area= 1.77 sf

Primary OutFlow Max=0.2 cfs @ 12.11 hrs HW=14.30' TW=0.00' (Dynamic Tailwater)
1=Culvert (Inlet Controls 0.2 cfs @ 1.19 fps)

Pond 27P: DMH10



Summary for Pond 29P: Ex DMH4

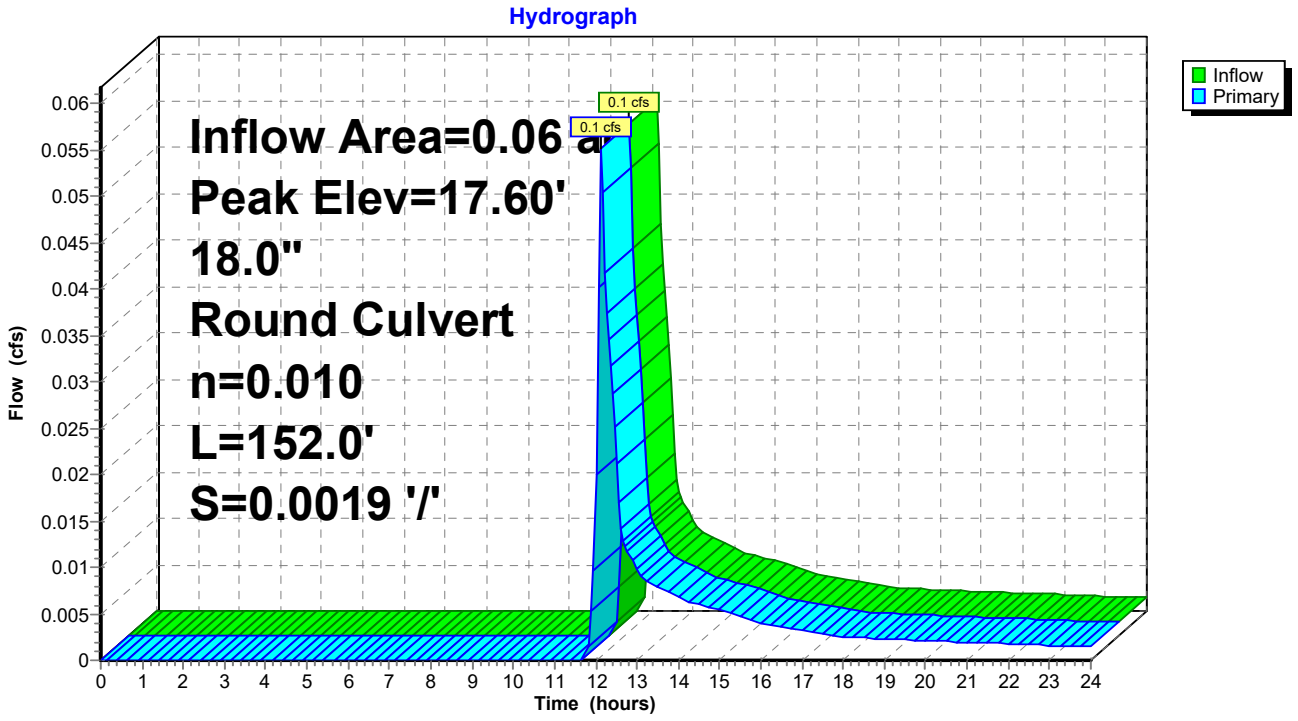
Inflow Area = 0.06 ac, 17.99% Impervious, Inflow Depth > 1.04" for 25-Year Storm event
Inflow = 0.1 cfs @ 12.11 hrs, Volume= 0.005 af
Outflow = 0.1 cfs @ 12.11 hrs, Volume= 0.005 af, Atten= 0%, Lag= 0.0 min
Primary = 0.1 cfs @ 12.11 hrs, Volume= 0.005 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Peak Elev= 17.60' @ 12.11 hrs
Flood Elev= 23.44'

Device	Routing	Invert	Outlet Devices
#1	Primary	17.46'	**18.0" Round Culvert** L= 152.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 17.46' / 17.17' S= 0.0019 '/' Cc= 0.900 n= 0.010 PVC, smooth interior, Flow Area= 1.77 sf

Primary OutFlow Max=0.1 cfs @ 12.11 hrs HW=17.59' TW=17.25' (Dynamic Tailwater)
1=Culvert (Barrel Controls 0.1 cfs @ 1.05 fps)

Pond 29P: Ex DMH4

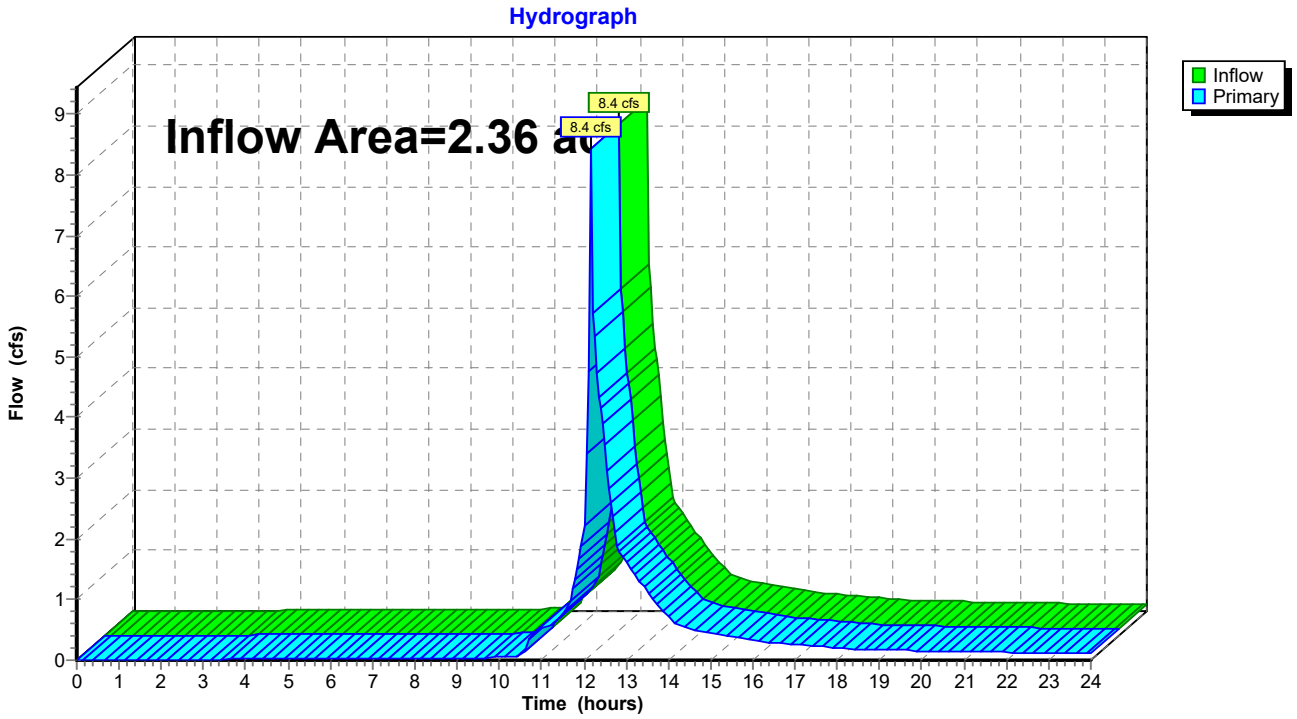


Summary for Link SP1: Forest Ave Storm Drain

Inflow Area = 2.36 ac, 72.31% Impervious, Inflow Depth > 3.49" for 25-Year Storm event
Inflow = 8.4 cfs @ 12.15 hrs, Volume= 0.687 af
Primary = 8.4 cfs @ 12.15 hrs, Volume= 0.687 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs

Link SP1: Forest Ave Storm Drain

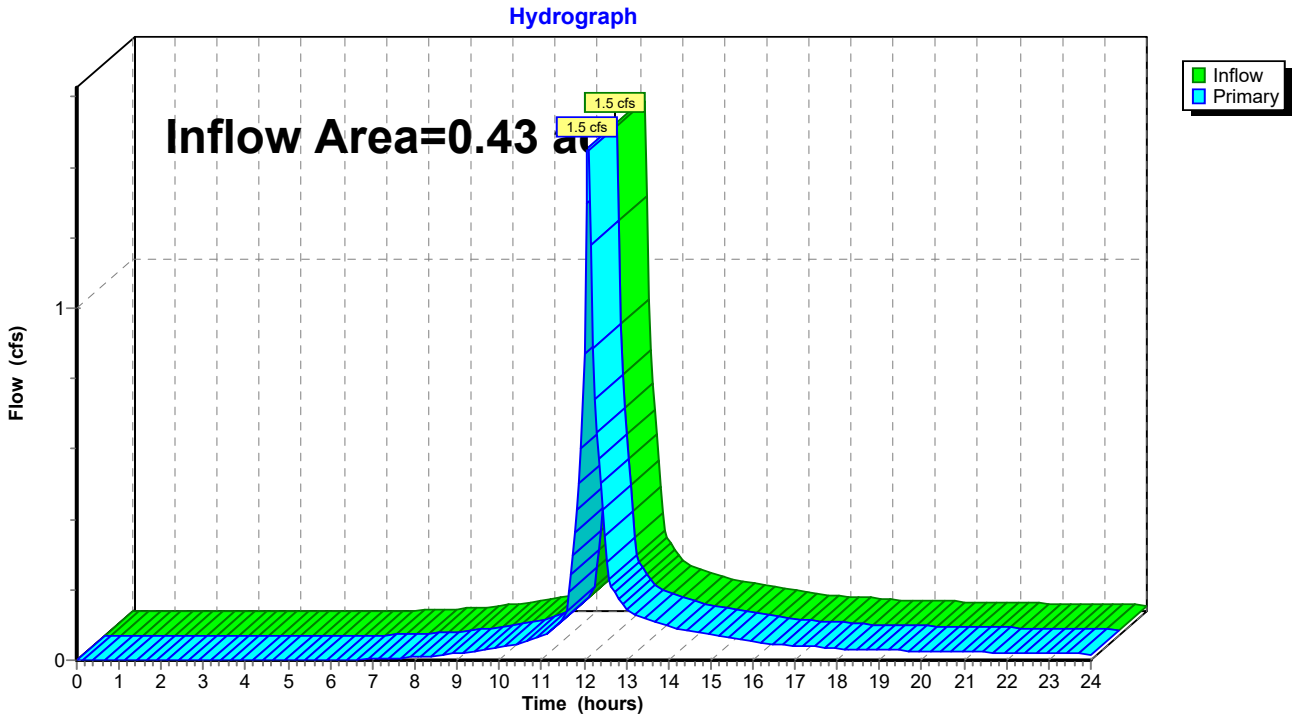


Summary for Link SP2: Combined Sewer

Inflow Area = 0.43 ac, 57.64% Impervious, Inflow Depth > 3.05" for 25-Year Storm event
Inflow = 1.5 cfs @ 12.09 hrs, Volume= 0.109 af
Primary = 1.5 cfs @ 12.09 hrs, Volume= 0.109 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs

Link SP2: Combined Sewer



APPENDIX D: FIGURES

BEDFORD STREET
PAVED - PUBLIC - 60' WIDE

LOT AREA
387,550 S.F.
8.90AC ±

WISHCAMPER CENTER

OSHER MAP & GLICKMAN FAMILY LIBRARY

CONANT STREET
DISCONTINUED 2007
TEMPORARY SEWER EASEMENT RETAINED

WINSLOW STREET
DISCONTINUED 2007
TEMPORARY SEWER EASEMENT RETAINED

INTERSTATE HIGHWAY 295
SOUTHBOUND ON-RAMP

STORMWATER LEGEND

- 1X — SUBCATCHMENT AREAS
- XX — POND
- LIMIT OF DRAINAGE AREA
- SP1 — STUDY POINT

BAR SCALE
1" = 20'
CHECK GRAPHIC SCALE BEFORE USING

UNIVERSITY OF SOUTHERN MAINE
25 Bedford Street, Portland, ME 04104
207.712.5183 | USM.MAINE.EDU

PROJECT TEAM:

CLIENT
UNIVERSITY OF SOUTHERN MAINE

PRIME CONSULTANT
& STRUCTURAL ENGINEER

DESMAN Design Management
18 Tremont Street #300
Boston, MA 02108

ARCHITECT
WINTON-SCOTT ARCHITECTS
5 MILK STREET
PORTLAND, ME 04101

CIVIL ENGINEER
WOODARD & CURRAN
41 HUTCHINS DRIVE
PORTLAND, ME 04102

LANDSCAPE ARCHITECT
MICHAEL BOUCHER LANDSCAPE ARCHITECTURE
457 US ROUTE 1 SUITE 2
FREEPORT, ME 04032

MEP/FP ENGINEER
ALLIED ENGINEERING
160 VERANDA STREET
PORTLAND, ME 04103

GEOTECHNICAL ENGINEER
S.W. COLE
286 PORTLAND ROAD
GREY, ME 04039

TRAFFIC ENGINEER
VANASSE HANGEN BRUSTLIN INC
40 IDX DR 100 #200, SOUTH
BURLINGTON, VT 05403

COST ESTIMATOR
PREFERRED CONSTRUCTION MGMT
94 AUBURN ST,
PORTLAND, ME 04103

SEAL / SIGNATURE

© DESMAN, Inc.
2021

PROJECT:

USM - Structured Parking Garage

Address

44 Bedford Street,
Portland ME 04104

REVISIONS:

No.	Date	Description

SUBMISSIONS:

Date	Issued For:
07/12/21	Schematic Design Progress Set

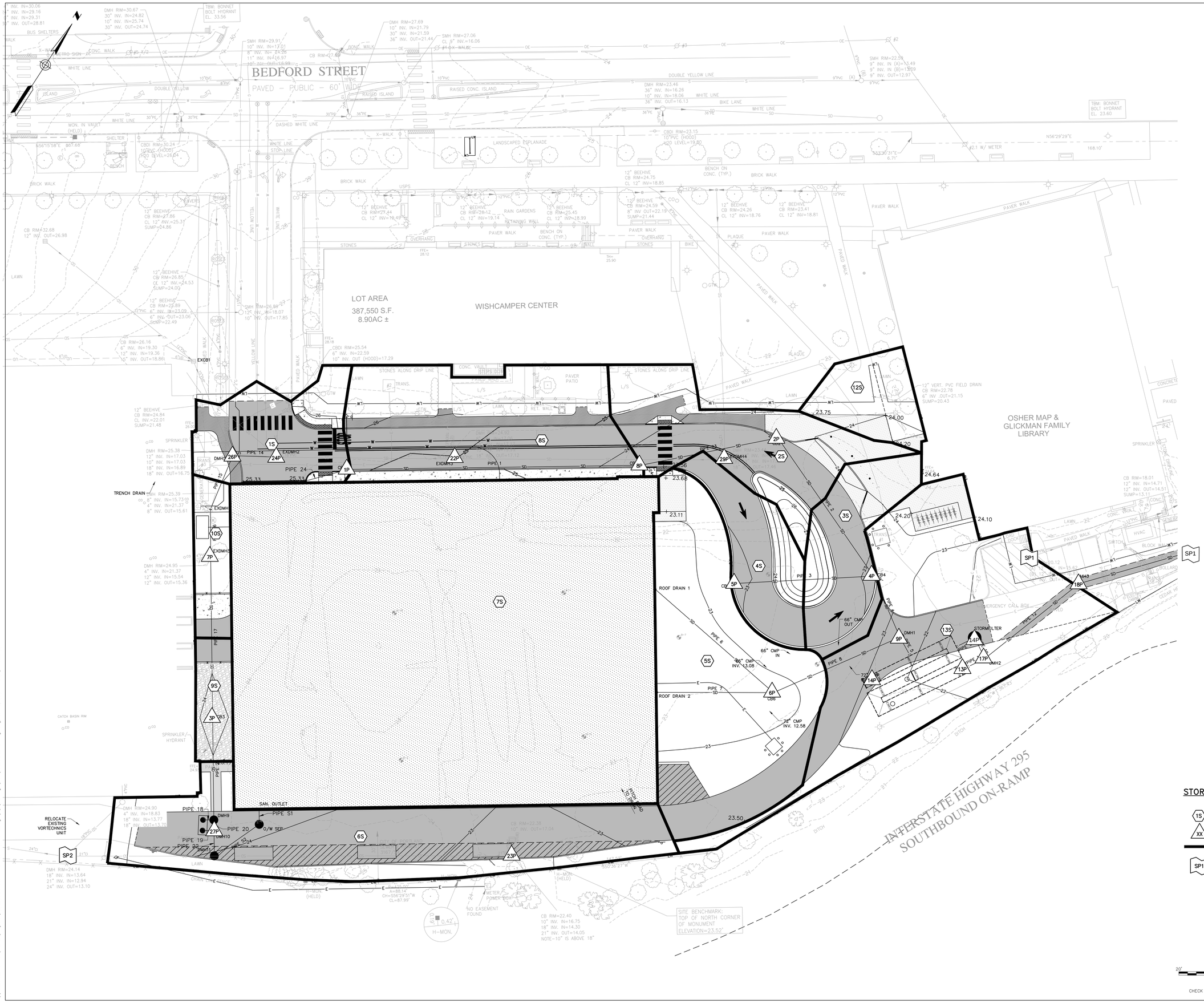
SCALE	**1"=20'**
DATE ISSUED	**JULY 2021**
PROJECT NO	**20-20145.00-1**
DRAWN BY	**B.C.M.**
CHECKED BY	**A.E.F.**

SHEET TITLE:

PRE DEVELOPMENT

PRE

\\vssdosfcurran.net\Shared\Projects\20230535.00 USM - Falmouth Street Garage\wip\Drawings\Civil\230535.00 SW Figs.dwg, Jul 16, 2021 - 3:25pm JCOWLEY



UNIVERSITY OF SOUTHERN MAINE

25 Bedford Street, Portland, ME 04104
207.712.5183 | USM.MAINE.EDU

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GREY, ME 04039

TRAFFIC ENGINEER
VANASSE HANGEN BRUSTLIN INC

40 IDX DR 100 #200, SOUTH
BURLINGTON, VT 05403

COST ESTIMATOR
PREFERRED CONSTRUCTION MGMT

94 AUBURN ST,
PORTLAND, ME 04103

SEAL / SIGNATURE

© DESMAN, Inc.
2021

PROJECT:

USM - Structured Parking Garage

Address

44 Bedford Street,
Portland ME 04104

REVISIONS:

No.	Date	Description

SUBMISSIONS:

Date	Issued For:
07/12/21	Schematic Design Progress Set

SCALE	**1"=20'**
DATE ISSUED	**JULY 2021**
PROJECT NO	**20-20145.00-1**
DRAWN BY	**B.C.M.**
CHECKED BY	**A.E.F.**

SHEET TITLE:

POST DEVELOPMENT

POST

\\woodardcurran.net\Shared\Projects\20233035.00 USM - Falmouth Street Garage\wip\Drawings\Civil\233035.00 SW Flat.dwg, Jul 16, 2021 - 3:24pm, JCONLEY

[redacted]

WOODARD &CURRAN

woodardcurran.com

COMMITMENT & INTEGRITY DRIVE RESULTS

September 10, 2021

Mr. Matthew Grooms
City of Portland
389 Congress Street, 4th floor
Portland, Maine 04101

Re: Application for Traffic Movement Permit Modification
University of Southern Maine
Portland, Maine

Dear Matthew,

On behalf of University of Southern Maine (applicant), VHB is pleased to submit this Traffic Movement Permit Modification Application detailing the relocation of the parking garage that was previously permitted as part of Project ID PL-001040-2020. The previous approval for a student center and residential hall included a parking garage with access on Falmouth Street. In response to feedback from the surrounding neighborhood and a parking garage site selection process, this modification application seeks approval for relocation of the parking garage south of Bedford Street in Portland.

We have attached the following information in support of this application:

- Updates to Sections 1-7
- Signed Modification Application Form
- Notice of Intent to File
- List of Abutters

As the $500 application fee will be sent to you separately, please advise an appropriate address. We look forward to scheduling a meeting in the near future.

Very truly yours,

Jennifer Conley, PE, PTOE
Director, Transportation Systems
Jconley@vhb.com

Engineers | Scientists | Planners | Designers

500 Southborough Drive
Suite 105B
South Portland, Maine 04106
P 207.889.3150
F 207.253.5596

DEPARTMENT OF TRANSPORTATION
TRAFFIC ENGINEERING DIVISION

ID#:_____
Fees Paid:_____
Date Received:_____

APPLICATION FOR TRAFFIC MOVEMENT PERMIT MODIFICATION

This form shall be used to request approval of minor changes to: (a) project design or operation; or (b) the conditions of a permit as previously approved by the Department of Transportation or the Department of Environmental Protection.

A processing fee of $500.00 (check payable to Treasurer, State of Maine) is required at the time of application submittal.

If significant changes are proposed, then a complete new or amendment application may be required by the Department.

(Please type or print)

Name of Applicant: University of Southern Maine

Address: 37 College Avenue, Gorham, ME 04038

Telephone Number: (207) 780-4585

Name of Contact or Agent: Aaron Witham

Telephone Number: (207) 780-5947

LOCATION OF ACTIVITY

Name of Project: University of Southern Maine Residence Hall, Student Center and Parking Garage

Municipality or Township: Portland County: Cumberland

REQUIRED INFORMATION

1. Existing DOT or DEP Permit Number: PL-001040-2020

2. DOT or DEP Project Manager for previous application (if known): Matthew Grooms

3. Description of Proposed Change: Prior approval of a Residential Hall and Student Center included a location for a parking garage with access and egress to Falmouth Street. In response to feedback from the community and a site selection process, the parking garage site was relocated to a site with access and egress to Bedford Street.

(Attach additional sheet(s), if necessary)

4. Provide all documentation necessary to support the proposed change. This documentation shall include, as appropriate, revised site plans, construction drawings and technical data. (If you are unsure of what information to include, please contact the original DOT or DEP project manager, or the Traffic Engineering Division.

5. Does your proposal involve a significant expansion of the project, change the nature of the project, or modify any Department findings with respect to any licensing criteria? no (if you are unsure how to answer this or if your answer is "yes", please contact the original DOT or DEP project manager, or the Division of Land Resource Regulation in either Portland, Augusta, or Bangor for assistance).

If yes, you must provide public notice (see attached form). By signing this application, you certify that the completed notice has been sent by certified mail to abutters and municipal officials; and has been published once in a newspaper circulated in the area where the project is located.

NOTE: All supporting documents summarized above must be attached to this form and sent to the nearest appropriate DOT Office located below: File the modification "Attention Division Traffic Engineer" in the appropriate Division office.

MDOT Division P.O. Box 1178 41 Rice Street Presque Isle, ME 04769 Tel: (207) 764-2060	MDOT Division 2 P.O. Box 539 High Street Ellsworth, ME 04605 Tel: (207) 667-5556	MDOT Division 3 P.O. Box 1208 219 Hogan Road Bangor, ME 04402-1208 Tel: (207) 941-4500
MDOT Division 4 Route 201 10 Mountain Ave. Fairfield, ME 04937 Tel: (207) 453-7377	MDOT Division 5 143 Rankin St. P.O. Box 566 Rockland, ME 04841 Tel: (207) 596-2230	MDOT Division 6 P.O. Box 1940 Portland, ME 04104 Tel: (207) 883-5546
MDOT Division 7 P.O. Box 817 Dixfield, ME 04224-0683 Tel: (207) 562-4228		

"I certify under penalty of law that I have personally examined the information submitted in this document and all attachments thereto and that, based on my inquiry of those individuals immediately responsible for obtaining the information, I believe the information is true, accurate, and complete I authorize the Department to enter the property that is the subject of this application, at reasonable hours, including buildings, structures or conveyances on the property, to determine the accuracy of any information provided herein. I am aware there are significant penalties for submitting false information, including the possibility of fine and imprisonment".

Aaron Witham .....DATE: 09-09-2021

SIGNATURE OF APPLICANT

Aaron Witham

PRINT OR TYPED NAME

Director of Sustainability, USM

TITLE

THE APPLICATION FEE IS DUE AT THE TIME OF APPLICATION SUBMITTAL. THE APPLICATION WILL NOT BE PROCESSED UNTIL THIS FEE IS PAID.

1/2000

CERTIFICATION

The traffic engineer responsible for preparing this application and/or attaching pertinent site and traffic information hereto, by signing below, certifies that the application for traffic approval is complete and accurate to the best of his/her knowledge.

Signature: _____ Re/Cert/Lic No.: 15652

Name (print): Jennifer Conley

Date: September 3, 2021

If the signature below is not the applicant's signature, attach letter of agent authorization signed by applicant.

"I certify under penalty of law that I have personally examined the information submitted in this document and all attachments thereto and that, based on my inquiry of those individuals immediately responsible for obtaining the information, I believe the information is true, accurate, and complete. I authorize the Department to enter the property that is the subject of this application, at reasonable hours, including buildings, structures or conveyances on the property, to determine the accuracy of any information provided herein. I am aware there are significant penalties for submitting false information, including the possibility of fine and imprisonment."

_____ 09-09-2021

Signature of applicant Date

FORM C 7/97

NOTICE OF INTENT TO FILE

Please take notice that

University of Southern Maine
96 Falmouth St
Portland, ME 04103

is intending to file a Traffic Movement Permit application with the Maine Department of Transportation pursuant to the provisions of 23 M.R.S.A. § 704 - A on or about September 7, 2021.

The application is for the relocation of a parking garage previously approved as part of the development of a residential hall and student center on the University of Southern Maine campus in Portland. In response to feedback from the neighboring community and a parking garage site evaluation, the originally proposed parking garage located adjacent to the Sullivan Gymnasium Complex was shifted to a site adjacent to the existing parking garage south of Wishcamper Center. Construction of the parking garage, residential hall, and student center is anticipated to be completed and occupied in 2023. The project, as was previously approved, is anticipated to generate up to 160 AM peak hour and 160 PM peak hour trips based on ITE Trip Generation, 10th Edition, estimates for the forecasted enrollment out to 2028. The project site is adjacent to the Wishcamper Center, Glickman Family and Osher Map Libraries, and existing parking garage on Bedford Street at the following location:

Tax Map/Lot No. 114 A001
44 Bedford Street
Portland, ME 04101

A request for a public hearing must be received by the Department, in writing, no later than 20 days after the application is found by the Department to be complete and is accepted for processing. Public comment on the application will be accepted throughout the processing of the application.

The application will be filed for public inspection at the Department of Transportation Division office (Presque Isle, Ellsworth, Bangor, Fairfield, Rockland, Scarborough or Dixfield) during normal working hours. A copy of the application may also be seen at the City of Portland offices in Portland, Maine.

Written public comments may be sent to the following address: Attention Matthew Grooms, Planning Department, City of Portland, 289 Congress Street, Portland, ME 04101.

Abutters List

Name	Address			
15 BAXTER BOULEVARD LLC	PO BOX 255	BRUNSWICK	ME	04011
343 LLC	PO BOX 66749	FALMOUTH	ME	04105
BAXTER 43 HOLDINGS LLC	712 MAIN ST	RICHMOND	ME	04357
BAYVIEW COURT LLC	ONE CITY CENTER 4TH FL	PORTLAND	ME	04101
MAUREEN BYRNE	11 GLENN LN	YORK	ME	03909
PETER CALLNAN	25 WASHBURN ST	PORTLAND	ME	04101
HAROLD COZENS	16 CHAMBERLAIN AVE	PORTLAND	ME	04101
CPORT CREDIT UNION	PO BOX 777	PORTLAND	ME	04104
SEAN DOWLING	1209 N TAFT ST # C	ARLINGTON	VA	22201
MICHAEL ELING	23 CHAMBERLAIN AVE	PORTLAND	ME	04101
DANIEL FINK	35 WASHBURN AVE	PORTLAND	ME	04101
DAWN GAY	8 CHAMBERLAIN AVE	PORTLAND	ME	04101
HANNAFORD BROS CO #351C	PO BOX 1000	PORTLAND	ME	04104
ANNE HEELAN	7 WASHBURN AVE	PORTLAND	ME	04101
ADAM MOSES	24 CHAMBERLAIN AVE	PORTLAND	ME	04101
OAKHURST DAIRY	364 FOREST AVE	PORTLAND	ME	04101
JOHN OGOREK	20 CHAMBERLAIN AVE	PORTLAND	ME	04101
PALMER SPRING CO	PO BOX 8009	PORTLAND	ME	04104
GEORGIA PORTER	29 WASHBURN AVE	PORTLAND	ME	04101
PORTLAND HOUSING AUTHORITY	14 BAXTER BLVD	PORTLAND	ME	04101
AMANDA POWELL	4 CHAMBERLAIN AVE	PORTLAND	ME	04101
DEBRA SMITH	3 WASHBURN AVE	PORTLAND	ME	04101
JOHN STEVENS	29 CHAMBERLAIN AVE	PORTLAND	ME	04101
EVAN THOMAS	34 CHAMBERLAIN AVE	PORTLAND	ME	04101
LISA TUPPER	30 CHAMBERLAIN AVE	PORTLAND	ME	04101
UNIVERSITY OF MAINE	107 MAINE AVE	BANGOR	ME	04401
UNIVERSITY OF MAINE SYSTEM	96 FALMOUTH ST	PORTLAND	ME	04103
UNIVERSITY OF MAINE SYSTEM	5703 ALUMNI HALL	ORONO	ME	04469
UNIVERSITY OF MAINE SYSTEM	107 MAINE AVE	BANGOR	ME	04401

Abutters List

Name	Address			
UNIVERSITY OF MAINE SYSTEM CHIEF FINANCIAL OFFICER	PO BOX 9300	PORTLAND	ME	04104
UNIVERSITY OF MAINE THE	107 MAINE AVE	BANGOR	ME	04401
KATHERINE URBANEK	PO BOX 66749	FALMOUTH	ME	04105
LUCAS WALKER	21 WASHBURN AVE	PORTLAND	ME	04101
PETER WEED	33 CHAMBERLAIN AVE	PORTLAND	ME	04101
TROY WILKINS	PO BOX 3891	PORTLAND	ME	04104
WILLIAM C ROWELL FAMILY LIMITED PARTNERSHIP	PO BOX 3615	PORTLAND	ME	04104

Section 1

Site and Traffic Information

1.A. Site Description and Site Plan

A modification to the original Traffic Movement Permit (TMP) for Project ID PL-001040-2020 is being pursued based on change to the proposed location of the multi-level parking garage intended to provide parking for the residence hall and student center that were permitted originally. The sites for the residence hall and student center remain as described in the original permit, located on the block between Bedford Street, Brighton Avenue, Falmouth Street, and Durham Street (Tax Map/Lot No. 114A).

The project site for the proposed parking garage is located at 44 Bedford Street (Tax Map/Lot No. 114 A001), in the area south of the Wishcamper Center and north of the I-295 corridor. The site is owned by the University of Southern Maine and is proposed to provide parking for the residence hall and student center permitted in the original TMP. The site and boundary surveys, as well as the proposed site plan are included in Attachment 1A. The garage site that was described in the original TMP is no longer applicable.

1.B. Existing and Proposed Site Uses

The existing and proposed uses for the residence hall and student center sites remain the same as previously permitted. The existing use of the proposed parking garage site is surface parking adjacent to the Wishcamper Center, Glickman Family and Osher Map Libraries, and the existing parking garage. The proposed multi-level parking facility will provide up to 650 parking spaces. Proposed garage access will be from Bedford Street with traffic entering via Winslow Street and exiting through the existing garage to Surrenden Street.

1.C. Regional Mapping

No Change

1.D. Proposed Uses in the Vicinity of the Proposed Development

No Change

1.E. Trip Generation

The trip generation remained consistent with the previously approved TMP and was calculated based on the Institute of Transportation Engineers (ITE) publication, Trip Generation, 10th edition.

		Trip Generation - Proposed Site[1]
Weekday AM Peak Hour	Enter	125
	Exit	35
	Total	160
Weekday PM Peak Hour	Enter	51
	Exit	109
	Total	160

1 Trip Generation based on ITE 10th Edition, LUC 550, University/College (1,066 Students).

1.F. Trip Distribution

The regional trip distribution patterns remained consistent with the previously approved TMP, as outlined below. The distribution of the site related traffic was based on USM Portland student zip code information assuming the University will continue to draw from similar geographic areas.

Most site trips are anticipated to be generated to and from the south on Forest Avenue with 46 percent of traffic oriented to and from I-295 and an additional seven percent oriented to and from downtown Portland and parts of South Portland. The next sources of trips are 30 percent to and from Brighton Avenue and 14 percent to and from points north via Forest Avenue. Minor percentages access USM from Preble Street (two percent) and Deering Avenue points south (one percent).

1.G. Trip Assignment

The trips associated with increased enrollment and previously oriented to and from the garage site on Falmouth Street are now anticipated to derive to and from the proposed multi-level parking garage off Bedford Street. As such, the trips previously assigned to the driveway on Falmouth Street were redistributed to the Winslow Street entrance and from the Surrenden Street exit of the proposed garage site. The trips are now assigned to and from the proposed garage site following the likely path to and from the respective student zip codes. The resulting site trip reassignment is depicted in Attachment 1B.

Attachments

Attachment 1A – Site survey, Proposed site plans

Attachment 1B –Trip generation calculations, site trip diagrams

Section 2

Traffic Crashes

No changes

Section 3

Development Entrances and Exits

3.A Entrance and Exit Locations

The sites for the residence hall and student center previously approved remain unchanged. As such, the driveway locations and anticipated entering and exiting travel patterns to and from these facilities remain largely the same as previously outlined in the approved TMP. Any anticipated shift in travel patterns surrounding the residence hall and student center will result from the relocation of the parking garage from the site adjacent to Sullivan Gymnasium Complex to the site adjacent to the existing parking garage. It is anticipated that access between the residence hall or student center and the proposed garage will concentrate non-motorized travel to Bedford Street.

The proposed multi-level parking garage site is located off Bedford Street between Wishcamper Center, Glickman Family and Osher Map Libraries, and the existing parking garage. The current access to the garage site is provided via Winslow Street. Winslow Street facilitates vehicles entering and exiting the current surface parking areas and drop off locations behind Wishcamper and the libraries, as well as vehicles exiting the existing parking garage. It is proposed that the access to the garage site along Bedford Street will shift to circulate vehicles entering the parking garages via Winslow Street and vehicles exiting the parking garages via Surrenden Street. Both Winslow Street and Surrenden Street will remain two-way facilities to provide access to local driveways, parking, and drop-off locations.

The change in circulation for access and egress to the proposed and existing parking garages, as well as the anticipated concentration of non-motorized activity along and across Bedford Street, will compel improvements to the Bedford Street corridor in the vicinity of the Surrenden Street and Winslow Street intersections. The proposed improvements for vehicular traffic include the addition of a westbound left turn lane on Bedford Street to process vehicles entering the parking garages at Winslow Street, reconfiguration of Winslow Street to two lanes southbound to process the queues entering the garages, reconfiguration of Surrenden Street to two lanes northbound with dedicated left and right turn lanes to process vehicles exiting the garages, and raised median islands along the corridor to channelize traffic and encourage slower speeds. From a non-vehicular standpoint, improvements along Bedford Street include maintenance of full width bike lanes in both directions, a pedestrian bump-out to narrow the pedestrian crossing at Winslow Street, relocation and improvement of the three existing crosswalks to locations with new raised median islands for mid-crossing pedestrian refuge and enhancement such as raised crosswalks and rectangular rapid flashing beacons(RRFBs), the addition of a new crosswalk, and compliant ramps and connections to the new crossing locations.

Attachment 3 provides a conceptual plan for the proposed improvements on Bedford Street, Winslow Street, and Surrenden Street.

3.B Plan View

Attachment 1A of Section 1 shows the proposed site plan. As shown, the site fronts onto Winslow Street with access via Bedford Street. Attachment 3 shows all intersection roads, speed limits, and sight distances for each entrance/exit.

3.C Stopping Sight Distances

The access points to and from the garage are located on minor roadways with low traffic volumes and traveling speeds. In both cases (entry and exit), the proposed garage is sharing an access with the existing garage with a configuration that the garage access is a continuation of the main roadway and not intersecting with it.

3.D Entrance/Exit Compliance with Design Requirements

As indicated above, the entrances and exits are designed as continuations of through roadways and not as driveway entrances. As such, the criteria specified in the MaineDOT's Chapter 299 Highway Driveway and Entrance Rules is not applicable.

Section 4

Title, Right, or Interest

4.A Evidence of Title, Right, or Interest

The proposed development is located on property owned by the Applicant and identified as Tax Map 114A Lot A-1. Attached are copies of the deeds associated with this property.

- Deed, dated September 11, 2006, Cumberland County Registry of Deeds, Book 24387, Pg 261.
- Deed, dated December 16, 2011, Cumberland County Registry of Deeds, Book 29219, Pg 218.

Section 5

Public or Private Right-of-Way

5.A Public or Private Rights-of-Way

The site is proposed to be accessed as described in Section 3. No additional public or private rights of way are proposed.

Section 6

Schedule

6.A Schedule

Construction of the residence hall and student center is underway with anticipated opening in Summer 2023. The proposed parking garage project is planned to be constructed in coordination with the ongoing projects, with anticipated construction beginning in 2022 and completed in 2023.

LUTHER BONNEY HALL

BASEMENT ENTRANCE

CONC.

MASTERTON HALL

ABROSOM COMMUNITY EDUCATION CENTER

BEDFORD STREET
PAVED – PUBLIC – 60' WIDE

CHAMBERLAIN AVENUE
PAVED–PUBLIC–50'WIDE

SURRENDEN STREET
PAVED–PUBLIC–66'WIDE

WASHBURN AVENUE
PAVED–PUBLIC

PARKING GARAGE

WISHCAMPER CENTER

LOT AREA
387,550 S.F.
8.90AC ±

WINSLOW STREET
DISCONTINUED 2007 – TEMPORARY SEWER EASEMENT RETAINED

CONANT STREET

TEMPORARY SEWER EASEMENT RETAINED
DISCONTINUED 2007

INTERSTATE HIGHWAY 295
SOUTHBOUND ON-RAMP

OSHER MAP & GLICKMAN FAMILY LIBRARY

TAX MAP 114-A-2

MATCH LINE SHEET 2

N56°15'58"E 857.45'

S38°49'59"E 180.72'

S38°48'03"E 195.20'

N56°20'22"E 7.33'

S26°31'16"W 36.43'

S50°36'27"W 147.52'

R=3894.72'
A=404.65'
CH=S59°27'46"W
CL=404.47

R=425.00'
A=88.14'
CH=S56°29'51"W
CL=87.99'

NOTE: THIS PORTION OF SURRENDEN STREET DISCONTINUED FEB. 27, 2003

CITY OF PORTLAND UTILITY EASEMENT – SEE 19739/130
PORTLAND WATER DISTRICT EASMENT – SEE 19364/95
NORTHERN UTILITIES NATURAL GAS EASEMENT – SEE 20781/344

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 SURVEY HAS NOT PHYSICALLY LOCATION 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.

SCALE : 1" = 30'
0' 15' 30' 60'

PLAN REFERENCES

1. "BOUNDARY & TOPOGRAPHIC PLAN ON BEDFORD STREET, USM CAMPUS, PORTLAND, MAINE MADE FOR WOODARD & CURRAN, INC." SEPTEMBER 08, 2005 REV. 5 11–02–06 BY OWEN HASKELL, INC.

2. MAINE STATE HIGHWAY COMMISSION RIGHT OF WAY MAP, STATE HIGHWAY '295', PORTLAND, CUMBERLAND COUNTY, S.H.C. FILE NO. 3–185. SHEETS 57 REVISED AND 61

3. "BOUNDAY & TOPOGRAPHIC SURVEY, USM PORTLAND CAMPUS, 96 FALMOUTH STREET, PORTLAND, MAINE MADE FOR OAK POINT ASSOCIATES," NOV. 12, 2019 BY OWEN HASKELL, INC., OHI JOB# 2019–244 P.

GENERAL NOTES

1. OWNER OF RECORD: UNIVERSITY OF MAINE
TAX MAP 114 BLOCK A LOT 1 and LOT 2
BOOK 29219 PAGE 218
BOOK 24387 PAGE 258
BOOK 34066 PAGE 29

2. BEARINGS ARE BASED ON MAINE STATE PLANE COORDINATE SYSTEM, WEST ZONE, NAD 83 PER COORDINATE DATA PROVIDED BY THE CITY OF PORTLAND DEPARTMENT OF PUBLIC WORKS.

3. ELEVATIONS ARE BASED ON CITY OF PORTLAND DATUM, NGVD 29. BENCHMARK UTILIZED IS A COPPER BOLT IN 3 FOOT OFFSET MONUMENT LOCATED AT THE SOUTHWEST CORNER OF THE BRIGHTON AVENUE AND FALMOUTH STREET INTERSECTION.

SITE BENCHMARK:
TOP OF NORTH CORNER OF MONUMENT
ELEVATION=23.52'

SAMUEL D. GLIDDEN, PLS #2520

STATE OF MAINE
SAMUEL D. GLIDDEN
2520
REGISTERED LAND SURVEYOR

REV. 1	4-30-2021	SURVEYED ADDITIONAL AREAS

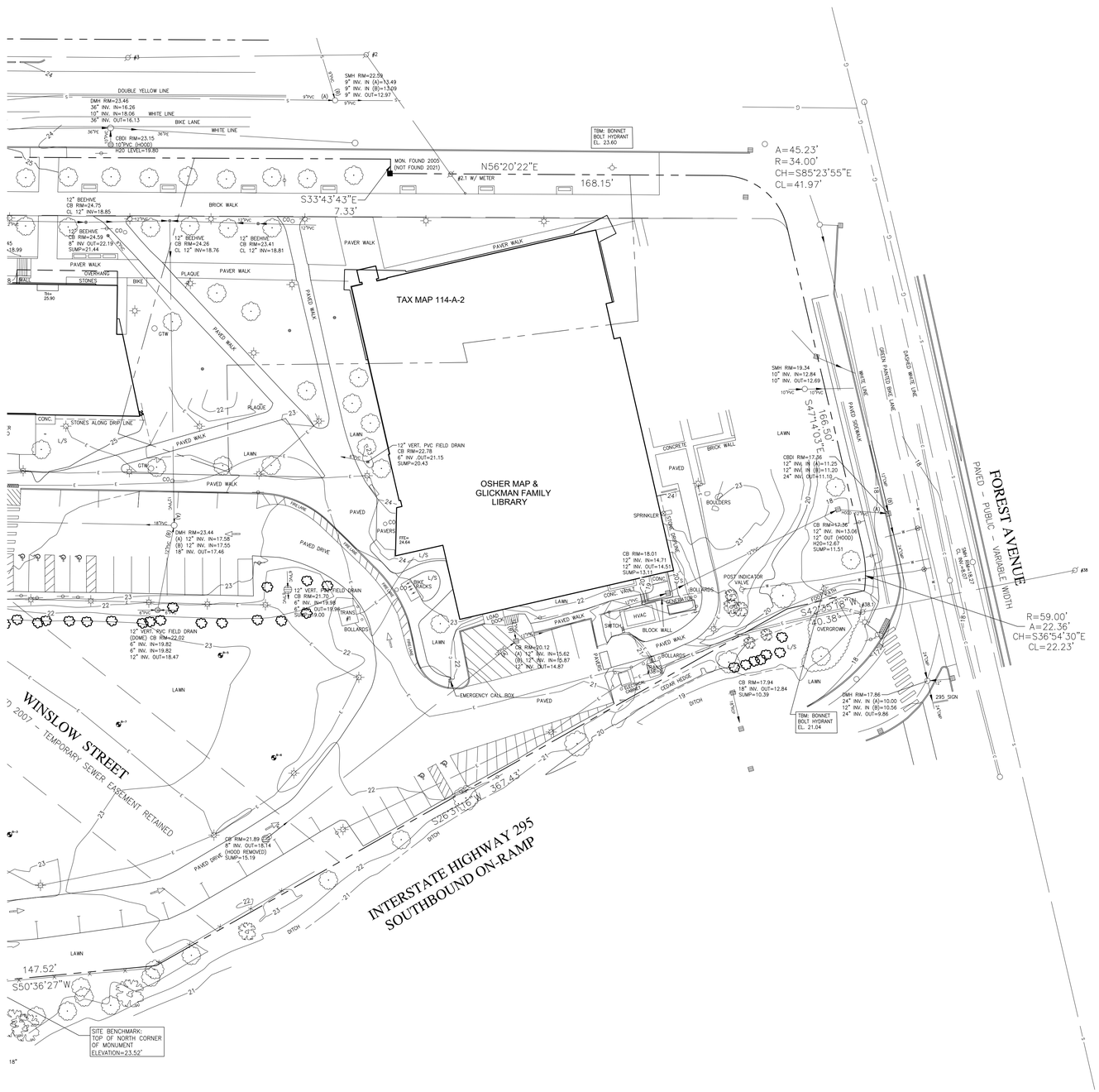
Existing Conditions Survey

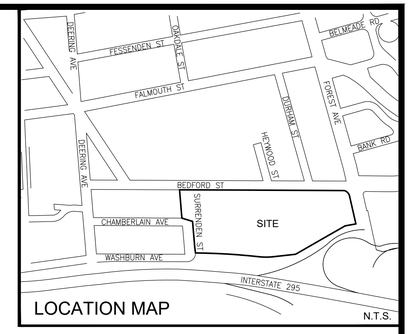
USM Portland - Wishcamper Lot
Portland, Maine
Made for
Woodard & Curran
41 Hutchins Drive, Portland, Maine

OWEN HASKELL, INC.
PROFESSIONAL LAND SURVEYORS
390 US ROUTE 1, UNIT 10, FALMOUTH, ME 04105 TEL. 207-774-0424

DRAWN BY:	SDG / JLW	DATE:	JAN. 27, 2019	JOB NO.	2019-267 P
CHECKED BY:	SDG	SCALE:	1" = 30'	DRWG. NO.	1 OF 2

MATCH LINE SHEET 1





LEGEND

●	IRON PIPE OR ROD FOUND	-X-X-	FENCE
■	MONUMENT FOUND	═══	CURB
	UTILITY POLE	- - -	OVERHEAD WIRES
	MANHOLE	E	UNDERGROUND POWER
E G	ELECTRIC/GAS METER	C	COMMUNICATION
	SIGN	W	WATER LINE
	CATCH BASIN	G	GAS LINE
	HYDRANT	T	TELEPHONE
	WATER VALVE OR SHUTOFF	SD	STORM DRAIN
	GAS VALVE	SS	SANITARY SEWER
	LIGHT POLE	STM	STEAM LINE
	DECIDUOUS TREE	IPF/IRF	IRON PIPE OR ROD FOUND
	CONIFEROUS TREE	L/S	LANDSCAPED AREA
	SHRUB / BUSH	CONC.	CONCRETE
GTW	GEOTHERMAL WELL	FFE	FINISHED FLOOR ELEVATION
	ELECTRICAL JUNCT. BOX	THRES.	THRESHOLD
		N/F	NOW OR FORMERLY
		000/000	DEED BOOK / 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 SURVEY HAS NOT PHYSICALLY LOCATION 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.

SCALE : 1" = 30'

0' 15' 30' 60'

PLAN REFERENCES

1. "BOUNDARY & TOPOGRAPHIC PLAN ON BEDFORD STREET, USM CAMPUS, PORTLAND, MAINE MADE FOR WOODARD & CURRAN, INC." SEPTEMBER 08, 2005 REV. 5 11-02-06 BY OWEN HASKELL, INC.

2. MAINE STATE HIGHWAY COMMISSION RIGHT OF WAY MAP, STATE HIGHWAY '295', PORTLAND, CUMBERLAND COUNTY, S.H.C. FILE NO. 3-185. SHEETS 57 REVISED AND 61

3. "BOUNDAY & TOPOGRAPHIC SURVEY, USM PORTLAND CAMPUS, 96 FALMOUTH STREET, PORTLAND, MAINE MADE FOR OAK POINT ASSOCIATES," NOV. 12, 2019 BY OWEN HASKELL, INC., OHI JOB# 2019-244 P.

GENERAL NOTES

1. OWNER OF RECORD: UNIVERSITY OF MAINE
TAX MAP 114 BLOCK A LOT 1 and LOT 2
BOOK 29219 PAGE 218
BOOK 24387 PAGE 258
BOOK 34066 PAGE 29

2. BEARINGS ARE BASED ON MAINE STATE PLANE COORDINATE SYSTEM, WEST ZONE, NAD 83 PER COORDINATE DATA PROVIDED BY THE CITY OF PORTLAND DEPARTMENT OF PUBLIC WORKS.

3. ELEVATIONS ARE BASED ON CITY OF PORTLAND DATUM, NGVD 29. BENCHMARK UTILIZED IS A COPPER BOLT IN 3 FOOT OFFSET MONUMENT LOCATED AT THE SOUTHWEST CORNER OF THE BRIGHTON AVENUE AND FALMOUTH STREET INTERSECTION.

SAMUEL D. GLIDDEN, PLS #2520

STATE OF MAINE · SAMUEL D GLIDDEN · 2520 · PROFESSIONAL LAND SURVEYOR

REV.	DATE	DESCRIPTION
1	4-30-2021	SURVEYED ADDITIONAL AREAS

Existing Conditions Survey

USM Portland - Wishcamper Lot
Portland, Maine
Made for
Woodard & Curran
41 Hutchins Drive, Portland, Maine

OWEN HASKELL, INC.
PROFESSIONAL LAND SURVEYORS
390 US ROUTE 1, UNIT 10, FALMOUTH, ME 04105 TEL. 207-774-0424

DRAWN BY:	SDG / JLW	DATE:	JAN 27, 2019	JOB NO.	2019-267 P
CHECKED BY:	SDG	SCALE:	1" = 30'	DRWG. NO.	2 OF 2

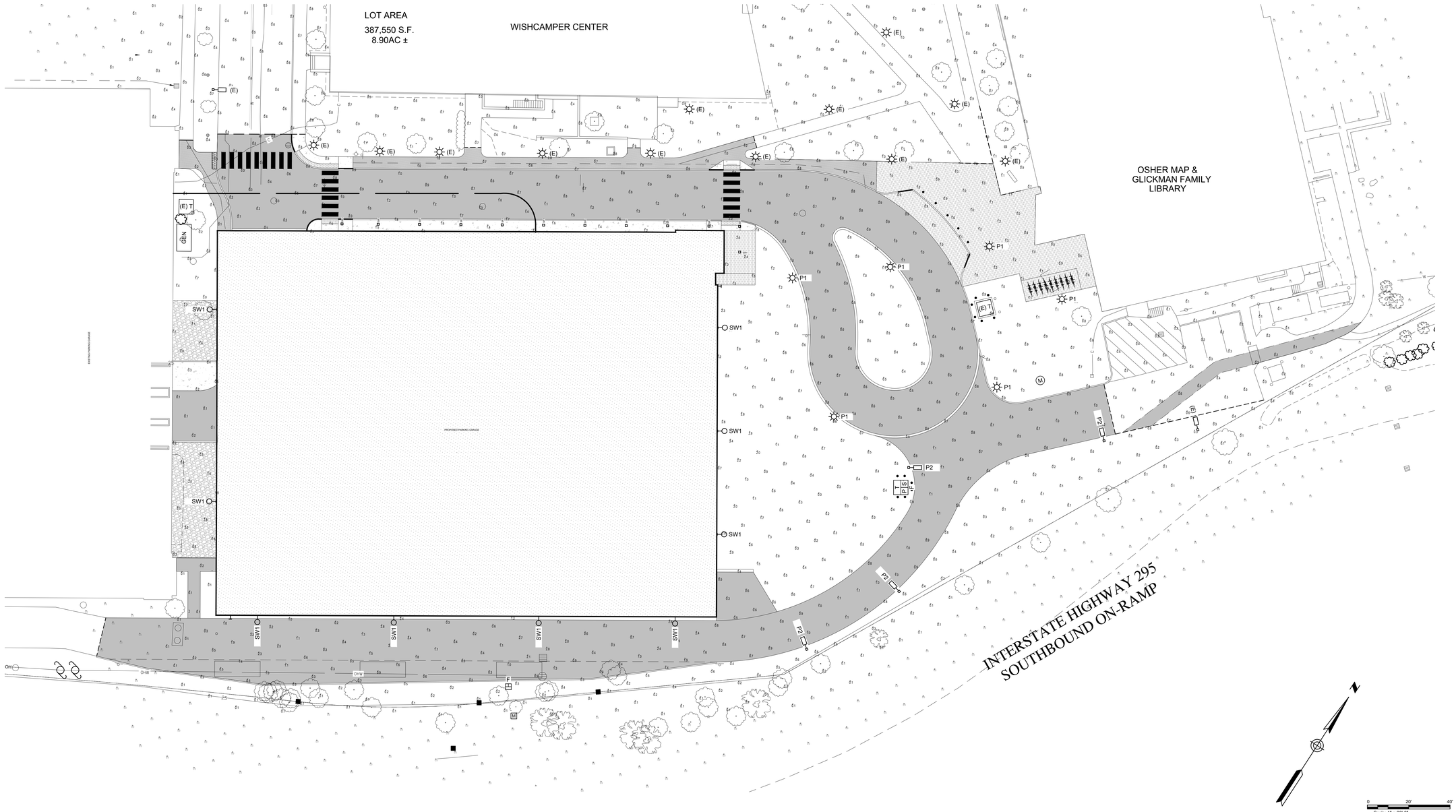
LUMINAIRE SCHEDULE ~ SITE

TYPE	DESCRIPTION	MFR	CATALOG SERIES NUMBER SEE NOTE 1	MOUNTING, U.N.O.	VOLTS	LAMP				KEY NOTES
						QTY PER FIXTURE	WATTS	LUMENS	TYPE	
P1	SITE LIGHT AND POLE, "ICE CREAM CONE" SHAPE	SEE NOTE 8		14' POLE	277	1	24	3,330	LED ARRAY ~ 4000K	8,9
P2	SITE LIGHT AND POLE, "SHOEBOX" SHAPE	SEE NOTE 8		14' POLE	277	1	18	2,160	LED ARRAY ~ 4000K	8,10
SW1	WALL MOUNTED EXTERIOR LIGHT	LITHONIA	KAXW-LED-P1-40K-R4-MVOLT	KEYNOTE 5	UNV	1	29	3,643	LED ARRAY ~ 4000K	5
SR1	RECESSED CANOPY LIGHT	LITHONIA	LDN4SQ-40-07-LS4-AR-LSS-MVOLT	RECESSED CANOPY	UNV	1	8.6	620	LED ARRAY ~ 4000K	

	NOTES
1	**NOTE THAT THESE NUMBERS ARE NOT COMPLETE CATALOG NUMBERS. PROVIDE ALL REQUIREMENTS ON SCHEDULE, NOTES, SPECS, AND DRAWINGS COMBINED.**
2	**CATALOG SERIES NUMBERS ARE USED TO ESTABLISH A LEVEL OF QUALITY AND NOT INTENDED TO LIMIT COMPETITION. SERIES NUMBERS ARE NOT COMPLETE CATALOG NUMBERS. COMPLY WITH ADDITIONAL REQUIREMENTS IN SPECIFICATIONS AND DRAWINGS.**
3	PROVIDE WALL,CEILING, OR PENDANT MOUNTING AS INDICATED ON PLANS. PROVIDE NUMBER OF FACES AND ARROWS AS INDICATED.
4	VERIFY CEILING STRUCTURE AND MOUNTING HEIGHT PRIOR TO ORDERING ANY LIGHT FIXTURES.
5	COORDINATE MOUNTING HEIGHT WITH STRUCTURAL AND ARCHITECTURAL DRAWINGS.
6	PROVIDE COLD WEATHER OPTION.
7	CONFIRM EXACT FIXTURE CONFIGURATION AND OPTIONS WITH MUNICIPALITY PRIOR TO ORDERING FIXTURE.
8	FIXTURE AND POLE SHALL BE PROVIDED BY OWNER FROM EXISTING OWNER'S STOCK.
9	PROVIDE SCREW-IN LED RETROFIT LAMP. BASIS OF DESIGN IS MFG. BY LIGHT EFFICIENT DESIGN, PART NO. LED-8029E345-A.
10	PROVIDE SCREW-IN LED RETROFIT LAMP. BASIS OF DESIGN IS MFG. BY LIGHT EFFICIENT DESIGN, PART NO. LED-8039E40-A.

Calculation Summary

Label	CalcType	Units	Avg	Max	Min	Avg/Min	Max/Min
DRIVES	Illuminance	Fc	0.99	3.5	0.2	4.95	17.50
WALKWAY- GLICKMAN	Illuminance	Fc	1.00	1.3	0.5	2.00	2.60
WALKWAY- NEW GARAGE	Illuminance	Fc	1.46	1.7	1.2	1.22	1.42



A1	PHOTOMETRIC SITE PLAN
SCALE: 1"=20'-0"	

7/2/2021 3:16:33 PM

UNIVERSITY OF SOUTHERN MAINE

25 Bedford Street, Portland, ME 04104
207.712.5183 | USM.MAINE.EDU

PROJECT TEAM:

CLIENT
UNIVERSITY OF SOUTHERN MAINE

PRIME CONSULTANT
& STRUCTURAL ENGINEER
DESMAN Design Management
18 Tremont Street #300
Boston, MA 02108

ARCHITECT
WINTON-SCOTT ARCHITECTS
5 MILK STREET
PORTLAND, ME 04101

CIVIL ENGINEER
WOODARD & CURRAN
41 HUTCHINS DRIVE
PORTLAND, ME 04102

LANDSCAPE ARCHITECT
MICHAEL BOUCHER LANDSCAPE ARCHITECTURE
457 US ROUTE 1 SUITE 2
FREEPORT, ME 04032

MEP/FP ENGINEER
ALLIED ENGINEERING
160 VERANDA STREET
PORTLAND, ME 04103

GEOTECHNICAL ENGINEER
S.W. COLE
286 PORTLAND ROAD
GREY, ME 04039

TRAFFIC ENGINEER
VANASSE HANGEN BRUSTLIN INC
40 IDX DR 100 #200, SOUTH
BURLINGTON, VT 05403

COST ESTIMATOR
PREFERRED CONSTRUCTION MGMT
94 AUBURN ST,
PORTLAND, ME 04103

SEAL / SIGNATURE

© DESMAN, Inc.
2021

PROJECT:

USM - Structured Parking Garage

Address

44 Bedford Street,
Portland ME 04104

REVISIONS:

No.	Date	Description

SUBMISSIONS:

Date	Issued For:
07/30/21	Site Plan Submittal

SCALE	**AS NOTED**
DATE ISSUED	**07/30/2021**
PROJECT NO	**20-20145.00-1**
DRAWN BY	**GMC**
CHECKED BY	**BTG**

SHEET TITLE:

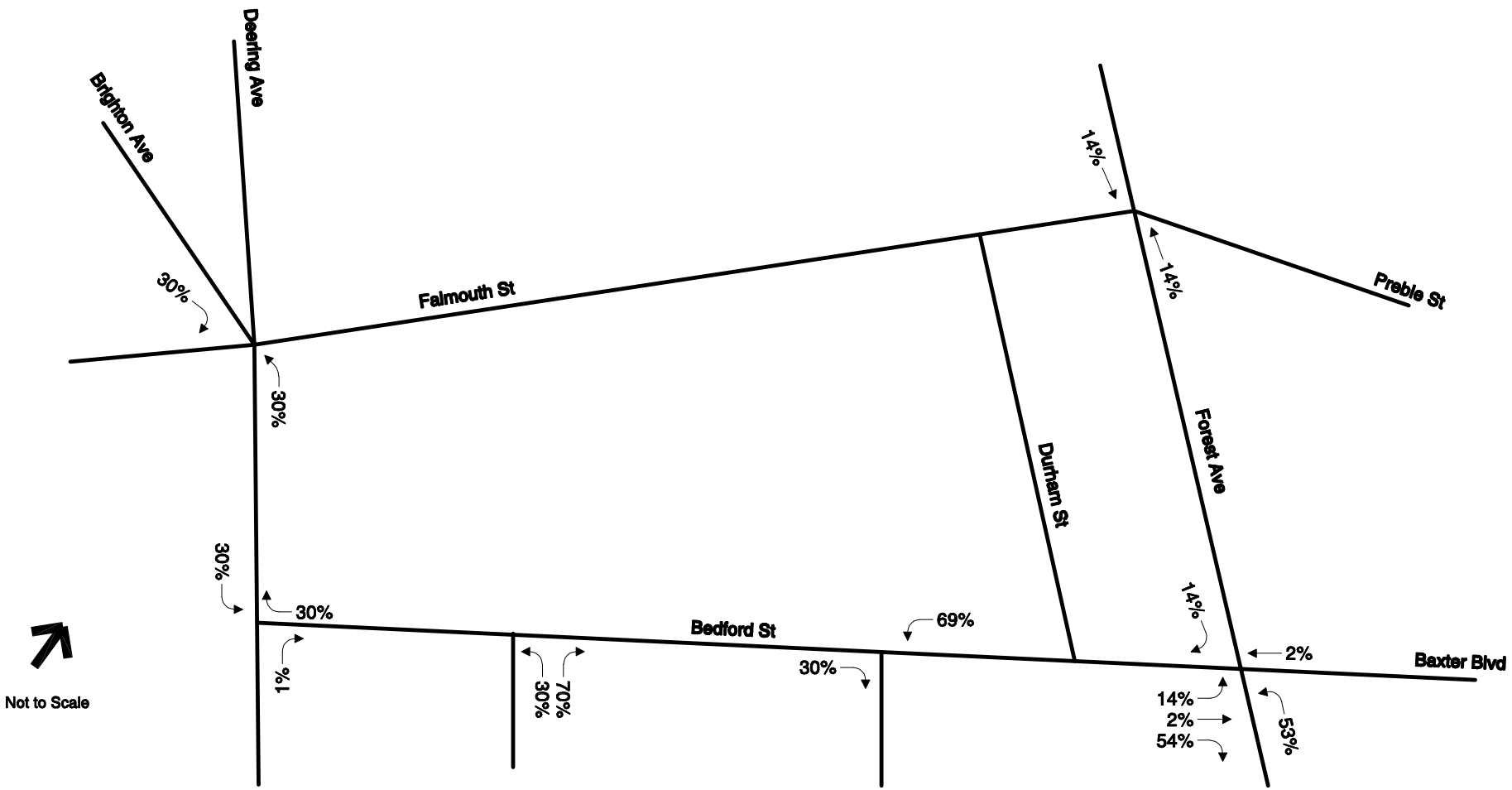
SITE PHOTOMETRIC PLAN AND SCHEDULES

SL-100

Trip Generation

Total Site generated trips (not accounting for internal, pass-by, or diverted trips)

	Site Land Uses and Descriptions				AM PK HR OF GENERATOR										PM PK HR OF GENERATOR									
					directional dist.		average				# trips				directional dist.		average				# trips			
	Code	Land Use	Size	Unit	% enter	% exit	# studies	Avg Rate	Std Dev.	Total by Avg	Method Chosen	Total Trips	Entering	Exiting	% enter	% exit	# studies	Avg Rate	Std Dev.	Total by Avg	Method Chosen	Total Trips	Entering	Exiting
	1	2	3	4	16	17	18	19	20	21	24	25			26	27	28	29	30	31	34	35		
10th	550	University / College	1066	students	78%	20%	7.00	0.15	0.05	160	average	**160**	**125**	**35**	32%	68%	9.00	0.15	0.05	160	average	**160**	**51**	**109**



Trip Distribution Percentages

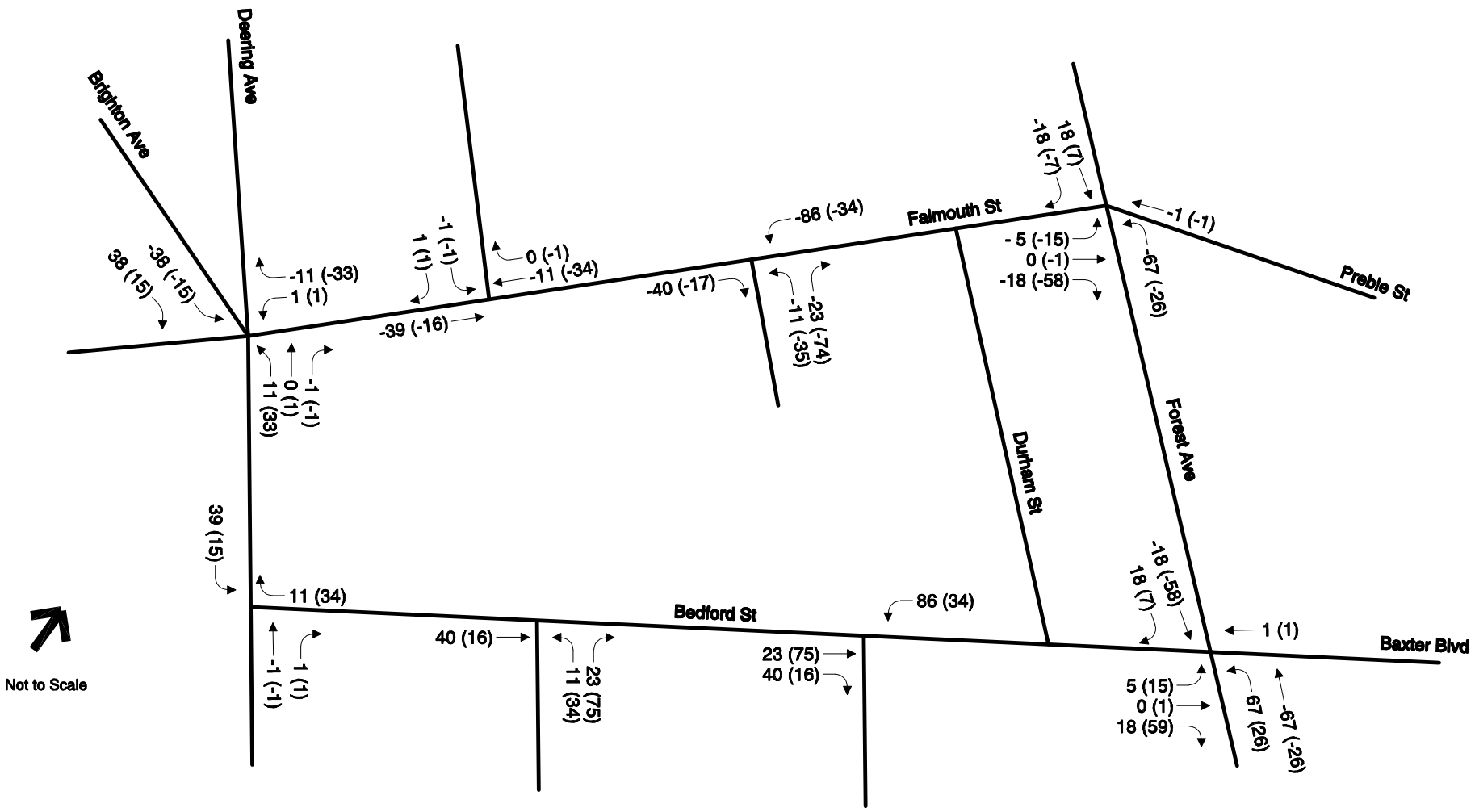
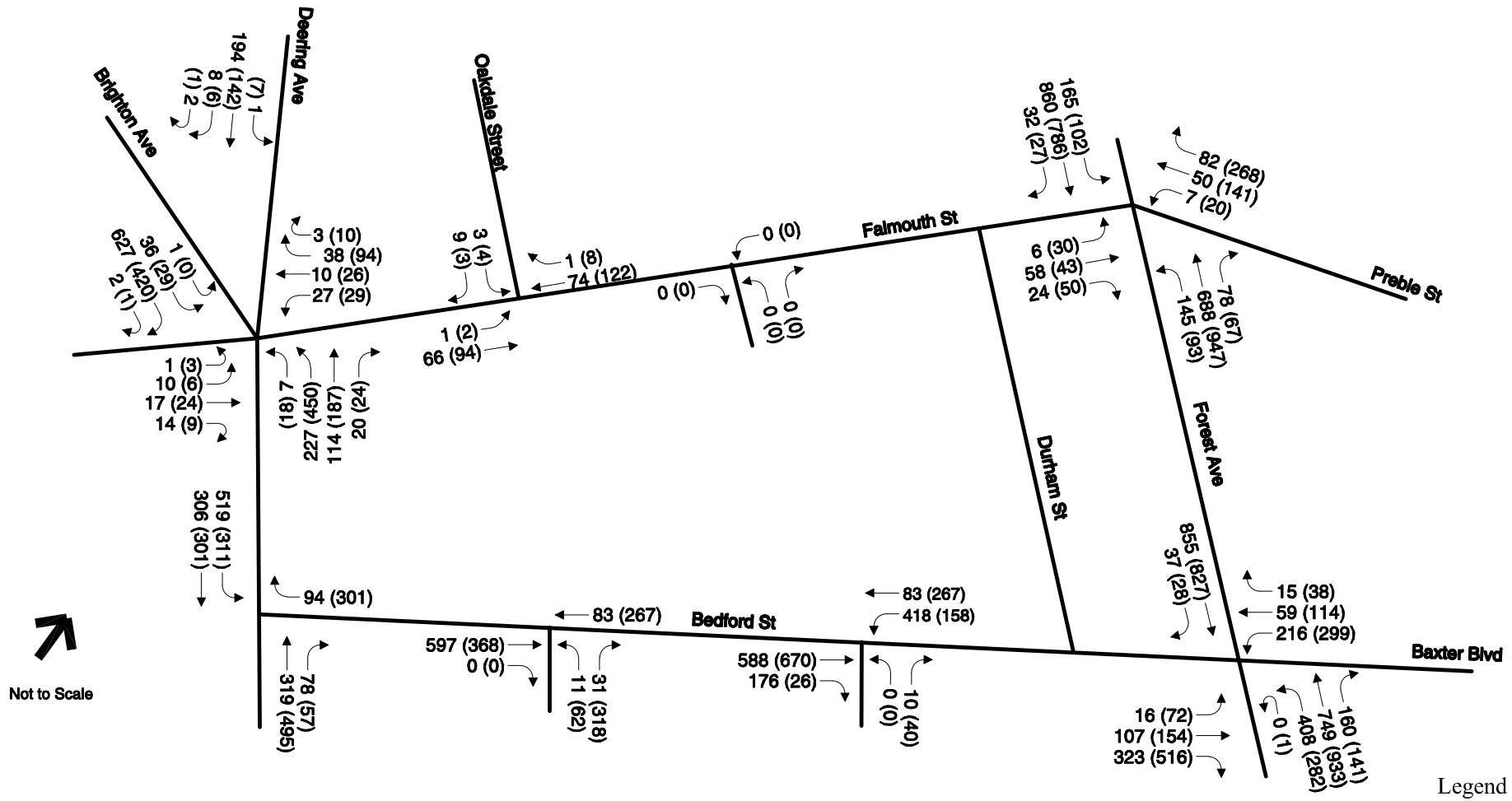


Figure 5: Trip Generation for the Proposed Site

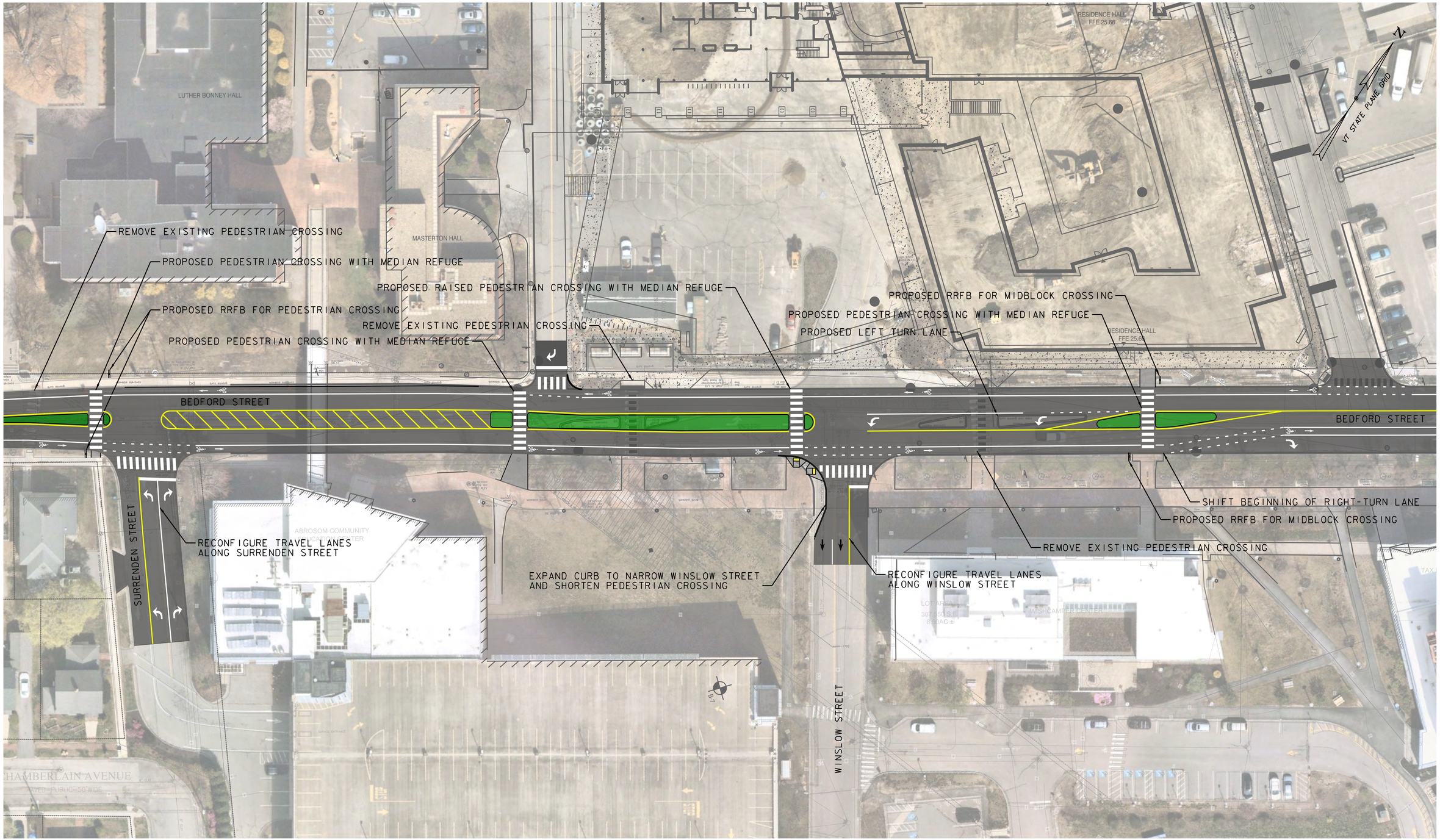
2028 TMP Modification Traffic Volumes



Legend

AM Peak Hour
(PM Peak Hour)

2028 Build Traffic Volumes
(TMP Modification)



PROJECT NAME:	USM INTERSECTION IMPROVEMENTS
PROJECT NUMBER:	52718.01

FILE NAME: bdr_concepts.dgn	PLOT DATE: 09/03/21
PROJECT LEADER: J.A. CONLEY	DRAWN BY: D.A. GINGRAS
DESIGNED BY: D.A. GINGRAS	CHECKED BY: J.A. CONLEY
BEDFORD STREET CONCEPT	SHEET 3 OF 4

GOVERNOR'S DEED
(with Reverter)

KNOW ALL PERSONS BY THESE PRESENTS, that the STATE OF MAINE, acting by and through its Governor, on recommendation of the Commissioner of its DEPARTMENT OF TRANSPORTATION, under and pursuant to the provisions of 23 M.R.S.A., Section 61, for consideration, the sufficiency of which is hereby acknowledged, RELEASES to THE UNIVERSITY OF MAINE SYSTEM, organized as a non-profit corporation of the State of Maine, with offices at 16 Central Street in Bangor, Maine, its successors and assigns forever, all its right, title and interest in and to a certain lot or parcel of land situated on the southerly side of Winslow Street, so-called, at its intersection with the westerly sideline of the right-of-way of State Highway "295", also known as Interstate 295, in Portland, County of Cumberland and State of Maine, and being as shown on a Right-of-way Map for State Highway "295" Portland, Cumberland County, Federal Aid Project Number I-295-3(28), dated January 1967, File Number 3-185, sheet 57 of 73, on file at the offices of the Maine Department of Transportation in Augusta, bounded and described as follows:

BEGINNING at a point on the southerly sideline of Winslow Street at its intersection with the westerly sideline of the right-of-way of Route 295;

THENCE S 26° 51' 18" W along said westerly sideline of Route 295, a distance of 34.00 feet;

THENCE S 51° 22' 05" W continuing along said westerly sideline of Route 295, a distance of 23.93 feet to land now or formerly of the University Of Southern Maine Foundation;

THENCE N 38° 37' 55" W along said University Of Southern Maine Foundation land 20.00 feet;

THENCE N 6° 51' 23" E continuing along said University Of Southern Maine Foundation land, 33.28 feet to the southerly sideline of said Winslow Street;

THENCE S 85° 26' 46" E along said southerly sideline of Winslow Street, 42.70 feet, more or less to the aforementioned westerly sideline of the right-of-way of Route 295 and the POINT OF BEGINNING, and containing one thousand four hundred twenty-seven square feet, more or less (1,427 sq. ft. ±).

EXCEPTING AND RESERVING from this conveyance any and all rights of access from the herein described parcel of land to State Highway "295", also known as Interstate 295, all of which rights of access are expressly reserved to, and retained by, the State of Maine.

ALSO RESERVING to the State of Maine the perpetual right to enter upon said parcel to maintain any highway slopes and drainage facilities or installations that may exist.

SUBJECT TO all utility easements and installations located on the above described premises, including those shown on the herein referred to Right-of-way Map, and to those rights which any utility enjoys over the subject premises for maintenance, location or relocation of poles and other installations.

NOTWITHSTANDING the foregoing, Grantor gives this deed, and Grantee accepts the same, upon the express CONDITION that the property hereby conveyed is to be retained by the University of Maine system and used for

public purposes only; and if said property or any interest in it, or any portion of it, is transferred, or if it is used for any commercial or other non-public purposes, said property shall at once REVERT to, and re-vest in, the Grantor, its successors or assigns; and that such reversion, should it occur, shall be automatic and require no further act of conveyance or documentation in order to be effective.

BEING a portion of premises acquired by the State of Maine from Charles T. Hayes, Jr. and Beatrice Hayes by warranty deed dated July 19, 1968 and recorded at the Cumberland County Registry of Deeds on July 23, 1968 in Volume 3049 at Page 553; and a portion of premises acquired from Reuben Katz by warranty deed dated January 10, 1969 and recorded at said Registry Of Deeds on January 15, 1969 in Volume 3072 at Page 435.

THE STATE OF MAINE makes no representations or warranties with respect to the premises hereby conveyed. The representations and warranties so excluded encompass, but are not limited to, those pertaining to: land use and environmental matters; fitness of the premises or any portion thereof for any particular purposes; water quality or quantity; the condition or quality of the soil; inchoate or unrecorded liens; status of title to or rights within that area lying between the high and low water marks; or the existence, status, or condition of access to, or public utilities serving the premises. Any subsequent use of, improvement to, or construction on the parcel shall be subject to all applicable laws, regulations, ordinances, and permitting requirements.

IN WITNESS WHEREOF, I, John E. Baldacci, Governor of the State of Maine, have caused the name and Great Seal of the State of Maine to be hereunto affixed this 11th day of Sept. in the year two thousand six.

STATE OF MAINE

By: _____, Governor
John E. Baldacci

Received
Recorded Register of Deeds
Sep 20,2006 02:29:02P
Cumberland County
John B OBrien

Affixed by: _____
Secretary of State

STATE OF MAINE
Kennebec, *ss.*

Sept. 11th, 2006

Personally appeared the above-named, John E. Baldacci, Governor of the State of Maine and acknowledged the foregoing instrument to be his free act and deed in his said capacity and the free act and deed of the State of Maine.

Before me, _____
Notary Public/~~Attorney at Law~~

Print Name: _____

My commission expires: _____

ROSEMARIE D. SMITH
Notary Public, Maine
My Commission Expires January 6, 2009

SEAL

SHORT FORM QUITCLAIM DEED WITH COVENANT

MAINE REAL ESTATE TAX PAID

THE UNIVERSITY OF SOUTHERN MAINE FOUNDATION, a Maine nonprofit corporation with a mailing address of 96 Falmouth Street, Portland, Maine 04104, FOR CONSIDERATION PAID, grants to UNIVERSITY OF MAINE SYSTEM, a body politic and instrumentality of the State of Maine, with a mailing address of 16 Central Street, Bangor, Maine 04401, with QUITCLAIM COVENANT, certain real property, together with any improvements thereon, located in the City of Portland, Cumberland County, Maine and more particularly described on Exhibit A attached hereto and made a part hereof.

Being the same premises conveyed to the grantor herein by a Short Form Quitclaim Deed With Covenant from Frederick J. Olsen dated April 27, 2005 and recorded at the Cumberland County Registry of Deeds in Book 22577, Page 79.

IN WITNESS WHEREOF, The University of Southern Maine Foundation, has caused this instrument to be executed and delivered as of the 20th day of December, 2011.

The University of Southern Maine Foundation

Witness

By: Margaret A. Weston
Name: Margaret A. Weston
Its: President

State of Maine
County of Cumberland, ss. December 16, 2011

Personally appeared the above-named Margaret A. Weston, President of The University of Southern Maine Foundation, and acknowledged the foregoing instrument to be her free act and deed in her said capacity and the free act and deed of The University of Southern Maine Foundation.

Before me,

Amy Blaisdell
Notary Public/Attorney at Law
Name: Amy Blaisdell
Commission Expires: 10/16/2015

Amy Blaisdell
NOTARY PUBLIC
Lisbon Falls, ME
Commission expires on
October 16, 2015

Exhibit A

Formerly Tax Map 114, Block D, Lot 21:

Three (3) certain lots or parcels of land, with the buildings thereon, situated on the northerly side of Winslow Street in the City of Portland, County of Cumberland, State of Maine, being lots numbered 1, 2 and 3 on an unrecorded plan of the Heater piece at and adjoining the junction of said Winslow Street and Bedford Street made by E.C. Jordan & Co., Civ. Eng., in January 1918, and on file in the office of said E.C. Jordan & Co., said three lots taken together, being bounded and described as follows:

Beginning at a point on said northerly line of Winslow Street at the southwest corner of land now or formerly of John W. Lovely heirs and thence running, with an included angle of 88° 43' and by the westerly line of said Lovely land eighty-six (86) feet to a post and land now or formerly of the T.A. Huston & Co.; thence northwesterly and along said Huston land, forty-nine (49) feet to a post; thence northwesterly and along said Huston land thirty-two and three tenths (32.3) feet to an iron post; thence westerly and along said Huston land twenty-two and thirty-five hundredths (22.35) feet to an iron post; thence westerly and along said Huston land nineteen and eighty-four hundredths (19.84) feet to a post; said post being the southeasterly corner of lot numbered 11 on said plan; thence westerly and along the rear or southerly line of said lot numbered 11, fifty-nine and thirty-seven hundredths (59.37) feet to the southwesterly corner of lot numbered 11; thence southwesterly at right angles to said Winslow Street one hundred (100) feet to said northerly line of Winslow Street; thence easterly and along said northerly line of Winslow Street one hundred fifty-nine (159) feet to the point or place of beginning; said three lots having together an area of 18,027 square feet, be the same more or less.

EXCEPTING AND RESERVING from the above-described premises that portion thereof which was conveyed by Ellestad Hansen, Warren K. Webber and Mary E. Hansen to Charles A. Adams by deed dated April 8, 1924 and recorded in the Cumberland County Registry of Deeds in Book 1165, Page 79, and such portion thereof as may have been conveyed by Mary E. Hansen to the State of Maine by deed dated January 7, 1970 and recorded in the said Registry of Deeds in Book 3114, Page 724.

Formerly Tax Map 114, Block D, Lot 22:

ALSO a certain lot or parcel of land situated on the northerly side of Winslow Street in the City of Portland, County of Cumberland and State of Maine, bounded and described as follows, to wit:

Beginning at an iron hub at the southwest corner of a lot of land conveyed by Edward D. Noyes, et al. to Ellestad Hansen and Warren K. Webber by deed dated November 14, 1923 and recorded in the Cumberland County Registry of Deeds in Book 1153, Page 280; thence easterly along the northerly side line of Winslow Street forty-seven (47) feet to a stake; thence northerly at right angles to said Winslow Street one hundred sixteen and thirty-three hundredths (116.33) feet to an iron hub in the northerly line of the lot above mentioned; thence westerly with an included angle of seventy (70) degrees and thirty-six (36) minutes to the right, forty-nine and seventy-six hundredths (49.76) feet to a stake at the northwest corner of the lot above mentioned; thence southerly on a line at right angles to said Winslow Street one hundred (100) feet to the point of beginning.

Formerly Tax Map 114, Block C, Lot 1:

ALSO a certain lot or parcel of land in the City of Portland, County of Cumberland and State of Maine, described as follows: Beginning at a stake on the southerly side of Winslow Street at the intersection with the easterly side of Conant Street; thence 25° E by Conant Street one hundred ten (110) feet; thence easterly at right angles with Conant Street forty-six and thirty-one hundredths (46.31) feet to a stake; thence northerly to a point in the southerly side of Winslow Street distant easterly sixty-three and seventy-two hundredths (63.72) feet from the point of beginning; thence N 71° 37' W by said Winslow Street sixty-three and seventy-two hundredths (63.72) feet to the point of beginning.

Formerly Tax Map 114, Block C, Lot 2:

ALSO a certain lot or parcel of land situated in the City of Portland, County of Cumberland and State of Maine bounded and described as follows, to wit:

Beginning at a point on the present southerly boundary line of Winslow Street at the northeasterly line of land now or formerly of Frederick J. Olsen; thence southeasterly along the northeasterly line of land now or formerly of said Olsen, about sixty-six (66) feet to a corner; thence southwesterly along the southeasterly line of land now or formerly of said Olsen, about forty-six and three tenths (46.3) feet to the northeasterly boundary line of Conant Street; thence southeasterly along the northeasterly boundary line of Conant Street about eighteen (18) feet to a monument located about seventy-one (71) feet northwesterly from and as measured along a line normal to the Ramp F.A. 6 Base Line at about Sta. 5+50; thence northeasterly about sixty-six (66) feet to a point on a line, said line being a projected line between the beforementioned monument and a monument located fifty (50) feet northwesterly from and as measured along a line normal to the Ramp F.A. 6 Base Line at Sta. 4+50, said point being twenty-five (25) feet southwesterly of and as measured along said projected line from said monument located

northwesterly of Sta. 4+50; thence northwesterly at right angles to said projected line twenty (20) feet to a point; thence northerly by a direct course to a point on the present southerly boundary line of Winslow Street; thence westerly along the present southerly boundary line of Winslow Street sixty (60) feet to the point of beginning. Said lot or parcel of land contains about 2,867 square feet and is a portion of that land as acquired from Charles T. Hayes, Jr. and Beatrice Hayes, pursuant to a Notice of Layout and Taking dated March 8, 1973 and recorded at the Cumberland County Registry of Deeds in Book 3367, Page 58. Said parcel is shown on a certain Maine Department of Transportation Right-of-way Map entitled "State Highway '295', Portland, Cumberland County, Federal Aid Project No. 1-295-3(28)" dated January 1967, on file in Augusta, File No. 3-185.

The premises herein conveyed is SUBJECT to a State of Maine Notice of Layout and Taking dated February 28, 1973 and recorded in said Cumberland County Registry of Deeds in Book 3367, Page 58.

Received
Recorded Register of Deeds
Dec 21,2011 12:40:48P
Cumberland County
Pamela E. Lovley

University of Southern Maine

Traffic Movement Permit - Section 7

Proposed Residence Hall, Student Center, and Parking Garage

August 2021

Introduction

VHB has conducted a technical analysis in support of a Traffic Movement Permit (TMP) modification for development of a new residence hall and Student Center on the University of Southern Maine (USM) campus. Although in the approved TMP for Project ID PL-001040-2020, a parking garage was not the primary subject of the permit application, for the purposes of the traffic analysis, the proposed parking garage location was situated off of Falmouth Street. Anticipated new trips to and from the campus were assumed to utilize the new parking garage structure.

The proposed location of the parking garage has since been relocated as a response to neighborhood feedback and a site evaluation process. The locations of the 580-bed residence hall and Student Center that were previously permitted have not changed. The new parking garage will now be located adjacent to the existing parking structure on campus with joint access to and from Bedford Street. As a result, the traffic that had previously been assigned to the garage on Falmouth Street will instead access the proposed parking structure location on Bedford Street. This traffic was redistributed across the adjacent street network and reevaluated to assess the resulting traffic impacts.

Future Conditions

The future traffic conditions in the study area were analyzed with the proposed project in place and compared to the conditions outlined in the TMP traffic analysis. The TMP future traffic volumes and intersection operations for the future horizon year of 2028 were analyzed for the Build condition, with the parking garage located off of Bedford Street. The results for the Base condition, with the parking garage located off of Falmouth Street, were included as previous permitted.

Infrastructure Improvements

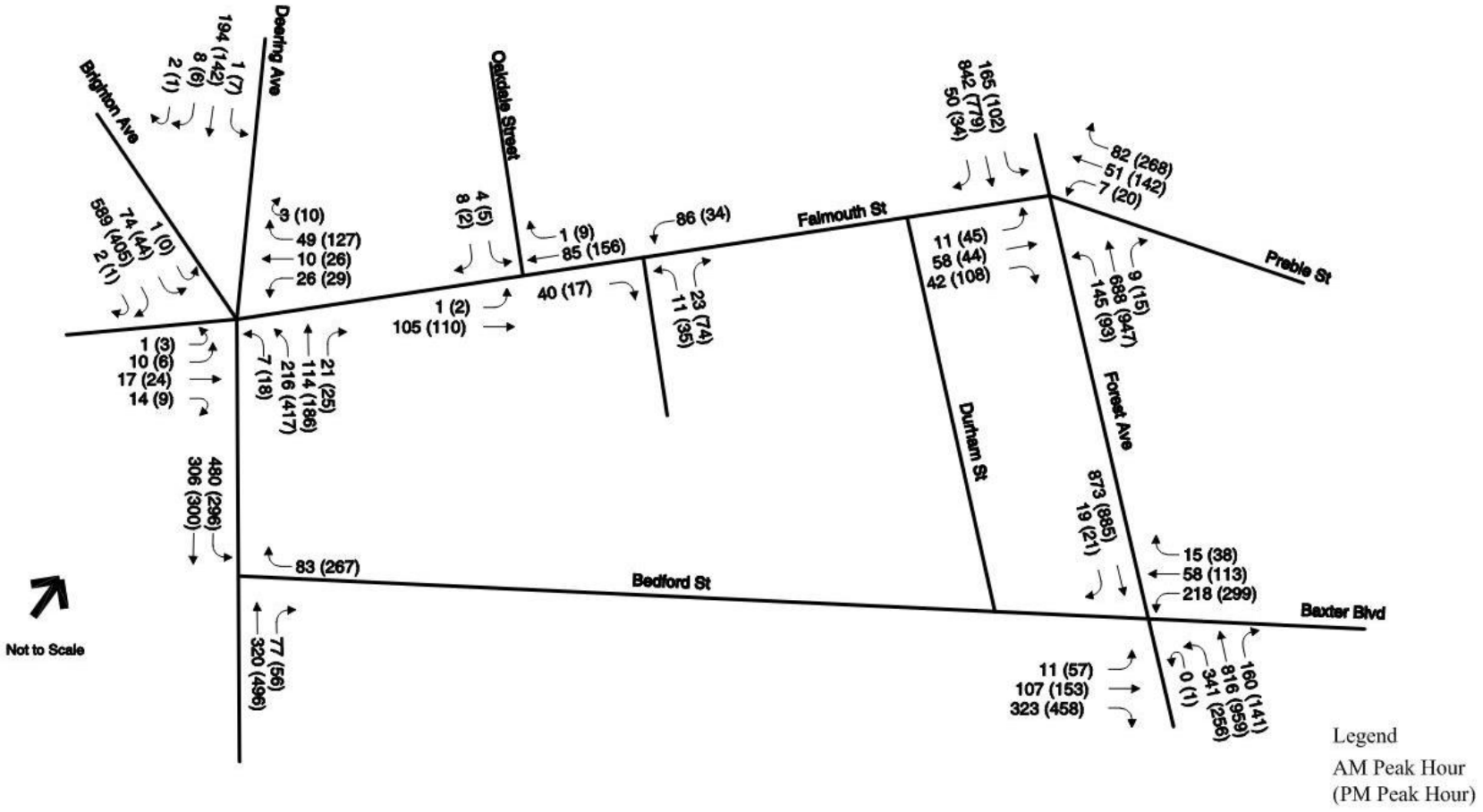
Construction of a roundabout at the intersection of Falmouth Street, Brighton Avenue and Deering Avenue is currently being completed. As such, the TMP permit traffic analysis as well as the traffic analysis for the current garage location on Bedford Street both include a completed roundabout at this location.

The traffic volume data collected at the intersection of Falmouth Street, Brighton Avenue and Deering Avenue was redistributed to represent the volumes that will exist at the five-leg roundabout in the future, rather than the current six-leg condition.

Baseline Traffic Conditions

The TMP traffic analysis included a one percent per year background traffic growth rate, the traffic associated with identified projects in the area, and the trip generation associated with the growth anticipated on campus assigned to a parking garage on Falmouth Street. The resulting traffic networks from the 2028 TMP Build conditions serve as the baseline condition for this analysis, as illustrated in Figure 1.

Figure 1. 2028 Base Network (TMP Condition with garage on Falmouth Street)



Trip Generation Reassignment

To determine the impact of the proposed garage location, VHB reassigned the trips destined for the proposed parking garage from the location on Falmouth Street to the location on Bedford Street. As a reminder, based on industry standards and MaineDOT guidance, the number of new peak hour trips anticipated with the growth in enrollment is 160 trips (125 in and 35 out) in the highest AM peak hour and 160 trips (51 and 109 out) in the highest PM peak hour with no adjustments for the high portion of transit trips to and from the campus. It is important to note that existing campus mode shares are already high and with additional Transportation Demand Management initiatives, the number of students and employees walking, biking, riding transit, or carpooling is expected to rise. To remain conservative, the trip generation for this analysis was not reduced to reflect the existing or anticipated mode split based on TDM measures.

The proposed garage circulation will involve an entrance at Winslow Street and an exit at Surrenden Street via the existing garage. The trips to and from the existing garage will also follow the new entry and exit pattern and were redistributed accordingly. The trips to and from the existing Bedford Street garage were added to that network based on garage entry and exit data from October 2019 (determined to represent a typical school year condition).

The new garage trips were assigned to local roadways based on campus user zip code data. The redistributed trips were added to the 2028 baseline networks to determine the 2028 Build networks. The trip reassignment based on the new proposed garage location is shown in Figure 2.

The resulting 2028 Build networks for the TMP Modification are shown in Figure 3.

Figure 2. Redistribution of Trip Generation based on Proposed Parking Relocation

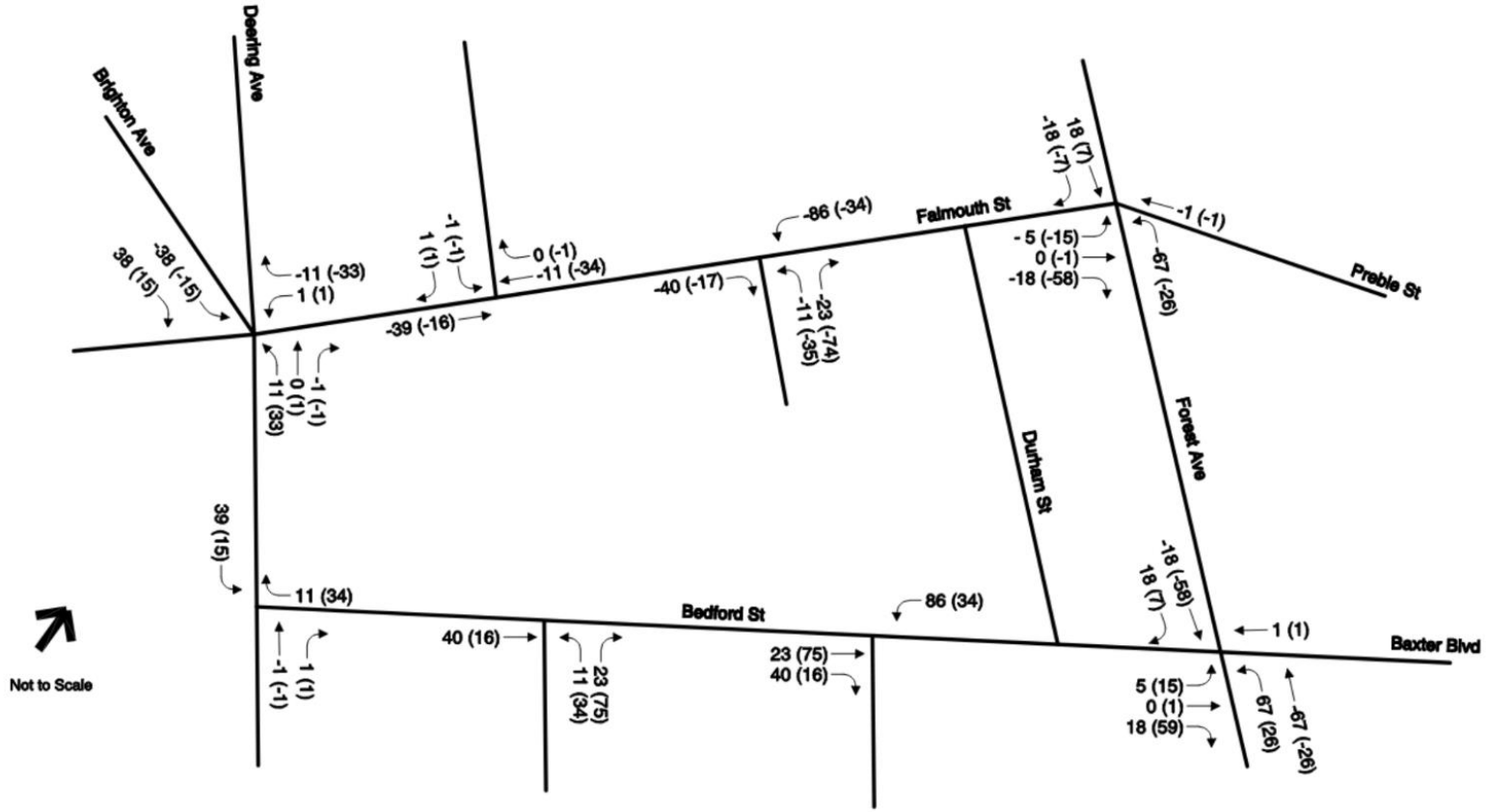
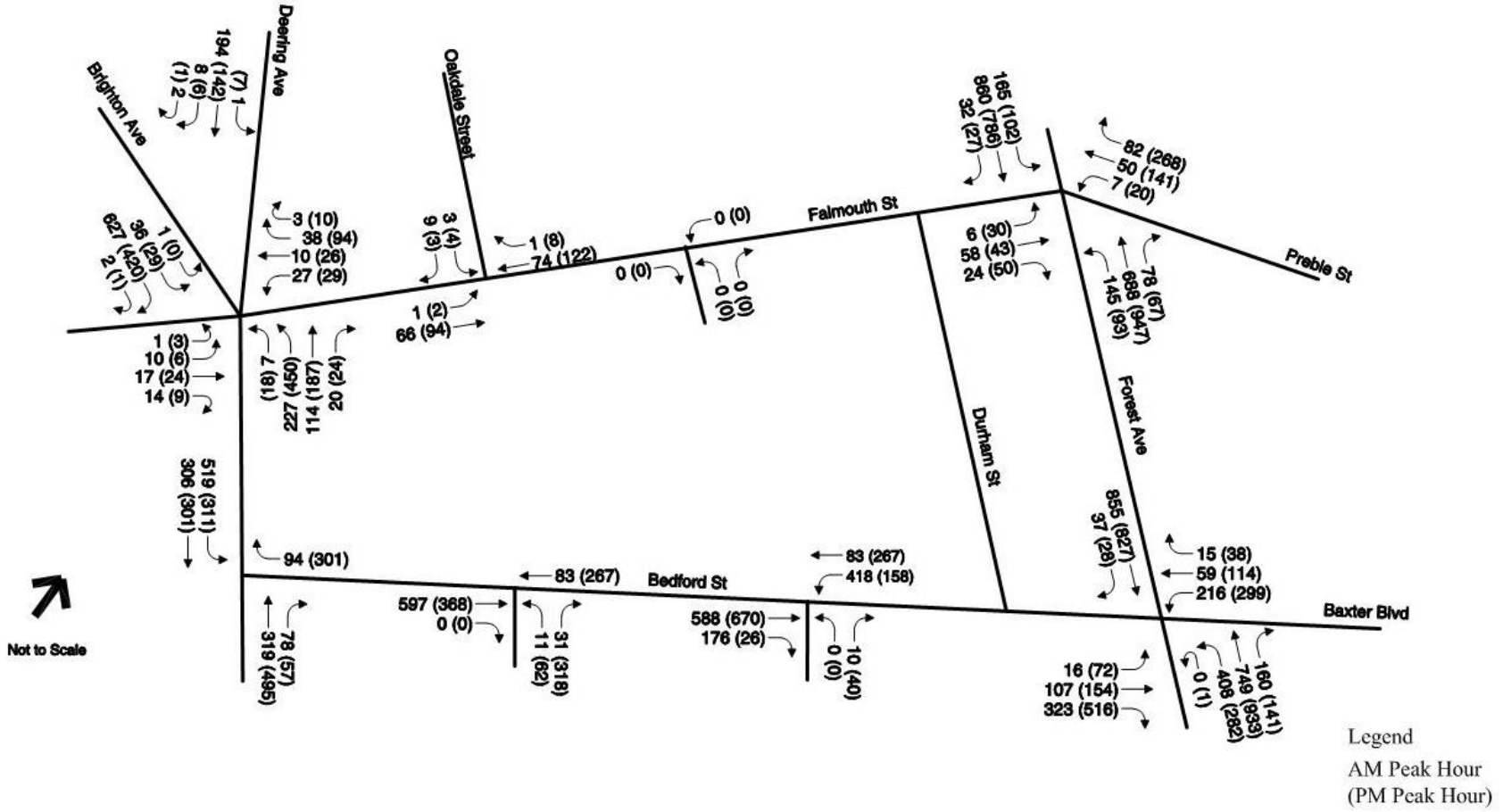


Figure 3. 2028 TMP Modification Build Condition Traffic Volumes



TRAFFIC ANALYSES

Intersection Capacity Analyses

Intersection capacity analyses were performed for the study area intersections consistent with the traffic analysis provided in the TMP traffic analysis. Levels of service (LOS) were calculated based on the criteria published in the *2000 Highway Capacity Manual*.[1] Level of service is the term that defines the conditions that may occur on a given roadway or at an intersection when accommodating various traffic volume loads. Levels of service range from A to F with LOS A representing generally free flowing operating conditions and LOS F representing generally congested conditions. Synchro 10 was used to determine the LOS at signalized intersections and Sidra Intersection 8 was used to determine the LOS at the proposed roundabout. Copies of the LOS calculations are provided in the Appendix.

Table 1 summarizes the operational analysis at the signalized study area intersections during the 2028 weekday AM and PM peak hours under Base (Falmouth Street garage) and Build (Bedford Street garage) conditions. As shown, the intersection of Forest Avenue at Falmouth Street is expected to operate at LOS B/C in 2028. The redistribution of some trips away from this intersection was anticipated to reduce the overall delay at the intersection by just over two seconds in the AM peak hour and by less than a second in the PM peak hour compared to the already permitted Base condition.

The signalized intersection of Forest Avenue at Bedford Street is expected to operate at LOS D in 2028 both in the Base condition and the Build condition. With the relocation of the parking garage to the Bedford Street site, it is anticipated that the overall delay at the intersection will increase by approximately seven seconds in the AM peak hour and only about 2 seconds in the PM peak hour. Even in the No Build condition, without project traffic, a number of movements at this intersection are currently operating at LOS E. The installation of adaptive signal control would ensure that the intersection operates at optimal conditions throughout the day.

Table 1. 2028 Signalized Intersection Operation

Intersection	2028 Baseline			2028 Build		
Peak Hour	**v/c+**	**Delay***	**LOS****	**v/c+**	**Delay***	**LOS****
Forest Avenue at Falmouth Street/Preble Street						
AM Peak Hour	0.53	19.6	B	0.49	17.4	B
PM Peak Hour	0.54	20.6	C	0.54	20.1	C
Forest Avenue at Bedford Street/Baxter Blvd						
AM Peak Hour	0.80	38.4	D	0.84	45.8	D
PM Peak Hour	0.93	49.7	D	0.96	51.9	D

+ Volume to capacity ratio
* Delay expressed in seconds per vehicles
** Level of Service

Based on the impact associated with the new garage location trips at the intersection of Forest Avenue at Bedford Avenue and Baxter Street, potential improvements were investigated. Pedestrian accommodations are being improved at this location by USM as a part of the permit condition for the residence hall and student center. However,

[1] Highway Capacity Manual, Federal Highway Administration, Transportation Research Board, 2000.

vehicular delays will also be impacted. In particular, the northbound left turn movement from Forest Avenue onto Bedford Street is anticipated to operate at LOS E in the AM and LOS F in the PM. Queues for the northbound left movement were reported to be 565' and 445' in the AM and PM, respectively.

To better understand the queuing, simulations were observed that produced queues with spill back past the I-295 off-ramp of 3 to 5 vehicles. A queue of 375 feet will block vehicles from exiting the ramp from I-295 Southbound. It was observed however, that queues forming on the ramp of 424' in the AM and 341' in the PM dissipated quickly when the northbound movements of the Forest / Baxter / Bedford intersection were served. Advanced detection would ensure the northbound lanes get cleared and alleviate potential queuing on the exit ramp. As with the no build condition evaluated in the original analysis, the westbound left and southbound through movements are anticipated to have queues that exceed storage in the AM and PM peak hours. Additionally, in the PM peak hour the eastbound lanes at the intersection are anticipated to have queues that exceed storage, however, it was observed in the simulation that these queues clear with the help of an overlap phase.

Table 2 summarizes the operational analysis at the Brighton Avenue, Deering Avenue and Falmouth Street roundabout during the 2028 weekday AM and PM peak hours under Base and Build conditions. As shown, even with anticipated growth, project related traffic, and relocation of the parking garage, the proposed infrastructure will result in a LOS B or better condition for all approaches during the peak hours.

Table 2. Roundabout Levels of Service

Peak Hour		2028 Base (Falmouth Site)				2028 Build (Bedford Site)			
Movement	**SL^**	**v/c+**	**Delay***	**LOS****	**Queue**	**v/c+**	**Delay***	**LOS****	**Queue**
Falmouth Street at Deering Street and Brighton Avenue									
AM Peak Hour									
Deering Ave, SE	200	0.401	4.4	A	6	0.379	4.0	A	6
Falmouth St, NE	290	0.146	5.4	A	2	0.128	5.7	A	1
Deering Ave, NW	420	0.39	5.0	A	5	0.388	5.0	A	5
Brighton Ave, E	165	0.838	12.1	B	33	0.839	11.9	B	33
Falmouth St, SW	625	0.166	12.5	B	2	0.167	12.5	B	2
Overall		**0.838**	**8.4**	**A**		**0.839**	**8.3**	**A**	
PM Peak Hour									
Deering Ave, SE	200	0.663	4.8	A	15	0.675	4.7	A	16
Falmouth St, NE	290	0.467	11.3	B	8	0.407	11	B	6
Deering Ave, NW	420	0.431	11.1	B	6	0.435	11.1	B	6
Brighton Ave, E	165	0.566	4.7	A	11	0.567	4.6	A	11
Falmouth St, SW	625	0.101	7.5	A	1	0.102	7.5	A	1
Overall		**0.663**	**6.4**	**A**		**0.675**	**6.1**	**A**	

^ Storage length measured in feet, distance to adjacent intersection
+ Volume to capacity ratio
* Delay expressed in seconds per vehicles
** Level of Service
Queue measured in feet

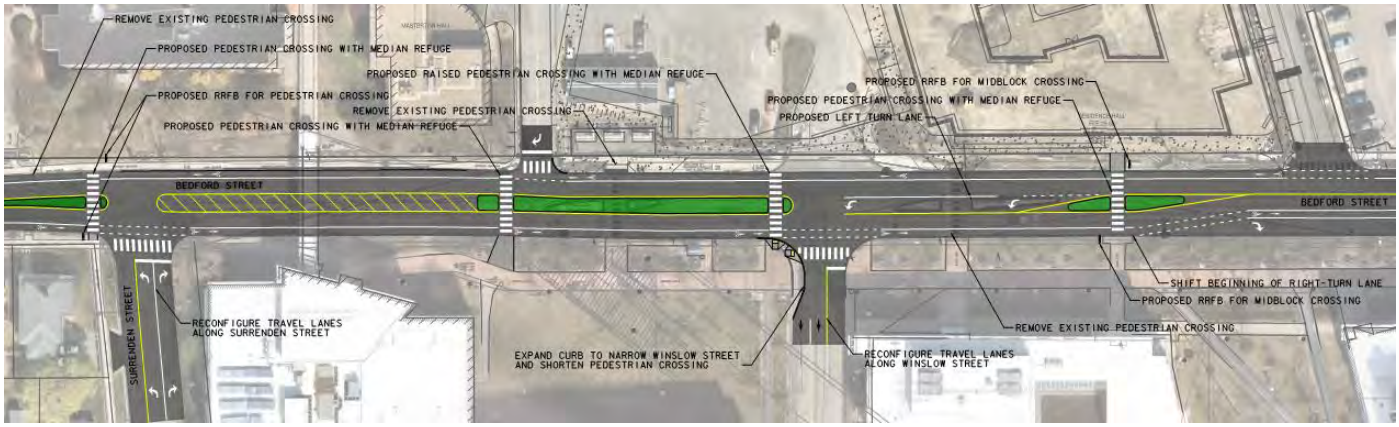
The approaches of the driveway exiting the joint garage proposed on Bedford Street at Surrenden Street is anticipated to operate at LOS B/C with 13 to 17 seconds of delay during both the AM and PM peak hours, the highest delay occurring for the PM peak hour left hand turn lane. The entering driveway proposed for the joint garage on Bedford Street at Winslow Street is anticipated to have a 10 to 15 second delay when making the left hand turning movement to enter from Bedford Street. It is anticipated that this movement will be accommodated in a separate left turn lane.

Bedford Street Concept

Updated traffic circulation for access and egress to the existing and proposed parking garages will compel updates to the Bedford Street corridor. It is proposed that vehicles will enter the parking garages via Winslow Street and exit the parking garages via Surrenden Street, as previously discussed and depicted in Figure 3 below. A dedicated left turn lane will be provided for vehicles traveling westbound on Bedford Street and entering the parking garages via Winslow Street, replacing the raised median island and crosswalk currently set back from the intersection on the east leg. This crosswalk will be replaced by a raised crossing on the west leg of the intersection to limit the number of vehicular lanes pedestrians will need to cross to two with a raised pedestrian refuge island between the lanes. The raised island will extend to the west to discourage vehicles from passing busses in the bus stop and keep vehicular speeds low. The need for a single departure lane from the intersection on Winslow Street will allow for a pedestrian bumpout to be implemented. The bumpout will effectively shorten the crossing distance for pedestrians across the Winslow Street leg of the intersection and widen back to two lanes to maximize the queuing space for vehicles entering the parking garages.

Additional crossing improvements have also been proposed. Crosswalks with rectangular rapid flashing beacons (RRFBs) are proposed to the west of Surrenden Street and midblock between Winslow Street and Durham Street as there is anticipated to be a desire line in that vicinity between the residence hall and student center to the north and the library and parking garage to the south.

Figure 3. Conceptual Plan for Bedford Street and Parking Garage Circulation



Transportation Demand Management (TDM)

The University of Southern Maine (USM) has recently developed a Transportation Demand Management (TDM) plan that provides a cohesive strategy for establishing and implementing a successful TDM program for the Portland campus. The TDM plan seeks to enhance multimodal accessibility, ensure the use of non-vehicular modes, and discourage the use of driving through parking management, to achieve and build upon the university's parking demand reduction goals for the campus. The TDM Plan presents a suite of strategies and timeframe for when USM intends to implement the various strategies. The strategies aim at promoting walking and bicycling, improving transit service to promote ridership, promoting carpooling, changing time-of-day travel demands to eliminate or reduce

vehicle trips, and managing parking demand via changes to USM's pricing and permit policies. The implementation of TDM will reduce the vehicle trips to the site and reduce delays at area intersections.

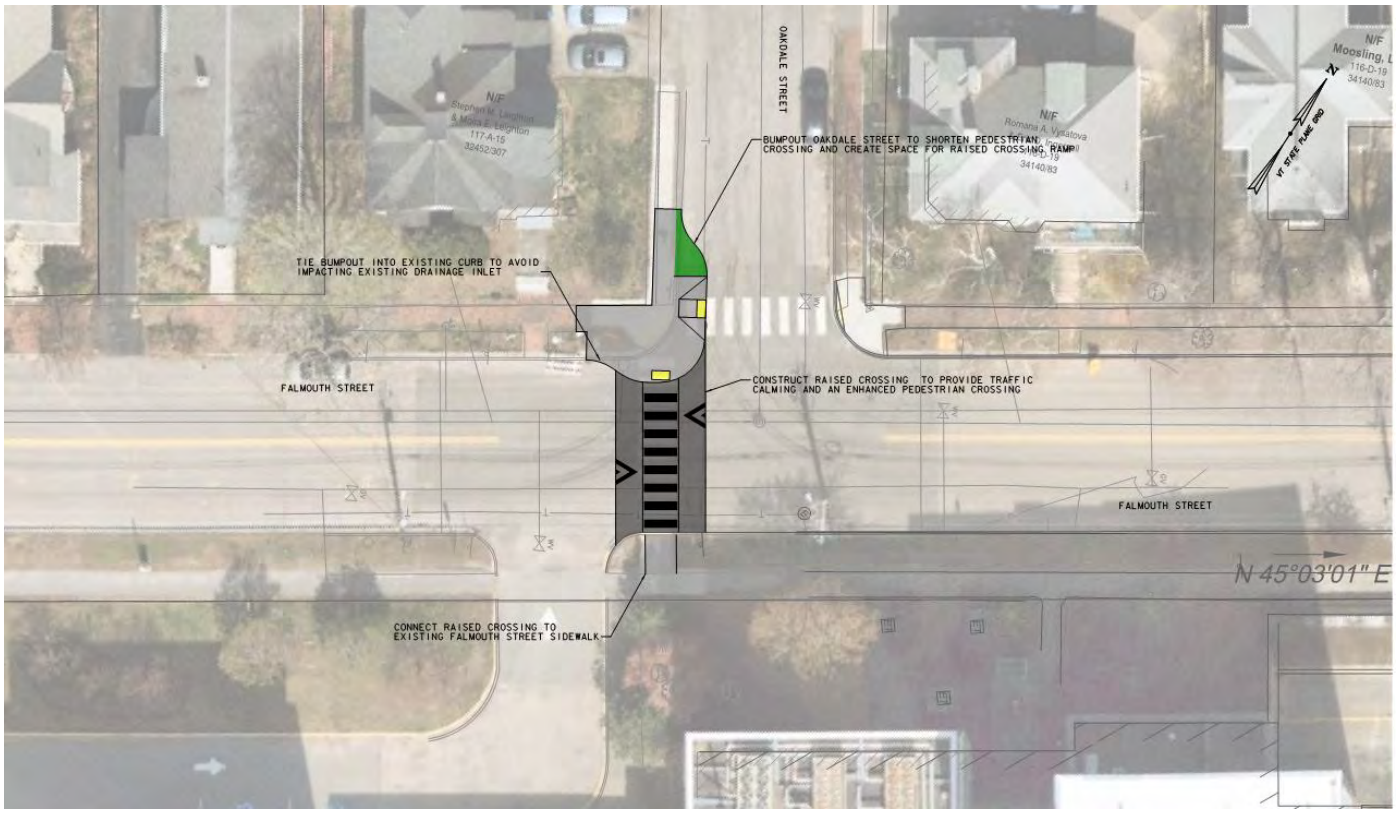
Neighbor Concern – Oakhurst Dairy

USM has worked with Oakhurst Dairy to understand their concerns associated with the proposed project. One concern raised by Oakhurst Dairy is the length of queue on Forest Avenue northbound and that it causes a backup on the I-295 off ramp. As indicated above, USM is committed to addressing this concern. Oakhurst is even more concerned with queues blocking the Oakhurst driveway on Forest Avenue. Although this has been a longstanding concern, recently, traffic signal operation at Forest Avenue at Bedford Street and Baxter Boulevard has resulted in longer queues. A discussion with the City Traffic Engineer reveals that the City has had an issue with vehicle detection at this location and as a result the signal is not operating optimally. A representative from Oakhurst has shared video that documents these queuing concerns. In order to address the issues with the operation at this intersection so that the impacts to our neighbor are reduced, we have engaged a traffic signal technician to work with the City to troubleshoot and determine a plan for remedying this issue. Because Oakhurst remains concerned about the operation at their driveway and the queues on Forest Avenue that block that driveway, USM is committed to work with Oakhurst and the City to develop a plan to discourage vehicles from blocking the driveway. Preliminary discussions indicate that the City could be agreeable to signage and/or striping to not "Block the Box". USM plans to continue to work with Oakhurst on this issue.

Neighbor Concern – Falmouth Street/Oakdale Street and Bedford Street

USM has worked with neighborhood since the previous permitting process to ensure that their concerns are being addressed. USM held an open meeting with residential neighbors on August 26th to discuss traffic impacts and proposed mitigation measures. The neighborhood had previously expressed concern with traffic speed and volumes on Falmouth Street, and as such an undefined traffic calming measure was written into a condition of approval on the residence hall & student center project. The University shared a conceptual draft of the Falmouth Street traffic calming measure at the meeting with the neighborhood (see Figure 4 below). The neighborhood's reception of the drawing seemed favorable. However, the neighborhood expressed some concerns about traffic along Bedford Street and that traffic would be made worse by pedestrian safety measures such as pedestrian island improvements and by higher volumes of vehicles entering/exiting the South side of Bedford. Several items were brought up from individuals along the lines of wanting traffic to flow efficiently, but one specific item brought up by multiple residents was concern that USM was not proposing bus pull-outs for the METRO, and that this could lead to traffic backing up behind stopped buses. USM explored this issue at length internally, and also had two meetings with METRO to discuss it. Ultimately, USM decided that pedestrian safety should outweigh vehicular traffic efficiency when the two are opposed as an in-line bus stop would minimize the ability of vehicles to drive past buses that are offloading people. USM feels that the suite of measures currently proposed offers the best trade-off between efficiency and safety given the siting of the garage on Bedford Street. Bedford Street was the location the neighborhood favored over Falmouth Street and Deering Avenue, and this was one of the most important factors in deciding on the garage's location.

Figure 4. Conceptual Plan for Pedestrian Improvements at Falmouth Street at Oakdale Street



Conclusions

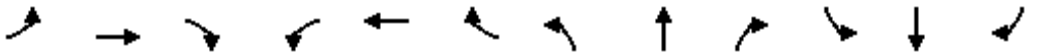
The proposal to relocate the parking garage to Bedford Street is positive for a number of reasons. However, adding these trips to the roadway network at the new proposed parking garage location along Bedford Street results in some delay increases at the intersection of Forest Avenue with Bedford Street and Baxter Boulevard as compared to the garage location along Falmouth Street. Advance queue detection should be considered in order to ensure that the addition of this traffic to the intersection of Forest Avenue with Bedford Street and Baxter Boulevard does not cause an impact beyond the available queue storage or impact the operation of the I-295 off ramp. In addition, USM is committed to creating a Bedford Street that is hospitable to pedestrians, transit and bicyclists. Finally, USM is working to improve the operations at Forest Street at Bedford Street and Baxter Boulevard in the short term to ensure that the traffic signal is operating as it was intended. Overall, this proposed location for the parking garage is not anticipated to adversely affect traffic operations in the vicinity of the USM campus.

Memorandum

Technical Appendix

Synchro Intersection Capacity Analysis

SIDRA Roundabout Capacity Analysis

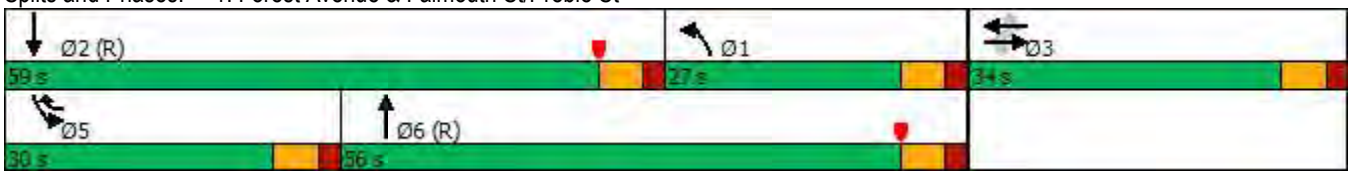


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	6	58	24	7	50	82	78	688	9	165	860	32
Future Volume (vph)	6	58	24	7	50	82	78	688	9	165	860	32
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	0		150	0		0	200		0	150		0
Storage Lanes	0		1	0		1	1		0	1		0
Taper Length (ft)	25			25			75			75		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.95	0.95	1.00	0.95	0.95
Ped Bike Factor		1.00	0.99		1.00	0.99	1.00	1.00		1.00	1.00	
Frt			0.850			0.850		0.998			0.995	
Flt Protected		0.995			0.994		0.950			0.950		
Satd. Flow (prot)	0	1890	1615	0	1811	1583	1703	3499	0	1719	3486	0
Flt Permitted		0.970			0.958		0.950			0.950		
Satd. Flow (perm)	0	1843	1593	0	1746	1560	1697	3499	0	1718	3486	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			136			88		1			4	
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		771			1265			804			1168	
Travel Time (s)		17.5			28.8			18.3			26.5	
Confl. Peds. (#/hr)	2		1	1		2	5		1	1		5
Peak Hour Factor	0.77	0.77	0.77	0.93	0.93	0.93	0.91	0.91	0.91	0.82	0.82	0.82
Heavy Vehicles (%)	0%	0%	0%	33%	0%	2%	6%	3%	0%	5%	3%	0%
Adj. Flow (vph)	8	75	31	8	54	88	86	756	10	201	1049	39
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	83	31	0	62	88	86	766	0	201	1088	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		0			10			18			16	
Link Offset(ft)		0			-6			0			-2	
Crosswalk Width(ft)		16			16			30			16	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors	1	1	1	1	1	1	1	1		1	1	
Detector Template												
Leading Detector (ft)	50	50	50	50	50	50	50	50		50	50	
Trailing Detector (ft)	0	0	0	0	0	0	0	0		0	0	
Detector 1 Position(ft)	0	0	0	0	0	0	0	0		0	0	
Detector 1 Size(ft)	50	50	50	50	50	50	50	50		50	50	
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Turn Type	Perm	NA	Perm	Perm	NA	pm+ov	Prot	NA		Prot	NA	
Protected Phases		3			3	5	1	6		5	2	
Permitted Phases	3		3	3		3						
Detector Phase	3	3	3	3	3	5	1	6		5	2	
Switch Phase												

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	10.0		5.0	10.0	
Minimum Split (s)	32.0	32.0	32.0	32.0	32.0	16.0	16.0	37.0		16.0	25.0	
Total Split (s)	34.0	34.0	34.0	34.0	34.0	30.0	27.0	56.0		30.0	59.0	
Total Split (%)	28.3%	28.3%	28.3%	28.3%	28.3%	25.0%	22.5%	46.7%		25.0%	49.2%	
Maximum Green (s)	28.0	28.0	28.0	28.0	28.0	24.0	21.0	50.0		24.0	53.0	
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0		4.0	4.0	
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0		2.0	2.0	
Lost Time Adjust (s)		-2.0	-2.0		-2.0	-2.0	-2.0	-2.0		-2.0	-2.0	
Total Lost Time (s)		4.0	4.0		4.0	4.0	4.0	4.0		4.0	4.0	
Lead/Lag						Lead	Lag	Lag		Lead	Lead	
Lead-Lag Optimize?												
Vehicle Extension (s)	2.5	2.5	2.5	2.5	2.5	2.0	2.0	3.0		2.0	3.0	
Recall Mode	None	None	None	None	None	None	None	C-Min		None	C-Min	
Walk Time (s)	4.0	4.0	4.0	4.0	4.0			4.0			4.0	
Flash Dont Walk (s)	21.0	21.0	21.0	21.0	21.0			26.0			14.0	
Pedestrian Calls (#/hr)	4	4	4	4	4			7			4	
Act Effct Green (s)		14.4	14.4		14.4	34.7	16.3	73.3		20.3	79.7	
Actuated g/C Ratio		0.12	0.12		0.12	0.29	0.14	0.61		0.17	0.66	
v/c Ratio		0.38	0.10		0.30	0.17	0.37	0.36		0.69	0.47	
Control Delay		51.4	0.6		49.3	4.9	36.1	7.5		58.9	12.8	
Queue Delay		0.0	0.0		0.0	0.0	0.0	0.0		0.0	0.0	
Total Delay		51.4	0.6		49.3	4.9	36.1	7.5		58.9	12.8	
LOS		D	A		D	A	D	A		E	B	
Approach Delay		37.6			23.2			10.4			19.9	
Approach LOS		D			C			B			B	

Intersection Summary			
Area Type:	Other		
Cycle Length: 120			
Actuated Cycle Length: 120			
Offset: 0 (0%), Referenced to phase 2:SBT and 6:NBT, Start of Yellow			
Natural Cycle: 85			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.69			
Intersection Signal Delay: 17.6		Intersection LOS: B	
Intersection Capacity Utilization 53.5%		ICU Level of Service A	
Analysis Period (min) 15			

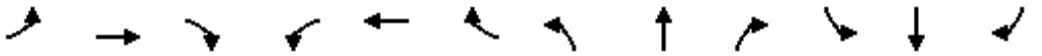
Splits and Phases: 1: Forest Avenue & Falmouth St/Preble St





Lane Group	EBT	EBR	WBT	WBR	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	83	31	62	88	86	766	201	1088
v/c Ratio	0.38	0.10	0.30	0.17	0.37	0.36	0.69	0.47
Control Delay	51.4	0.6	49.3	4.9	36.1	7.5	58.9	12.8
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	51.4	0.6	49.3	4.9	36.1	7.5	58.9	12.8
Queue Length 50th (ft)	61	0	45	0	61	70	148	213
Queue Length 95th (ft)	82	0	78	28	114	141	193	306
Internal Link Dist (ft)	691		1185			724		1088
Turn Bay Length (ft)		150			200		150	
Base Capacity (vph)	460	500	436	590	326	2138	375	2317
Starvation Cap Reductn	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.18	0.06	0.14	0.15	0.26	0.36	0.54	0.47

Intersection Summary



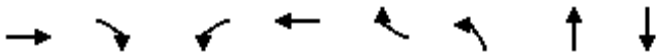
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	16	107	323	218	59	15	408	749	160	0	855	37
Future Volume (vph)	16	107	323	218	59	15	408	749	160	0	855	37
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	0		375	140		75	0		0	0		0
Storage Lanes	0		1	1		1	1		0	0		0
Taper Length (ft)	100			75			25			25		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.95	0.95	1.00	0.95	0.95
Ped Bike Factor		1.00		0.99		0.98		1.00			1.00	
Frt			0.850			0.850		0.974			0.994	
Flt Protected		0.994		0.950			0.950					
Satd. Flow (prot)	0	1656	1439	1608	1676	1454	1608	3068	0	0	3156	0
Flt Permitted		0.963		0.950			0.950					
Satd. Flow (perm)	0	1603	1439	1593	1676	1424	1608	3068	0	0	3156	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			82			82		34			4	
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		609			1168			275			804	
Travel Time (s)		13.8			26.5			6.3			18.3	
Confl. Peds. (#/hr)	5		7	7		5			5			5
Peak Hour Factor	0.83	0.83	0.83	0.92	0.92	0.92	0.97	0.97	0.97	0.96	0.96	0.96
Heavy Vehicles (%)	7%	2%	1%	1%	2%	0%	1%	3%	2%	0%	2%	7%
Adj. Flow (vph)	19	129	389	237	64	16	421	772	165	0	891	39
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	148	389	237	64	16	421	937	0	0	930	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		0			12			18			4	
Link Offset(ft)		0			3			0			0	
Crosswalk Width(ft)		20			10			16			16	
Two way Left Turn Lane												
Headway Factor	1.14	1.14	1.14	1.14	1.14	1.14	1.14	1.14	1.14	1.14	1.14	1.14
Turning Speed (mph)	15		9	15		15	15		9	15		9
Number of Detectors	1	1	1	1	1	1	1	1			1	
Detector Template												
Leading Detector (ft)	50	50	50	50	50	50	50	50			50	
Trailing Detector (ft)	0	0	0	0	0	0	0	0			0	
Detector 1 Position(ft)	0	0	0	0	0	0	0	0			0	
Detector 1 Size(ft)	50	50	50	50	50	50	50	50			50	
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex			Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0			0.0	
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0			0.0	
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0			0.0	
Turn Type	Perm	NA	pt+ov	Prot	NA	Perm	Prot	NA			NA	
Protected Phases		4	4 5	3	8		5	2			6	
Permitted Phases	4					8						
Detector Phase	4	4	4 5	3	8	8	5	2			6	
Switch Phase												

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Minimum Initial (s)	7.0	7.0		5.0	5.0	5.0	5.0	10.0			10.0	
Minimum Split (s)	29.0	29.0		16.0	29.0	29.0	16.0	34.0			34.0	
Total Split (s)	29.0	29.0		23.0	52.0	52.0	31.0	68.0			37.0	
Total Split (%)	24.2%	24.2%		19.2%	43.3%	43.3%	25.8%	56.7%			30.8%	
Maximum Green (s)	23.0	23.0		17.0	46.0	46.0	25.0	62.0			31.0	
Yellow Time (s)	4.0	4.0		4.0	4.0	4.0	4.0	4.0			4.0	
All-Red Time (s)	2.0	2.0		2.0	2.0	2.0	2.0	2.0			2.0	
Lost Time Adjust (s)		-4.0		-4.0	-4.0	-4.0	-4.0	-4.0			-4.0	
Total Lost Time (s)		2.0		2.0	2.0	2.0	2.0	2.0			2.0	
Lead/Lag	Lag	Lag		Lead			Lead				Lag	
Lead-Lag Optimize?												
Vehicle Extension (s)	2.0	2.0		2.0	2.0	2.0	3.5	3.0			3.0	
Recall Mode	None	None		None	None	None	None	C-Min			C-Min	
Walk Time (s)	4.0	4.0			4.0	4.0		4.0			4.0	
Flash Dont Walk (s)	18.0	18.0			18.0	18.0		23.0			23.0	
Pedestrian Calls (#/hr)	10	10			1	1		1			1	
Act Effct Green (s)		24.0	58.3	20.7	46.7	46.7	32.3	69.3			35.0	
Actuated g/C Ratio		0.20	0.49	0.17	0.39	0.39	0.27	0.58			0.29	
v/c Ratio		0.46	0.53	0.86	0.10	0.03	0.97	0.53			1.01	
Control Delay		46.5	19.5	76.0	22.4	0.1	82.4	16.7			67.1	
Queue Delay		0.0	0.0	0.0	0.0	0.0	0.0	0.0			0.0	
Total Delay		46.5	19.5	76.0	22.4	0.1	82.4	16.7			67.1	
LOS		D	B	E	C	A	F	B			E	
Approach Delay		26.9			61.3			37.0			67.1	
Approach LOS		C			E			D			E	

Intersection Summary			
Area Type:	CBD		
Cycle Length: 120			
Actuated Cycle Length: 120			
Offset: 0 (0%), Referenced to phase 2:NBT and 6:SBT, Start of Yellow			
Natural Cycle: 105			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 1.01			
Intersection Signal Delay: 46.7		Intersection LOS: D	
Intersection Capacity Utilization 82.8%		ICU Level of Service E	
Analysis Period (min) 15			

Splits and Phases: 2: Forest Avenue & Bedford St/Baxter Blvd





Lane Group	EBT	EBR	WBL	WBT	WBR	NBL	NBT	SBT
Lane Group Flow (vph)	148	389	237	64	16	421	937	930
v/c Ratio	0.46	0.53	0.86	0.10	0.03	0.97	0.53	1.01
Control Delay	46.5	19.5	76.0	22.4	0.1	82.4	16.7	67.1
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	46.5	19.5	76.0	22.4	0.1	82.4	16.7	67.1
Queue Length 50th (ft)	99	159	180	30	0	~361	225	~409
Queue Length 95th (ft)	149	220	#318	58	0	#565	287	#530
Internal Link Dist (ft)	529			1088			195	724
Turn Bay Length (ft)		375	140		75			
Base Capacity (vph)	360	737	281	698	641	432	1784	923
Starvation Cap Reductn	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.41	0.53	0.84	0.09	0.02	0.97	0.53	1.01

Intersection Summary

~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.



Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	69	0	0	75	0	0
Future Volume (vph)	69	0	0	75	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt						
Flt Protected						
Satd. Flow (prot)	1863	0	0	1863	1863	0
Flt Permitted						
Satd. Flow (perm)	1863	0	0	1863	1863	0
Link Speed (mph)	30			30	30	
Link Distance (ft)	198			771	187	
Travel Time (s)	4.5			17.5	4.3	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	75	0	0	82	0	0
Shared Lane Traffic (%)						
Lane Group Flow (vph)	75	0	0	82	0	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(ft)	0			0	12	
Link Offset(ft)	0			0	0	
Crosswalk Width(ft)	16			16	16	
Two way Left Turn Lane						
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)		9	15		15	9
Sign Control	Free			Free	Stop	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 7.3%		ICU Level of Service A	
Analysis Period (min) 15			



Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	69	0	0	75	0	0
Future Volume (Veh/h)	69	0	0	75	0	0
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	75	0	0	82	0	0
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None			None		
Median storage veh)						
Upstream signal (ft)				771		
pX, platoon unblocked						
vC, conflicting volume			75		157	75
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			75		157	75
tC, single (s)			4.1		6.4	6.2
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
p0 queue free %			100		100	100
cM capacity (veh/h)			1524		834	986

Direction, Lane #	EB 1	WB 1	NB 1
Volume Total	75	82	0
Volume Left	0	0	0
Volume Right	0	0	0
cSH	1700	1524	1700
Volume to Capacity	0.04	0.00	0.00
Queue Length 95th (ft)	0	0	0
Control Delay (s)	0.0	0.0	0.0
Lane LOS			A
Approach Delay (s)	0.0	0.0	0.0
Approach LOS			A

Intersection Summary			
Average Delay	0.0		
Intersection Capacity Utilization	7.3%	ICU Level of Service	A
Analysis Period (min)	15		



Lane Group	SEL	SER	NEL	NET	SWT	SWR
Lane Configurations						
Traffic Volume (vph)	3	9	1	66	74	1
Future Volume (vph)	3	9	1	66	74	1
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt	0.896				0.998	
Flt Protected	0.989			0.999		
Satd. Flow (prot)	1651	0	0	1861	1859	0
Flt Permitted	0.989			0.999		
Satd. Flow (perm)	1651	0	0	1861	1859	0
Link Speed (mph)	30			30	30	
Link Distance (ft)	291			602	198	
Travel Time (s)	6.6			13.7	4.5	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	3	10	1	72	80	1
Shared Lane Traffic (%)						
Lane Group Flow (vph)	13	0	0	73	81	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(ft)	12			0	0	
Link Offset(ft)	0			0	0	
Crosswalk Width(ft)	16			16	16	
Two way Left Turn Lane						
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15	9	15			9
Sign Control	Stop			Free	Free	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization	14.3%	ICU Level of Service	A
Analysis Period (min)	15		



Movement	SEL	SER	NEL	NET	SWT	SWR
Lane Configurations						
Traffic Volume (veh/h)	3	9	1	66	74	1
Future Volume (Veh/h)	3	9	1	66	74	1
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	3	10	1	72	80	1
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type				None	None	
Median storage veh)						
Upstream signal (ft)					969	
pX, platoon unblocked						
vC, conflicting volume	154	80	81			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	154	80	81			
tC, single (s)	6.4	6.2	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.2			
p0 queue free %	100	99	100			
cM capacity (veh/h)	836	980	1517			

Direction, Lane #	SE 1	NE 1	SW 1
Volume Total	13	73	81
Volume Left	3	1	0
Volume Right	10	0	1
cSH	942	1517	1700
Volume to Capacity	0.01	0.00	0.05
Queue Length 95th (ft)	1	0	0
Control Delay (s)	8.9	0.1	0.0
Lane LOS	A	A	
Approach Delay (s)	8.9	0.1	0.0
Approach LOS	A		

Intersection Summary			
Average Delay	0.7		
Intersection Capacity Utilization	14.3%	ICU Level of Service	A
Analysis Period (min)	15		



Lane Group	NWL	NWR	NET	NER	SWL	SWT
Lane Configurations						
Traffic Volume (vph)	11	31	597	0	0	83
Future Volume (vph)	11	31	597	0	0	83
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.850				
Flt Protected	0.950					
Satd. Flow (prot)	1770	1583	1863	0	0	1863
Flt Permitted	0.950					
Satd. Flow (perm)	1770	1583	1863	0	0	1863
Link Speed (mph)	30		30			30
Link Distance (ft)	225		566			440
Travel Time (s)	5.1		12.9			10.0
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	12	34	649	0	0	90
Shared Lane Traffic (%)						
Lane Group Flow (vph)	12	34	649	0	0	90
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Right	Left	Left
Median Width(ft)	12		0			0
Link Offset(ft)	0		0			0
Crosswalk Width(ft)	16		16			16
Two way Left Turn Lane						
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15	9		9	15	
Sign Control	Stop		Free			Free

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization	41.4%	ICU Level of Service	A
Analysis Period (min)	15		



Movement	NWL	NWR	NET	NER	SWL	SWT
Lane Configurations						
Traffic Volume (veh/h)	11	31	597	0	0	83
Future Volume (Veh/h)	11	31	597	0	0	83
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	12	34	649	0	0	90
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type			None			None
Median storage veh)						
Upstream signal (ft)						1049
pX, platoon unblocked						
vC, conflicting volume	739	649			649	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	739	649			649	
tC, single (s)	6.4	6.2			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	97	93			100	
cM capacity (veh/h)	385	470			937	

Direction, Lane #	NW 1	NW 2	NE 1	SW 1
Volume Total	12	34	649	90
Volume Left	12	0	0	0
Volume Right	0	34	0	0
cSH	385	470	1700	937
Volume to Capacity	0.03	0.07	0.38	0.00
Queue Length 95th (ft)	2	6	0	0
Control Delay (s)	14.7	13.3	0.0	0.0
Lane LOS	B	B		
Approach Delay (s)	13.6		0.0	0.0
Approach LOS	B			

Intersection Summary			
Average Delay	0.8		
Intersection Capacity Utilization	41.4%	ICU Level of Service	A
Analysis Period (min)	15		



Lane Group	NWL	NWR	NET	NER	SWL	SWT
Lane Configurations						
Traffic Volume (vph)	0	10	588	176	418	83
Future Volume (vph)	0	10	588	176	418	83
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (ft)	0	0		0	100	
Storage Lanes	1	0		0	1	
Taper Length (ft)	25				25	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt	0.865		0.969			
Flt Protected					0.950	
Satd. Flow (prot)	1611	0	1805	0	1770	1863
Flt Permitted					0.950	
Satd. Flow (perm)	1611	0	1805	0	1770	1863
Link Speed (mph)	30		30			30
Link Distance (ft)	239		440			609
Travel Time (s)	5.4		10.0			13.8
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	0	11	639	191	454	90
Shared Lane Traffic (%)						
Lane Group Flow (vph)	11	0	830	0	454	90
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Right	Left	Left
Median Width(ft)	12		12			12
Link Offset(ft)	0		0			0
Crosswalk Width(ft)	16		16			16
Two way Left Turn Lane						
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15	9		9	15	
Sign Control	Stop		Free			Free

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization	78.1%	ICU Level of Service	D
Analysis Period (min)	15		



Movement	NWL	NWR	NET	NER	SWL	SWT
Lane Configurations						
Traffic Volume (veh/h)	0	10	588	176	418	83
Future Volume (Veh/h)	0	10	588	176	418	83
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	0	11	639	191	454	90
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type			None			None
Median storage veh)						
Upstream signal (ft)						609
pX, platoon unblocked						
vC, conflicting volume	1732	734			830	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	1732	734			830	
tC, single (s)	6.4	6.2			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	100	97			43	
cM capacity (veh/h)	42	420			802	

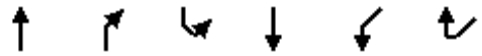
Direction, Lane #	NW 1	NE 1	SW 1	SW 2
Volume Total	11	830	454	90
Volume Left	0	0	454	0
Volume Right	11	191	0	0
cSH	420	1700	802	1700
Volume to Capacity	0.03	0.49	0.57	0.05
Queue Length 95th (ft)	2	0	90	0
Control Delay (s)	13.8	0.0	15.2	0.0
Lane LOS	B		C	
Approach Delay (s)	13.8	0.0	12.7	
Approach LOS	B			

Intersection Summary			
Average Delay	5.1		
Intersection Capacity Utilization	78.1%	ICU Level of Service	D
Analysis Period (min)	15		



Lane Group	NBT	NBR	SBL	SBT	SWL	SWR
Lane Configurations						
Traffic Volume (vph)	319	78	519	306	0	94
Future Volume (vph)	319	78	519	306	0	94
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt	0.973					0.865
Flt Protected				0.970		
Satd. Flow (prot)	1812	0	0	1807	0	1611
Flt Permitted				0.970		
Satd. Flow (perm)	1812	0	0	1807	0	1611
Link Speed (mph)	30			30	30	
Link Distance (ft)	205			164	566	
Travel Time (s)	4.7			3.7	12.9	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	347	85	564	333	0	102
Shared Lane Traffic (%)						
Lane Group Flow (vph)	432	0	0	897	0	102
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(ft)	0			0	0	
Link Offset(ft)	0			0	0	
Crosswalk Width(ft)	16			16	16	
Two way Left Turn Lane						
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)		9	15		15	9
Sign Control	Free			Free	Stop	

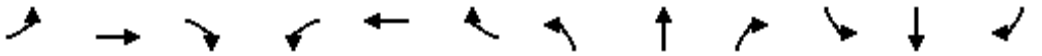
Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 73.0%		ICU Level of Service D	
Analysis Period (min) 15			



Movement	NBT	NBR	SBL	SBT	SWL	SWR
Lane Configurations						
Traffic Volume (veh/h)	319	78	519	306	0	94
Future Volume (Veh/h)	319	78	519	306	0	94
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	347	85	564	333	0	102
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None			None		
Median storage veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume			432		1850	390
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			432		1850	390
tC, single (s)			4.1		6.4	6.2
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
p0 queue free %			50		100	85
cM capacity (veh/h)			1128		41	659

Direction, Lane #	NB 1	SB 1	SW 1
Volume Total	432	897	102
Volume Left	0	564	0
Volume Right	85	0	102
cSH	1700	1128	659
Volume to Capacity	0.25	0.50	0.15
Queue Length 95th (ft)	0	72	14
Control Delay (s)	0.0	9.8	11.5
Lane LOS		A	B
Approach Delay (s)	0.0	9.8	11.5
Approach LOS			B

Intersection Summary			
Average Delay	6.9		
Intersection Capacity Utilization	73.0%	ICU Level of Service	D
Analysis Period (min)	15		

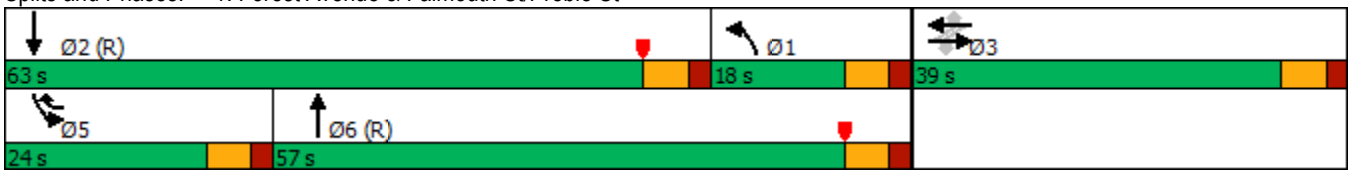


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	45	44	108	20	142	268	93	947	15	102	779	34
Future Volume (vph)	45	44	108	20	142	268	93	947	15	102	779	34
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	0		150	0		0	200		0	150		0
Storage Lanes	0		1	0		1	1		0	1		0
Taper Length (ft)	25			25			75			75		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.95	0.95	1.00	0.95	0.95
Frt			0.850			0.850		0.998			0.994	
Flt Protected		0.975			0.994		0.950			0.950		
Satd. Flow (prot)	0	1852	1615	0	1858	1599	1805	3466	0	1805	3554	0
Flt Permitted		0.482			0.950		0.950			0.950		
Satd. Flow (perm)	0	916	1615	0	1776	1599	1805	3466	0	1805	3554	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			140			82		2			5	
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		675			1256			804			1168	
Travel Time (s)		15.3			28.5			18.3			26.5	
Peak Hour Factor	0.77	0.77	0.77	0.81	0.81	0.81	0.96	0.96	0.96	0.95	0.95	0.95
Growth Factor	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	0%	0%	0%	6%	1%	1%	0%	4%	1%	0%	1%	0%
Adj. Flow (vph)	58	57	140	25	175	331	97	986	16	107	820	36
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	115	140	0	200	331	97	1002	0	107	856	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		0			10			18			16	
Link Offset(ft)		0			-6			0			-2	
Crosswalk Width(ft)		16			16			30			16	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors	1	1	1	1	1	1	1	1		1	1	
Detector Template												
Leading Detector (ft)	50	50	50	50	50	50	50	50		50	50	
Trailing Detector (ft)	0	0	0	0	0	0	0	0		0	0	
Detector 1 Position(ft)	0	0	0	0	0	0	0	0		0	0	
Detector 1 Size(ft)	50	50	50	50	50	50	50	50		50	50	
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Turn Type	Perm	NA	Perm	Perm	NA	pm+ov	Prot	NA		Prot	NA	
Protected Phases		3			3	5	1	6		5	2	
Permitted Phases	3		3	3		3						
Detector Phase	3	3	3	3	3	5	1	6		5	2	
Switch Phase												
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	10.0		5.0	10.0	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Minimum Split (s)	32.0	32.0	32.0	32.0	32.0	16.0	16.0	37.0		16.0	25.0	
Total Split (s)	39.0	39.0	39.0	39.0	39.0	24.0	18.0	57.0		24.0	63.0	
Total Split (%)	32.5%	32.5%	32.5%	32.5%	32.5%	20.0%	15.0%	47.5%		20.0%	52.5%	
Maximum Green (s)	33.0	33.0	33.0	33.0	33.0	18.0	12.0	51.0		18.0	57.0	
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0		4.0	4.0	
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0		2.0	2.0	
Lost Time Adjust (s)		-2.0	-2.0		-2.0	-2.0	-2.0	-2.0		-2.0	-2.0	
Total Lost Time (s)		4.0	4.0		4.0	4.0	4.0	4.0		4.0	4.0	
Lead/Lag						Lead	Lag	Lag		Lead	Lead	
Lead-Lag Optimize?												
Vehicle Extension (s)	2.5	2.5	2.5	2.5	2.5	2.0	2.0	3.0		2.0	3.0	
Recall Mode	None	None	None	None	None	None	None	C-Min		None	C-Min	
Walk Time (s)	4.0	4.0	4.0	4.0	4.0			4.0			4.0	
Flash Dont Walk (s)	21.0	21.0	21.0	21.0	21.0			26.0			14.0	
Pedestrian Calls (#/hr)	4	4	4	4	4			7			4	
Act Effct Green (s)		20.4	20.4		20.4	37.8	21.1	74.2		13.3	66.5	
Actuated g/C Ratio		0.17	0.17		0.17	0.32	0.18	0.62		0.11	0.55	
v/c Ratio		0.74	0.36		0.66	0.59	0.31	0.47		0.54	0.43	
Control Delay		73.4	9.0		56.6	28.8	25.3	4.5		74.7	10.9	
Queue Delay		0.0	0.0		0.0	0.0	0.0	0.0		0.0	0.0	
Total Delay		73.4	9.0		56.6	28.8	25.3	4.5		74.7	10.9	
LOS		E	A		E	C	C	A		E	B	
Approach Delay		38.0			39.3			6.4			18.0	
Approach LOS		D			D			A			B	

Intersection Summary			
Area Type:	Other		
Cycle Length: 120			
Actuated Cycle Length: 120			
Offset: 21 (18%), Referenced to phase 2:SBT and 6:NBT, Start of Yellow			
Natural Cycle: 85			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.74			
Intersection Signal Delay: 19.3		Intersection LOS: B	
Intersection Capacity Utilization 59.0%		ICU Level of Service B	
Analysis Period (min) 15			

Splits and Phases: 1: Forest Avenue & Falmouth St/Preble St

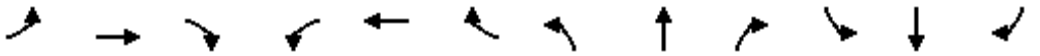




Lane Group	EBT	EBR	WBT	WBR	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	115	140	200	331	97	1002	107	856
v/c Ratio	0.74	0.36	0.66	0.59	0.31	0.47	0.54	0.43
Control Delay	73.4	9.0	56.6	28.8	25.3	4.5	74.7	10.9
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	73.4	9.0	56.6	28.8	25.3	4.5	74.7	10.9
Queue Length 50th (ft)	86	0	147	162	58	56	89	93
Queue Length 95th (ft)	119	31	187	186	m87	41	m119	126
Internal Link Dist (ft)	595		1176			724		1088
Turn Bay Length (ft)		150			200		150	
Base Capacity (vph)	267	570	518	643	317	2144	300	1976
Starvation Cap Reductn	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.43	0.25	0.39	0.51	0.31	0.47	0.36	0.43

Intersection Summary

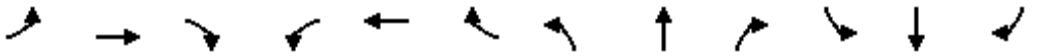
m Volume for 95th percentile queue is metered by upstream signal.



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	45	44	108	20	142	268	93	947	15	102	779	34
Future Volume (vph)	45	44	108	20	142	268	93	947	15	102	779	34
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0	4.0		4.0	4.0	4.0	4.0		4.0	4.0	
Lane Util. Factor		1.00	1.00		1.00	1.00	1.00	0.95		1.00	0.95	
Frt		1.00	0.85		1.00	0.85	1.00	1.00		1.00	0.99	
Flt Protected		0.98	1.00		0.99	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (prot)		1853	1615		1858	1599	1805	3464		1805	3553	
Flt Permitted		0.48	1.00		0.95	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (perm)		917	1615		1775	1599	1805	3464		1805	3553	
Peak-hour factor, PHF	0.77	0.77	0.77	0.81	0.81	0.81	0.96	0.96	0.96	0.95	0.95	0.95
Growth Factor (vph)	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Adj. Flow (vph)	58	57	140	25	175	331	97	986	16	107	820	36
RTOR Reduction (vph)	0	0	116	0	0	59	0	1	0	0	2	0
Lane Group Flow (vph)	0	115	24	0	200	272	97	1001	0	107	854	0
Heavy Vehicles (%)	0%	0%	0%	6%	1%	1%	0%	4%	1%	0%	1%	0%
Turn Type	Perm	NA	Perm	Perm	NA	pm+ov	Prot	NA		Prot	NA	
Protected Phases		3			3	5	1	6		5	2	
Permitted Phases	3		3	3		3						
Actuated Green, G (s)		18.4	18.4		18.4	29.7	19.1	72.3		11.3	64.5	
Effective Green, g (s)		20.4	20.4		20.4	33.7	21.1	74.3		13.3	66.5	
Actuated g/C Ratio		0.17	0.17		0.17	0.28	0.18	0.62		0.11	0.55	
Clearance Time (s)		6.0	6.0		6.0	6.0	6.0	6.0		6.0	6.0	
Vehicle Extension (s)		2.5	2.5		2.5	2.0	2.0	3.0		2.0	3.0	
Lane Grp Cap (vph)		155	274		301	502	317	2144		200	1968	
v/s Ratio Prot						c0.06	0.05	c0.29		0.06	0.24	
v/s Ratio Perm		c0.13	0.01		0.11	0.11						
v/c Ratio		0.74	0.09		0.66	0.54	0.31	0.47		0.54	0.43	
Uniform Delay, d1		47.3	42.0		46.6	36.6	43.1	12.2		50.4	15.7	
Progression Factor		1.00	1.00		1.00	1.00	0.54	0.29		1.35	0.63	
Incremental Delay, d2		16.5	0.1		4.9	0.6	0.1	0.5		1.0	0.5	
Delay (s)		63.8	42.1		51.5	37.2	23.6	4.1		69.3	10.4	
Level of Service		E	D		D	D	C	A		E	B	
Approach Delay (s)		51.9			42.6			5.8			16.9	
Approach LOS		D			D			A			B	

Intersection Summary			
HCM 2000 Control Delay	20.6	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.54		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	59.0%	ICU Level of Service	B
Analysis Period (min)	15		

c Critical Lane Group

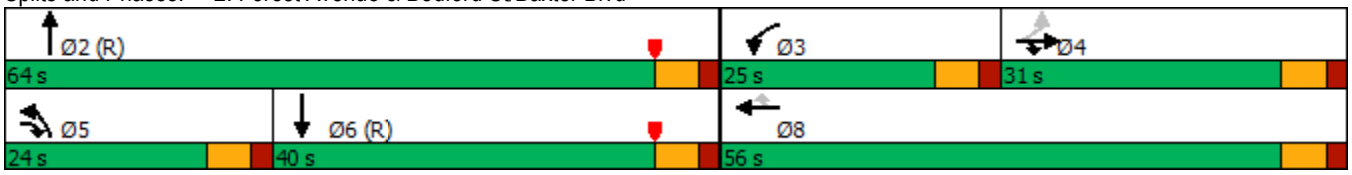


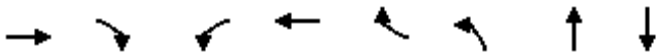
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	57	153	458	299	113	38	256	959	141	0	885	21
Future Volume (vph)	57	153	458	299	113	38	256	959	141	0	885	21
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	0		375	140		75	0		0	0		0
Storage Lanes	0		1	1		1	1		0	0		0
Taper Length (ft)	100			75			25			25		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.95	0.95	1.00	0.95	0.95
Frt			0.850			0.850		0.981			0.996	
Flt Protected		0.987		0.950			0.950					
Satd. Flow (prot)	0	1655	1425	1608	1693	1439	1593	3125	0	0	3173	0
Flt Permitted		0.882		0.950			0.950					
Satd. Flow (perm)	0	1479	1425	1608	1693	1439	1593	3125	0	0	3173	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			82			82		20			2	
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		609			1329			253			804	
Travel Time (s)		13.8			30.2			5.8			18.3	
Peak Hour Factor	0.87	0.87	0.87	0.85	0.85	0.85	0.91	0.91	0.91	0.92	0.92	0.92
Growth Factor	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	2%	2%	2%	1%	1%	1%	2%	2%	2%	2%	2%	2%
Adj. Flow (vph)	66	176	526	352	133	45	281	1054	155	0	962	23
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	242	526	352	133	45	281	1209	0	0	985	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		0			12			18			4	
Link Offset(ft)		0			3			0			0	
Crosswalk Width(ft)		20			10			16			16	
Two way Left Turn Lane												
Headway Factor	1.14	1.14	1.14	1.14	1.14	1.14	1.14	1.14	1.14	1.14	1.14	1.14
Turning Speed (mph)	15		9	15		15	15		9	15		9
Number of Detectors	1	1	1	1	1	1	1	1			1	
Detector Template												
Leading Detector (ft)	50	50	50	50	50	50	50	50			50	
Trailing Detector (ft)	0	0	0	0	0	0	0	0			0	
Detector 1 Position(ft)	0	0	0	0	0	0	0	0			0	
Detector 1 Size(ft)	50	50	50	50	50	50	50	50			50	
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex			Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0			0.0	
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0			0.0	
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0			0.0	
Turn Type	Perm	NA	pt+ov	Prot	NA	Perm	Prot	NA			NA	
Protected Phases		4	4 5	3	8		5	2			6	
Permitted Phases	4					8						
Detector Phase	4	4	4 5	3	8	8	5	2			6	
Switch Phase												
Minimum Initial (s)	7.0	7.0		5.0	5.0	5.0	5.0	10.0			10.0	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Minimum Split (s)	29.0	29.0		16.0	29.0	29.0	16.0	34.0			34.0	
Total Split (s)	31.0	31.0		25.0	56.0	56.0	24.0	64.0			40.0	
Total Split (%)	25.8%	25.8%		20.8%	46.7%	46.7%	20.0%	53.3%			33.3%	
Maximum Green (s)	25.0	25.0		19.0	50.0	50.0	18.0	58.0			34.0	
Yellow Time (s)	4.0	4.0		4.0	4.0	4.0	4.0	4.0			4.0	
All-Red Time (s)	2.0	2.0		2.0	2.0	2.0	2.0	2.0			2.0	
Lost Time Adjust (s)		-4.0		-4.0	-4.0	-4.0	-4.0	-4.0			-4.0	
Total Lost Time (s)		2.0		2.0	2.0	2.0	2.0	2.0			2.0	
Lead/Lag	Lag	Lag		Lead			Lead				Lag	
Lead-Lag Optimize?												
Vehicle Extension (s)	2.0	2.0		2.0	2.0	2.0	3.5	3.0			3.0	
Recall Mode	None	None		None	None	None	None	C-Min			C-Min	
Walk Time (s)	4.0	4.0			4.0	4.0		4.0			4.0	
Flash Dont Walk (s)	18.0	18.0			18.0	18.0		23.0			23.0	
Pedestrian Calls (#/hr)	10	10			1	1		1			1	
Act Effct Green (s)		28.5	53.0	23.0	53.5	53.5	22.5	62.5			38.0	
Actuated g/C Ratio		0.24	0.44	0.19	0.45	0.45	0.19	0.52			0.32	
v/c Ratio		0.69	0.78	1.14	0.18	0.07	0.94	0.74			0.98	
Control Delay		52.9	33.3	139.5	20.6	1.0	88.3	25.6			52.0	
Queue Delay		0.0	0.0	0.0	0.0	0.0	0.0	0.0			0.0	
Total Delay		52.9	33.3	139.5	20.6	1.0	88.3	25.6			52.0	
LOS		D	C	F	C	A	F	C			D	
Approach Delay		39.5			97.9			37.4			52.0	
Approach LOS		D			F			D			D	

Intersection Summary			
Area Type:	CBD		
Cycle Length: 120			
Actuated Cycle Length: 120			
Offset: 9 (8%), Referenced to phase 2:NBT and 6:SBT, Start of Yellow			
Natural Cycle: 105			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 1.14			
Intersection Signal Delay: 50.1		Intersection LOS: D	
Intersection Capacity Utilization 87.9%		ICU Level of Service E	
Analysis Period (min) 15			

Splits and Phases: 2: Forest Avenue & Bedford St/Baxter Blvd



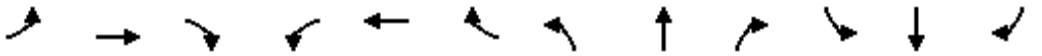


Lane Group	EBT	EBR	WBL	WBT	WBR	NBL	NBT	SBT
Lane Group Flow (vph)	242	526	352	133	45	281	1209	985
v/c Ratio	0.69	0.78	1.14	0.18	0.07	0.94	0.74	0.98
Control Delay	52.9	33.3	139.5	20.6	1.0	88.3	25.6	52.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	52.9	33.3	139.5	20.6	1.0	88.3	25.6	52.0
Queue Length 50th (ft)	171	293	~319	60	0	218	367	407
Queue Length 95th (ft)	253	421	#466	95	3	#392	456	#534
Internal Link Dist (ft)	529			1249			173	724
Turn Bay Length (ft)		375	140		75			
Base Capacity (vph)	357	675	308	761	692	298	1636	1006
Starvation Cap Reductn	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.68	0.78	1.14	0.17	0.07	0.94	0.74	0.98

Intersection Summary

~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	57	153	458	299	113	38	256	959	141	0	885	21
Future Volume (vph)	57	153	458	299	113	38	256	959	141	0	885	21
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		2.0	2.0	2.0	2.0	2.0	2.0	2.0			2.0	
Lane Util. Factor		1.00	1.00	1.00	1.00	1.00	1.00	0.95			0.95	
Frt		1.00	0.85	1.00	1.00	0.85	1.00	0.98			1.00	
Flt Protected		0.99	1.00	0.95	1.00	1.00	0.95	1.00			1.00	
Satd. Flow (prot)		1654	1425	1608	1693	1439	1593	3124			3174	
Flt Permitted		0.88	1.00	0.95	1.00	1.00	0.95	1.00			1.00	
Satd. Flow (perm)		1478	1425	1608	1693	1439	1593	3124			3174	
Peak-hour factor, PHF	0.87	0.87	0.87	0.85	0.85	0.85	0.91	0.91	0.91	0.92	0.92	0.92
Growth Factor (vph)	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Adj. Flow (vph)	66	176	526	352	133	45	281	1054	155	0	962	23
RTOR Reduction (vph)	0	0	46	0	0	25	0	10	0	0	1	0
Lane Group Flow (vph)	0	242	480	352	133	20	281	1199	0	0	984	0
Heavy Vehicles (%)	2%	2%	2%	1%	1%	1%	2%	2%	2%	2%	2%	2%
Turn Type	Perm	NA	pt+ov	Prot	NA	Perm	Prot	NA			NA	
Protected Phases		4	4 5	3	8		5	2			6	
Permitted Phases	4					8						
Actuated Green, G (s)		24.5	49.0	19.0	49.5	49.5	18.5	58.5			34.0	
Effective Green, g (s)		28.5	53.0	23.0	53.5	53.5	22.5	62.5			38.0	
Actuated g/C Ratio		0.24	0.44	0.19	0.45	0.45	0.19	0.52			0.32	
Clearance Time (s)		6.0		6.0	6.0	6.0	6.0	6.0			6.0	
Vehicle Extension (s)		2.0		2.0	2.0	2.0	3.5	3.0			3.0	
Lane Grp Cap (vph)		351	629	308	754	641	298	1627			1005	
v/s Ratio Prot			c0.34	c0.22	0.08		c0.18	0.38			c0.31	
v/s Ratio Perm		0.16				0.01						
v/c Ratio		0.69	0.76	1.14	0.18	0.03	0.94	0.74			0.98	
Uniform Delay, d1		41.7	28.2	48.5	20.0	18.7	48.1	22.4			40.6	
Progression Factor		1.00	1.00	1.00	1.00	1.00	1.00	1.00			0.69	
Incremental Delay, d2		4.5	4.9	95.7	0.0	0.0	37.3	3.0			22.7	
Delay (s)		46.2	33.2	144.2	20.0	18.7	85.4	25.4			50.8	
Level of Service		D	C	F	C	B	F	C			D	
Approach Delay (s)		37.3			102.4			36.7			50.8	
Approach LOS		D			F			D			D	

Intersection Summary			
HCM 2000 Control Delay	49.7	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.93		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	87.9%	ICU Level of Service	E
Analysis Period (min)	15		

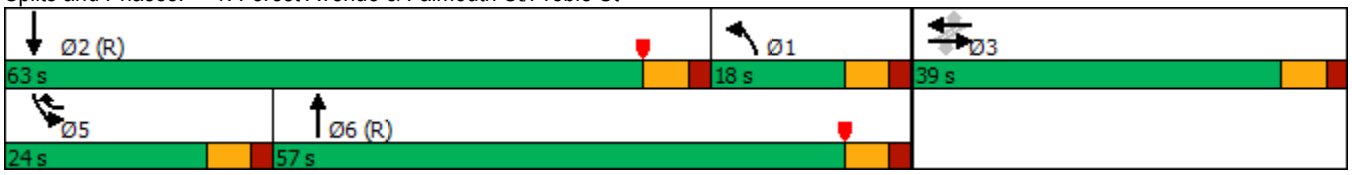
c Critical Lane Group

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	45	44	108	20	141	268	67	947	15	102	786	27
Future Volume (vph)	45	44	108	20	141	268	67	947	15	102	786	27
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	0		150	0		0	200		0	150		0
Storage Lanes	0		1	0		1	1		0	1		0
Taper Length (ft)	25			25			75			75		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.95	0.95	1.00	0.95	0.95
Frt			0.850			0.850		0.998			0.995	
Flt Protected		0.975			0.994		0.950			0.950		
Satd. Flow (prot)	0	1852	1615	0	1858	1599	1805	3466	0	1805	3558	0
Flt Permitted		0.485			0.949		0.950			0.950		
Satd. Flow (perm)	0	922	1615	0	1774	1599	1805	3466	0	1805	3558	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			140			82		2			4	
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		675			1256			804			1168	
Travel Time (s)		15.3			28.5			18.3			26.5	
Peak Hour Factor	0.77	0.77	0.77	0.81	0.81	0.81	0.96	0.96	0.96	0.95	0.95	0.95
Growth Factor	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	0%	0%	0%	6%	1%	1%	0%	4%	1%	0%	1%	0%
Adj. Flow (vph)	58	57	140	25	174	331	70	986	16	107	827	28
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	115	140	0	199	331	70	1002	0	107	855	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		0			10			18			16	
Link Offset(ft)		0			-6			0			-2	
Crosswalk Width(ft)		16			16			30			16	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors	1	1	1	1	1	1	1	1		1	1	
Detector Template												
Leading Detector (ft)	50	50	50	50	50	50	50	50		50	50	
Trailing Detector (ft)	0	0	0	0	0	0	0	0		0	0	
Detector 1 Position(ft)	0	0	0	0	0	0	0	0		0	0	
Detector 1 Size(ft)	50	50	50	50	50	50	50	50		50	50	
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Turn Type	Perm	NA	Perm	Perm	NA	pm+ov	Prot	NA		Prot	NA	
Protected Phases		3			3	5	1	6		5	2	
Permitted Phases	3		3	3		3						
Detector Phase	3	3	3	3	3	5	1	6		5	2	
Switch Phase												
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	10.0		5.0	10.0	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Minimum Split (s)	32.0	32.0	32.0	32.0	32.0	16.0	16.0	37.0		16.0	25.0	
Total Split (s)	39.0	39.0	39.0	39.0	39.0	24.0	18.0	57.0		24.0	63.0	
Total Split (%)	32.5%	32.5%	32.5%	32.5%	32.5%	20.0%	15.0%	47.5%		20.0%	52.5%	
Maximum Green (s)	33.0	33.0	33.0	33.0	33.0	18.0	12.0	51.0		18.0	57.0	
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0		4.0	4.0	
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0		2.0	2.0	
Lost Time Adjust (s)		-2.0	-2.0		-2.0	-2.0	-2.0	-2.0		-2.0	-2.0	
Total Lost Time (s)		4.0	4.0		4.0	4.0	4.0	4.0		4.0	4.0	
Lead/Lag						Lead	Lag	Lag		Lead	Lead	
Lead-Lag Optimize?												
Vehicle Extension (s)	2.5	2.5	2.5	2.5	2.5	2.0	2.0	3.0		2.0	3.0	
Recall Mode	None	None	None	None	None	None	None	C-Min		None	C-Min	
Walk Time (s)	4.0	4.0	4.0	4.0	4.0			4.0			4.0	
Flash Dont Walk (s)	21.0	21.0	21.0	21.0	21.0			26.0			14.0	
Pedestrian Calls (#/hr)	4	4	4	4	4			7			4	
Act Effct Green (s)		20.4	20.4		20.4	37.7	18.6	74.3		13.3	71.3	
Actuated g/C Ratio		0.17	0.17		0.17	0.31	0.16	0.62		0.11	0.59	
v/c Ratio		0.74	0.36		0.66	0.59	0.25	0.47		0.54	0.40	
Control Delay		73.0	9.0		56.6	28.8	25.6	4.7		74.7	9.9	
Queue Delay		0.0	0.0		0.0	0.0	0.0	0.0		0.0	0.0	
Total Delay		73.0	9.0		56.6	28.8	25.6	4.7		74.7	9.9	
LOS		E	A		E	C	C	A		E	A	
Approach Delay		37.9			39.3			6.0			17.1	
Approach LOS		D			D			A			B	

Intersection Summary			
Area Type:	Other		
Cycle Length: 120			
Actuated Cycle Length: 120			
Offset: 21 (18%), Referenced to phase 2:SBT and 6:NBT, Start of Yellow			
Natural Cycle: 85			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.74			
Intersection Signal Delay: 18.9		Intersection LOS: B	
Intersection Capacity Utilization 59.0%		ICU Level of Service B	
Analysis Period (min) 15			

Splits and Phases: 1: Forest Avenue & Falmouth St/Preble St

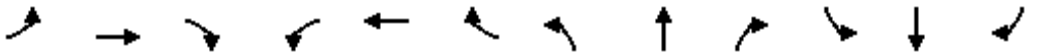




Lane Group	EBT	EBR	WBT	WBR	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	115	140	199	331	70	1002	107	855
v/c Ratio	0.74	0.36	0.66	0.59	0.25	0.47	0.54	0.40
Control Delay	73.0	9.0	56.6	28.8	25.6	4.7	74.7	9.9
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	73.0	9.0	56.6	28.8	25.6	4.7	74.7	9.9
Queue Length 50th (ft)	86	0	146	162	41	57	89	93
Queue Length 95th (ft)	119	31	186	186	m62	49	m119	126
Internal Link Dist (ft)	595		1176			724		1088
Turn Bay Length (ft)		150			200		150	
Base Capacity (vph)	268	570	517	643	300	2146	300	2120
Starvation Cap Reductn	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.43	0.25	0.38	0.51	0.23	0.47	0.36	0.40

Intersection Summary

m Volume for 95th percentile queue is metered by upstream signal.

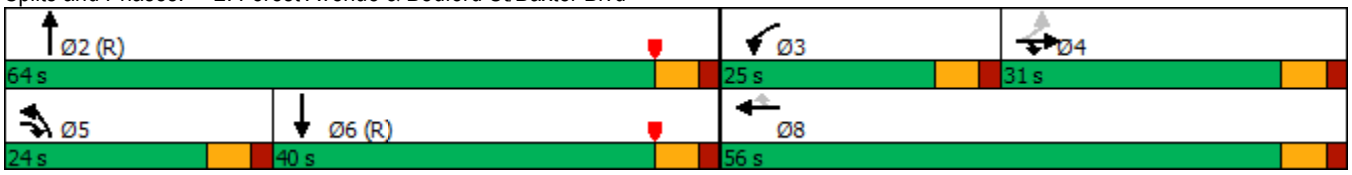


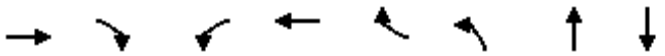
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	72	154	516	299	114	38	282	933	141	0	827	28
Future Volume (vph)	72	154	516	299	114	38	282	933	141	0	827	28
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	0		375	140		75	0		0	0		0
Storage Lanes	0		1	1		1	1		0	0		0
Taper Length (ft)	100			75			25			25		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.95	0.95	1.00	0.95	0.95
Frt			0.850			0.850		0.980			0.995	
Flt Protected		0.984		0.950			0.950					
Satd. Flow (prot)	0	1650	1425	1608	1693	1439	1593	3122	0	0	3169	0
Flt Permitted		0.858		0.950			0.950					
Satd. Flow (perm)	0	1438	1425	1608	1693	1439	1593	3122	0	0	3169	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			82			82		21			3	
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		609			1329			253			804	
Travel Time (s)		13.8			30.2			5.8			18.3	
Peak Hour Factor	0.87	0.87	0.87	0.85	0.85	0.85	0.91	0.91	0.91	0.92	0.92	0.92
Growth Factor	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	2%	2%	2%	1%	1%	1%	2%	2%	2%	2%	2%	2%
Adj. Flow (vph)	83	177	593	352	134	45	310	1025	155	0	899	30
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	260	593	352	134	45	310	1180	0	0	929	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		0			12			18			4	
Link Offset(ft)		0			3			0			0	
Crosswalk Width(ft)		20			10			16			16	
Two way Left Turn Lane												
Headway Factor	1.14	1.14	1.14	1.14	1.14	1.14	1.14	1.14	1.14	1.14	1.14	1.14
Turning Speed (mph)	15		9	15		15	15		9	15		9
Number of Detectors	1	1	1	1	1	1	1	1			1	
Detector Template												
Leading Detector (ft)	50	50	50	50	50	50	50	50			50	
Trailing Detector (ft)	0	0	0	0	0	0	0	0			0	
Detector 1 Position(ft)	0	0	0	0	0	0	0	0			0	
Detector 1 Size(ft)	50	50	50	50	50	50	50	50			50	
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex			Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0			0.0	
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0			0.0	
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0			0.0	
Turn Type	Perm	NA	pt+ov	Prot	NA	Perm	Prot	NA			NA	
Protected Phases		4	4 5	3	8		5	2			6	
Permitted Phases	4					8						
Detector Phase	4	4	4 5	3	8	8	5	2			6	
Switch Phase												
Minimum Initial (s)	7.0	7.0		5.0	5.0	5.0	5.0	10.0			10.0	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Minimum Split (s)	29.0	29.0		16.0	29.0	29.0	16.0	34.0			34.0	
Total Split (s)	31.0	31.0		25.0	56.0	56.0	24.0	64.0			40.0	
Total Split (%)	25.8%	25.8%		20.8%	46.7%	46.7%	20.0%	53.3%			33.3%	
Maximum Green (s)	25.0	25.0		19.0	50.0	50.0	18.0	58.0			34.0	
Yellow Time (s)	4.0	4.0		4.0	4.0	4.0	4.0	4.0			4.0	
All-Red Time (s)	2.0	2.0		2.0	2.0	2.0	2.0	2.0			2.0	
Lost Time Adjust (s)		-4.0		-4.0	-4.0	-4.0	-4.0	-4.0			-4.0	
Total Lost Time (s)		2.0		2.0	2.0	2.0	2.0	2.0			2.0	
Lead/Lag	Lag	Lag		Lead			Lead				Lag	
Lead-Lag Optimize?												
Vehicle Extension (s)	2.0	2.0		2.0	2.0	2.0	3.5	3.0			3.0	
Recall Mode	None	None		None	None	None	None	C-Min			C-Min	
Walk Time (s)	4.0	4.0			4.0	4.0		4.0			4.0	
Flash Dont Walk (s)	18.0	18.0			18.0	18.0		23.0			23.0	
Pedestrian Calls (#/hr)	10	10			1	1		1			1	
Act Effct Green (s)		29.0	53.0	23.0	54.0	54.0	22.0	62.0			38.0	
Actuated g/C Ratio		0.24	0.44	0.19	0.45	0.45	0.18	0.52			0.32	
v/c Ratio		0.75	0.88	1.14	0.18	0.07	1.06	0.73			0.92	
Control Delay		56.9	42.3	139.5	20.5	1.0	116.9	25.3			42.3	
Queue Delay		0.0	0.0	0.0	0.0	0.0	0.0	0.0			0.0	
Total Delay		56.9	42.3	139.5	20.5	1.0	116.9	25.3			42.3	
LOS		E	D	F	C	A	F	C			D	
Approach Delay		46.7			97.8			44.4			42.3	
Approach LOS		D			F			D			D	

Intersection Summary			
Area Type:	CBD		
Cycle Length: 120			
Actuated Cycle Length: 120			
Offset: 9 (8%), Referenced to phase 2:NBT and 6:SBT, Start of Yellow			
Natural Cycle: 105			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 1.14			
Intersection Signal Delay: 51.8		Intersection LOS: D	
Intersection Capacity Utilization 90.3%		ICU Level of Service E	
Analysis Period (min) 15			

Splits and Phases: 2: Forest Avenue & Bedford St/Baxter Blvd





Lane Group	EBT	EBR	WBL	WBT	WBR	NBL	NBT	SBT
Lane Group Flow (vph)	260	593	352	134	45	310	1180	929
v/c Ratio	0.75	0.88	1.14	0.18	0.07	1.06	0.73	0.92
Control Delay	56.9	42.3	139.5	20.5	1.0	116.9	25.3	42.3
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	56.9	42.3	139.5	20.5	1.0	116.9	25.3	42.3
Queue Length 50th (ft)	187	365	~319	61	0	~264	353	377
Queue Length 95th (ft)	#280	#557	#466	96	3	#445	438	#484
Internal Link Dist (ft)	529			1249			173	724
Turn Bay Length (ft)		375	140		75			
Base Capacity (vph)	347	675	308	761	692	292	1623	1005
Starvation Cap Reductn	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.75	0.88	1.14	0.18	0.07	1.06	0.73	0.92

Intersection Summary

~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.



Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	98	0	0	130	0	0
Future Volume (vph)	98	0	0	130	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt						
Flt Protected						
Satd. Flow (prot)	1863	0	0	1863	1863	0
Flt Permitted						
Satd. Flow (perm)	1863	0	0	1863	1863	0
Link Speed (mph)	30			30	30	
Link Distance (ft)	136			675	183	
Travel Time (s)	3.1			15.3	4.2	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Growth Factor	100%	100%	100%	100%	100%	100%
Adj. Flow (vph)	107	0	0	141	0	0
Shared Lane Traffic (%)						
Lane Group Flow (vph)	107	0	0	141	0	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(ft)	0			0	12	
Link Offset(ft)	0			0	0	
Crosswalk Width(ft)	16			16	16	
Two way Left Turn Lane						
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)		9	15		15	9
Sign Control	Free			Free	Stop	

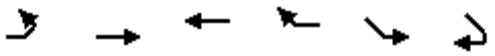
Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization	10.2%	ICU Level of Service	A
Analysis Period (min)	15		



Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	98	0	0	130	0	0
Future Volume (Veh/h)	98	0	0	130	0	0
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	107	0	0	141	0	0
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None			None		
Median storage veh)						
Upstream signal (ft)				675		
pX, platoon unblocked						
vC, conflicting volume			107		248	107
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			107		248	107
tC, single (s)			4.1		6.4	6.2
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
p0 queue free %			100		100	100
cM capacity (veh/h)			1484		740	947

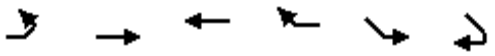
Direction, Lane #	EB 1	WB 1	NB 1
Volume Total	107	141	0
Volume Left	0	0	0
Volume Right	0	0	0
cSH	1700	1484	1700
Volume to Capacity	0.06	0.00	0.00
Queue Length 95th (ft)	0	0	0
Control Delay (s)	0.0	0.0	0.0
Lane LOS			A
Approach Delay (s)	0.0	0.0	0.0
Approach LOS			A

Intersection Summary			
Average Delay	0.0		
Intersection Capacity Utilization	10.2%	ICU Level of Service	A
Analysis Period (min)	15		



Lane Group	EBL	EBT	WBT	WBR	SEL	SER
Lane Configurations						
Traffic Volume (vph)	2	94	122	8	4	3
Future Volume (vph)	2	94	122	8	4	3
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt			0.991		0.942	
Flt Protected		0.999			0.972	
Satd. Flow (prot)	0	1861	1846	0	1706	0
Flt Permitted		0.999			0.972	
Satd. Flow (perm)	0	1861	1846	0	1706	0
Link Speed (mph)		30	30		30	
Link Distance (ft)		733	136		287	
Travel Time (s)		16.7	3.1		6.5	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Growth Factor	100%	100%	100%	100%	100%	100%
Adj. Flow (vph)	2	102	133	9	4	3
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	104	142	0	7	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Left	Left	Right	Left	Right
Median Width(ft)		0	0		12	
Link Offset(ft)		0	0		0	
Crosswalk Width(ft)		16	16		16	
Two way Left Turn Lane						
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15			9	15	9
Sign Control		Free	Free		Stop	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization	16.9%	ICU Level of Service	A
Analysis Period (min)	15		



Movement	EBL	EBT	WBT	WBR	SEL	SER
Lane Configurations						
Traffic Volume (veh/h)	2	94	122	8	4	3
Future Volume (Veh/h)	2	94	122	8	4	3
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	2	102	133	9	4	3
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type		None	None			
Median storage veh)						
Upstream signal (ft)			811			
pX, platoon unblocked						
vC, conflicting volume	142				244	138
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	142				244	138
tC, single (s)	4.1				6.4	6.2
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.3
p0 queue free %	100				99	100
cM capacity (veh/h)	1441				744	911

Direction, Lane #	EB 1	WB 1	SE 1
Volume Total	104	142	7
Volume Left	2	0	4
Volume Right	0	9	3
cSH	1441	1700	807
Volume to Capacity	0.00	0.08	0.01
Queue Length 95th (ft)	0	0	1
Control Delay (s)	0.2	0.0	9.5
Lane LOS	A		A
Approach Delay (s)	0.2	0.0	9.5
Approach LOS			A

Intersection Summary			
Average Delay	0.3		
Intersection Capacity Utilization	16.9%	ICU Level of Service	A
Analysis Period (min)	15		



Lane Group	NWL	NWR	NET	NER	SWL	SWT
Lane Configurations						
Traffic Volume (vph)	62	318	368	0	0	267
Future Volume (vph)	62	318	368	0	0	267
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.850				
Flt Protected	0.950					
Satd. Flow (prot)	1770	1583	1863	0	0	1863
Flt Permitted	0.950					
Satd. Flow (perm)	1770	1583	1863	0	0	1863
Link Speed (mph)	30		30			30
Link Distance (ft)	218		550			444
Travel Time (s)	5.0		12.5			10.1
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Growth Factor	100%	100%	100%	100%	100%	100%
Adj. Flow (vph)	67	346	400	0	0	290
Shared Lane Traffic (%)						
Lane Group Flow (vph)	67	346	400	0	0	290
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Right	Left	Left
Median Width(ft)	12		0			0
Link Offset(ft)	0		0			0
Crosswalk Width(ft)	16		16			16
Two way Left Turn Lane						
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15	9		9	15	
Sign Control	Stop		Free			Free

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 45.7%		ICU Level of Service A	
Analysis Period (min) 15			



Movement	NWL	NWR	NET	NER	SWL	SWT
Lane Configurations						
Traffic Volume (veh/h)	62	318	368	0	0	267
Future Volume (Veh/h)	62	318	368	0	0	267
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	67	346	400	0	0	290
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type			None			None
Median storage veh)						
Upstream signal (ft)						1053
pX, platoon unblocked						
vC, conflicting volume	690	400			400	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	690	400			400	
tC, single (s)	6.4	6.2			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	84	47			100	
cM capacity (veh/h)	411	650			1159	

Direction, Lane #	NW 1	NW 2	NE 1	SW 1
Volume Total	67	346	400	290
Volume Left	67	0	0	0
Volume Right	0	346	0	0
cSH	411	650	1700	1159
Volume to Capacity	0.16	0.53	0.24	0.00
Queue Length 95th (ft)	14	79	0	0
Control Delay (s)	15.5	16.7	0.0	0.0
Lane LOS	C	C		
Approach Delay (s)	16.5		0.0	0.0
Approach LOS	C			

Intersection Summary			
Average Delay	6.2		
Intersection Capacity Utilization	45.7%	ICU Level of Service	A
Analysis Period (min)	15		



Lane Group	NBL	NBR	NET	NER	SWL	SWT
Lane Configurations						
Traffic Volume (vph)	0	40	670	26	158	267
Future Volume (vph)	0	40	670	26	158	267
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (ft)	0	0		0	100	
Storage Lanes	1	0		0	1	
Taper Length (ft)	25				25	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt	0.865		0.995			
Flt Protected					0.950	
Satd. Flow (prot)	1611	0	1853	0	1770	1863
Flt Permitted					0.950	
Satd. Flow (perm)	1611	0	1853	0	1770	1863
Link Speed (mph)	30		30			30
Link Distance (ft)	212		444			609
Travel Time (s)	4.8		10.1			13.8
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Growth Factor	100%	100%	100%	100%	100%	100%
Adj. Flow (vph)	0	43	728	28	172	290
Shared Lane Traffic (%)						
Lane Group Flow (vph)	43	0	756	0	172	290
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Right	Left	Left
Median Width(ft)	12		12			12
Link Offset(ft)	0		0			0
Crosswalk Width(ft)	16		16			16
Two way Left Turn Lane						
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15	9		9	15	
Sign Control	Stop		Free			Free

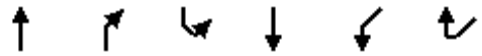
Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 58.9%		ICU Level of Service B	
Analysis Period (min) 15			



Movement	NBL	NBR	NET	NER	SWL	SWT
Lane Configurations						
Traffic Volume (veh/h)	0	40	670	26	158	267
Future Volume (Veh/h)	0	40	670	26	158	267
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	0	43	728	28	172	290
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type			None			None
Median storage veh)						
Upstream signal (ft)						609
pX, platoon unblocked						
vC, conflicting volume	1376	742			756	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	1376	742			756	
tC, single (s)	6.4	6.2			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	100	90			80	
cM capacity (veh/h)	128	416			855	

Direction, Lane #	NB 1	NE 1	SW 1	SW 2
Volume Total	43	756	172	290
Volume Left	0	0	172	0
Volume Right	43	28	0	0
cSH	416	1700	855	1700
Volume to Capacity	0.10	0.44	0.20	0.17
Queue Length 95th (ft)	9	0	19	0
Control Delay (s)	14.7	0.0	10.3	0.0
Lane LOS	B		B	
Approach Delay (s)	14.7	0.0	3.8	
Approach LOS	B			

Intersection Summary			
Average Delay	1.9		
Intersection Capacity Utilization	58.9%	ICU Level of Service	B
Analysis Period (min)	15		



Lane Group	NBT	NBR	SBL	SBT	SWL	SWR
Lane Configurations						
Traffic Volume (vph)	495	57	311	301	0	301
Future Volume (vph)	495	57	311	301	0	301
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt	0.986					0.865
Flt Protected				0.975		
Satd. Flow (prot)	1837	0	0	1816	0	1611
Flt Permitted				0.975		
Satd. Flow (perm)	1837	0	0	1816	0	1611
Link Speed (mph)	30			30	30	
Link Distance (ft)	214			201	550	
Travel Time (s)	4.9			4.6	12.5	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Growth Factor	100%	100%	100%	100%	100%	100%
Adj. Flow (vph)	538	62	338	327	0	327
Shared Lane Traffic (%)						
Lane Group Flow (vph)	600	0	0	665	0	327
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(ft)	0			0	0	
Link Offset(ft)	0			0	0	
Crosswalk Width(ft)	16			16	16	
Two way Left Turn Lane						
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)		9	15		15	9
Sign Control	Free			Free	Stop	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 69.2%		ICU Level of Service C	
Analysis Period (min) 15			

Movement	NBT	NBR	SBL	SBT	SWL	SWR
Lane Configurations						
Traffic Volume (veh/h)	495	57	311	301	0	301
Future Volume (Veh/h)	495	57	311	301	0	301
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	538	62	338	327	0	327
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None			None		
Median storage veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume			600		1572	569
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			600		1572	569
tC, single (s)			4.1		6.4	6.2
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
p0 queue free %			65		100	37
cM capacity (veh/h)			977		79	522

Direction, Lane #	NB 1	SB 1	SW 1
Volume Total	600	665	327
Volume Left	0	338	0
Volume Right	62	0	327
cSH	1700	977	522
Volume to Capacity	0.35	0.35	0.63
Queue Length 95th (ft)	0	39	107
Control Delay (s)	0.0	7.6	22.8
Lane LOS		A	C
Approach Delay (s)	0.0	7.6	22.8
Approach LOS			C

Intersection Summary			
Average Delay	7.9		
Intersection Capacity Utilization	69.2%	ICU Level of Service	C
Analysis Period (min)	15		

MOVEMENT SUMMARY

Site: 101 [AM Peak Hour - 2028 Build - Bedford Garage]

Deering Ave / Brighton Ave / Falmouth St
Portland, ME
Roundabout

Movement Performance - Vehicles											
Mov ID	OD Mov	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
SouthEast: Deering Ave											
21	L2	9	0.0	0.379	6.1	LOS A	2.7	19.3	0.33	0.44	39.5
21a	L1	284	2.4	0.379	5.3	LOS A	2.7	19.3	0.33	0.44	39.1
22	T1	143	1.0	0.379	1.6	LOS A	2.7	19.3	0.33	0.44	39.1
23	R2	25	0.0	0.379	2.2	LOS A	2.7	19.3	0.33	0.44	38.3
Approach		460	1.8	0.379	4.0	LOS A	2.7	19.3	0.33	0.44	39.0
NorthEast: Falmouth St											
24	L2	34	0.0	0.128	8.6	LOS A	0.7	4.8	0.59	0.61	39.1
25	T1	13	0.0	0.128	4.2	LOS A	0.7	4.8	0.59	0.61	38.7
26a	R1	48	0.0	0.128	4.1	LOS A	0.7	4.8	0.59	0.61	38.4
26	R2	4	0.0	0.128	4.7	LOS A	0.7	4.8	0.59	0.61	38.0
Approach		98	0.0	0.128	5.7	LOS A	0.7	4.8	0.59	0.61	38.7
NorthWest: Deering Ave											
27	L2	1	0.0	0.388	9.2	LOS A	2.1	15.3	0.63	0.64	39.4
28	T1	240	5.4	0.388	5.0	LOS A	2.1	15.3	0.63	0.64	39.0
29	R2	10	0.0	0.388	5.4	LOS A	2.1	15.3	0.63	0.64	38.2
29b	R3	2	0.0	0.388	5.8	LOS A	2.1	15.3	0.63	0.64	38.0
Approach		253	5.1	0.388	5.0	LOS A	2.1	15.3	0.63	0.64	39.0
West: Brighton Ave											
10b	L3	1	0.0	0.839	16.9	LOS B	15.0	107.1	1.00	1.13	37.0
10a	L1	40	0.0	0.839	15.4	LOS B	15.0	107.1	1.00	1.13	36.4
12a	R1	704	2.7	0.839	11.7	LOS B	15.0	107.1	1.00	1.13	36.1
12b	R3	2	0.0	0.839	12.7	LOS B	15.0	107.1	1.00	1.13	35.5
Approach		748	2.5	0.839	11.9	LOS B	15.0	107.1	1.00	1.13	36.1
SouthWest: Falmouth St											
30b	L3	1	0.0	0.167	16.1	LOS B	1.1	7.9	0.92	0.90	36.8
30	L2	14	0.0	0.167	15.4	LOS B	1.1	7.9	0.92	0.90	36.5
31	T1	24	0.0	0.167	11.0	LOS B	1.1	7.9	0.92	0.90	36.1
32	R2	20	8.0	0.167	12.1	LOS B	1.1	7.9	0.92	0.90	35.5
Approach		59	2.7	0.167	12.5	LOS B	1.1	7.9	0.92	0.90	36.0
All Vehicles		1618	2.6	0.839	8.3	LOS A	15.0	107.1	0.72	0.81	37.5

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Roundabout LOS Method: SIDRA Roundabout LOS.
Vehicle movement LOS values are based on average delay per movement.
Intersection and Approach LOS values are based on average delay for all vehicle movements.
Roundabout Capacity Model: SIDRA Standard.
SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

MOVEMENT SUMMARY

Site: 101 [PM Peak Hour - 2028 Build - Bedford Garage]

Deering Ave / Brighton Ave / Falmouth St
Portland, ME
Roundabout

Movement Performance - Vehicles											
Mov ID	OD Mov	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
SouthEast: Deering Ave											
21	L2	23	0.0	0.675	6.5	LOS A	7.4	52.6	0.52	0.48	39.1
21a	L1	563	1.7	0.675	5.8	LOS A	7.4	52.6	0.52	0.48	38.7
22	T1	234	0.7	0.675	2.1	LOS A	7.4	52.6	0.52	0.48	38.7
23	R2	30	0.0	0.675	2.6	LOS A	7.4	52.6	0.52	0.48	37.9
Approach		849	1.3	0.675	4.7	LOS A	7.4	52.6	0.52	0.48	38.7
NorthEast: Falmouth St											
24	L2	36	0.0	0.407	14.6	LOS B	2.8	19.8	0.88	0.96	37.1
25	T1	33	0.0	0.407	10.2	LOS B	2.8	19.8	0.88	0.96	36.7
26a	R1	118	0.0	0.407	10.1	LOS B	2.8	19.8	0.88	0.96	36.5
26	R2	13	0.0	0.407	10.7	LOS B	2.8	19.8	0.88	0.96	36.0
Approach		199	0.0	0.407	11.0	LOS B	2.8	19.8	0.88	0.96	36.6
NorthWest: Deering Ave											
27	L2	9	16.7	0.435	16.5	LOS B	2.7	19.0	0.82	0.92	37.0
28	T1	175	0.0	0.435	10.9	LOS B	2.7	19.0	0.82	0.92	36.7
29	R2	7	0.0	0.435	11.4	LOS B	2.7	19.0	0.82	0.92	36.0
29b	R3	1	0.0	0.435	11.9	LOS B	2.7	19.0	0.82	0.92	35.8
Approach		193	0.7	0.435	11.1	LOS B	2.7	19.0	0.82	0.92	36.6
West: Brighton Ave											
10b	L3	1	0.0	0.567	9.5	LOS A	4.9	34.8	0.72	0.66	39.9
10a	L1	33	0.0	0.567	8.0	LOS A	4.9	34.8	0.72	0.66	39.1
12a	R1	472	3.0	0.567	4.3	LOS A	4.9	34.8	0.72	0.66	38.8
12b	R3	1	0.0	0.567	5.3	LOS A	4.9	34.8	0.72	0.66	38.1
Approach		507	2.8	0.567	4.6	LOS A	4.9	34.8	0.72	0.66	38.8
SouthWest: Falmouth St											
30b	L3	4	0.0	0.102	11.4	LOS B	0.6	4.2	0.75	0.71	38.8
30	L2	8	20.0	0.102	11.6	LOS B	0.6	4.2	0.75	0.71	38.4
31	T1	34	0.0	0.102	6.3	LOS A	0.6	4.2	0.75	0.71	38.0
32	R2	13	0.0	0.102	6.8	LOS A	0.6	4.2	0.75	0.71	37.3
Approach		59	2.9	0.102	7.5	LOS A	0.6	4.2	0.75	0.71	38.0
All Vehicles		1806	1.6	0.675	6.1	LOS A	7.4	52.6	0.65	0.63	38.2

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Roundabout LOS Method: SIDRA Roundabout LOS.
Vehicle movement LOS values are based on average delay per movement.
Intersection and Approach LOS values are based on average delay for all vehicle movements.
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HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

COMMITMENT & INTEGRITY
DRIVE RESULTS

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Att. Q

Via Electronic Mail

September 13, 2021

Jimmy Dealaman, Planner
Planning and Urban Development Department
City Hall, 389 Congress Street, 4th Floor
Portland, Maine 04101

Re: 50 Bedford Street – Response to Site Plan Application Review Comments

Dear Jimmy:

The following are responses to comments received from the City of Portland in an email dated August 29, 2021; the comments received are provided below for your reference, followed by our response in italics:

Preliminary Site Plan Review Comments

Zoning

According to Land Use Code Section 8.10.5 the University of Southern Maine Overlay Zone (exclusive of public streets), is subject to a maximum lot coverage of 40% for building footprints and the maximum impervious area of 66%. Staff request an estimate of where the USM campus is at with each of these metrics in order to confirm the maximum is not exceeded.

RESPONSE: As noted in the Zoning Analysis Table attached to Section 6 of our application, the proposed building lot coverage is 30%, and the proposed impervious area coverage is 55%.

Impact on Surrounding Street Systems

The City's consulting traffic engineer has determined that modification to the TMP application is acceptable. Staff request that the applicant's traffic engineer (VHB) submit appropriate materials to amend the TMP application. Once the amended TMP application is submitted for review, please email Tom Errico thomas.errico@tylin.com to schedule the required scoping with between the applicant team and City staff.

RESPONSE: The TMP Amendment Application is in progress; the traffic engineer will reach out to Tom Errico to schedule the scoping meeting.

Are any additional street improvements at the entrance to the driveway on Bedford Street proposed or anticipated that might impact circulation into the access drive to the site?

RESPONSE: A figure depicting the conceptual-level plan for Bedford Street improvements and supporting narrative description was provided in Section 10.1.1 of the Site Plan

Narrative. The design is still in progress; design drawings and supplemental narrative for these improvements will be provided under separate cover as part of the TMP Amendment Application.

Access and Circulation

The width of the door to the bicycle storage space appears to be narrow which may discourage access to this area. Please revisit the entrance to this location.

RESPONSE: The bicycle storage entrance has been re-worked to provide a larger door with recessed alcove to better define and provide access to the bicycle entrance/storage area. Please see the revised Drawing A101.

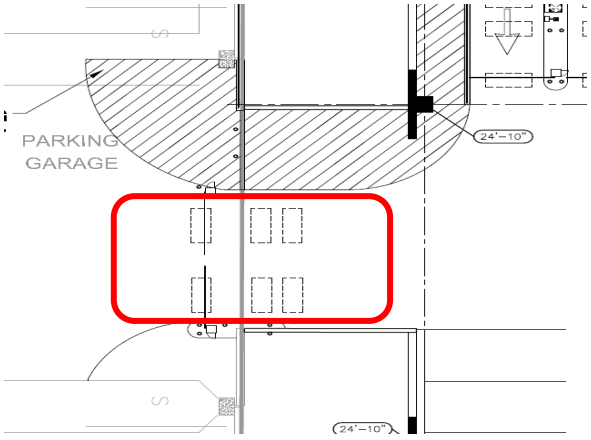
Referencing the State of Maine's guide on ADA design standards, the size of the garage appears to necessitate adding more accessible spaces. Please revisit the minimum # of required handicap accessible parking spaces, or provide staff with more information showing how the requirement for accessible spaces is being met for the project.

RESPONSE: The car count table on sheet A101 has been updated to show the number of accessible parking spaces provided with a note identifying the ADA Criteria.

Please clarify the interaction between the two garages. Please show any directional striping to clarify vehicle circulation between the two garages (i.e. is there two way traffic between the garages, any special signage for directing vehicles to the exit?)

RESPONSE: Two-way traffic will not be permitted between garages; this will be controlled by "Free-in" gates that allow entry-only into the existing garage, except for limited USM facility vehicles. Directional arrows have been added along with planned active and static signage to the Striping Plans (Sheets A-101 through A-105).

Please label for clarification what is proposed in the area shown below (see image) between the two garages on the ground level striping plan. (i.e. gate, speed bump, etc.)



RESPONSE: The Ground-Level Striping Plan (Sheet A-101) has been revised to include directional arrows to aid with patron wayfinding (see previous response).

Please provide additional narrative about how the south drive behind the garage will be utilized? It appears to be used as a fire lane to access the building as well as for trash pick-up. How do trash trucks access the dumpsters in that vicinity and how regularly? Also, please explain what generates the trash that the dumpsters will be accommodating, and where are these operations located? What restricts movement of unauthorized vehicles from using this lane (gate, signage, etc.) The narrative suggests gated emergency access. Please show any features related to vehicle circulation on the plan. Also please clarify if restricted access continues behind the existing garage. Please note whether this is a one-way drive? If so, please show any proposed signage.

RESPONSE: Similar to existing conditions, the area south of the garage will be fenced and gated to restrict unauthorized access. The fire access drive is a 20-foot wide, two-way drive with limited and restricted use. Emergency vehicle access will be provided via a Knox box at the gate. The Site Layout & Materials Plan (Drawing Sheet C-103) has been updated to depict fence, gate, and Knox box locations.

Three open-top, roll-off container dumpsters are proposed to manage bulky waste generated by the USM Portland campus that cannot fit into regular municipal solid waste dumpsters or compactors. Each container will store a different type of bulky waste: yard waste (grass clippings and leaves); construction and demolition (C&D) debris (branches cut from trees, broken wooden furniture, lumber, and carpet from renovations, etc.); and metal (scrap metal from various projects, metal desks, filing cabinets, metal pieces of chairs, etc.). Apart from emergency vehicle access, only ground, waste, and custodial Facilities supervisors will be allowed keyed entry into the gated area to access the dumpsters. Two pulls are expected each month, which means two of the three dumpsters will be pulled each month and returned. The dumpsters will be removed from campus for the winter months, so as not to impede snow removal. During the warmer months, the yard waste and C&D dumpsters will remain, while the waste dumpster will be on-site intermittently (only around about 25% of the time). The dumpsters will not be used for liquid material, food, hazardous waste, or regular municipal solid waste.

It appears a waiver will be needed to the City's Technical Manual Section 1.14.5. for drive aisles being under 24 feet wide (shown in I-27 of Section 1 of the Technical Manual). If a waiver is being sought, please provide a written request explaining the basis for justifying a waiver.

RESPONSE: The proposed drive aisle into the site and up to the turnaround is 24-feet wide to accommodate two-way traffic in accordance with the City's Technical Manual. The turnaround lanes are 22-feet and will be one-way as indicated by the signage specified on the Site Layout & Materials Plan (Drawing Sheet C-103); in accordance with Section 1.7.2.2 of the City's Technical Manual, the minimum width for one-way traffic is 12-feet. The proposed emergency access drive along the south side of the site is 20-feet wide and is not

intended for general traffic. Furthermore, in accordance with Section 1.7.2.3 of the Technical Manual, it is our understanding that the minimum two-way drive aisle width is 20-feet, with a preferred width of 24-feet. Section 1.14.5 and Figure I-27 of the Technical Manual apply to parking lot and parking space design; the proposed drive aisle is not associated with a parking lot. We do not believe a waiver is needed for the proposed drive aisles but will complete one if the City determines one is necessary.

Please show all dimensions within the garage parking areas. Also please add a scale for staff to reference on the floor/striping plan sheets. In particular please be sure to show the dimension aisle width behind the handicap accessible spaces. Staff are also wondering if the EV charging stations will occupy any space and if so, accounting for those dimensions in the parking layout design accordingly.

RESPONSE: Dimensions identifying drive aisle widths, stall depths, stall widths, and dual-head EV charging station locations (between stalls so as not to interfere with the parking spaces) have been added to the floor/striping plan sheets.

Please label any compact parking spaces that are being proposed so staff can differentiate these.

RESPONSE: Presently there are no compact parking spaces planned.

Staff are wondering how traffic and parking to the garage is being regulated (how do students know which garage to enter, and what type of device is used to allow entry to the garage)

RESPONSE: Active signage will be included above the main entrance directing visitors, monthly permit holders, and students to the appropriate entry lane. Internal to the garage signage, floor striping will further direct patrons to the appropriate zone of parking.

What are the hours of the garage?

RESPONSE: The new garage will be open 24 hours/day, 7days/week.

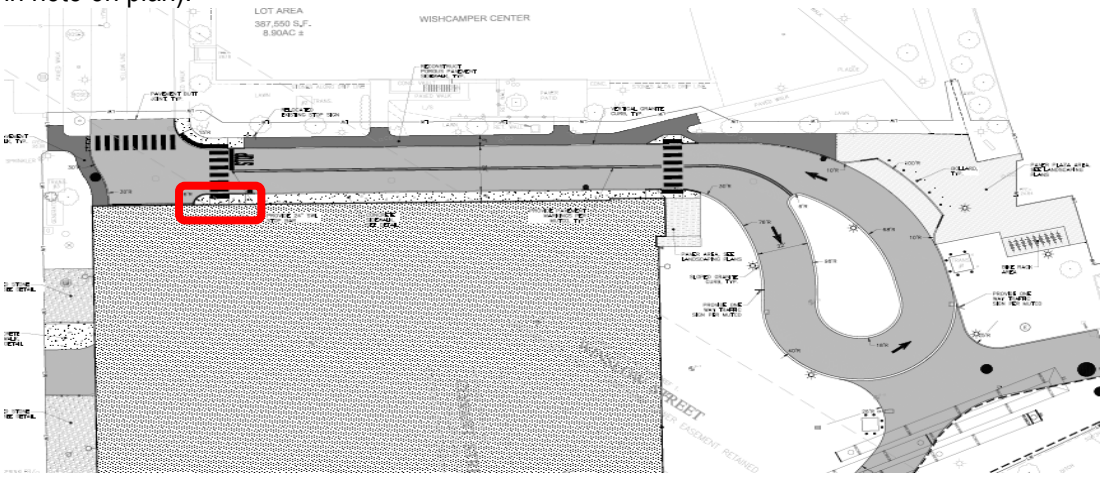
Will there be a maximum duration for vehicles charging at EV stations? What will deter parking at EV charging stations longer than required to charge vehicle?

RESPONSE: EV charging stations will be specified to have a user interface application that will prompt users when their car is charged (and to move it to a non-EV stall). Potential monetary fines for not moving a charged vehicle will be considered.

Is the extent of impervious surface area in the vicinity of the vehicle turnaround (towards the Forest Avenue side of site) necessary? Staff wonder if any unnecessary paving not needed for turning could be reduced. Staff recommend seeing a better outcome for this space if possible (e.g. increasing green space, etc.)

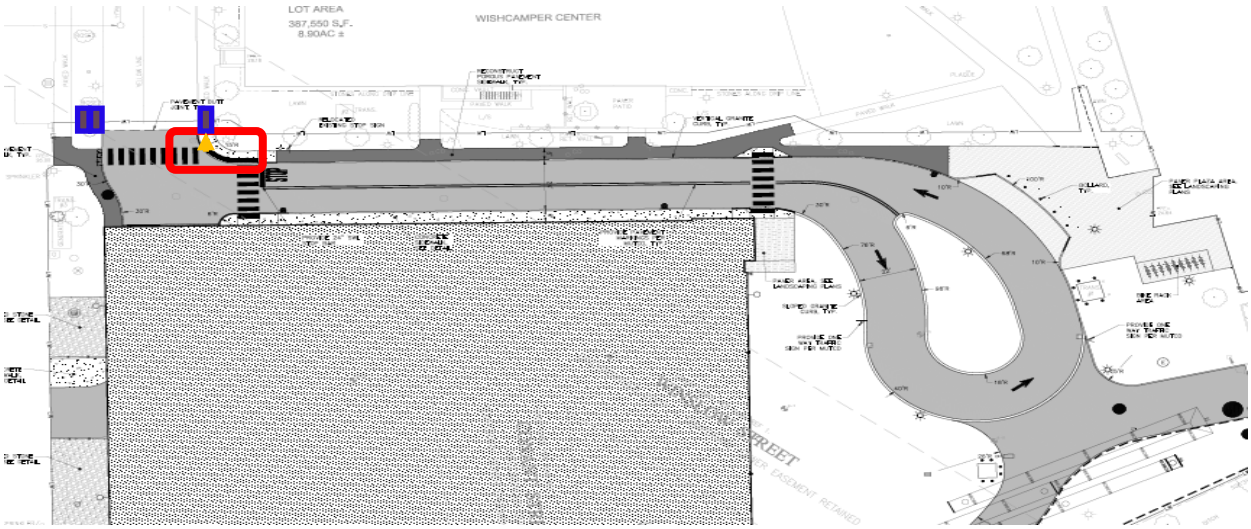
RESPONSE: As shown by the enclosed turning template showing fire truck access route, the extent of impervious surface area in the vicinity of the vehicle turnaround is necessary for fire truck access and maneuvering.

Please revisit the design of the ramps and landing at the location shown below. Pedestrian routes should be accessible (not exceeding 2% max slope) The interior hallway should also be revisited for its interface/relationship with the sidewalk. Please label slope or provide detail (citing detail in note on plan).



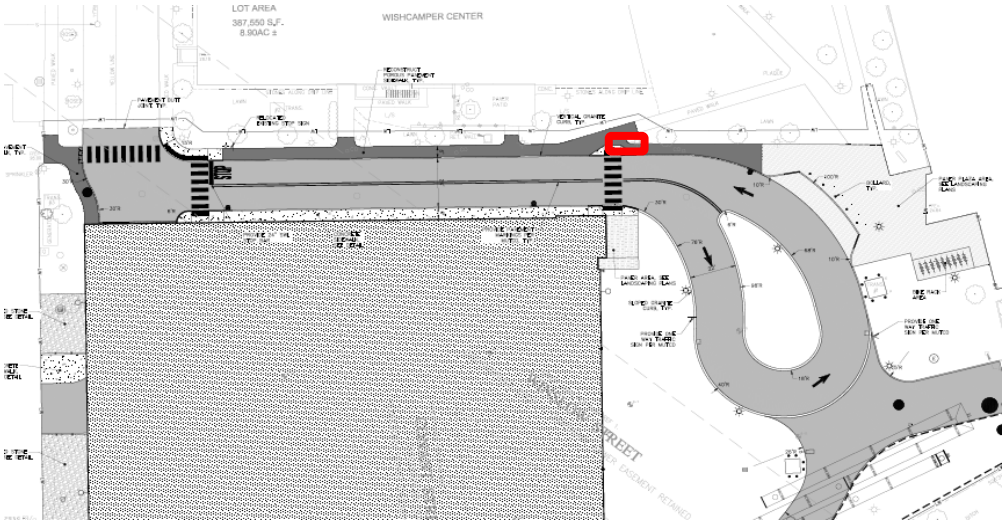
RESPONSE: Details specifying maximum slopes for all pedestrian ramps are cited on the Grading Plan (Drawing Sheet C-104); all pedestrian routes are ADA accessible.

The entirely of the detectable warning panel location (see image below) should be within the crosswalk. Please revisit this location. The panel could potentially be shifted slightly (see blue locations) and the ramps could be separated to meet each crosswalk.



RESPONSE: As specified on the Grading Plan (Drawing Sheet C-104), the proposed ramp has been designed to be a "Blended Transition Ramp"; this is a Maine Department of Transportation (MaineDOT) Standard Detail for Pedestrian Ramps (per MaineDOT Standard Details 801(26)) and an ADA acceptable configuration. All other options for ramp configurations have been deemed infeasible given the site's tight constraints. The ramp cannot be relocated further north as sketched above as it would conflict with existing stormwater features located along the west side of the driveway entrance into the site.

Please revisit the path at the location below (see image). It appears to be 3 feet from the top of the ramp, so this path should likely be extended to provide sufficient access and turning.



RESPONSE: The sidewalk width was increased in this area to provide a minimum 4-foot landing at the top of the ADA ramp; this change is reflected on the Site Layout & Materials Plan (Drawing Sheet C-103).

Parking

Please label any parking spaces that are expected along the access drive (if any are expected), also show any signage for loading or no parking areas.

RESPONSE: "No Parking" signs will be provided along the access drive loop. Two vehicle loading/unloading spaces are provided proximal to the Glickman/Osher entrance for safe pedestrian drop-offs. Proposed signage is depicted on the Site Layout & Materials Plan (Drawing Sheet C-103).

Based on the waiver documentation submitted, staff are open to supporting a partial waiver for the electric vehicle charging station requirement. Please provide a note on the utility plans that remaining spaces will be served by sufficient conduit, wiring, and electrical service to allow for future installation of electric vehicle supply equipment.

RESPONSE: A note has been added to the Utility & Grading Plan (Sheet C-104) regarding the accommodation of future electric vehicle supply equipment. Electrical conduit in the garage is surface mounted and easily expandable. Electrical circuits will also be designed to be expandable as new equipment is added.

To be clear, the applicant is proposing the following:

1. *Size the transformer now to accommodate a 20% EV buildout (install the 29 dual head units (58 spaces) or 9.4% of the current 618 spaces at this time, as indicated in the waiver request.*
2. *Install the conduit from the electric room to the future transformer pad site to accommodate the remaining 80% EV spaces.*
3. *Ensure there is sufficient room for future panels in the electric room and the satellite electric rooms on the various floors.*
4. *Design pathways for future conduit (and wiring) to those satellite electric rooms.*
5. *Future conduit from the satellite electric rooms will be overhead and utilize the blockouts that will be provided in the double tees. This will allow for additional conduit to be ceiling mounted and enable routing to all parking spaces if/when needed.*

This approach:

1. *Limits unused materials from being installed and subject to deterioration and/or damage;*
2. *Ensures that capability to expand, as needed, is in place now; and*
3. *Limits spending for elements that might never be necessary.*

Also, please clarify what parking areas might be reserved or intended for students/guests/faculty/etc.

RESPONSE: The parking program will include the nesting of daily credentialed patrons to park in the existing garage and utilize the Surrenden Street Exit. Long-term resident, visitor, and off-peak patrons will utilize the new garage.

Will any special signage be shown to inform visitors if parking lot is full or which garage has capacity? Will this be monitored?

RESPONSE: Active signage will be provided above the main entrance and a monument sign off of Bedford Street will direct garage patrons to the garage entrance (off of Winslow Street).

Is there any demand or parking areas that will be set aside for motorcycle, etc. If so, where will this be located and how will it be reserved for these vehicles?

RESPONSE: Motorcycle parking has been added on the ground-level of the garage as shown on Sheet A-101.

Public Safety and Fire Prevention

Please provide a turning template showing fire truck access route, also showing how vehicle is expected to turn around.

RESPONSE: Fire truck access and turnaround turning templates are enclosed.

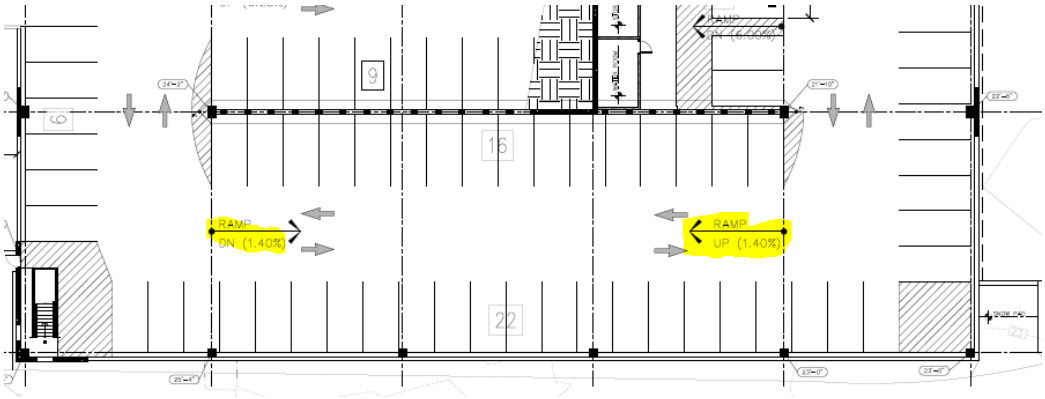
Site Design Standards

Also included as part of these preliminary comments, staff are providing design review comments (please see separate attachment).

RESPONSE: Noted. Responses to preliminary design review comments are provided in the following sections.

General

Please verify that the slopes provided on the ground level striping plan are correct (see image below). These appear to be possibly unintended so staff want confirm this is accurate.



RESPONSE: The Striping Plans (Sheets A101 through A105) have been revised to clarify ramp slope.

Preliminary Design Review Comments

Provide additional information on landscape/screening of hvac systems.
See attached rendering with notes (dated 8/27/21 by ccameron).

RESPONSE: There are no HVAC systems in the landscape to be screened.

A-3 Pedestrian Environment

The bike/ped circulation routes do not seem to be indicated or thought through. The pedestrian and bike entrances to the building are not legible or clear from either direction.

RESPONSE: Pedestrian routes have been considered and accommodated in the site design as shown on the enclosed Pedestrian Routes diagram. Building façade changes have also been proposed. Please see updated renderings, architectural elevations, and narrative responses below.

In addition, the interstitial space between the two garages has the potential to become dark, inhospitable spaces. To make this space feel secure and comfortable consider how visual interest or screening will be accommodated either in the design of the fencing, with lighting, or other amenities to indicate what is safe, habitable space.

RESPONSE: The space between the buildings is not intended to be a habitable space; however, it will be well lit and easy to maintain, with crushed stone at the ground-plane. There will be 36" concrete knee walls between the parking garage interior and these spaces, and 6' fencing between these spaces and the exterior. See drawings A200 and A201 for fencing, see drawing A201 for light fixtures. View A202 shows the perspective from the driveway entrance.

C-1 Structures

Scale, Massing, and material selection are compatible with adjacent, existing garage structure. Building is setback with minimal visual impact on Bedford Street. Front facade treated with material changes that correspond to entry points/building corners, scaling elements such as canopy and banners. The pedestrian/bike experience does not seem fully functional or adequately accommodated. Pedestrian entrances should emphasized and made more legible from the circulation routes - especially from adjacent building entrances. Bike room entrances are not directly accessible, functional. What is circulation pattern for peds/bikes? Staff recommend that the ground floor bay for bikes be differentiated with material and set back from the building face to accommodate maneuvering - a visible and wide/accessible entrance to the bike storage should be placed on the front facade. The remaining two car bays might carry the brick cladding to help the differentiation.

RESPONSE. Please see updated renderings and architectural elevations, showing building façade changes. A new recessed entry for the bicycle storage room has been added to provide more maneuvering space for cyclists apart from car traffic. The existing pedestrian stair tower has been emphasized as an entrance by removing the wrap-around canopy and extending the mass of glass to grade. A sunscreen of smaller scale has been added to draw interest around to the east side entry door location. The ground level of the east side of the garage in general has had piers added within each structural bay which creates a storefront expression for both the car and bike parking zones.

Principle C

Overall the project meets the goals to minimize the impact on the street and to create an attractive facade to neighboring uses.

RESPONSE: Acknowledged.

C-2 Active Uses

The building is setback at least 35' from Bedford Street and is placed behind the more active Wishcamper Center.

RESPONSE: Acknowledged.

C-3 Decks and Ramps

Ramps throughout the building including where visible from public rights of way. However, building is setback from all rights of way and ramps are screened so as to appear mostly horizontal floors from exterior.

RESPONSE: Acknowledged.

C-6 Utility Services

Provide screening for existing equipment visible from driveway. Where, if any, will additional hvac units be located?

RESPONSE: The existing transformer and existing generator near vehicular entry are being screened from entry driveway by five bayberry shrubs. These woody shrubs are semi evergreen, very hardy, and grow to about 8' tall. All transformers must have clear access 10' from front of unit and cannot be screened between front of unit and vehicular way. Any additional HVAC units will be integrated into the design of the garage.

In addition to changes made to the plans in response to the above comments, a 1.5" domestic water service connection to the proposed garage has been added to the Utility & Grading Plan (Sheet C-104). While daily use of domestic water in the garage is not expected, occasional use via hose hookups is anticipated to facilitate occasional garage maintenance. An ability to serve request letter has been prepared and sent to Portland Water District; a copy of this letter is enclosed. An ability to serve determination will be provided upon receipt.

Thank you for your feedback and comments as we continue to move forward with this project. Please contact me should you have any questions.

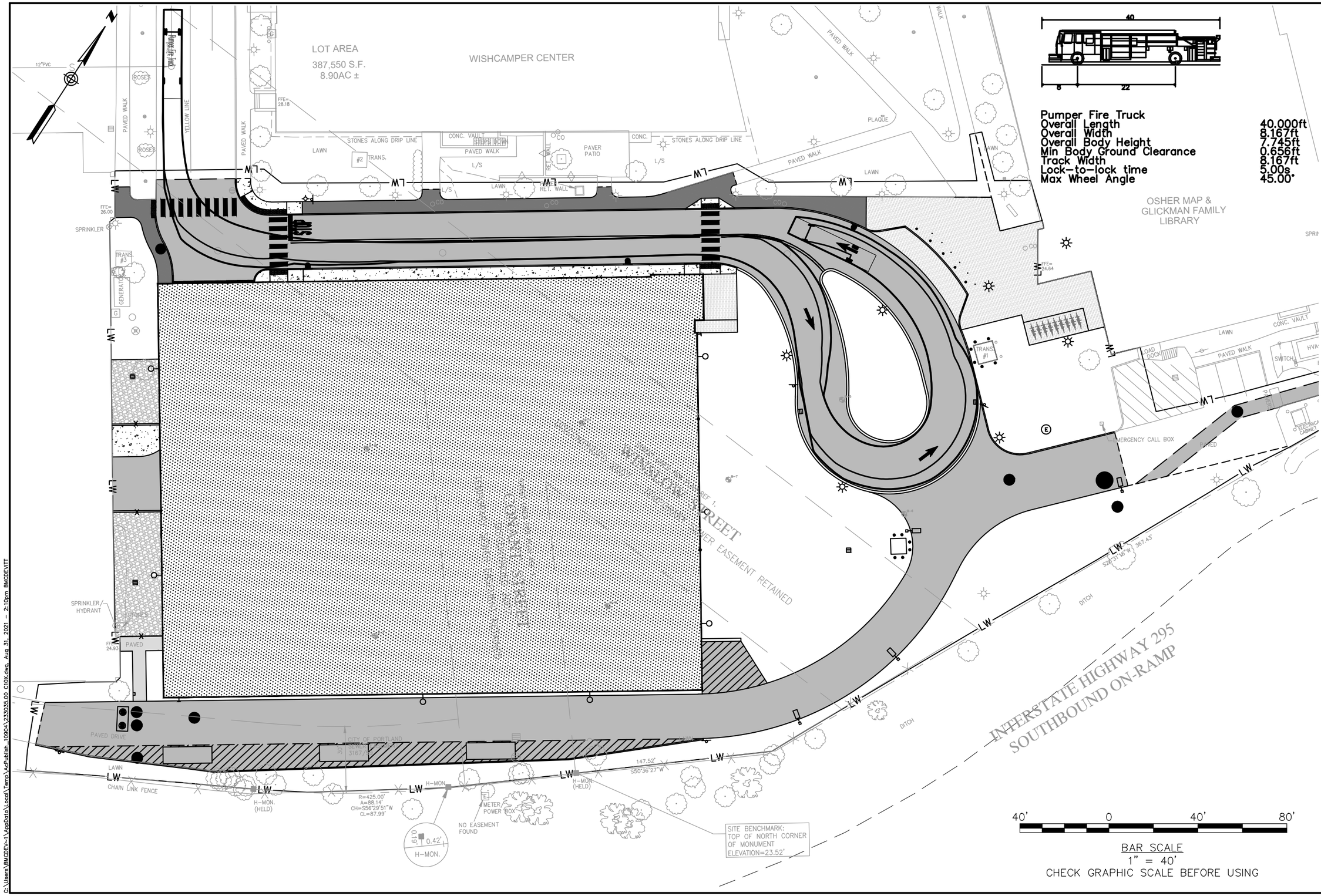
Sincerely,

WOODARD & CURRAN, INC.

Darrin Stairs, PE
Project Manager

Enclosure(s): Fire Truck Vehicle Movement Figures 1-3
Pedestrian Routes Diagram
Water Ability to Serve Request Letter
Revised Plans (uploaded under separate cover to Eplan)
- A-100 Site Plan
- A-101 Ground Level Striping Plan
- A-102 First Level Striping Plan
- A-103 Second Level Striping Plan
- A-104 Third Level Striping Plan
- A-105 Roof Level Striping Plan
- A-200 Building Elevations
- A-201 Building Elevations
- A-202 Building Views
- A-203 Building Views
- C-103 Site Layout & Materials Plan
- C-104 Utility & Grading Plan
- D-201 Civil Details – 2
- L-100 Planting Plan

cc: Wes Wilson, Desman Design Management
Ann Vashon, USM



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

COMMITMENT & INTEGRITY DRIVE RESULTS

WOODARD & CURRAN

VEHICLE MOVEMENT FIGURE – 1

DESIGNED BY:	ANL
DRAWN BY:	BCM
CHECKED BY:	DBS
233035.00 C10X.dwg	

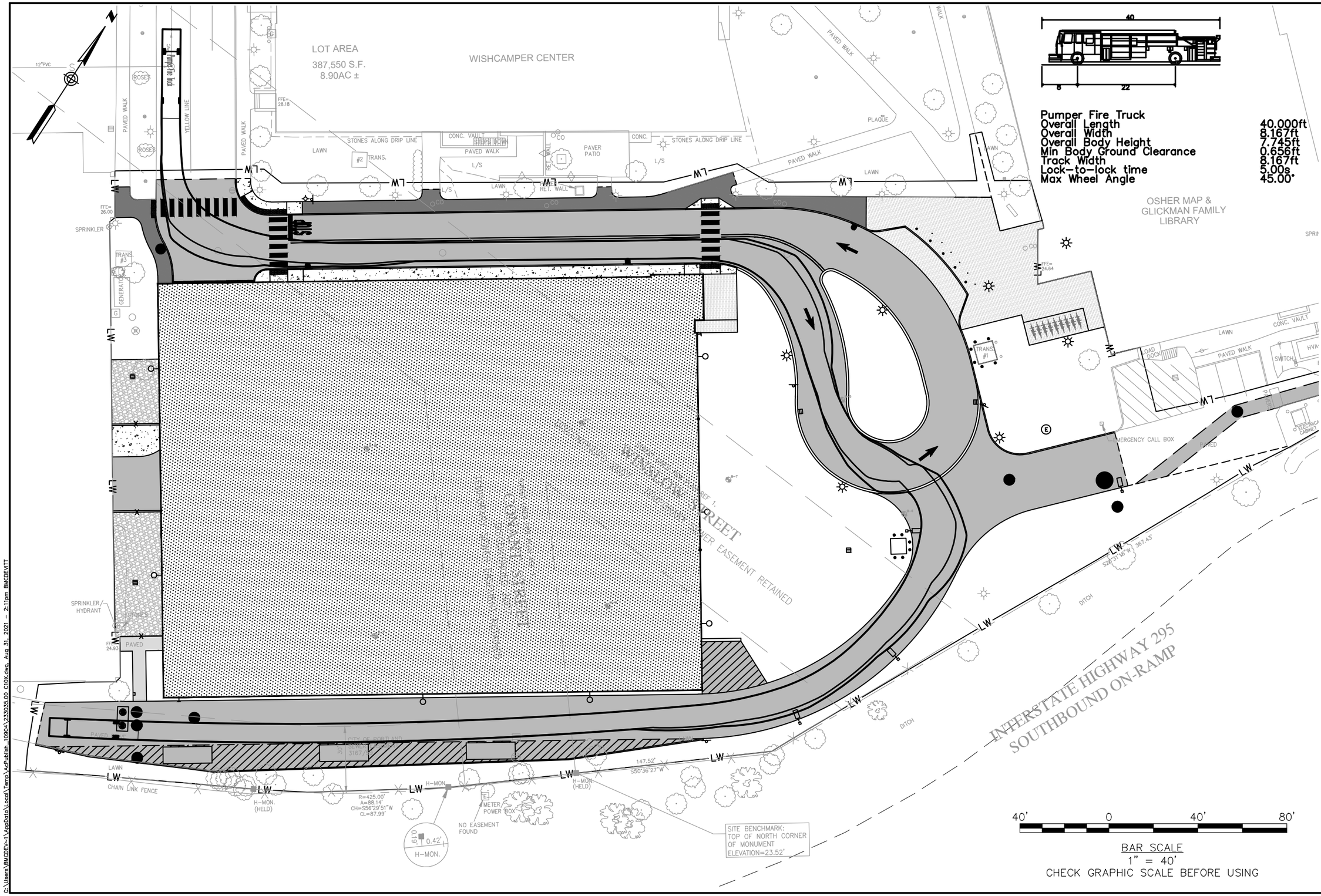
UNIVERSITY OF SOUTHERN MAINE
PORTLAND, MAINE

USM – STRUCTURED PARKING GARAGE
50 BEDFORD ST. PORTLAND, ME 04104

JOB NO: 233035.00
DATE: SEPTEMBER 2021
SCALE: 1"=40'

VEH. 1

C:\Users\BMCDEV~1\AppData\Local\Temp\AcPublish_10904\233035.00 C10X.dwg, Aug 31, 2021 - 2:10pm BMCDEVITT



C:\Users\BMCQEVITT\AppData\Local\Temp\AcPublish_10904\233035.00 C10X.dwg, Aug 31, 2021 - 2:11pm BMCQEVITT

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VEHICLE MOVEMENT FIGURE – 2

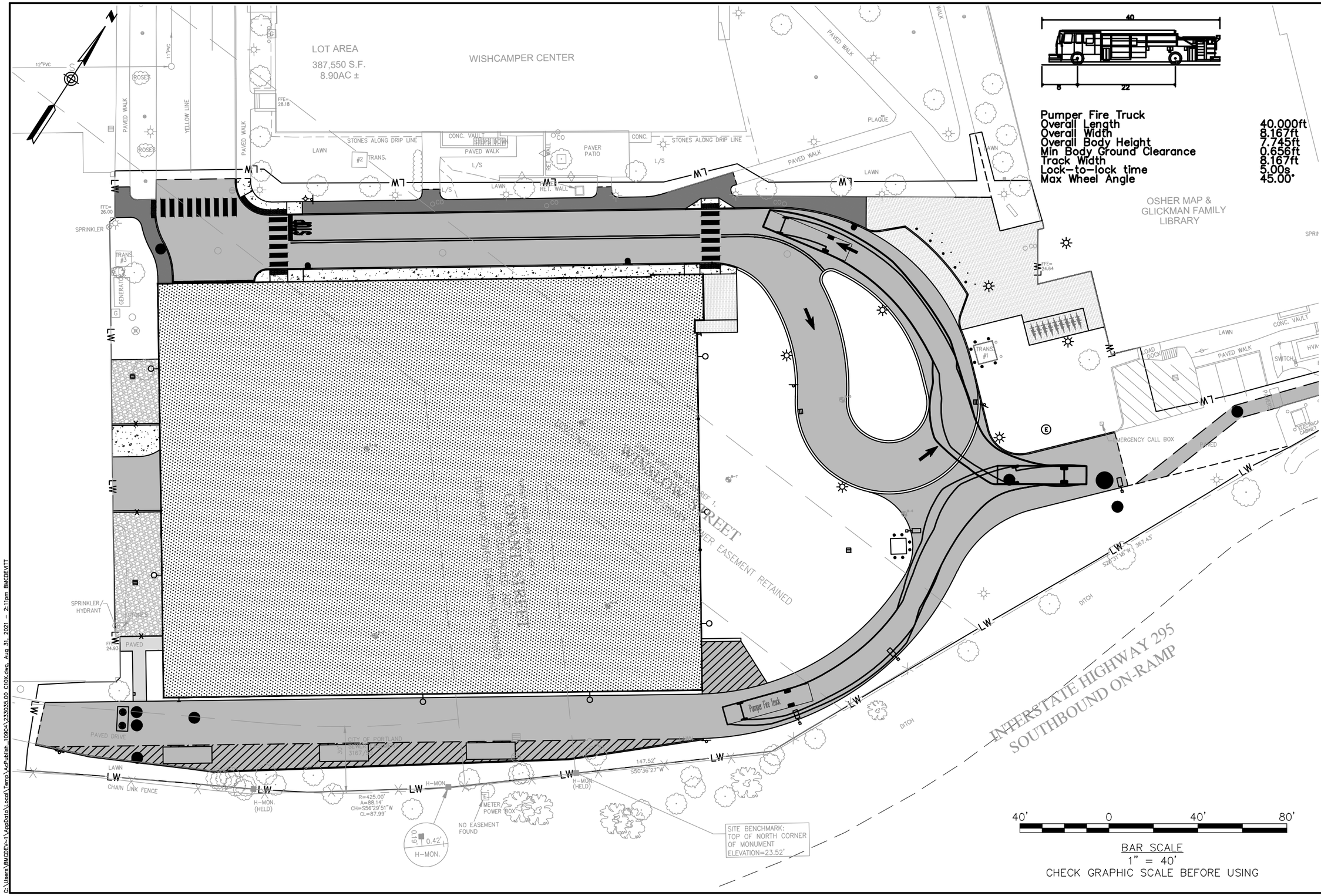
DESIGNED BY:	ANL
DRAWN BY:	BCM
CHECKED BY:	DBS
	233035.00 C10X.dwg

UNIVERSITY OF SOUTHERN MAINE
PORTLAND, MAINE

USM – STRUCTURED PARKING GARAGE
50 BEDFORD ST. PORTLAND, ME 04104

JOB NO: 233035.00
DATE: SEPTEMBER 2021
SCALE: 1"=40'

VEH. 2



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COMMITMENT & INTEGRITY DRIVE RESULTS
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VEHICLE MOVEMENT FIGURE – 3

DESIGNED BY:	ANL
DRAWN BY:	BCM
CHECKED BY:	DBS
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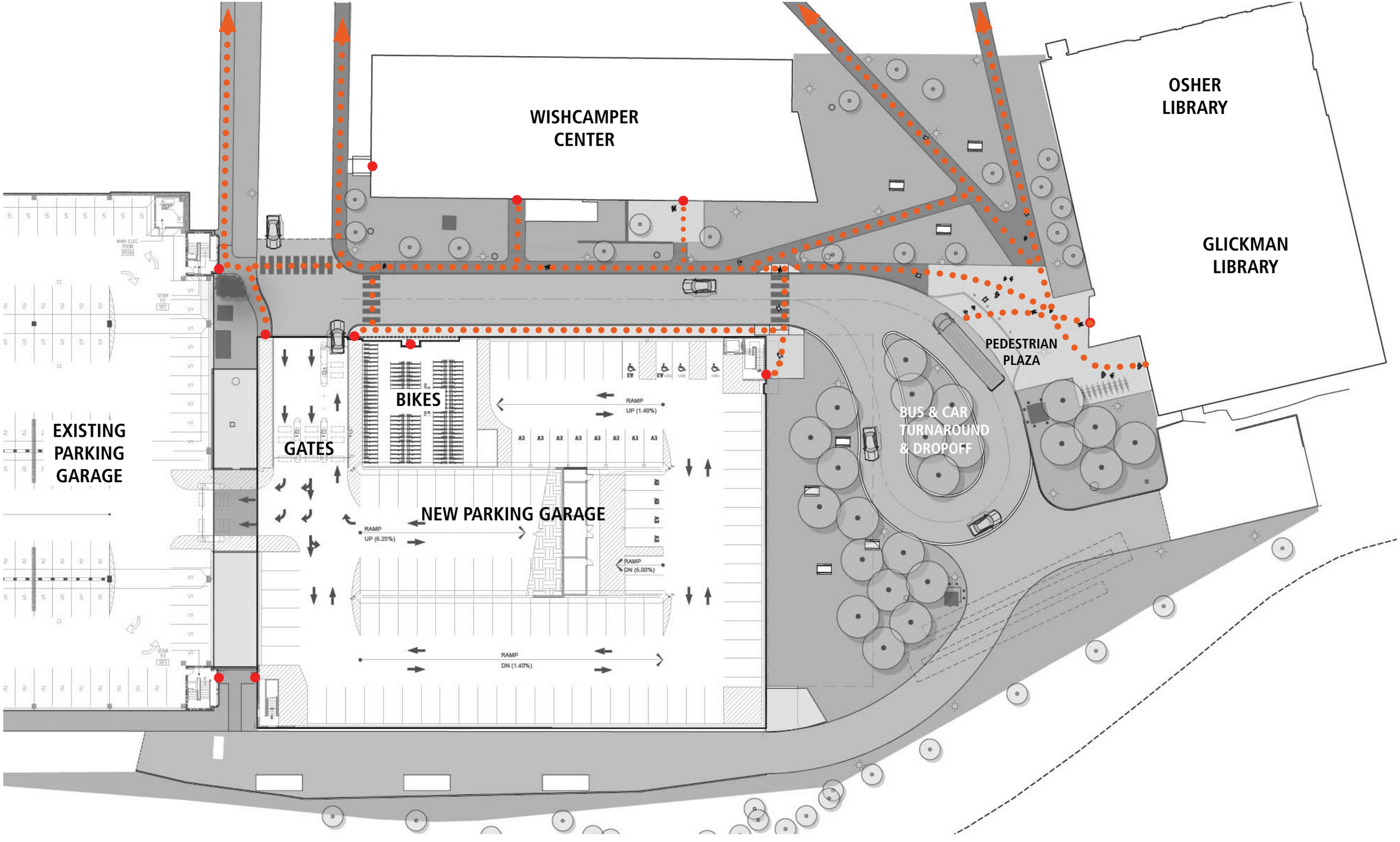
UNIVERSITY OF SOUTHERN MAINE
PORTLAND, MAINE

USM – STRUCTURED PARKING GARAGE
50 BEDFORD ST. PORTLAND, ME 04104

JOB NO: 233035.00
DATE: SEPTEMBER 2021
SCALE: 1"=40'

VEH. 3

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USM PARKING GARAGE: **WISHCAMPER SITE**
Portland, Maine

PEDESTRIAN ROUTES
1 SEPTEMBER 2021
mbla | inc

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

WOODARD &CURRAN

September 2, 2021

MEANS Group
Portland Water District
225 Douglass Street
Portland, ME 04104

Re: USM Structured Parking Garage – Request for Evidence of Ability to Serve

To Whom It May Concern:

The University of Southern Maine Portland Campus is proposing to construct a structured parking garage adjacent to the existing garage located at 44 Bedford Street in Portland, Maine. The proposed project will include the construction of a five-level structured parking garage with associated site improvements including lighting, landscaping, utilities, and stormwater management infrastructure. Portions of the existing water services on-site will be displaced to accommodate construction of the garage and its foundation, including a fire hydrant. The garage design includes a 1.5" domestic water service and a dry standpipe and sprinkler system with a Fire Department Connection (FDC) in the northeast corner stairwell. Locations and sizes of proposed water services, hydrant, valves, and service connection are shown on the enclosed Utility Plan. A fixture count spreadsheet is also enclosed to assist in determining peak flow for the site.

Daily use of domestic water is not anticipated for the proposed development. Hose hookups in the garage will facilitate occasional and infrequent garage maintenance. This estimate is based on the preliminary design of the interior layout. We do not anticipate changes that would result in significant water usage increases but will notify the Water District if design development results in any major changes. We have submitted a Major Site Plan Application for the proposed project to the City of Portland Planning Department and would appreciate documentation regarding Portland Water District's ability to serve the proposed development with potable water.

Please let us know if any additional information is required to facilitate your review. We appreciate your assistance and look forward to working with you further. Please do not hesitate to contact me at (207)558-3662 or dstairs@woodardcurran.com.

Sincerely,

WOODARD & CURRAN

Darrin Stairs, P.E.
Project Manager

Enclosure(s) Utility Plan
Fixture Count Spreadsheet

PN: 0233035.00

41 Hutchins Drive
Portland, Maine 04102
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T 800.426.4262
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Via Electronic Mail

September 17, 2021

Jimmy Dealaman, Planner
Planning and Urban Development Department
City Hall, 389 Congress Street, 4th Floor
Portland, Maine 04101

Re: 50 Bedford Street – Response to Wright-Pierce Stormwater Review Comments

Dear Jimmy:

Thank you for coordinating the review of the proposed parking garage located at 50 (44) Bedford Street. We received the September 3, 2021 memo from Wright-Pierce (3rd party peer reviewer); the comments provided by Wright-Pierce are provided below for your reference and our response follows each comment in italics:

September 3, 2021 Memo from Wright-Pierce

Basic Standard

- Erosion and Sedimentation Control best management practices were observed on the Erosion and Sediment Control Plan and associated Details. An Inspection, Maintenance, and Housekeeping Plan has been provided with the erosion details and notes. In general, application of erosion and sedimentation control devices is appropriate. The following items are in need of clarification:
    - Inspection and Maintenance Log should include Oil/Water Separator inspection requirements.
    - Inspection and Maintenance Log should reference the inspector to MaineDEP Stormwater BMP Handbook for engineers and designers (current edition) for a full list of required inspection items.

  RESPONSE: Only flows captured by the garage's interior floor drains will discharge to the proposed oil/water separator; these flows are considered wastewater and will discharge to the combined sewer. Since the oil/water separator will not be treating stormwater, it is not included in the Stormwater Inspection and Maintenance Plan. The proposed oil/water separator will be maintained by USM similar to other oil/water separators on campus. The reference to the MaineDEP Stormwater BMP Handbook has been added to the Inspection and Maintenance Plan and BMP Log.

General Standard

- The applicant has provided an impact analysis to compare pre-development and post-development land use pollutant rankings under MaineDEP redevelopment guidelines. The written analysis indicated that the proposed development had a higher pollutant ranking than the existing site by a magnitude between 0 and 1, and is therefore required to treat 60% of the proposed site's disturbed surface area. A summary of pollutant rankings was provided by the applicant, reviewed, and it is generally agreed that the site required surface runoff treatment for 60% of the disturbed surface area for the proposed project. To help confirm the approach, please provide a brief discussion confirming the specific use of different paved surfaces and the roof area. Please confirm how those values relates to the indicated pollutant rankings for the existing and proposed parking lots and roof areas.

RESPONSE: All impervious areas with uncovered vehicular traffic, including paved parking lot area, drive aisles, fire access road, and driveways were considered Pollutant Ranking 4 – Medium Use Roads/Parking lot in both the pre- and post-development pollutant impact analysis. For the post-development analysis, the garage roof, which consists of uncovered parking spaces, and the drop off pull-out spaces off the loop driveway were also assigned Pollutant Ranking 4 – Medium Use Roads/Parking. Paved and concrete walkways, paver plaza area, pervious pavement, and grassed landscaped areas were considered Pollutant Ranking 2 – Landscaped Area/Paved Walkway.

- High-pollutant surface areas should be prioritized to a practicable extent for stormwater treatment under the redevelopment standard. Please provide a calculation of what percentage of surfaces with a pollutant ranking of 4 are being treated. If there are limitations to treating high-ranked surface areas, please indicate what site limitations would drive this design need.

  RESPONSE: High-pollutant surface areas were prioritized for treatment during design of the stormwater system. Of the 2.37-acre redevelopment area, Pollutant Ranking 4 encompasses 1.72 acres in the post-development condition. Approximately 1.44 acres or 83.5% of Pollutant Ranking 4 area is treated by the proposed subsurface stormwater treatment system. The remaining area is located over the treatment system (4.5% of Pollutant Ranking 4 area), at ground-level between the garages (1%) and along the portion of the fire-access road south of the proposed garage where existing stormwater infrastructure will be preserved (11%).

- An executed maintenance contract for the BMP systems is required. Maintenance agreements may be provided as a condition of approval.

  RESPONSE: Acknowledged.

<u>Porous Pavement, Stormfilter, and Subsurface Storage Design</u>

- Porous pavement design is included within the proposed project. However, the applicant has indicated proprietary devices are being used to meet the Water Quality Design standards, and porous pavement has not been included in the calculations for Treatment Design Calculations section of Appendix B. Please confirm intent of porous pavement on this project.

  RESPONSE: Existing porous pavement sidewalk will be impacted to construct the proposed improvements. Porous pavement was not allocated treatment credit in the Design Calculations because the proposed work will be maintenance and repair of existing porous pavement.

- A letter from the manufacturer is provided stating the StormFilter and storage conduit meets their approval for the specific project. The subsurface alignment is provided to remove a portion of granular solids prior to entering the treatment system.

  RESPONSE: Acknowledged.

- The information provided has indicated the project meets the minimum treatment requirements under Chapter 500. Further review of HydroCAD files will be provided once Department of Public Works clarifies intent and allowable activities for connections to the existing combined sewer system.

  RESPONSE: Acknowledged.

Flooding Standard

- It is understood that these two study points are located in separate watersheds for the proposed project, with one study point leading towards a combined sewer system, and the other conveying flows towards a separated sewer system. As such, the reviewer does not necessarily agree with the statement that the proposed flow rates have the represented net change in the Peak Runoff Rates table as these flow rates are not necessarily additive. The City of Portland Department of Public Works is responsible for issuing certification of any connection to Existing Stormwater Systems. E-mail, or otherwise written, confirmation from the Department of Public Works accepting this connection is requested to confirm that this connection is appropriate under Land Use section (prior number) 14-526 (b) 3 a. (iv); and 14-526 (c) 3 a., as well as adherence to MaineDEP Chapter 500.
    - It is understood the connection to the combined sewer system has not been approved by Public Works at this time.
    - It is appreciated there are two competing design requirements; to both remove stormwater flows to the combined sewer system, and to also meet the requirement to reduce flow rates to each study point. In many ways, these requirements work in opposition to achieve a common goal.
    - There is a potential ability to waive the requirements of the Flooding Standard, governing flow rates to each study point, within the existing codes. This would require the following information:
        - The applicant indicating the storm drainage system ultimately discharges to tidal waterways;
        - The applicant indicating through calculations, or receiving confirmation from the Department of Public Works, to allow an increase for surface water flows to the drainage system in interval rain events as noted in the Land Use Code;
        - The applicant requesting this waiver to discharge to tidal waterways, and having such waiver approved by the City Planning authority.
    - Connection to the existing combined sewer must be coordinated with the Department of Public Works.

  RESPONSE: The design, as proposed, is the result of a specific request of City DPW staff to direct stormwater flows, to the maximum extent possible, to the separated sewer located in Forest Avenue. It is the applicant's understanding that the Forest Avenue storm system has adequate capacity to handle the flows. A revised ability to serve request has been submitted to DPW for review, clarifying the separation of building sewer flows (building floor drains) to the combined sewer system as required by the City of Portland Technical Standards.

Grading and Drainage

- The applicant has indicated Maine Construction General Permit will likely be required for the project due to the extent of disturbed surface area. No further action necessary.

  RESPONSE: Acknowledged.

- Typical details should show a maximum 2% cross-slope for sidewalks, crosswalks, and crosswalk portions of driveways and maintenance entrances. No further action necessary.

  RESPONSE: Acknowledged.

- Further review of grading and drainage, in particular reviewing pipe information for positive flows, will be provided once the City Department of Public Works confirms the approved path forward for the flow rates as mentioned in Section 4 of these comments.

  RESPONSE: Acknowledged.

Utility Connections

- Ability to serve letters have not been provided for utilities impacted by the proposed project, but have been requested by the applicant for applicable utilities. Please confirm these letters will be provided to the Planning Department when received.

  RESPONSE: Water and sewer ability to serve determinations will be submitted to Planning upon receipt.

- Standard design for the electrical utility has been provided. Please confirm intent of infrastructure on the roadway side of fencing. While no work appears to be occurring outside of the property limits, temporary removal of the existing fence may be considered a safety concern to vehicles on the interstate, particularly if new above-ground electrical systems are placed near the property line.

  RESPONSE: The proposed electrical service will be underground from Forest Avenue. Please see sheet ES-100 Electrical Site Plan previously provided.

  The electrical work shown near the property line (adjacent to the I-295 corridor) is a relocated secondary electrical service to the interstate lighting circuit. This work is being coordinated directly with Maine DOT and Central Maine Power.

If you have any questions or require additional information, please do not hesitate to contact me at (207) 558-3662 or by email at dstairs@woodardcurran.com.

Sincerely,

WOODARD & CURRAN INC.

Darrin Stairs, PE
Project Manager

cc: University of Southern Maine

Enclosures:
1. Revised Stormwater Inspection & Maintenance Plan and Inspection Checklist
2. Stormwater BMP Maintenance Log

STORMWATER INSPECTION & MAINTENANCE PLAN

USM Structured Parking Garage, Portland, Maine

General inspection and maintenance during and after construction must take place in accordance with the requirements outlined in Appendix B of the Maine Department of Environmental Protection (MaineDEP) Chapter 500 Rules. Upon completion of the project, the Owner will assume responsibility for overseeing the property, including the inspection and maintenance of the Site's stormwater drainage system and treatment measures outlined herein. A person with knowledge of stormwater management and erosion and sediment control, including the standards and conditions in the permit, shall conduct the inspections and perform maintenance of the facilities. The inspector should refer to the MaineDEP Stormwater BMP Handbook for engineers and designers (current edition) for a full list of required inspection items.

Inspection and maintenance activities will be performed per the attached checklist, schedule, StormFilter guidelines; an example page of the BMP Maintenance Log that shall be kept on-site is also attached.

Storm Drain System

Trash, debris, and sediment shall be removed from storm drain pipes and catch basins as needed on a semi-annual basis. In addition to the inspection and maintenance of stormwater systems, paved areas will be inspected annually each spring. Visual inspections will enable parking areas to be kept clean and clear through periodic sweeping and winter plowing as required. The inspections will also ensure pavement markings are repainted as needed to maintain proper traffic circulation and parking space delineation. Paved areas will be plowed and sanded as often as necessary to maintain public safety. Periodic sweeping of pavement will keep the parking areas clean and will reduce the amount of sediment available to enter the stormwater systems, in turn reducing the need to clean the stormwater systems.

Porous Pavement

Winter maintenance procedures may be problematic (e.g., scraping by plows, clogging by sand, clogging by or inability to treat de-icing chemicals). Snow removal and deicing activities should be done carefully to avoid disturbance to the pavement structure. The plow blade should be raised 1" above the surface or outfitted with a flexible rubber bottom piece. Porous pavement has the potential to become impervious if not properly maintained. Proper maintenance should consist of the following:

- Frequent inspections should be performed during the first few months following construction; the system should inspected routinely on an annual basis thereafter. Inspections should be made after significant storm events to check for surface ponding that could indicate failure due to clogging. Non-routine maintenance may require reconstruction of the surface treatment, and possibly the filter and reservoir layers, to relieve major clogging.
- Prevent sedimentation due to the erosion of areas upgradient of the porous pavement.
- Prevent vehicles with muddy wheels from accessing the porous pavement.
- Sweep, vacuum and/or pressure wash pavement twice annually at a minimum.
- Limit salt use for deicing and do not use sand.
- Remove leaves and organic debris in the fall.
- Measures should be taken to ensure that an area designed to be porous does not receive a future overlay of conventional non-porous paving.

StormFilter System

The StormFilter system must be inspected at least once every six months, and the filters maintained annually per the manufacturer's guidelines, which are outlined in the attached guidance document.

STORMWATER INSPECTION CHECKLIST

Inspection by: _____ Date: _____

Stormwater Management Feature	Condition						Comments
Subsurface Detention System	no siltation		some siltation		heavily silted in		
Subsurface Detention System	no clogging/flooding		some clogging/flooding		heavy clogging/flooding		
Subsurface Detention System	outlet free of erosion		some erosion at outlet		outlet heavily eroded		
Subsurface Detention System	inlet/outlet clear		some debris		completely blocked		
StormFilter System*	Cartridges are in good condition		Cartridges in need of cleaning		Cartridges in need of replacement		
StormFilter System*	no clogging/flooding		some clogging/flooding		heavy clogging/flooding		
Porous Pavement	No sediment or debris accumulation		Some sediment or debris accumulation		Excessive sediment or debris accumulation		
Porous Pavement	Structure is in good condition.		Structure has small visible wear.		Structure has excessive visible wear.		

**See attached manufacturer's guidelines for StormFilter System maintenance and inspection.*
***Refer to the MaineDEP Stormwater BMP Handbook for Engineers and Designers (current edition) for a full list of required inspection items.*

Recommended Actions: _____

_____

Actions Completed: _____ Date: _____

STORMWATER MAINTENANCE TASKS & RECOMMENDED SCHEDULE

TASKS	DETENTION AND STORMFILTER SYSTEM	POROUS PAVEMENT	STORM DRAIN PIPES	SCHEDULE
Inspect for sediment & debris accumulation	X	X	X	Spring and Fall
Remove sediment & Debris accumulation	X	X	X	As needed
Inspect for erosion				As needed
Reestablish vegetation in erosion areas				Early spring
Inspect structural elements during wet weather and compare to as-built plans	X	X	X	Annually
Make adjustments or replacements as determined by wet weather observations	X	X	X	As needed
Keep records of all inspections and maintenance activities	X	X	X	Annually
Have a professional engineer perform emergency inspections upon identification of severe problems	X	X	X	As needed

Stormwater BMP Maintenance Log

BMP Structure	Inspector (Name)	Work Performed	Date Performed	Comments
Pavement Sweeping				
Porous Pavement				
Catch Basins				
CMP System				
StormFilter System				
Other				
Additional Comments:				

The Inspector should refer to the MaineDEP Stormwater BMP Handbook for Engineers and Designers (current edition) for a full list of required inspection items.

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Portland, Maine 04102
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F 207.774.6635

Att. S

Via Electronic Mail

October 25, 2021

Jimmy Dealaman, Planner
Planning & Urban Development Department
City of Portland
389 Congress Street, 4th Floor
Portland, ME 04101

Re: USM Parking Garage – 50 Bedford Street
Major Site Plan Review (PL-001729-2021) – Supplemental Materials

Jimmy:

Thank you for continuing to coordinate the review of the Site Plan application for the proposed USM Parking Garage located at 50 Bedford Street.

On behalf of the applicant, we are submitting revised materials to the site plan application (PL-001729-2021) as follows:

- Revised Parking Garage size

In addition, we are providing supplemental materials for the following items:

- Proposed TDM Revisions to support the EV Charging Station waiver request
- Response to Planning Board question on landscape plantings between the two garages
- Response to Planning Board question on brick types and colors.
- Ability to Serve Confirmation from Portland Water District

Each of these items is described in more detail below.

1. Revised Parking Garage Size

As discussed in a phone call with planning staff last week, the applicant is reducing the size of the garage, from 631 passenger car spaces to 504 passenger car spaces. This will be accomplished by removing one level. Additionally, a number of compact spaces have been added. The summary of the parking provided in this revised submittal is summarized in the table below:

PARKING SUMMARY – **CURRENT SUBMITTAL**						
LEVEL	STANDARD SPACES 9' x 18'	COMPACT SPACES 8' x 18'	EV SPACES 9'x18'	ADA SPACES	TOTALS (CARS ONLY)	MOTOR-CYCLE SPACES
GRADE	76	9	12	4	101	6
FIRST	96	25	16	3	140	0
SECOND	96	25	16	3	140	0
THIRD (ROOF)	83	25	14	1	123	0
TOTAL	**351**	**84**	**58**	**11**	**504**	**6**

As discussed with planning staff, this reduction in the proposed size of the garage is being made due to new (real-time) information for both parking demand, and supply, on the campus. This is primarily due to the Law School moving off the USM Campus. It remains the intent of the new garage to provide the 396 parking spaces required to meet the Condition of Approval (COA) for Portland Commons (PL-1040-2020). The additional spaces beyond those required to meet the COA, and Campus Parking Inventory changes are explained in the table below:

Proposed Parking Garage and Portland Commons Condition of Approval	
Proposed New Parking Garage	504 spaces[1]
Required to meet the Condition of Approval (Portland Commons)	(396) spaces
Additional Spaces in New Garage After meeting Condition of Approval	**108 spaces**

Campus Parking Inventory Changes	
Additional Spaces in New Garage after meeting COA for Portland Commons (from above)	108 spaces
Displacement due to Siting New Garage on Wishcamper Lot	(207) spaces
Peak Demand Gain in Available Spaces by Law School Move Offsite	152 spaces
Total Net Surplus on Campus	**53**[2]

[1]Six Motorcycle Spaces Planned for New Garage are Additional to the Above Automobile Spaces

[2]Subject to design completion, two additional spaces may be lost in the existing garage adjacent to the proposed exit modifications

The removal of one level of the proposed garage results in new building elevations and floor plans, but all other aspects of the project (building materials, site access and layout, utilities, and stormwater management) remain the same. The attached revised plans (Striping Plans, Building Elevations and Views) depict those changes.

2. Proposed TDM Revisions to support the EV Charging Station waiver request

In order to provide additional assurance that the University will report on EVs and build supply to match demand, the applicant proposes the following revisions to the Transportation Demand Management (TDM) Plan:

In Section 6 "Trip, Parking, Mode Split & GHG Reduction Strategies, p. 39, the narrative under initiative "Build Additional EV Charging Stations" should be replaced with the following: "The University will install additional EV Charging Stations in the parking garage in response to demand until the number of Charging Stations equals 20% of parking spaces in the garage as required by the City of Portland's Technical Manual. The University will endeavor to continue to match demonstrated demand with supply of electric vehicle charging stations, so that demand would not exceed supply."

In Section 7, "Monitoring and Reporting Plan", p. 43, the inclusion of EV ownership would stay in the annual transportation survey, as it is important for GHG calculations, but we would add a new, additional requirement to our annual reporting portfolio to read: "The University will provide an EV Use and Forecast Report to the City on or before June 1st of each year beginning in 2024, summarizing EV ownership and EV charging station use statistics. The Report will also include a proposal regarding the number of EV charging stations for the coming school year, based upon the supply and demand statistics from the previous year. In alignment with the other reporting activities outlined in the TDM plan, the University commits to annual reporting through 2030, the horizon of the Facilities Master Plan, after which a new TDM plan may be proposed."

3. Response to Planning Board question on landscape plantings between the two garages:

At the first Planning Board Workshop, there were questions regarding the consideration of plantings in the space between the two garages. This idea was considered, but USM prefers not to introduce plants/trees to the zone between the two garages for the following reasons:

- There are many utilities in this zone that require access and preclude planting in their footprints
- The zones are surrounded by 36" high concrete barriers to enhance vehicular and pedestrian safety, along with 6' fences at either end. Users will not occupy this space nor have many opportunities to experience the space.
- This narrow gap between two tall buildings experiences limited direct light and is thus a challenging growing situation.
- Maintaining plantings in this zone, which is awkward to access, creates an unnecessary burden for USM facilities department.
- USM security prefers no plantings in this zone for visibility reasons. Evergreen trees would not be a viable option due to security concerns, and deciduous trees, although better, still obscure views and create a maintenance issue.
- USM prefers to maintain this interstitial space as an open ventilated lightwell, with low maintenance inert stone at the ground plane.

4. Response to Planning Board question on brick types and colors.

In response to the questions at the Planning Board Workshop regarding brick types and colors, the applicant offers the following:

Brick selection began with inquiries to Morin LaChance since their products are locally made and of highest quality. They also do not require shipping over long distances and have historically contributed

to the Maine economy and environment. Unfortunately, they do not have any products which meet the dimensional uniformity requirements for being incorporated into precast concrete units.

We subsequently researched available products which meet these criteria and looked closely at a gray brick offered by Glen-Gery. Closer examination showed that brick did not have a desired contrast to the middle portion of the building and gave an impression of a mesh net of an under-scaled texture. In addition, the gray bricks in this manufacturer's offerings are produced at a plant in West Germany.

A red-orange thin brick was included in initial views submitted for City urban design comments. In response, a red-bronze blend was strongly recommended, since most brickwork on campus has this coloration. The brick submitted in the final application has a similar variety of colors, even if the dimensional restrictions for the brick mean that it is not an exact match for the waterstruck brick found on campus and at existing adjacent parking garage. Its most important characteristic, however, is that its blend of tones avoids a "thin" appearance.

5. Ability to Serve Confirmation from Portland Water District

The Portland Water District has acknowledged it ability to serve the project in the enclosed email.

We look forward to moving forward on this matter, and trust that City Staff has the additional information to move forward with a second Planning Board workshop.

If you have any questions or require additional information, please do not hesitate to contact me at 207-558-3662 or email me at dstairs@woodardcurran.com.

Sincerely,

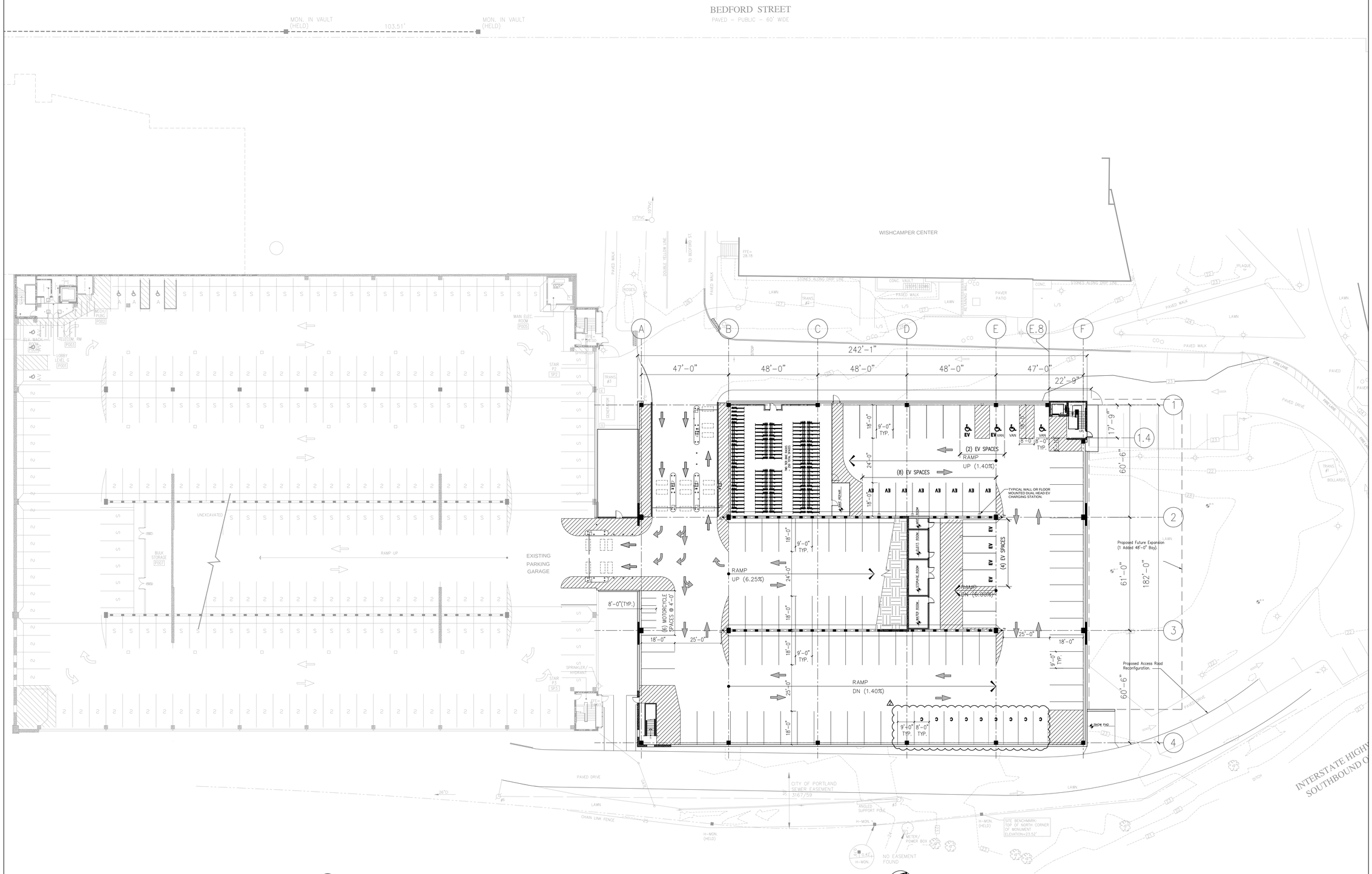
WOODARD & CURRAN, INC.

Darrin Stairs, PE
Project Manager

cc: Ann Witham, USM
Wes Wilson, Desman Design Group

Attachments:
- Plans (uploaded separately to EPlan)
  - Revised Building Striping Plans
  - Revised Building Elevations
  - Revised Building Views
- Ability to Serve email from Portland Water District

PN: 233035.00



1 SITE PLAN
SCALE: 1" = 30'

NORTH

UNIVERSITY OF SOUTHERN MAINE

25 Bedford Street, Portland, ME 04104
207.712.5183 | USM.MAINE.EDU

PROJECT TEAM:

CLIENT
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& STRUCTURAL ENGINEER
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CIVIL ENGINEER
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LANDSCAPE ARCHITECT
MICHAEL BOUCHER LANDSCAPE ARCHITECTURE
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MEP/FP ENGINEER
ALLIED ENGINEERING
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GEOTECHNICAL ENGINEER
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GREY, ME 04039

TRAFFIC ENGINEER
VANASSE HANGEN BRUSTLIN INC
40 IDX DR 100 #200, SOUTH
BURLINGTON, VT 05403

COST ESTIMATOR
PREFERRED CONSTRUCTION MGMT
94 AUBURN ST,
PORTLAND, ME 04103

SEAL / SIGNATURE

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2021

PROJECT:

USM - Structured Parking Garage

Address

50 Bedford Street,
Portland ME 04104

REVISIONS:

No.	Date	Description
1	9/1/21	Response to City Comments
2	10/25/21	Plng Brd W.S. #2 Updates

SUBMISSIONS:

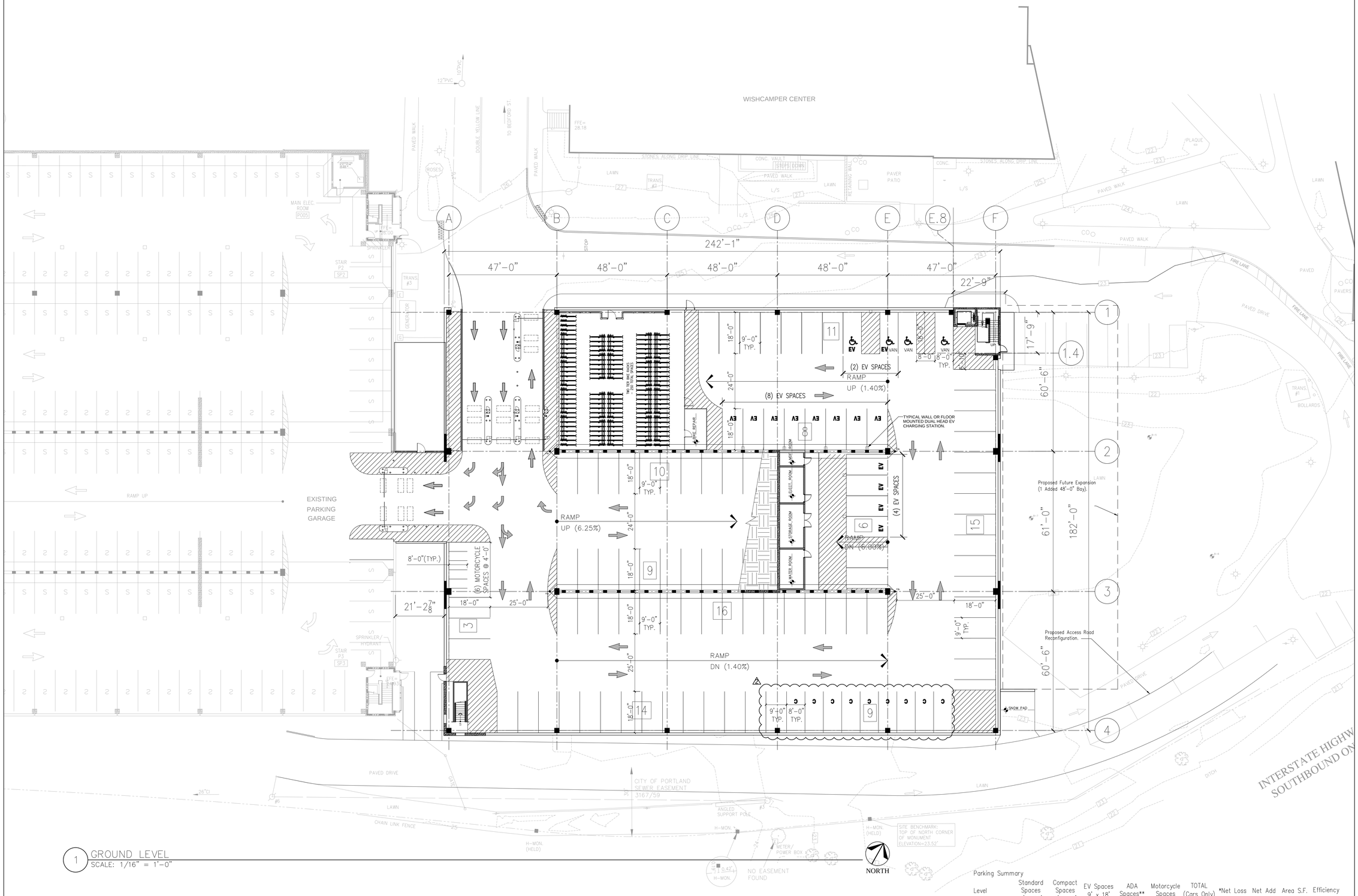
Date	Issued For:
08/09/21	Schematic Design

SCALE	**1" = 20'-0"**
DATE ISSUED	**08/31/2021**
PROJECT NO	**20-20145.00-1**
DRAWN BY	**C.M.**
CHECKED BY	**B.F.**

SHEET TITLE:

SITE PLAN

A-100



1 GROUND LEVEL
SCALE: 1/16" = 1'-0"

Parking Summary

Level	Standard Spaces 9' x 18'	Compact Spaces 8' x 18'	EV Spaces 9' x 18'	ADA Spaces**	Motorcycle Spaces	TOTAL (Cars Only)	*Net Loss	Net Add	Area S.F.	Efficiency
Ground Level (Grade)	76	9	12	4	6	101	−207	−106	45,960	455.0
First Level	96	25	16	3	0	140	0	140	45,090	322.1
Second Level	96	25	16	3	0	140	0	140	45,090	322.1
Third Level (Roof)	83	25	14	1	0	123	0	123	35,710	290.3
Total	351	84	58	11	6	504	−207	297	171,850	341

*Includes loss of stalls in the adjacent parking garage and off-site parking
** ADA Parking Stalls = 2% of 512 Total Spaces = 10.24 = 11

UNIVERSITY OF SOUTHERN MAINE
25 Bedford Street, Portland, ME 04104
207.712.5183 | USM.MAINE.EDU

PROJECT TEAM:

CLIENT
UNIVERSITY OF SOUTHERN MAINE

PRIME CONSULTANT & STRUCTURAL ENGINEER
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18 Tremont Street #300
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ARCHITECT
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PORTLAND, ME 04102

LANDSCAPE ARCHITECT
MICHAEL BOUCHER LANDSCAPE ARCHITECTURE
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FREEPORT, ME 04032

MEP/FP ENGINEER
ALLIED ENGINEERING
160 VERANDA STREET
PORTLAND, ME 04103

GEOTECHNICAL ENGINEER
S.W. COLE
286 PORTLAND ROAD
GREY, ME 04039

TRAFFIC ENGINEER
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COST ESTIMATOR
PREFERRED CONSTRUCTION MGMT
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PORTLAND, ME 04103

SEAL / SIGNATURE

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PROJECT:

USM - Structured Parking Garage

Address

50 Bedford Street,
Portland ME 04104

REVISIONS:

No.	Date	Description
1	9/1/21	Response to City Comments
2	10/25/21	Plng Brd W.S. #2 Updates

SUBMISSIONS:

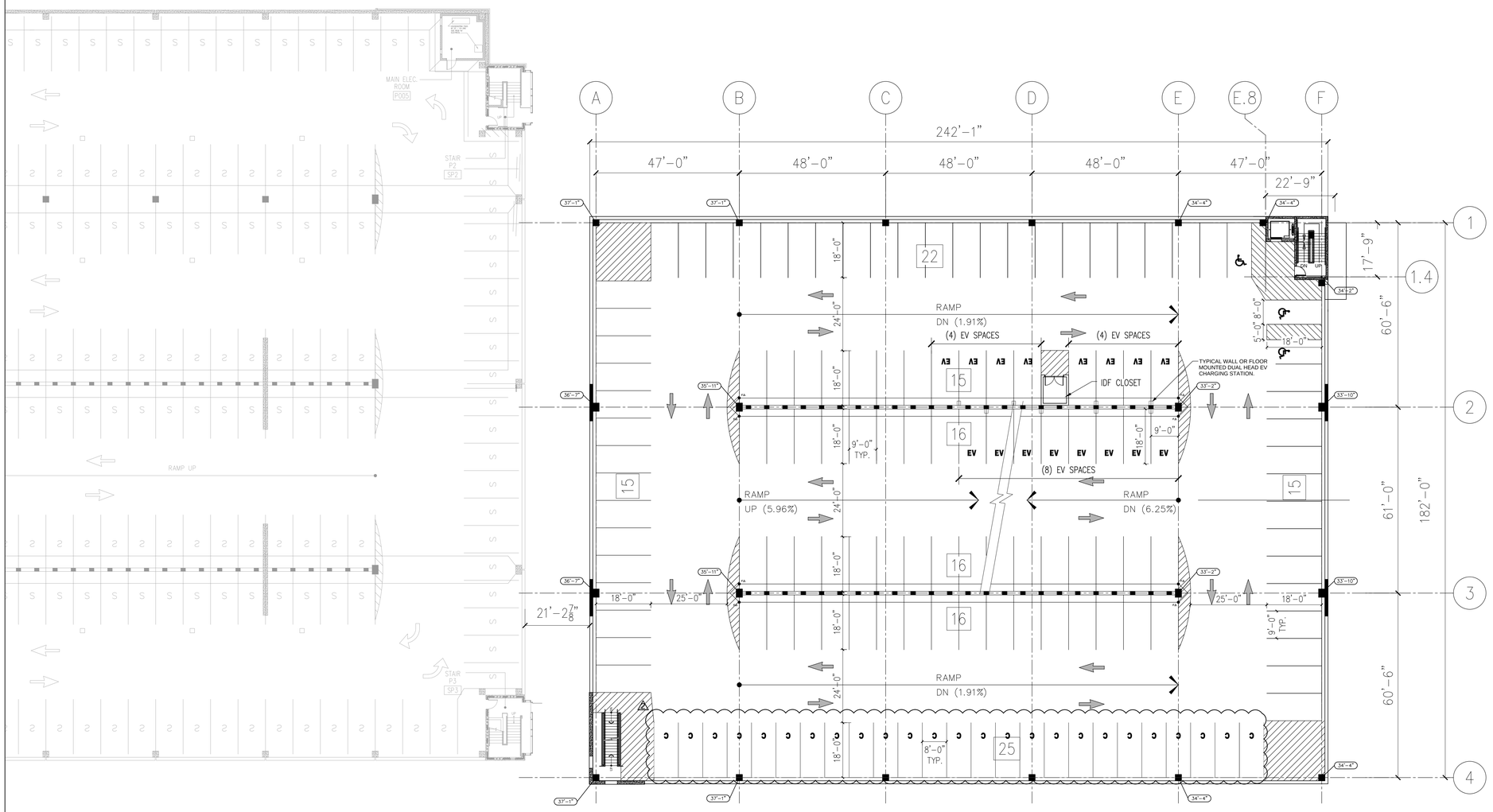
Date	Issued For:
08/09/21	Schematic Design

SCALE	**1/16" = 1'-0"**
DATE ISSUED	**08/31/2021**
PROJECT NO	**20-20145.00-1**
DRAWN BY	**C.M.**
CHECKED BY	**B.F.**

SHEET TITLE:

GROUND LEVEL STRIPING PLAN

A-101



1 FIRST LEVEL
SCALE: 1/16" = 1'-0"

NORTH

UNIVERSITY OF SOUTHERN MAINE

25 Bedford Street, Portland, ME 04104
207.712.5183 | USM.MAINE.EDU

PROJECT TEAM:

CLIENT
UNIVERSITY OF SOUTHERN MAINE

PRIME CONSULTANT
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DESMAN Design Management
18 Tremont Street #300
Boston, MA 02108

ARCHITECT
WINTON SCOTT ARCHITECTS
5 MILK STREET
PORTLAND, ME 04101

CIVIL ENGINEER
WOODARD & CURRAN
41 HUTCHINS DRIVE
PORTLAND, ME 04102

LANDSCAPE ARCHITECT
MICHAEL BOUCHER LANDSCAPE ARCHITECTURE
457 US ROUTE 1 SUITE 2
FREEPORT, ME 04032

MEP/FP ENGINEER
ALLIED ENGINEERING
160 VERANDA STREET
PORTLAND, ME 04103

GEOTECHNICAL ENGINEER
S.W. COLE
286 PORTLAND ROAD
GREY, ME 04039

TRAFFIC ENGINEER
VANASSE HANGEN BRUSTLIN INC
40 IDX DR 100 #200, SOUTH
BURLINGTON, VT 05403

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PREFERRED CONSTRUCTION MGMT
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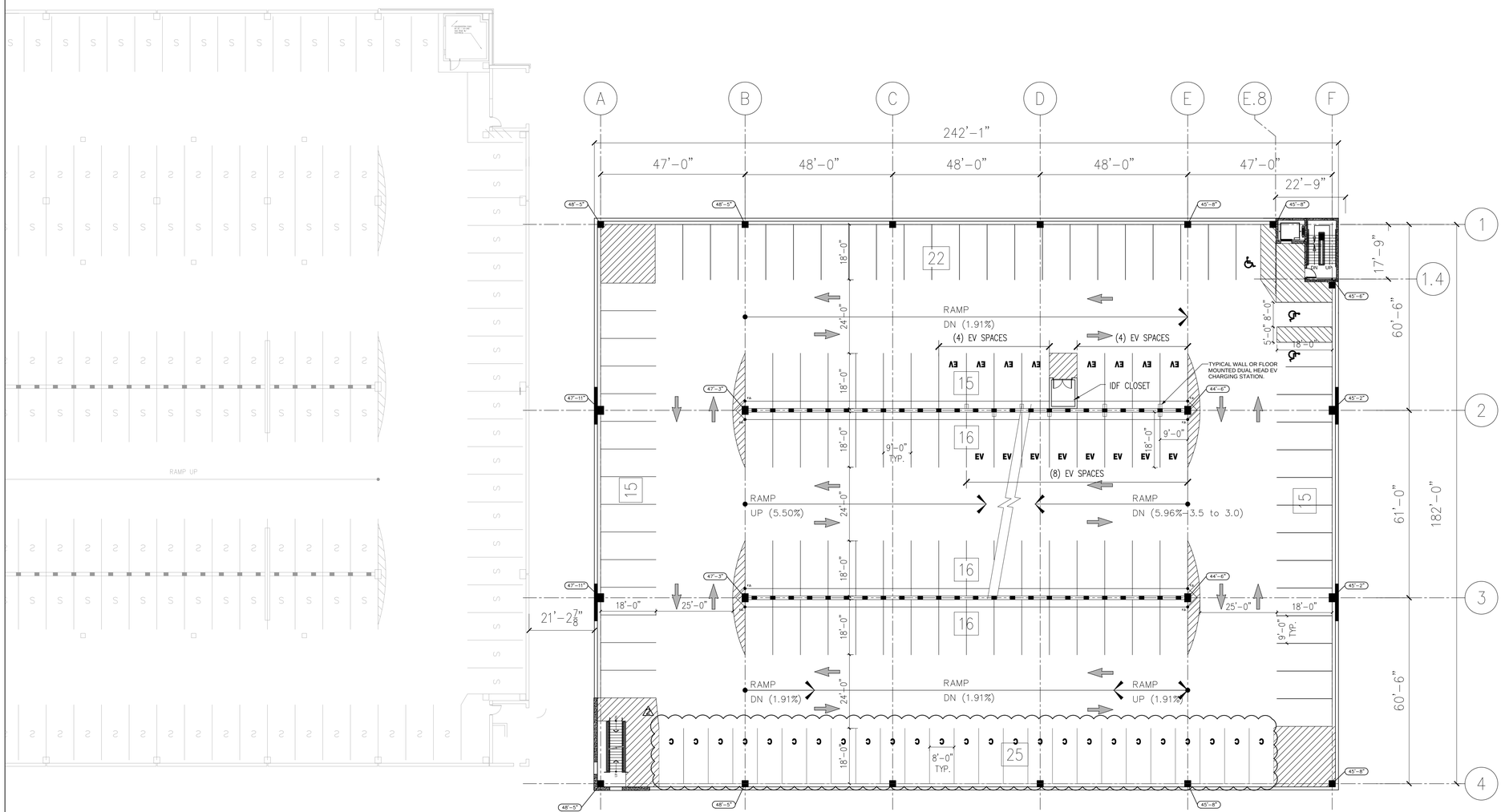
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DRAWN BY	**C.M.**
CHECKED BY	**B.F.**

SHEET TITLE:

FIRST LEVEL STRIPING PLAN

A-102



1 SECOND LEVEL
SCALE: 1/16" = 1'–0"

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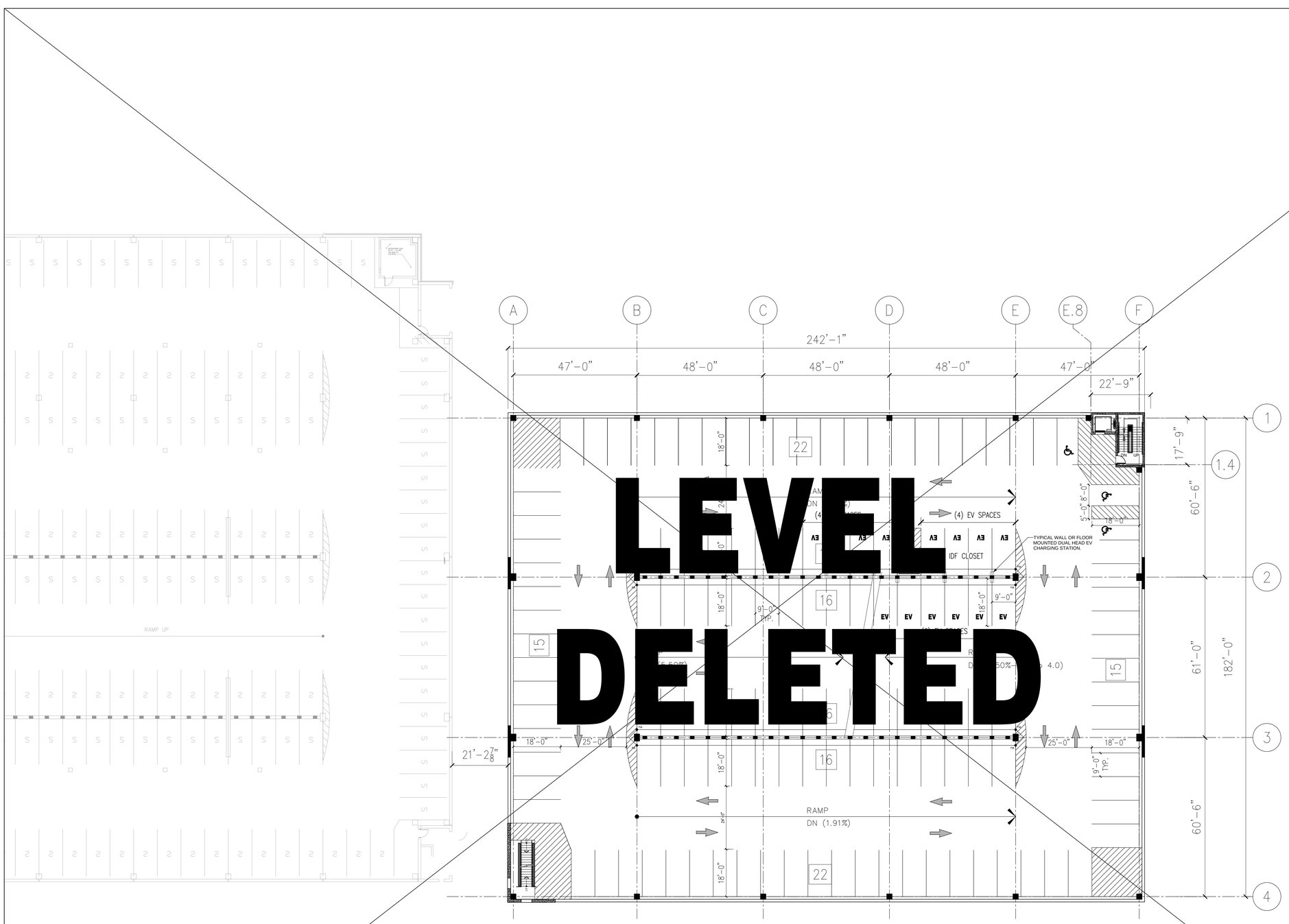
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CHECKED BY	**B.F.**

SHEET TITLE:

SECOND LEVEL STRIPING PLAN

A-103



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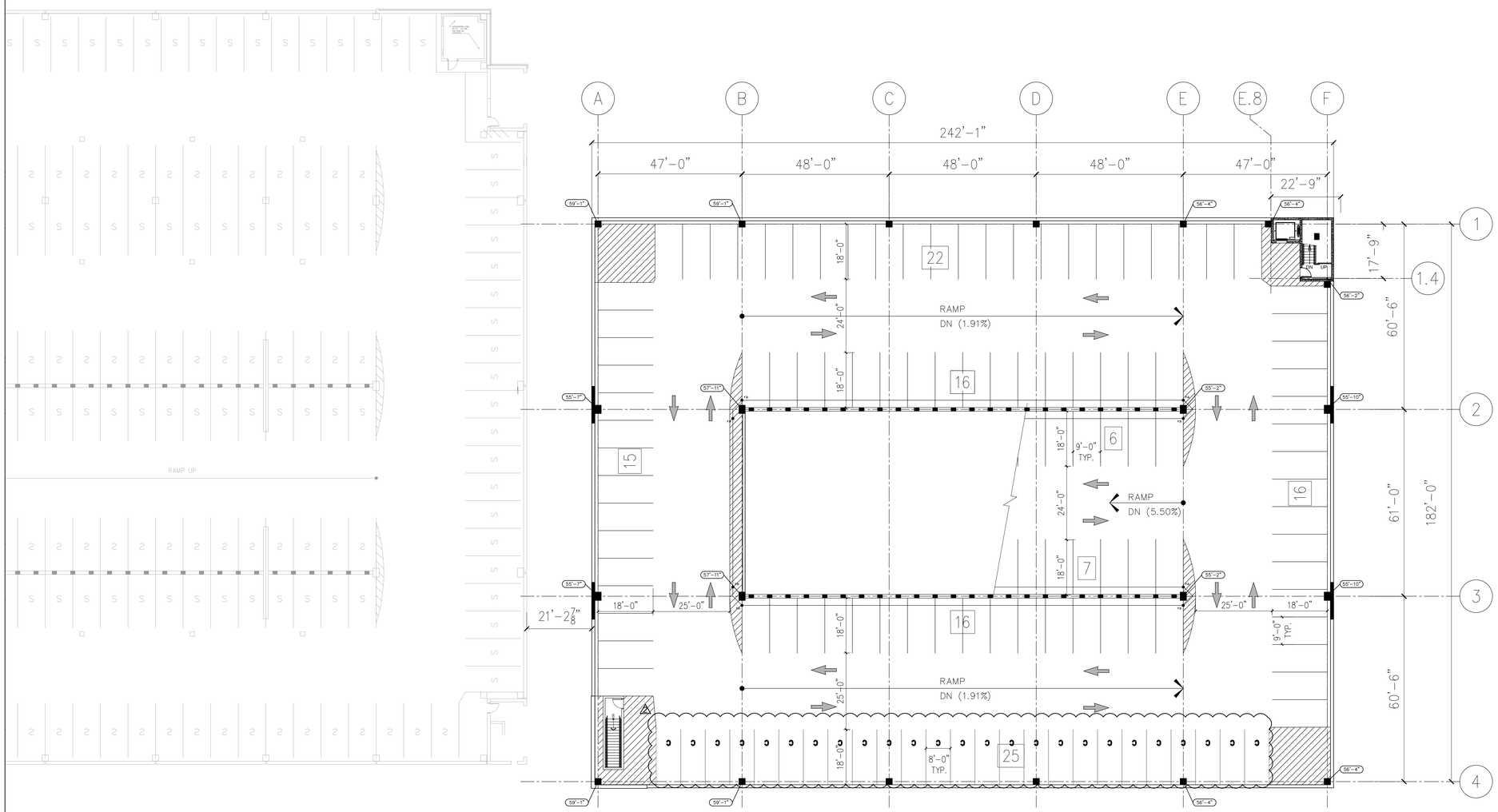
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PROJECT NO	**20-20145.00-1**
DRAWN BY	**C.M.**
CHECKED BY	**B.F.**

SHEET TITLE:

THIRD LEVEL STRIPING PLAN

A-104



1 ROOF LEVEL
SCALE: 1/16" = 1'-0"

NORTH

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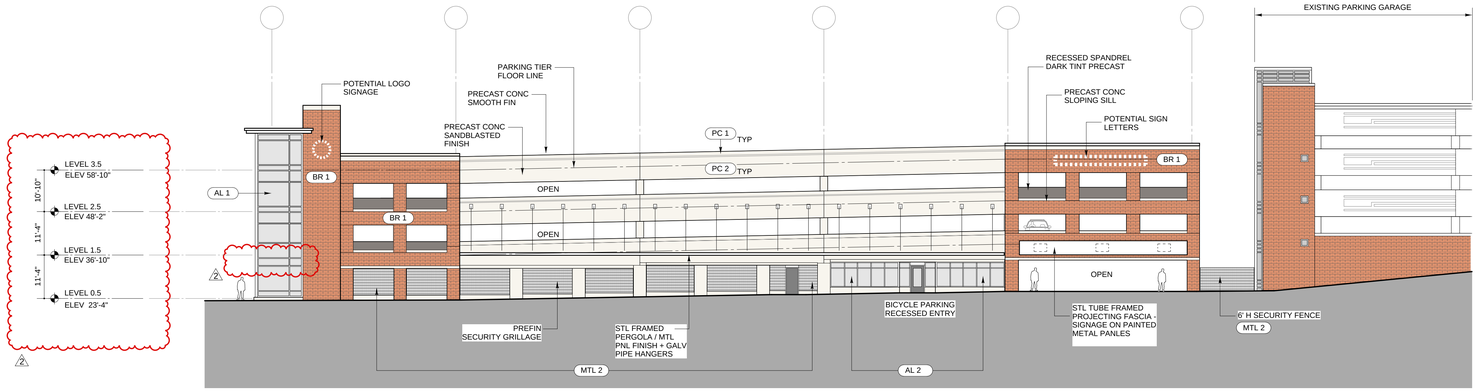
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DATE ISSUED	**08/31/2021**
PROJECT NO	**20-20145.00-1**
DRAWN BY	**C.M.**
CHECKED BY	**B.F.**

SHEET TITLE:

ROOF LEVEL STRIPING PLAN

A-105

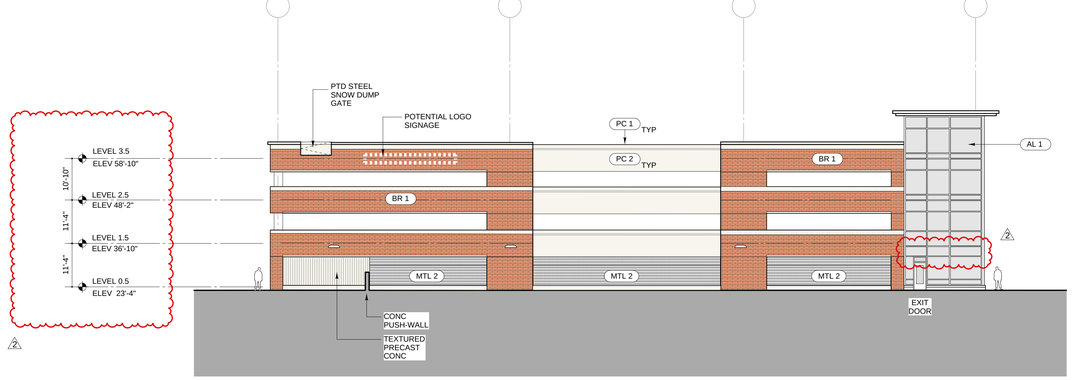


NORTH ELEVATION

1/16" = 1' - 0"

1 ADDED:
- SECURITY FENCE BETWEEN EXISTING AND NEW GARAGE
- RECESSED ENTRY TO BIKE STORAGE
- GLAZED ALUM STOREFRONT AT BIKE STORAGE
- PIERS TO SUBDIVIDE BAYS AT GROUND LEVEL
- STEEL PERGOLA IN LIEU OF FULL CANOPY
- EXTENDED GLASS AT EAST STAIR TO GRADE LEVEL
- ALUM SUNSCREEN FEATURE AT EAST STAIR

2 DELETED:
- ONE PARKING TIER
- ALUM SUNSCREEN FEATURE AT EAST STAIR



EAST ELEVATION

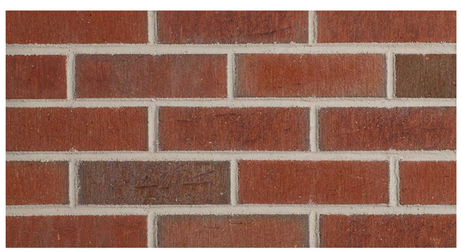
1/16" = 1' - 0"

1 • DELETED CANOPY
• ADDED ALUM SUNSHADE FEATURE

2 • DELETED ONE TIER AND ALUM SUNSHADE



SECURITY BAR GRATING - MTL 2



BRICK - BR 1
GLEN-GERY 387 RUSTIC RED

MATERIALS LEGEND

KEY	MATERIAL	NOTES
AL 1	ALUMINUM CURTAINWALL	CLEAR ANODIZED / UN-TINTED GLASS
BR 1	BRICK	THIN BRICK INTEGRAL TO PRECAST
MTL 1	SECURITY FENCING	BLACK VINYL-COATED CHAIN LINK
MTL 2	SECURITY BAR GRATING	2" x 5" OPENING / BLACK PREFINISH
MTL 3	PAINTED STEEL	FLUSH PANEL
PC 1	PRECAST CONCRETE	SMOOTH FINISH
PC 2	PRECAST CONCRETE	MEDIUM SANDBLASTED FINISH

2 REVISED MATERIAL

16 0 16 32

BAR SCALE

1" = 16'

CHECK GRAPHIC SCALE BEFORE USING

7/2/2021 3:16:33 PM

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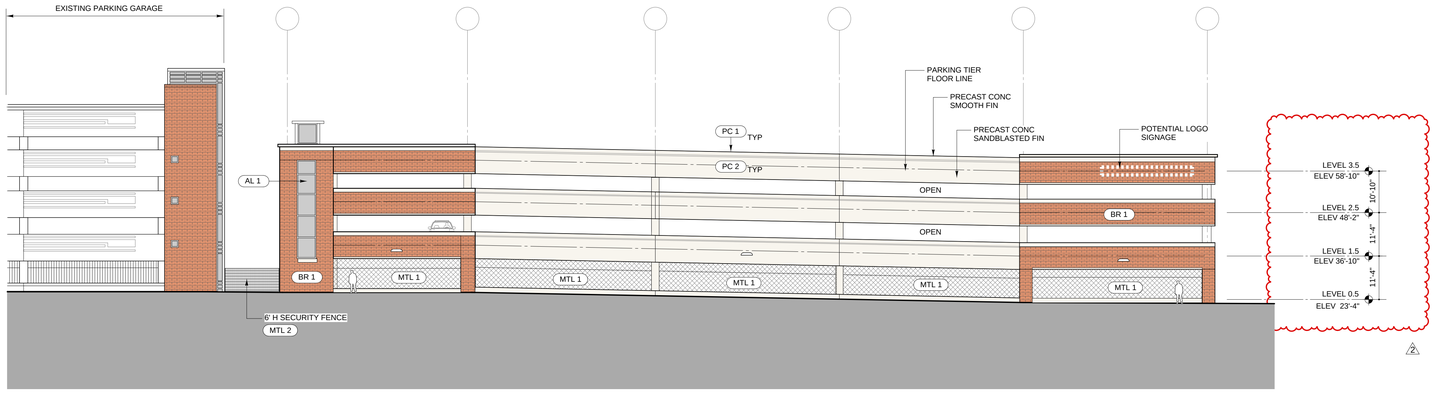
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CHECKED BY	

SHEET TITLE:

Building Elevations

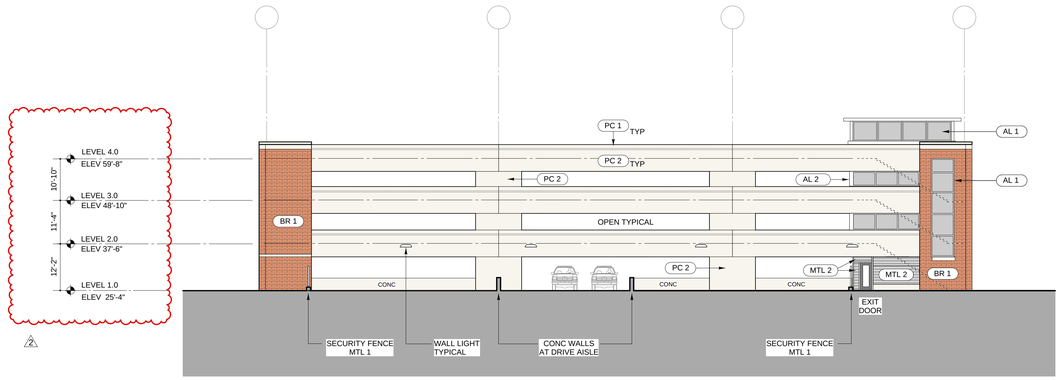
A - 200



SOUTH ELEVATION

1/16" = 1' - 0"

2 DELETED ONE PARKING TIER
VINYL COATED CHAIN LINK FOR OPENINGS INFILL



WEST ELEVATION

1/16" = 1' - 0"

1 • WALL LIGHTS CALLED OUT
• CONCRETE KNEEWALLS ADDED
• SOUTHWEST STAIR ENCLOSURE MODIFIED
• PIERS TO SUBDIVIDE BAYS AT GROUND LEVEL
• STEEL PERGOLA IN LIEU OF FULL CANOPY
• EXTENDED GLASS AT EAST STAIR TO GRADE LEVEL
• ALUM SUNSCREEN FEATURE AT EAST STAIR

2 DELETED ONE PARKING TIER

MATERIALS LEGEND

KEY	MATERIAL	NOTES
AL 1	ALUMINUM CURTAINWALL	CLEAR ANODIZED / UN-TINTED GLASS
BR 1	BRICK	THIN BRICK INTEGRAL TO PRECAST
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MTL 3	PAINTED STEEL	FLUSH PANEL
PC 1	PRECAST CONCRETE	SMOOTH FINISH
PC 2	PRECAST CONCRETE	MEDIUM SANDBLASTED FINISH

2 REVISED MATERIAL

16 0 16 32

BAR SCALE

1" = 16'

CHECK GRAPHIC SCALE BEFORE USING

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SHEET TITLE:

Building Elevations

A - 501



OVERVIEW

2 ONE TIER DELETED



BEDFORD STREET VIEW

2 ONE TIER DELETED



GARAGE ENTRANCE

1 DESIGN REVISIONS

2 ONE TIER DELETED

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SHEET TITLE:

Building Views

A - 202

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STAIRWAY ENTRANCE

1 DESIGN REVISIONS
2 ONE TIER DELETED



BICYCLE ROOM ENTRANCE

1 DESIGN REVISIONS
2 ONE TIER DELETED

7/2/2021 3:16:33 PM

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CHECKED BY	

SHEET TITLE:

Building Views

A - 203

From: Robert Bartels <rbartels@pwd.org> on behalf of AMaP MEANS <means@pwd.org>
Sent: Friday, October 8, 2021 1:57 PM
To: Darrin Stairs
Cc: Amy LeBel; Adam Sellick
Subject: RE: 509089-44 Bedford Street, PO

Hello Darrin,

Based on the information provided, the existing **6-inch domestic service** with **2-inch meter** should be able to handle the water demand at the site. As part of this approval, and in accordance with PWD's Cross Connection Control Program, an approved **Reduced Pressure Zone Assembly (RPZ) backflow prevention device** must be installed on the new domestic service branch to the proposed parking garage directly after the service entrance prior to service activation. Please refer to the PWD website for more information on cross-connection control policies.

PLEASE NOTE: The following conditions apply to your project:

- One (1) private fire hydrant may be installed on the fire service on this site. Please refer to the PWD website for more information regarding private hydrant inspection policies. A service application will be required to take a deposit for the inspection of the private hydrant. PWD is currently only processing service applications via email, and accepting completed applications with payment by the drop box at our main office or through the mail at PO Box 3553, Portland, ME 04104-3553. To begin the service application process, please contact the MEANS department at MEANS@pwd.org or by phone at (207)774-5961 Ext. 3199.

Please feel free to reach out if you have any questions.

Thanks,

From: Darrin Stairs <DStairs@woodardcurran.com>
Sent: Wednesday, October 06, 2021 9:27 AM
To: Robert Bartels <rbartels@pwd.org>
Cc: Amy LeBel <alebel@woodardcurran.com>
Subject: RE: 509089-44 Bedford Street, PO

ATTENTION: This email did NOT originate from Portland Water District. This email is from an external source outside of the District. Exercise EXTREME caution when opening external attachments or links from unknown senders.

Robert – Here is the corrected plan. Thank you for pointing that out.

Thank you,

Darrin
Darrin B. Stairs, PE
Project Manager
Woodard & Curran
Direct: 207.558.3662
Cell: 207.405.4805

From: Robert Bartels <rbartels@pwd.org>
Sent: Thursday, September 23, 2021 4:09 PM
To: Darrin Stairs <DStairs@woodardcurran.com>
Cc: Amy LeBel <alebel@woodardcurran.com>
Subject: RE: 509089-44 Bedford Street, PO
Darrin,
You are showing the domestic service coming off the fire line and not the domestic service line. I know this is a small error but it should be shown accurately. Please revise and resubmit.
Thanks,

From: Darrin Stairs <DStairs@woodardcurran.com>
Sent: Wednesday, September 22, 2021 3:31 PM
To: Robert Bartels <rbartels@pwd.org>
Cc: Amy LeBel <alebel@woodardcurran.com>
Subject: RE: 509089-44 Bedford Street, PO
ATTENTION: This email did NOT originate from Portland Water District. This email is from an external source outside of the District. Exercise EXTREME caution when opening external attachments or links from unknown senders.
Robert – we have revised the plan to include the notes below. Please see attached.
Thank you and please let me know if you need anything futher.
--Darrin
Darrin B. Stairs, PE
Project Manager
Woodard & Curran
Direct: 207.558.3662
Cell: 207.405.4805

From: Robert Bartels <rbartels@pwd.org>
Sent: Thursday, September 9, 2021 2:08 PM
To: Darrin Stairs <DStairs@woodardcurran.com>
Subject: 509089-44 Bedford Street, PO [Filed 13 Sep 2021 12:39]
Darrin,
A couple things for you. There is a meter pit on the domestic service line. It is located about 6' from the street line gate valve (between the arrows and the gas line on your plan). You can see the meter pit in Google street view.
The hydrant will be private. Please indicate the hydrant is a private hydrant on the plans.
The garage service will require an RPZ backflow preventer at the service entrance (no meter is required on this service). Please add a callout on the plans for an RPZ backflow preventer.
Thanks,
Robert Bartels, PE

Robert Bartels

Senior Project Engineer

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

Att. T

Via Electronic Mail

November 9, 2021

Jimmy Dealaman, Planner
Planning & Urban Development Department
City of Portland
389 Congress Street, 4th Floor
Portland, ME 04101

Re: USM Parking Garage – 50 Bedford Street
Major Site Plan Review (PL-001729-2021) – Supplemental Materials

Jimmy:

On behalf of the applicant, we are providing the following supplemental materials in support of this application:

- Proposed Addendum to the Transportation Demand Management (TDM) plan
- Updated USM Section 7 document
- Updated Section 7 Appendices

We look forward to moving forward on this matter, and trust that City Staff has the additional information to move forward with a second Planning Board workshop on November 23rd.

If you have any questions or require additional information, please do not hesitate to contact me at 207-558-3662 or email me at dstairs@woodardcurran.com.

Sincerely,

WOODARD & CURRAN, INC.

Darrin Stairs, PE
Project Manager

cc: Ann Witham, USM
Wes Wilson, Desman Design Group

Attachments:
- Proposed Addendum to the Transportation Demand Management (TDM) plan
- Updated USM Section 7 document
- Updated Section 7 Appendices

PN: 233035.00

Addendum to University of Southern Maine Portland Campus Transportation Demand Management (TDM) Plan

11-9-2021

The changes below represent modifications to the plan due to changes in the University's structured garage proposal and other dynamic changes (internal & external to USM) that have occurred over the last 12 months. These include:

- The University siting the proposed structured parking on the Wishcamper lot
- Maine Law School moving off campus
- The University downsizing the proposed size of the structured parking, as a result of the Maine Law School move and feedback received from the Planning Board
- The City of Portland adding a requirement for electric vehicle charging stations to its Technical Manual

Mobility Context, Section 2-

The following updates are made to the parking lots represented in Figure 7 on page 16. The figure represented the lots on November 11th, 2021. These updated figures are current as of November 9th, 2021:

- The Woodbury lot - 130 spaces were displaced due to construction of the residence hall and Career & Student Success Center ("CSSC")
- The Facilities lot - 41 spaces were displaced due to construction of the residence hall and CSSC
- The Heat Plant lot - 21 spaces will be reduced to 15 spaces due to construction of the residence hall and CSSC
- The Brighton Ave lot- 26 spaces were displaced from the City roundabout project
- The Wishcamper lot -91 spaces are proposed to be displaced from the new parking garage at this location

TDM Coordinator, Section 4-

The roles of the two point people from the University have been changed, in part to help support the TDM effort:

- The University's TDM Coordinator will still be Aaron Witham, whose new title is Director of Sustainability. The inclusion of TDM duties into his new job description demonstrate the University's commitment to TDM success.
- The supporting role will now be an Associate Vice President of Administration position, rather than Director of Auxiliary Services. This change also represents an increase in focus and attention to transportation matters.

Transportation Demand Reduction Goals, Section 5-

Trip Reduction Goal- This goal stays the same because even though the structured parking will be located in a different area, the trips are not created by the garage, and thus don't change

as a result of location. Even though trips from the Law School won't happen anymore, VHB thought it would be best to be conservative and not deduct those trips from our analysis, so that we can ensure that the traffic mitigation measures proposed are overly sufficient.

Parking Demand Reduction Goal-
The goal remains a 10-14% reduction at the hour of peak demand. The gross number translation, however, changes from the published 159-222 vehicles to 144-201, to reflect a loss of Maine Law School demand in the campus-wide base demand number.

GHG Reduction Goal-

The goal of 20% reduction in GHG emissions from transportation remains the same, as it is a per capita goal, not impacted by the size of the population. How the University plans to achieve this goal is constantly evolving based on the proportion of electric vehicle commuters and based on fuel economy standards, both of which are impacted as much or more by evolving national forces, as they are by University policies.

Summary of Targets-

TDM Plan: Baseline Data, Targets & Monitoring/Reporting

Date of TDM Plan: 11-3-2020				11-4-2021 Addendum
Provide Data in Percentages and Absolute Numbers, where applicable		*Baseline Data (at time of TDM plan adoption*	*TDM Plan Reduction Target (if applicable)*	*Current Reporting Period Data*
Vehicular Trips	*Off-Peak*	N/A	N/A	Report forthcoming in 2024
	AM Peak Hr	581	3-6% (17-35 trips)	Report forthcoming in 2024
	PM Peak Hr	381	3-6% (12-23 trips)	Report forthcoming in 2024
Mode Split (future data may be reported as	*Single-Occupancy Vehicle*	75%	70%	Report forthcoming in 2024

SOV & Non-SOV)	*Non-SOV*	25%	30%	Report forthcoming in 2024
	Carpool	8%	Not specific	Report forthcoming in 2024
	Bicycle	*11% (shared with walk)	Not specific	Report forthcoming in 2024
	Walk	*11% (shared with bike)	Not specific	Report forthcoming in 2024
	Transit	6%	Not specific	Report forthcoming in 2024
On-site Parking (Peak)		Was 1,587 (adjusted to 1,435)	10-14% (144-201)	Report forthcoming in 2024
GHG Emissions Targets		2 MT of CO2e per capita	20% (or .4 MT of CO2e per capita)	Report forthcoming in 2024
Other:_____				

*Adjusted On-site parking number is due to deducting Maine Law School from total demand in the baseline, so that the TDM reduction target accounts for the change in actual conditions on the ground

Trip, Parking, Mode Split & GHG Reduction Strategies, Section 6-

The existing strategy, "Build Additional EV Charging Stations" is clarified to mean the University will endeavor to match demonstrated demand with supply of electric vehicle charging stations, so that demand would not exceed supply.

A year into strategizing implementation of our TDM plan, we have adjusted some launch dates. Some have adjusted to earlier and some later. Please see new launch dates written in red in the table below.

Table 3: Overview of TDM Initiatives for USM

STRATEGY	LAUNCH DATE	INFRASTRUCTURE	INCENTIVES	EDUCATION
Walking				
Create Walk Spot Maps	Fall 2023			X
Publicize the "Complete City Project"	Spring 2022			X
Hold Fitness Challenges	Spring 2022		X	
Biking				
*Co-launch City Bikeshare	Spring 2023	X		
Build Bicycle Repair Station	Spring 2023	X		X
Promote Local Bike Activities	Spring 2022		X	X
Offer Discounted Bike Supplies	Fall 2022		X	
*Improve Bike Infrastructure	Spring 2023	X		
Apply for Bike Friendly University Certification	Fall 2022	X	X	X
Transit				
*Continue METRO Pass Program	Ongoing	X	X	
Propose Husky Line Improvements	Fall 2023	X		
Propose Transit Service Expansion Beyond Husky Line	Spring 2022	X		
Install Transit Screen	Spring 2023	X		
****Carpooling, Telecommuting & Time-of-Day***				
Establish Vanpool Vehicles	Fall 2022	X	X	
Designate Carpool/Vanpool Spaces	Fall 2022	X	X	

Develop Rideshare Matching Platform	Fall 2022	X		
Promote Telework & Flexwork	Ongoing		X	X
Restructure Course Schedule	Ongoing	X		
Parking Pricing				
Establish Commuter Parking Buyout Program	Fall 2022		X	
*Establish Residential Parking Buyout Program	Fall 2023		X	
Host Carshare Program to Support Buyouts	Spring 2023	X	X	
*Unbundle Student Parking Fees	Fall 2022		X	X
Build Additional EV Charging Stations	Spring 2023	X		
Review Parking Price Levels	Fall 2022		X	
Communications & Marketing				
*Hold New Student & Employee Orientations for Transportation	Spring 2022		X	X
*Revise Transportation Website	Fall 2021			X
*Publish Access Guide	Fall 2021			X
Offer Guaranteed Ride Home Service	Spring 2023		X	

*Core strategies that the University is committing to are indicated by *. In the case of the Carpooling, Telecommuting & Time-of-Day category, the category itself is considered core, but the University will maintain flexibility in which of these strategies it implements, depending on future conditions

Monitoring and Reporting Plan, Section 7-

Inclusion of EV ownership would stay in the annual transportation survey, as outlined on page 43. This is important for GHG calculations.

In addition to the survey data, the University will provide an EV Use and Forecast Report to the City on or before June 1st of each year beginning in calendar year 2024, summarizing EV ownership and EV charging station use statistics. The Report will also include a proposal regarding the number of EV charging stations for the coming school year, based upon the supply and demand statistics from the previous year. In alignment with the other reporting activities outlined in the TDM plan, the University commits to annual reporting through 2030, the horizon of the Facilities Master Plan, after which a new TDM plan may be proposed.

University of Southern Maine

Traffic Movement Permit

Revised Section 7

Proposed Residence Hall, Student Center, and Parking Garage

November 2021

Introduction

VHB has conducted a technical analysis in support of a Traffic Movement Permit (TMP) modification for development of a new residence hall and Student Center on the University of Southern Maine (USM) campus. Although in the approved TMP for Project ID PL-001040-2020, a parking garage was not the primary subject of the permit application, for the purposes of the traffic analysis, the proposed parking garage location was situated off of Falmouth Street. Anticipated new trips to and from the campus were assumed to utilize the new parking garage structure.

The proposed location of the parking garage has since been relocated as a response to neighborhood feedback and a site evaluation process. The locations of the 580-bed residence hall and Student Center that were previously permitted have not changed. The new parking garage will now be located adjacent to the existing parking structure on campus with joint access to and from Bedford Street. As a result, the traffic that had previously been assigned to the garage on Falmouth Street will instead access the proposed parking structure location on Bedford Street. This traffic was redistributed across the adjacent street network and reevaluated to assess the resulting traffic impacts.

Future Conditions

The future traffic conditions in the study area were analyzed with the proposed project in place and compared to the conditions outlined in the TMP traffic analysis. The TMP future traffic volumes and intersection operations for the future horizon year of 2028 were analyzed for the Build condition, with the parking garage located off of Bedford Street. The results for the Base condition, with the parking garage located off of Falmouth Street, were included as previous permitted.

Infrastructure Improvements

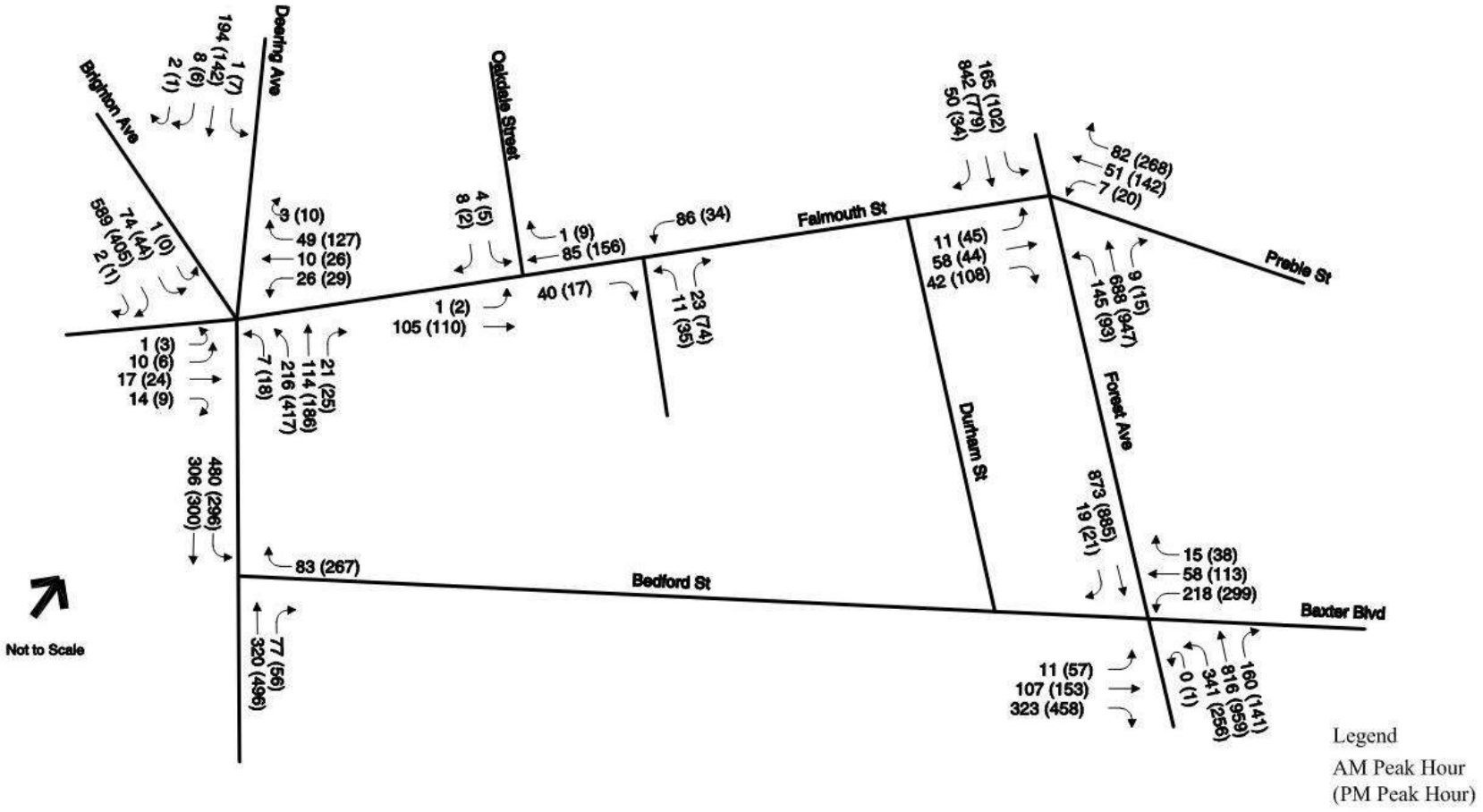
Construction of a roundabout at the intersection of Falmouth Street, Brighton Avenue and Deering Avenue is currently being completed. As such, the TMP permit traffic analysis as well as the traffic analysis for the current garage location on Bedford Street both include a completed roundabout at this location.

The traffic volume data collected at the intersection of Falmouth Street, Brighton Avenue and Deering Avenue was redistributed to represent the volumes that will exist at the five-leg roundabout in the future, rather than the current six-leg condition.

Baseline Traffic Conditions

The TMP traffic analysis included a one percent per year background traffic growth rate, the traffic associated with identified projects in the area, and the trip generation associated with the growth anticipated on campus assigned to a parking garage on Falmouth Street. The resulting traffic networks from the 2028 TMP Build conditions serve as the baseline condition for this analysis, as illustrated in Figure 1.

Figure 1. 2028 Base Network (TMP Condition with garage on Falmouth Street)



In anticipation of the proposed garage location on Bedford Street with access to and from the parking garage via Surrenden Street and Winslow Street, baseline data for the intersections would be necessary. The existing parking garage is the primary purpose for trips into or out of either Surrenden Street or Winslow Street. Therefore, data from the existing garage was representative of the entering and exiting movements at these two intersections with Bedford Street. As such, the peak AM and peak PM enters and exits to the existing garage were used as the basis for the baseline turning movements at the intersections.

The peak periods of the adjacent roadway network were reviewed for a three-day garage activity report counted from October 21, 2019 through October 23, 2019 to identify the peak AM and peak PM garage enters and exits. The time period was consistent with the campus-wide parking study which noted 90% occupancy of the parking garage. The AM peak hour had 474 enters and 9 exits and the PM peak hour had 70 enters and 309 exits. These data were distributed on to the network on Bedford Street based on the distributions for the study and adjusted to reflect the directional distribution noted in Bedford Street counts. Additional volumes were added at the intersection of Bedford Street and Winslow Street to address imbalances in the network and the drop off and pick up trips associated with the Wishcamper Center and Glickman Library. The figure outlining the raw garage count data and the adjustments the data for the intersections of Bedford Street with Surrenden Street and Winslow Street is included in the appendix.

Trip Generation Reassignment

To determine the impact of the proposed garage location, VHB reassigned the trips destined for the proposed parking garage from the location on Falmouth Street to the location on Bedford Street. As a reminder, based on industry standards and MaineDOT guidance, the number of new peak hour trips anticipated with the growth in enrollment is 160 trips (125 in and 35 out) in the highest AM peak hour and 160 trips (51 and 109 out) in the highest PM peak hour with no adjustments for the high portion of transit trips to and from the campus. It is important to note that existing campus mode shares are already high and with additional Transportation Demand Management initiatives, the number of students and employees walking, biking, riding transit, or carpooling is expected to rise. To remain conservative, the trip generation for this analysis was not reduced to reflect the existing or anticipated mode split based on TDM measures.

In order to confirm that the trips estimated based on the anticipated growth in enrollment represents the anticipated trips at a garage on this campus, an addition analysis was conducted. At the completion of this Section 7, the proposed garage was anticipated to accommodate approximately 631 parking spaces which would have consisted of 396 parking spaces associated with the residence hall and an additional 325 spaces that will accommodate parking spaces relocated from elsewhere on campus (ie. lots closed for development of campus center and residence hall as well as parking at Wishcamper center). Although it is likely that many of the trips relocating from Wishcamper parking are accounted for in the 2019 adjusted volumes, in the event that these are new commuter trips, the anticipated impact was calculated.

The 2019 trip rate at the existing garage was 0.42 trips per parking space during the AM peak hour and 0.33 trips per parking space during the PM peak hour. As the proposed non-residential spaces will likely follow the commuter student pattern of the existing garage, these rates were applied to the 236 non-residential spaces in the proposed garage resulting in 99 AM peak hour trips and 78 PM peak hour trips. Subtracting these commuter trips from the proposed total proposed garage trip generation of 160 trips during each the AM and PM peak hour results in the residential portion of the garage generating 61 AM peak hour trips and 79 PM peak hour trips. The trip rate associated with these residential spaces is 0.15 trips per parking space during the AM peak hour and 0.20 trips per parking space during the PM peak hour. It is reasonable that the residential spaces would result in only 35% of the

trips a commuter space would generate during the AM peak hour. The PM peak hour rate for the residential spaces would calculate to 60% of the trips associated with a commuter space. These ratios reflect what is likely an overestimate of the trips that will be generated by a residential student. Therefore the trip generation calculated by ITE appears to be conservative when compared to the trip patterns of the existing garage. With the reduction in parking spaces associated with the removal of a garage level, the ITE trip generation based on enrollment is a highly conservative estimate of the likely trips to the proposed garage.

The proposed trips to and from the existing Bedford Street garage were added to the 2028 baseline networks to determine the 2028 Build networks. The trip reassignment based on the new proposed garage location is shown in Figure 2. The resulting 2028 Build networks for the TMP Modification are shown in Figure 3.

Figure 2. Redistribution of Trip Generation based on Proposed Parking Relocation

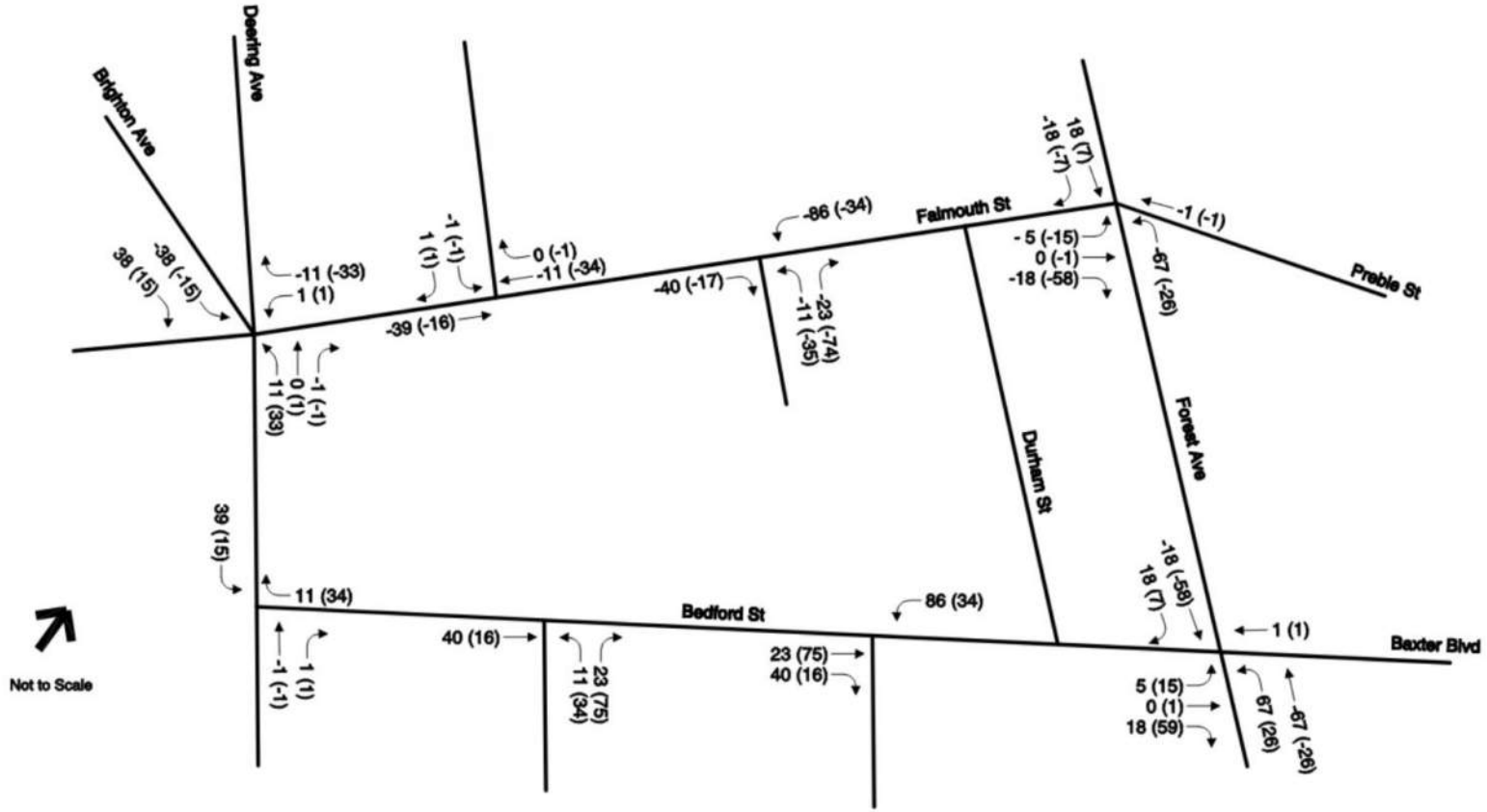
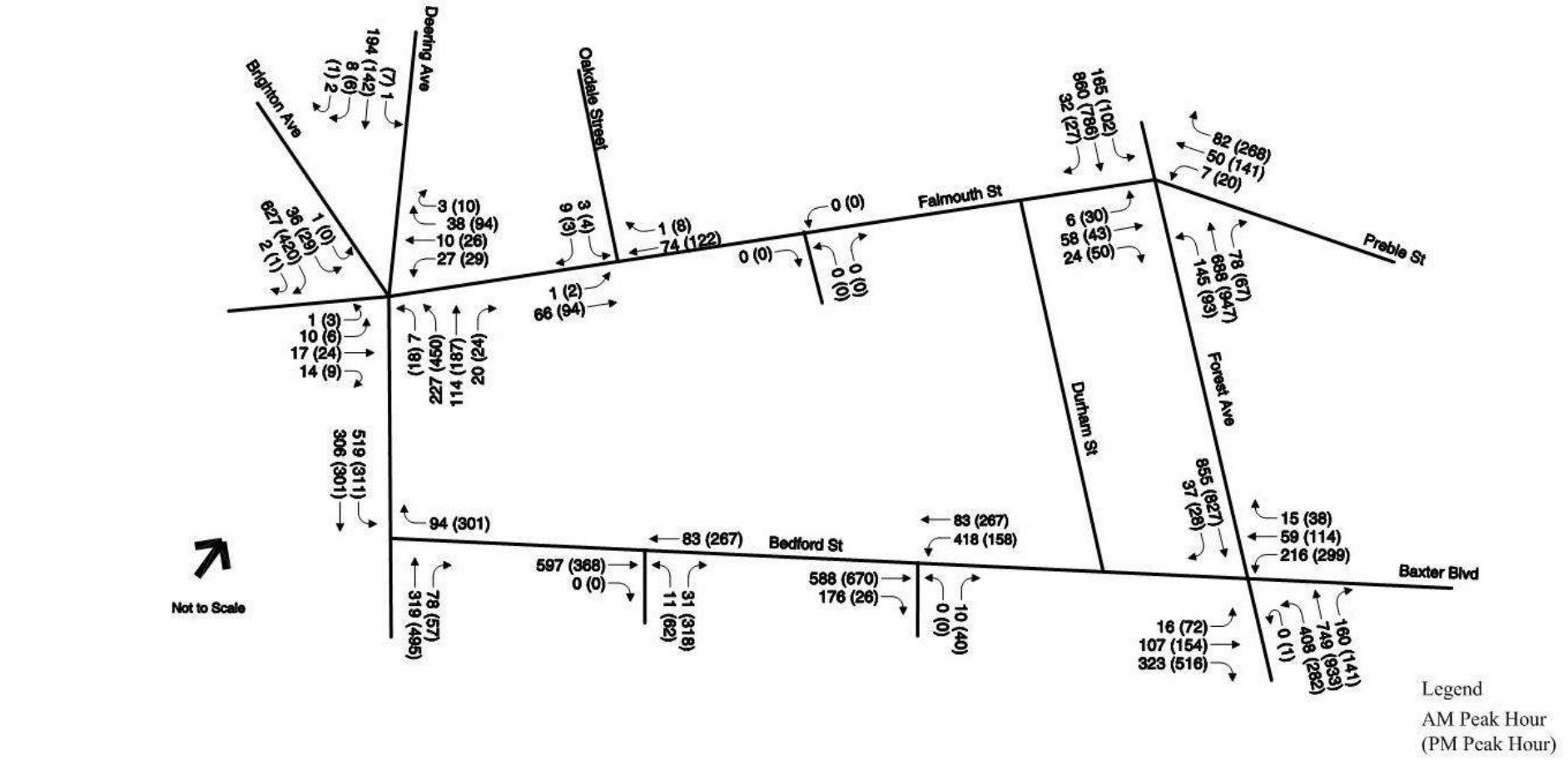


Figure 3. 2028 TMP Modification Build Condition Traffic Volumes



TRAFFIC ANALYSES

Intersection Capacity Analyses

Intersection capacity analyses were performed for the study area intersections consistent with the traffic analysis provided in the TMP traffic analysis. Levels of service (LOS) were calculated based on the criteria published in the *2000 Highway Capacity Manual*.[1] Level of service is the term that defines the conditions that may occur on a given roadway or at an intersection when accommodating various traffic volume loads. Levels of service range from A to F with LOS A representing generally free flowing operating conditions and LOS F representing generally congested conditions. Synchro 10 was used to determine the LOS at signalized intersections and Sidra Intersection 8 was used to determine the LOS at the proposed roundabout. Copies of the LOS calculations are provided in the Appendix.

Synchro Analysis

Table 1 summarizes the operational analysis at the signalized study area intersections during the 2028 weekday AM and PM peak hours under Base (Falmouth Street garage) and Build (Bedford Street garage) conditions. As shown, the intersection of Forest Avenue at Falmouth Street is expected to operate at LOS B/C in 2028. The redistribution of some trips away from this intersection was anticipated to reduce the overall delay at the intersection by just over two seconds in the AM peak hour and by less than a second in the PM peak hour compared to the already permitted Base condition. It is noted that based on each movement at the intersection, there are three movements that consistently operate at LOS E regardless of the garage site. This includes the southbound left movement in the AM and PM peak hour, which consistently experiences delay at LOS E including in the existing condition. In the PM peak hour, the eastbound and westbound left movements additionally operate consistently at a LOS E including in the existing condition. Ensuring that the adaptive signal control at this intersection is operating properly will help to optimize the conditions throughout the day and likely result in improved service and reduced delay for the legs of the intersection experiencing delays at LOS E.

The signalized intersection of Forest Avenue at Bedford Street is expected to operate at LOS D in 2028 both in the Base condition and the Build condition. With the relocation of the parking garage to the Bedford Street site, it is anticipated that the overall delay at the intersection will increase by approximately seven seconds in the AM peak hour and only about 2 seconds in the PM peak hour. Even in the No Build condition, without project traffic, two of the left turning movements at this intersection are currently operating at LOS E/F. A closer look at the movements at the intersection reveal that the westbound left and northbound left will continue to operate at LOS E/F in the 2028 Build condition regardless of the garage site, with the exception of the AM peak hour condition where the northbound left and southbound through will tip just past the threshold delays to LOS F and LOS E, respectively. The optimization possible through the adaptive signal control system in place at the intersection will help to ensure that these movements, serving two of the three heaviest volume movements at the intersection, are served optimally throughout the day.

Based on the impact associated with the new garage location trips at the intersection of Forest Avenue at Bedford Street and Baxter Boulevard, potential improvements were investigated. Pedestrian accommodations are being improved at this location by USM as a part of the permit condition for the residence hall and student center. However, vehicular delays will also be impacted. As such, it will be imperative that the adaptive signal control system is

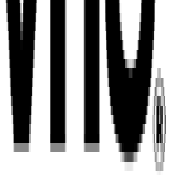
[1] Highway Capacity Manual, Federal Highway Administration, Transportation Research Board, 2000.

operating optimally. Adjustments to the detection and parameters of the system as these changes are adopted will ensure that the adaptive signal system is capturing all of the information it needs to optimize service to each movement at the intersection.

Table 1. Signalized Intersection Operation Summary

Intersection		2028 Base (Falmouth Site)				2028 Build (Bedford Site)			
Peak Hour	**SL^**	**v/c+**	**Delay***	**LOS****	**Queue**	**v/c+**	**Delay***	**LOS****	**Queue**
Forest Avenue at Falmouth Street/Preble Street									
AM Peak Hour									
Falmouth Avenue, EBLT	210	0.40	52.0	D	87	0.38	51.4	D	82
Falmouth Avenue, EBR	150	0.18	1.2	A	0	0.10	0.6	A	0
Preble Street, WBLT	630	0.29	48.9	D	79	0.3	49.3	D	78
Preble Street, WBR	630	0.17	4.8	A	28	0.17	4.9	A	28
Forest Avenue, NBL	200	0.57	39.8	D	190	0.37	36.1	D	114
Forest Avenue, NBT/TR	700	0.36	8.0	A	292	0.36	7.5	A	141
Forest Avenue, SBL	150	0.69	58.9	E	193	0.69	58.9	E	193
Forest Avenue, SBT/TR	250	0.51	15.5	B	347	0.47	12.8	B	306
Overall		**0.69**	**19.7**	**B**		**0.69**	**17.6**	**B**	
PM Peak Hour									
Falmouth Avenue, EBLT	210	0.74	73.4	E	119	0.74	73.0	E	119
Falmouth Avenue, EBR	150	0.36	9.0	A	31	0.36	9.0	A	31
Preble Street, WBLT	630	0.66	56.6	E	187	0.66	56.6	E	186
Preble Street, WBR	630	0.59	28.8	C	186	0.59	28.8	C	186
Forest Avenue, NBL	200	0.31	25.3	C	m87	0.25	25.6	C	m62
Forest Avenue, NBT/TR	700	0.47	4.5	A	41	0.47	4.7	A	49
Forest Avenue, SBL	150	0.54	74.7	E	m119	0.54	74.7	E	m119
Forest Avenue, SBT/TR	250	0.43	10.9	B	126	0.4	9.9	A	126
Overall		**0.74**	**19.3**	**B**		**0.74**	**18.9**	**B**	
Forest Avenue at Bedford Street/Baxter Blvd									
AM Peak Hour									
Bedford Street, EBLT	530	0.43	45.4	D	143	0.46	46.5	D	149
Bedford Street, EBR	375	0.54	20.3	C	220	0.53	19.5	B	220
Baxter Blvd, WBL	140	0.86	76.0	E	#318	0.86	76.0	E	318
Baxter Blvd, WBT	690	0.10	22.3	C	58	0.10	22.4	C	58
Baxter Blvd, WBR	75	0.03	0.1	A	0	0.03	0.1	A	0
Forest Avenue, NBL	1000+	0.88	67.2	E	#443	0.97	82.4	F	565
Forest Avenue, NBT/TR	1000+	0.57	17.6	B	318	0.53	16.7	B	287
Forest Avenue, SBT/TR	700	0.95	52.4	D	#529	1.01	67.1	E	530
Overall		**0.95**	**39.5**	**D**		**1.01**	**45.8**	**D**	
PM Peak Hour									
Bedford Street, EBLT	530	0.69	52.9	D	253	0.75	56.9	E	#280
Bedford Street, EBR	375	0.78	33.3	C	421	0.88	42.3	D	#557
Baxter Blvd, WBL	140	1.14	139.5	F	#466	1.14	139.5	F	#466
Baxter Blvd, WBT	690	0.18	20.6	C	95	0.18	20.5	C	96
Baxter Blvd, WBR	75	0.07	1.0	A	3	0.07	1.0	A	3
Forest Avenue, NBL	1000+	0.94	88.3	F	#392	1.06	116.9	F	#445
Forest Avenue, NBT/TR	1000+	0.74	25.6	C	456	0.73	25.3	C	438
Forest Avenue, SBT/TR	700	0.98	52	D	#534	0.92	42.3	D	#484
Overall		**1.14**	**50.1**	**D**		**1.14**	**51.9**	**D**	

^ Storage length measured in feet, length of turning lane or distance to adjacent intersection
+ Volume to capacity ratio
* Delay expressed in seconds per vehicles
** Level of Service
Queue measured in feet
95th percentile volume exceeds capacity, queue may be longer
m 95th percentile queue is metered by an upstream signal



SimTraffic Analysis

In addition to the Synchro Analysis, the City of Portland has requested the analysis results calculated by the simulations of the network. The simulations were observed and modified to reflect the operation of the Forest Avenue corridor with the Adaptive Traffic Signal system in place. Table provides the delays and queues reported from the simulation for the signalized intersections. As shown, the delays at the Forest Avenue intersections fall into range associated with poor levels of service but some of this is due to the simulation requiring vehicles to move into a lane early in anticipation of the ramp downstream. The delays reported are significantly longer than observed in the simulation.

Table 2. Signalized Intersection Operation Summary – SimTraffic Analysis

Intersection		2028 Build (Falmouth Site)			2028 Build (Bedford Site)		
Peak Hour	SL^	Delay (sec/veh)	LOS	95th Percentile Queue (ft)	Delay (sec/veh)	LOS	95th Percentile Queue (ft)
Forest Avenue at Falmouth Street/Preble Street							
AM Peak Hour							
Falmouth Avenue, EBLT	210	52.0	D	119	48.1	D	92
Falmouth Avenue, EBR	150	31.3	C	71	19.6	B	46
Preble Street, WBLT	630	50.6	D	70	51.4	D	78
Preble Street, WBR	630	6.8	A	32	5.5	A	37
Forest Avenue, NBL	200	35.7	D	193	40.2	D	102
Forest Avenue, NBT/TR	700	4.1	A	101	9.9	A	163
Forest Avenue, SBL	150	251.9	F	288	62.2	E	214
Forest Avenue, SBT/TR	250	360.1	F	1559	47.1	D	656
Overall		**135.2**	**F**		**29.6**	**C**	
PM Peak Hour							
Falmouth Avenue, EBLT	210	50.2	D	141	48.2	D	135
Falmouth Avenue, EBR	150	33.8	C	122	23.3	C	122
Preble Street, WBLT	630	61.8	E	218	47.4	D	192
Preble Street, WBR	630	52.9	D	148	12.6	B	139
Forest Avenue, NBL	200	43.6	D	126	43.9	D	96
Forest Avenue, NBT/TR	700	7.1	A	174	10.7	B	192
Forest Avenue, SBL	150	244.6	F	291	74.4	E	218
Forest Avenue, SBT/TR	250	506.6	F	1540	83.8	F	755
Overall		**119**	**F**		**36.8**	**D**	
Forest Avenue at Bedford Street/Baxter Blvd							
AM Peak Hour							
Bedford Street, EBLT	530	42.0	D	178	128.1	F	531
Bedford Street, EBR	375	25.3	C	253	69.0	E	454
Baxter Blvd, WBL	140	36.7	D	194	325.2	F	252
Baxter Blvd, WBT	690	21.8	C	125	231.8	F	1247
Baxter Blvd, WBR	75	8.9	A	22	195.2	F	34
Forest Avenue, NBL	1000+	53.8	D	225	70.7	E	210
Forest Avenue, NBT/TR	1000+	14.8	B	230	7.3	A	187
Forest Avenue, SBT/TR	700	215	F	836	82.7	F	794
Overall		**69.3**	**E**		**77.3**	**E**	
PM Peak Hour							
Bedford Street, EBLT	530	49.7	D	314	141.5	F	660
Bedford Street, EBR	375	38.1	D	374	84.5	F	448
Baxter Blvd, WBL	140	44.7	D	231	372	F	231
Baxter Blvd, WBT	690	22.1	C	258	280.4	F	1627
Baxter Blvd, WBR	75	8.8	A	27	259.2	F	29
Forest Avenue, NBL	1000+	71.1	E	204	62.5	E	198
Forest Avenue, NBT/TR	1000+	18.2	B	208	12	B	214
Forest Avenue, SBT/TR	700	205	F	681	116	F	877
Overall		**65.5**	**E**		**96.8**	**F**	

^ Storage length measured in feet, length of turning lane or distance to adjacent intersection
+ Volume to capacity ratio
* Delay expressed in seconds per vehicles
** Level of Service
Queue measured in feet
s Queue lengths determined from SimTraffic simulation

Table 3. Unsignalized Intersection Operation Summary – SimTraffic Analysis

Intersection	2028 Build (Falmouth Site)			2028 Build (Bedford Site)		
Peak Hour	Delay (sec/veh)	LOS	95th Percentile Queue (ft)	Delay (sec/veh)	LOS	95th Percentile Queue (ft)
Bedford St & Surrenden St						
AM Peak Hour						
Surrenden St, NWLR	2.1	A	0	8.6	A	51
Bedford St, NETR	1.3	A	30	0.8	A	0
Bedford St, SWTL	15.6	C	260	0.1	A	0
Overall	**7.6**	**A**		**1.1**	**A**	
PM Peak Hour						
Surrenden St, NWLR	0.0	A	0	19.1	B	183
Bedford St, NETR	0.8	A	0	2.6	A	68
Bedford St, SWTL	3.8	A	69	0.3	A	0
Overall	**8**	**A**		**8**	**A**	
Bedford St & Winslow St						
AM Peak Hour						
Winslow St, NWLR	9.6	A	25	11.9	B	27
Bedford St, NETR	4.4	A	0	3.6	A	136
Bedford St, SWL	0.6	A	0	40.1	E	143
Bedford St, SWT	1.6	A	0	17.0	C	507
Overall	**1.2**	**A**		**15.3**	**C**	
PM Peak Hour						
Winslow St, NWLR	13.1	B	152	155.9	F	159
Bedford St, NETR	0.7	A	4	16.5	B	392
Bedford St, SWL	0	A	0	17	B	114
Bedford St, SWT	1.5	A	0	2.2	A	80
Overall	**18.3**	**B**		**18.3**	**B**	
Forest Avenue at I-295						
AM Peak Hour						
I-295, EBR	7.6	A	232	16.5	B	414
I-295, WBR	13.6	B	180	400.9	F	1173
Forest Avenue, SET	0.4	A	35	0.5	A	16
Forest Ave, NWT	1.5	A	114	10.1	B	156
Overall	**3.7**	**A**		**33.1**	**C**	
PM Peak Hour						
I-295, EBR	11.2	B	242	15.4	B	301
I-295, WBR	138.0	F	848	77.6	E	525
Forest Avenue, SET	0.6	A	27	0.6	A	40
Forest Ave, NWT	3.9	A	118	2.7	A	115
Overall	**14.6**	**B**		**9.7**	**A**	

^ Storage length measured in feet, length of turning lane or distance to adjacent intersection
+ Volume to capacity ratio
* Delay expressed in seconds per vehicles
** Level of Service
Queue measured in feet
s Queue lengths determined from SimTraffic simulation

Roundabout Analysis

Table 4 summarizes the operational analysis at the Brighton Avenue, Deering Avenue and Falmouth Street roundabout during the 2028 weekday AM and PM peak hours under Base and Build conditions. As shown, even with anticipated growth, project related traffic, and relocation of the parking garage, the proposed infrastructure will result in a LOS B or better condition for all approaches during the peak hours.

Table 4. Roundabout Levels of Service

Peak Hour		2028 Base (Falmouth Site)				2028 Build (Bedford Site)			
Movement	**SL^**	**v/c+**	**Delay***	**LOS****	**Queue**	**v/c+**	**Delay***	**LOS****	**Queue**
Falmouth Street at Deering Street and Brighton Avenue									
AM Peak Hour									
Deering Ave, SE	200	0.401	4.4	A	6	0.379	4.0	A	6
Falmouth St, NE	290	0.146	5.4	A	2	0.128	5.7	A	1
Deering Ave, NW	420	0.39	5.0	A	5	0.388	5.0	A	5
Brighton Ave, E	165	0.838	12.1	B	33	0.839	11.9	B	33
Falmouth St, SW	625	0.166	12.5	B	2	0.167	12.5	B	2
Overall		**0.838**	**8.4**	**A**		**0.839**	**8.3**	**A**	
PM Peak Hour									
Deering Ave, SE	200	0.663	4.8	A	15	0.675	4.7	A	16
Falmouth St, NE	290	0.467	11.3	B	8	0.407	11	B	6
Deering Ave, NW	420	0.431	11.1	B	6	0.435	11.1	B	6
Brighton Ave, E	165	0.566	4.7	A	11	0.567	4.6	A	11
Falmouth St, SW	625	0.101	7.5	A	1	0.102	7.5	A	1
Overall		**0.663**	**6.4**	**A**		**0.675**	**6.1**	**A**	

^ Storage length measured in feet, distance to adjacent intersection
+ Volume to capacity ratio
* Delay expressed in seconds per vehicles
** Level of Service
Queue measured in feet

The approaches of the driveway exiting the joint garage proposed on Bedford Street at Surrenden Street is anticipated to operate at LOS B/C with 13 to 17 seconds of delay during both the AM and PM peak hours, the highest delay occurring for the PM peak hour left hand turn lane. The entering driveway proposed for the joint garage on Bedford Street at Winslow Street is anticipated to have a 10 to 15 second delay when making the left hand turning movement to enter from Bedford Street. It is anticipated that this movement will be accommodated in a separate left turn lane.

Bedford Street Concept

Updated traffic circulation for access and egress to the existing and proposed parking garages will compel updates to the Bedford Street corridor. It is proposed that vehicles will enter the parking garages via Winslow Street and exit the parking garages via Surrenden Street, as previously discussed and depicted in

Figure ***4*** below.

For entering vehicles, a dedicated left turn lane will be provided for vehicles traveling westbound on Bedford Street and entering the parking garages via Winslow Street. The left turn lane will require replacement of the raised median island and crosswalk currently set back from the intersection on the east leg. This crosswalk will be replaced by a raised crossing on the west leg of the intersection, limiting the number of vehicular lanes pedestrians will need to

cross to two with a pedestrian refuge island between the lanes. The need for a single departure lane from the intersection on Winslow Street will allow for a pedestrian bumpout to be implemented. The bumpout will effectively shorten the crossing distance for pedestrians across the Winslow Street leg of the intersection and widen back to two lanes to maximize the queuing space for vehicles entering the parking garages. Although Winslow Street will predominantly serve traffic entering the garage facilities, an exit lane will be maintained to allow for drop-offs.

The proposed circulation will provide egress for both garages through the existing garage and out to Surrenden Street. As such, a concept reconfiguring the lanes to accommodate the exiting movements is included in Figure 5 below. Although the predominant traffic flow on Surrenden Street will traffic exiting onto Bedford Street, a single lane will be maintained to accommodate vehicles entering to access the driveway, loading area, and few surface parking spaces along Surrenden Street.

Along the length of Bedford Street, other multimodal improvements are proposed. Crosswalks with rectangular rapid flashing beacons (RRFBs) are proposed to the west of Surrenden Street and midblock between Winslow Street and Durham Street. The latter is anticipated to serve a desire line between the residence hall and student center to the north and the library and parking garage to the south. A crossing is proposed midblock between Winslow Street and Surrenden Street, shifting the existing crossing approximately 70' west. The raised island separating opposing traffic on Bedford Street is proposed to extend from the raised crossing at Winslow Street through the midblock crossing between Winslow Street and Surrenden Street, creating a protected, mid-crossing pedestrian refuge. Buffered bike lanes are proposed to flank the eastbound and westbound travel lanes, providing 1 ½ to 2 feet of striped buffer width between vehicular and bicycle modes. The buffered bike lanes and median treatments will narrow the travel lanes to approximately 10'. These features will help to discourage vehicles from passing busses at the bus stops on the north and south sides of Bedford Street and help to reduce vehicular speeds through this critical multimodal area.

Figure 4. Conceptual Plan for Bedford Street and Parking Garage Circulation

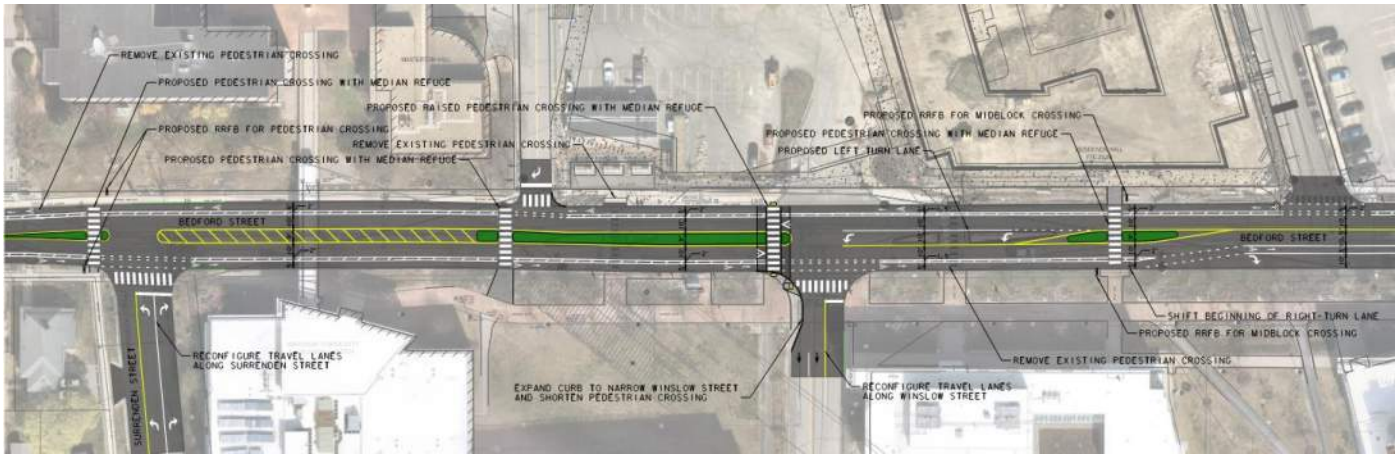
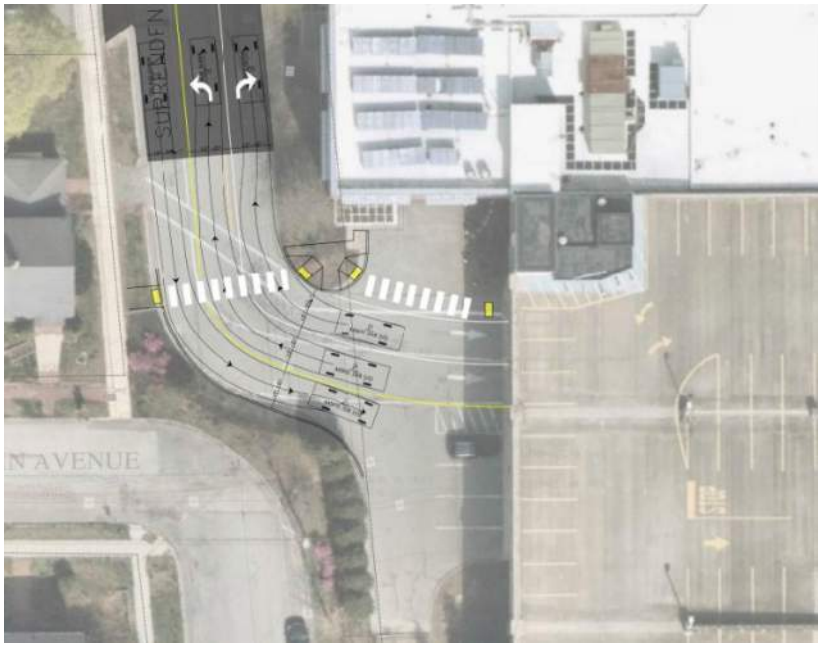


Figure 5. Conceptual Plan for Surrenden Street Garage Exit



Garage Queuing

In order to understand the queuing anticipated at the entry and exit points of the garage facilities, a queuing analysis was conducted for during and post construction scenarios. For analysis purposes, it was assumed that 1148 spaces are served during construction and 1780 spaces are served during post construction, and that the per space trip rate will be the same for the new garage as observed for the existing garage in October 2019. Further, observations from the existing garage on transaction times for permit parkers, transient parkers using pay-on-foot, and transient parkers using pay-at-exit were all factored into the analysis. Based on the analysis, during construction the garage entrance and exit would each require a minimum of 2 lanes with an anticipated design queue of 3 cars per entrance lane and 1 car per exit lane. Following construction, with both garages operational, it is anticipated that 3 entrance and 2 exit lanes will be required for peak operation. Given that the analysis evaluated more spaces than are now anticipated in the new garage and that the predominant use of the new garage is expected to be residential users with less per space trip making than the existing garage serving commuters, the analysis was conservative. The details of the analysis are outlined in the memorandum and supporting calculations included in the appendices.

Transportation Demand Management (TDM)

The University of Southern Maine (USM) has recently developed a Transportation Demand Management (TDM) plan that provides a cohesive strategy for establishing and implementing a successful TDM program for the Portland campus. The TDM plan seeks to enhance multimodal accessibility, ensure the use of non-vehicular modes, and discourage the use of driving through parking management, to achieve and build upon the university's parking demand reduction goals for the campus. The TDM Plan presents a suite of strategies and timeframe for when USM

intends to implement the various strategies. The strategies aim at promoting walking and bicycling, improving transit service to promote ridership, promoting carpooling, changing time-of-day travel demands to eliminate or reduce vehicle trips, and managing parking demand via changes to USM's pricing and permit policies. The implementation of TDM will reduce the vehicle trips to the site and reduce delays at area intersections.

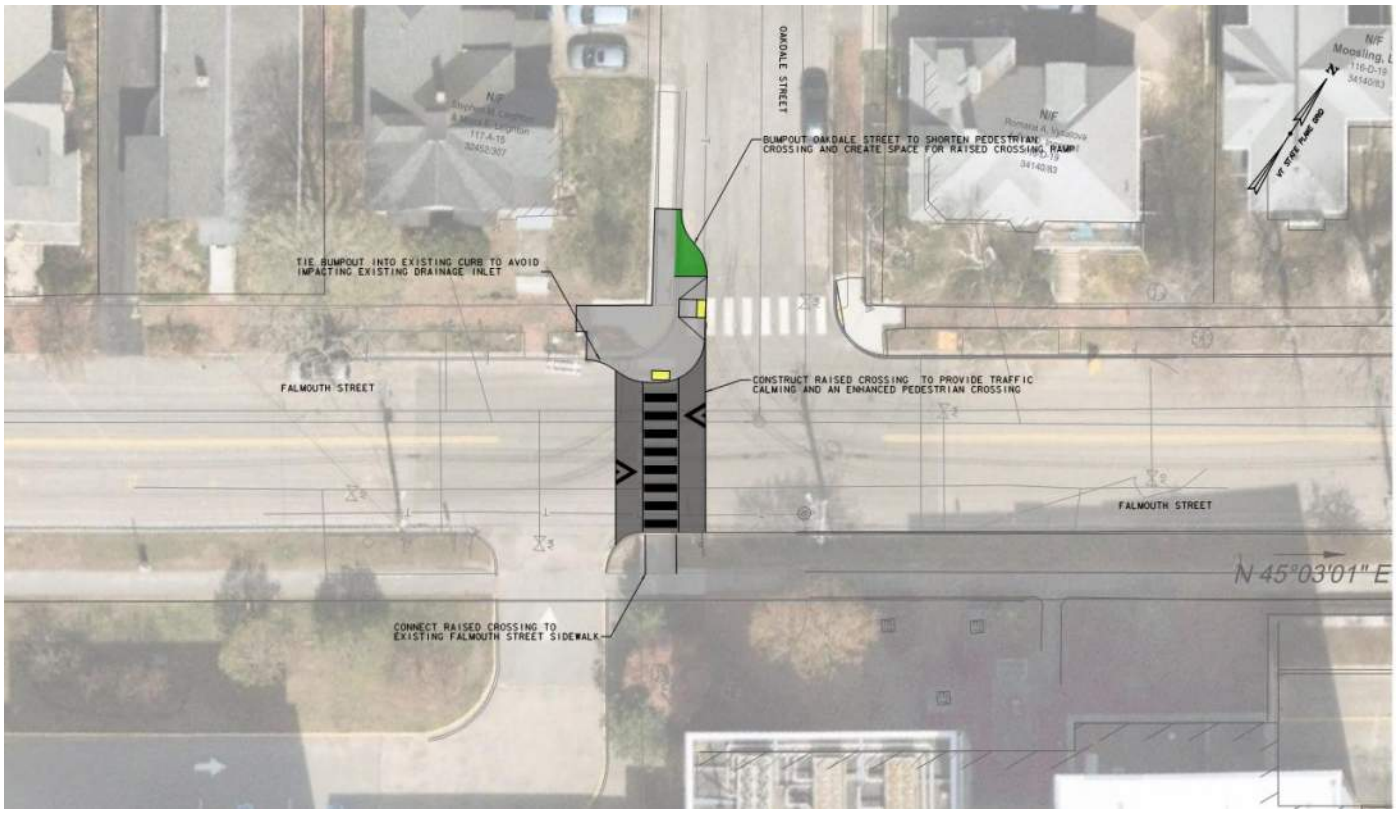
Neighbor Concern – Oakhurst Dairy

USM has worked with Oakhurst Dairy to understand their concerns associated with the proposed project. Oakhurst Dairy has raised a number of concerns with the queuing along Forest Avenue and the operation of the signals at the intersections of Bedford Street / Baxter Boulevard and Falmouth Street / Preble Street. One concern raised by Oakhurst Dairy is the length of queue on Forest Avenue northbound and that it causes a backup on the I-295 off ramp. As indicated above, USM is committed to addressing this concern. Oakhurst is even more concerned with queues blocking the Oakhurst driveway on Forest Avenue. Although the Bedford Street garage site reduces the anticipated additional volume along the Oakhurst block of Forest Avenue compared to the Falmouth garage site, queuing through this area remains a concern. Further, recent traffic signal operation at Forest Avenue at Bedford Street and Baxter Boulevard has resulted in longer queues. A discussion with the City Traffic Engineer revealed that the City has had an issue with vehicle detection at this location and as a result the signal is not operating optimally. A representative from Oakhurst shared video that documents these queuing concerns. As such, USM is committed to working with the City to replace the camera causing the detection issue at the intersection. Because Oakhurst remains concerned about the operation at their driveway and the queues on Forest Avenue that block that driveway, USM is committed to work with Oakhurst and the City to develop a plan to discourage vehicles from blocking the driveway, including signage and/or striping to not "Block the Box".

Neighbor Concern – Falmouth Street/Oakdale Street and Bedford Street

USM has worked with neighborhood since the previous permitting process to ensure that their concerns are being addressed. USM held an open meeting with residential neighbors on August 26th to discuss traffic impacts and proposed mitigation measures. The neighborhood had previously expressed concern with traffic speed and volumes on Falmouth Street, and as such an undefined traffic calming measure was written into a condition of approval on the residence hall & student center project. The University shared a conceptual draft of the Falmouth Street traffic calming measure at the meeting with the neighborhood (see Figure 6 below). The neighborhood's reception of the drawing seemed favorable. However, the neighborhood expressed some concerns about traffic along Bedford Street and that traffic would be made worse by pedestrian safety measures such as pedestrian island improvements and by higher volumes of vehicles entering/exiting the South side of Bedford. Several items were brought up from individuals along the lines of wanting traffic to flow efficiently, but one specific item brought up by multiple residents was concern that USM was not proposing bus pull-outs for the METRO, and that this could lead to traffic backing up behind stopped buses. USM explored this issue at length internally, and also had two meetings with METRO to discuss it. Ultimately, USM decided that pedestrian safety should outweigh vehicular traffic efficiency when the two are opposed as an in-line bus stop would minimize the ability of vehicles to drive past buses that are offloading people. USM feels that the suite of measures currently proposed offers the best trade-off between efficiency and safety given the siting of the garage on Bedford Street. Bedford Street was the location the neighborhood favored over Falmouth Street and Deering Avenue, and this was one of the most important factors in deciding on the garage's location.

Figure 6. Conceptual Plan for Pedestrian Improvements at Falmouth Street at Oakdale Street



Conclusions and Recommendations

The proposal to relocate the parking garage to Bedford Street is positive for a number of reasons. However, adding these trips to the roadway network at the new proposed parking garage location along Bedford Street results in some delay increases at the intersection of Forest Avenue with Bedford Street and Baxter Boulevard as compared to the garage location along Falmouth Street. Advance queue detection should be considered in order to ensure that the addition of this traffic to the intersection of Forest Avenue with Bedford Street and Baxter Boulevard does not cause an impact beyond the available queue storage and impact the operation of the I-295 off ramp. In addition, USM is committed to creating a Bedford Street that is hospitable to pedestrians, transit and bicyclists. To assist our neighbor Oakhurst, we proposed to create signage and striping to reduce incidents when traffic blocks that driveway. Finally, USM is working to improve the operations at Forest Street at Bedford Street and Baxter Boulevard in the short term to ensure that the traffic signal is operating as it was intended with the replacement of the detection camera. Overall, this proposed location for the parking garage is not anticipated to adversely affect traffic operations in the vicinity of the USM campus.

Technical Appendix

Existing USM Parking Garage Activity Report

Time		October 21, 2019							October 22, 2019							October 23, 2019						
		Entry			Exit			Entry/Exit	Entry			Exit			Entry/Exit	Entry			Exit			Entry/Exit
		Credential	Transient	Total	Credential	Transient	Total	Total	Credential	Transient	Total	Credential	Transient	Total	Total	Credential	Transient	Total	Credential	Transient	Total	Total
								0							0							0
0:00 -		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1:00 -		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2:00 -		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
3:00 -		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4:00 -		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:00 -		2	0	2	1	0	1	3	2	0	2	1	0	1	3	1	0	1	0	1	1	2
6:00 -		10	0	10	6	0	6	16	8	0	8	3	0	3	11	15	0	15	0	6	6	21
7:00 -		79	4	83	6	0	6	89	68	0	68	8	0	8	76	71	4	75	10	0	10	85
8:00 -		433	41	**474**	5	4	**9**	483	410	13	423	9	1	10	433	401	16	417	5	1	6	423
9:00 -		317	14	331	26	4	30	361	384	23	407	11	6	17	424	317	12	329	28	3	31	360
10:00 -		174	8	182	103	13	116	298	204	13	217	124	5	129	346	202	21	223	116	6	122	345
11:00 -		221	5	226	241	5	246	472	228	19	247	291	20	311	558	184	45	229	217	9	226	455
12:00 -		223	15	238	128	6	134	372	252	11	263	119	6	125	388	221	55	276	149	8	157	433
13:00 -		117	8	125	198	5	203	328	115	8	123	174	6	180	303	116	11	127	149	5	154	281
14:00 -		134	9	143	286	7	293	436	139	12	151	283	10	293	444	153	12	165	259	12	271	436
15:00 -		144	11	155	195	21	216	371	187	22	209	221	11	232	441	151	13	164	189	18	207	371
16:00 -		61	3	64	255	20	275	339	73	75	148	224	6	230	378	58	12	**70**	260	49	**309**	379
17:00 -		40	16	56	164	3	167	223	78	48	126	99	144	243	369	40	18	58	241	44	285	343
18:00 -		5	6	11	179	12	191	202	14	5	19	0	301	301	320	13	5	18	169	10	179	197
19:00 -		3	3	6	91	10	101	107	4	1	5	0	171	171	176	5	3	8	75	8	83	91
20:00 -		2	0	2	49	16	65	67	0	1	1	0	84	84	85	3	0	3	45	8	53	56
21:00 -		2	0	2	12	1	13	15	0	0	0	0	24	24	24	1	0	1	19	5	24	25
22:00 -		1	0	1	3	0	3	4	1	0	1	0	6	6	7	1	0	1	6	1	7	8
23:00 -		0	0	0	1	0	1	1	0	0	0	0	2	2	2	0	0	0	2	1	3	3
Total		1,968	143	2,111	1949	127	2076	2203	2167	251	2418	1567	803	2370	3173	1953	227	2180	1939	195	2134	2329

To: University of Southern Maine

Date: August 20, 2021

Memorandum

Project #: 52718.01

From: Jennifer Conley, PE, PTOE
Bill Cranshaw

Re: **DRAFT** Garage Queuing Analysis

VHB has reviewed the operations of the existing and proposed USM parking garages and analyzed the queues that are expected to occur under both the construction (existing) and final (existing and proposed) conditions.

Key assumptions

1. The existing parking garage has 1,148 spaces. The new garage will add 632 spaces.
2. The two garages will use the same entry and exit lanes.
    a. The entry lanes will be located between the two garages. The current concept is for there to be three entry lanes, one of which is reversable as a additional exit lane.
    b. The primary exit will be at the southwest corner of the existing garage, where the entrance to that garage is currently.
3. The garages will be used by a mix of permit holders and transient parkers.
    a. Permit holders have RFID hangtags
    a. Transient parkers pull a ticket at the entry and either pre-pay before exiting or pay at the exit. Based on information from the existing garage, ten percent of transient parkers are expected to pay at the exit.
4. Hourly volumes for October 21-23, 2019 show the following:
    a. The busiest hour for entries was consistently from 8-9 am. The highest single-day hourly entry volume was 474, with 433 permit holders and 43 transients entering.
    b. The busiest hour for exit varied each day – from late morning, to mid-afternoon, to late afternoon. The highest single-day hour exit volume was 311, with 291 permit holders and 20 transients exiting.
    c. The daily percentage of transient parkers ranged from 6 to 10 percent.
    d. The garage was never full during the three days. Peak occupancy ranged from 1,027 to 1,060 cars, approximately 90 to 92 percent of capacity.
5. **The analysis of future volumes, with both garages in operation, assume the same per-space trip rate as the existing garage (conservatively high assumption).** Those rates, calculated from the peak hourly volumes of the 2019 data, are listed below. Two sets of "per-space" rates are calculated, one based on the full garage capacity and one based on the maximum number of spaces used. The higher rates are used in the analysis.
    a. Entering volume = 0.41 cars per space (based on garage capacity)
    b. Exiting volume -= 0.27 cars per space (based on garage capacity)
    c. Entering volume = 0.46 cars per occupied space
    d. Exiting volume = 0.30 cars per occupied space
6. Transaction times are based on information provided by USM.
    a. Permit parkers: 10 seconds at the entrance and 10 seconds at the exit
    b. Transient parkers using pay-on-foot: 15 seconds at the entrance and 17 seconds at the exit

Memorandum

   a. Transient parkers paying at the exit: 15 seconds at the entrance and 120 seconds at the exit.
7. The service rate, i.e., the maximum number of cars per hour that can be accommodated in a lane, is calculated from the transaction times, weighted to reflect the mix of permit and transient cars in the peak hour.
   a. The service rate for entry lanes is 350 cars per hour
   b. The service rate for exit lanes is 335 cars per hour.

Number of Lanes

The determination of the number of lanes required is a two-step process.

1. The first is a simple check on the number of entry/exit lanes by comparing the anticipated hourly volumes with the service capacity of the lanes to ensure that the arriving volumes are not higher than the maximum processing capacity through the lanes.
2. The second next step is to evaluate the anticipate queuing based on the minimum number of lanes, to determine if there may be operational problems related to queuing or excessive delays for drivers

Table 1 presents the results of the calculations.

- The results show that during construction, with the existing garage fully used, two entry and two exit lanes are needed, and that the design queues are 3 and 1 car, respectively.
- Post construction, with the two garages fully used and sharing entry and exit plazas, the minimum number of lanes is 3 for the entry and 2 for the exit. At about 80% lane utilization, both the entry and exit plaza would require queuing space for 4 cars at each lane.

Table 1: Garage Entry/Exit Lane Calculations

	During Construction		Post Construction	
	Entrance	Exit	Entrance	Exit
Spaces	1148	1148	1780	1780
Hourly Rate/Space	0.46	0.30	0.46	0.3
Hourly Volume (V)	528	344	819	534
Max. Service Rate (SR)	350	335	350	335
V/SR	1.5	>1.0	2.3	1.6
Minimum # of Lanes	2	2	3	2
Lane Utilization (SR/V)	75%	51%	78%	80%
Average Queue	2	1	3	2
Design Queue	3	1	4	4

Notes: Average Queue and Design Queue are the number of cars per lane, including the car at the gate.
Queuing calculations assume multichannel queuing, where entry or exit lanes are in the same location and equally accessible to approaching drivers.

Lane Configuration During Construction

There are many factors affecting the proper design and layout of entry and exit plazas. One of the more important is how the service rate throughput of the lanes night be affected the ease for drivers to approach the lane and the ticket/car readers. If drivers need to make a turn as they approach the gate some may have trouble positioning themselves and accessing, say, a payment machine at the exit. This would reduce the effective service rate and thus increase queuing and might increase the number of required lanes.

The service rate used in the Table 1 calculations reflects field measurements made at the existing equipment. However, the proposed temporary lane configuration for the entrance involves a sharp turn towards the entrance plaza immediately after entering the garage.

Such a sharp turn to position a car in the entry lane can reduce the service rate by 25 percent or more, however, in this case the potential reduction is likely relatively small and any adverse impacts can likely be mitigated.
The reason that the potential reduction is relatively small is that the vast majority (90% or more) of parkers use RFID hangtags and an RFID system does not require as precise a vehicle alignment at the gate as would a swipe-card or ticket issuance system. Nonetheless, care should be taken to ensure that the entry lanes are effectively positioned. This could be done by moving the proposed gate location slightly farther into the garage, or by having the entry plaza located outside of the garage.

Garage Queuing Calculations

ENTRY	Spaces	Rate per Space	Volume	Max Service Rate	V/S	No. of Lanes
Typical Occupancy	1148	0.41	471	350	1.3	2
Full Occupancy	1148	0.46	528	350	1.5	2

EXIT	Spaces	Rate per Space	Volume	85% of Service Rate	Ratio	No. of Lanes
Typical Occupancy	1148	0.27	310	335	0.9	1
Full Occupancy	1148	0.30	344	335	1.0	1

ENTRY	Spaces	Rate per Space	Volume	85% of Service Rate	Ratio	No. of Lanes
Typical Occupancy	1780	0.41	730	350	2.1	3
Full Occupancy	1780	0.46	819	350	2.3	3

EXIT	Spaces	Rate per Space	Volume	85% of Service Rate	Ratio	No. of Lanes
Typical Occupancy	1780	0.27	481	335	1.4	2
Full Occupancy	1780	0.30	534	335	1.6	2

		350	3	1050	819	0.78
		335	2	670	534	0.797014925

Q =3 cars behind space

Q = 3 cars behind space

	Existing		Proposed	
	Entrance	**Exit**	**Entrance**	**Exit**
Spaces	1148	1148	1780	1780
Hourly Rate/Space	0.46	0.3	0.46	0.3
Hourly Volume	528	344	819	534
Max. Service Rate	350	335	350	335
Volume/Service Rate	1.5	1.0	2.3	1.6
Minimum # of Lanes	2	2.0	3	2
Lane Utiliization (SR/V)	75%	51%	78%	80%
Average Queue	2	1	2	2
Design Queue	3	1	4	4

Departure Rate	180	
Lanes	2	
	360	

		M/D/1		M/M/1	M/M/2
					0.85
Arrivals per minute		3	ʎ	3	3
Transactions per minute		4	u	4	4
Traffic Intensity (P)	75%		p	75%	0.882353
Average Length		1.125	cars	2.25	6.617647
Average time in queue		0.375	min per car	0.750	0.750
Spent in system		0.625	min per car	1.000	1.000

Typical Occupancy

Garage Queuing Calculations

Observations in Existing Garage (by Dewey)

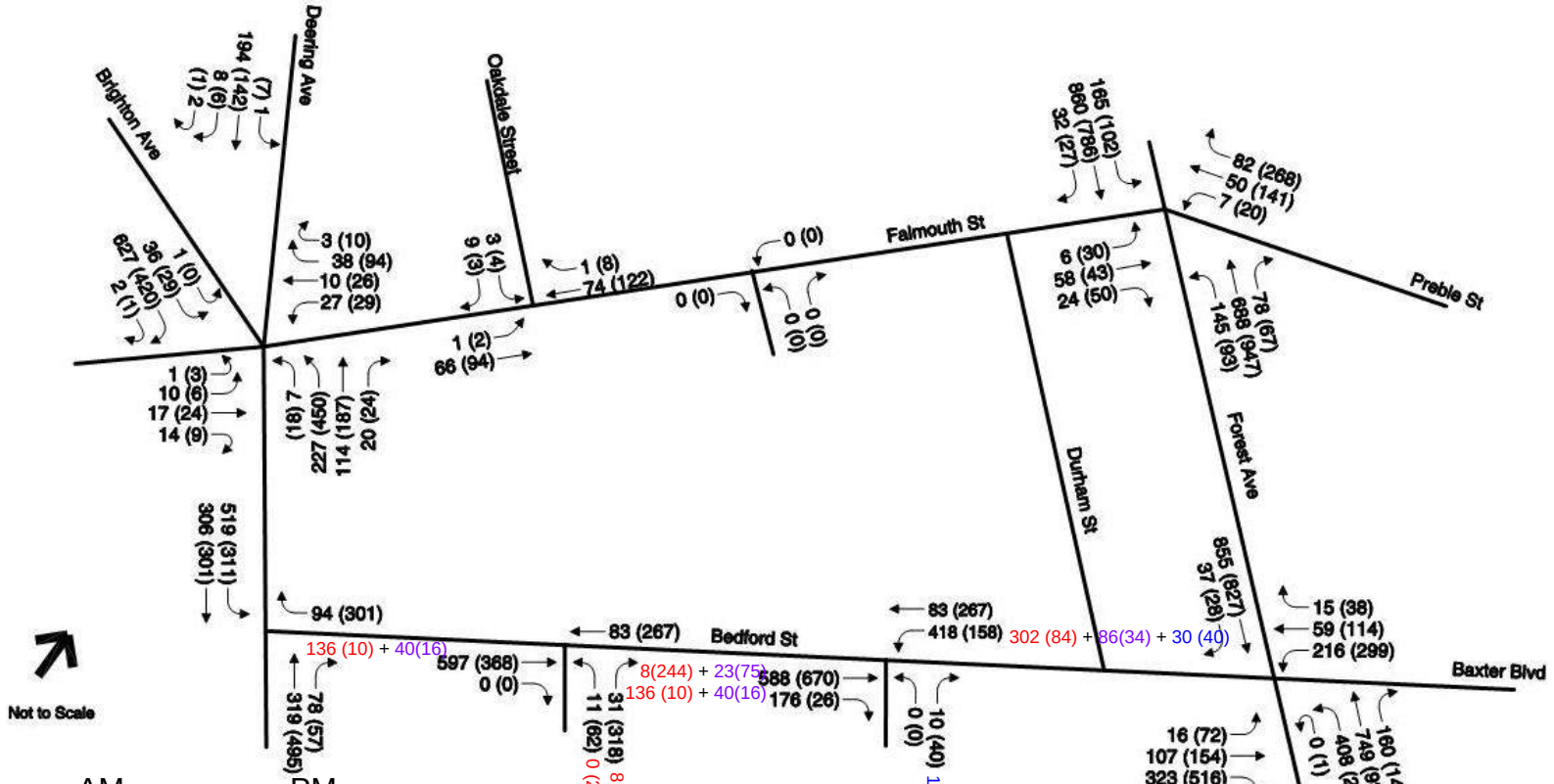
Using hangtag (USM students, staff & faculty):
Entry takes 10 seconds
Exit also takes 10 seconds

Pulling a ticket (visitors & conference goers):
Entry takes 10 seconds if you know exactly what you are doing (we think adding 5 seconds to get to 15 total is more representative of an actual visitor who doesn't know what they are doing and has to read the signs)
Exit takes 12 seconds)+5 for 17 total per logic explained above.
*Additionally, Dewey estimates 10% of this visitor population will try to pay at the exit gate instead of pre-paying (even after accounting for signs and education to deter this behavior). For those 10%, he estimates that exit will take at least 90 seconds, but probably more.

ENTRY	Time (seconds)	Actual Service Rate Per Hour		Hourly Volume				1 Lane	2 Lane	3 Lane						
USM	10	360		443	92%	329.5041						10	443	4430		
Transient				41								15	41	615		
Transient pre-pay	15	240	90%	36	7%	17.85124							484	5045	10.42355	secs per
Transient exit-pay	15	240	10%	5	1%	2.479339										
				484		349.8347	Service Rate	**1.38**	**0.69**	**0.46**	484					

EXIT	Time (seconds)	Actual Service Rate Per Hour		Hourly Volume												
USM	10	360		260	84%	302.9126						10	443	4430		
Transient				49												
Transient pre-pay	17	212	90%	44	14%	30.1542						17	44	748		
Transient exit-pay	120	30	10%	5	2%	0.485437						120	4	480		
													491	5658	11.52342	secs per
				309		333.5523	Service Rate	**1.45**	**0.73**	**0.48**	484					

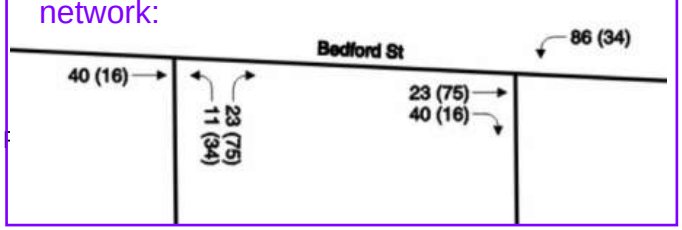
Figure 3. 2028 TMP Modification Build Condition Traffic Volumes



	AM		PM	
garage existing[1]	438 in	8 out	94 in	271 out
trip gen[2] -	126 in	34 out	50 in	109 out
drop-offs	30 in	10 out	40 in	40 out
TOTAL	594 in	52 out	184 in	420 out

Legend
AM Peak Hour
(PM Peak Hour)

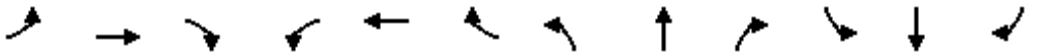
Trip Generation network:



[1] based on a peak USM week ins and outs in October 2019 (pre-COVID), average of Tuesday thru Thursday volumes

[2] based on TMP trip generation, conservative estimate of new trips

[3] replaces some existing drop off and parking trips to Wishcamper and Library to better balance network

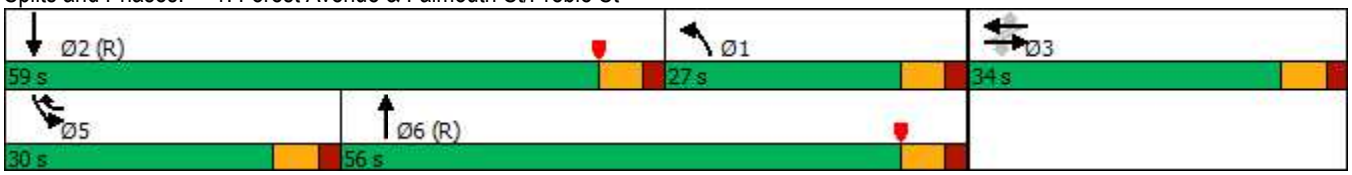


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	6	58	24	7	50	82	78	688	9	165	860	32
Future Volume (vph)	6	58	24	7	50	82	78	688	9	165	860	32
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	0		150	0		0	200		0	150		0
Storage Lanes	0		1	0		1	1		0	1		0
Taper Length (ft)	25			25			75			75		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.95	0.95	1.00	0.95	0.95
Ped Bike Factor		1.00	0.99		1.00	0.99	1.00	1.00		1.00	1.00	
Frt			0.850			0.850		0.998			0.995	
Flt Protected		0.995			0.994		0.950			0.950		
Satd. Flow (prot)	0	1890	1615	0	1811	1583	1703	3499	0	1719	3486	0
Flt Permitted		0.970			0.958		0.950			0.950		
Satd. Flow (perm)	0	1843	1593	0	1746	1560	1697	3499	0	1718	3486	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			136			88		1			4	
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		771			1265			804			1168	
Travel Time (s)		17.5			28.8			18.3			26.5	
Confl. Peds. (#/hr)	2		1	1		2	5		1	1		5
Peak Hour Factor	0.77	0.77	0.77	0.93	0.93	0.93	0.91	0.91	0.91	0.82	0.82	0.82
Heavy Vehicles (%)	0%	0%	0%	33%	0%	2%	6%	3%	0%	5%	3%	0%
Adj. Flow (vph)	8	75	31	8	54	88	86	756	10	201	1049	39
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	83	31	0	62	88	86	766	0	201	1088	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		0			10			18			16	
Link Offset(ft)		0			-6			0			-2	
Crosswalk Width(ft)		16			16			30			16	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors	1	1	1	1	1	1	1	1		1	1	
Detector Template												
Leading Detector (ft)	50	50	50	50	50	50	50	50		50	50	
Trailing Detector (ft)	0	0	0	0	0	0	0	0		0	0	
Detector 1 Position(ft)	0	0	0	0	0	0	0	0		0	0	
Detector 1 Size(ft)	50	50	50	50	50	50	50	50		50	50	
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Turn Type	Perm	NA	Perm	Perm	NA	pm+ov	Prot	NA		Prot	NA	
Protected Phases		3			3	5	1	6		5	2	
Permitted Phases	3		3	3		3						
Detector Phase	3	3	3	3	3	5	1	6		5	2	
Switch Phase												

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	10.0		5.0	10.0	
Minimum Split (s)	32.0	32.0	32.0	32.0	32.0	16.0	16.0	37.0		16.0	25.0	
Total Split (s)	34.0	34.0	34.0	34.0	34.0	30.0	27.0	56.0		30.0	59.0	
Total Split (%)	28.3%	28.3%	28.3%	28.3%	28.3%	25.0%	22.5%	46.7%		25.0%	49.2%	
Maximum Green (s)	28.0	28.0	28.0	28.0	28.0	24.0	21.0	50.0		24.0	53.0	
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0		4.0	4.0	
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0		2.0	2.0	
Lost Time Adjust (s)		-2.0	-2.0		-2.0	-2.0	-2.0	-2.0		-2.0	-2.0	
Total Lost Time (s)		4.0	4.0		4.0	4.0	4.0	4.0		4.0	4.0	
Lead/Lag						Lead	Lag	Lag		Lead	Lead	
Lead-Lag Optimize?												
Vehicle Extension (s)	2.5	2.5	2.5	2.5	2.5	2.0	2.0	3.0		2.0	3.0	
Recall Mode	None	None	None	None	None	None	None	C-Min		None	C-Min	
Walk Time (s)	4.0	4.0	4.0	4.0	4.0			4.0			4.0	
Flash Dont Walk (s)	21.0	21.0	21.0	21.0	21.0			26.0			14.0	
Pedestrian Calls (#/hr)	4	4	4	4	4			7			4	
Act Effct Green (s)		14.4	14.4		14.4	34.7	16.3	73.3		20.3	79.7	
Actuated g/C Ratio		0.12	0.12		0.12	0.29	0.14	0.61		0.17	0.66	
v/c Ratio		0.38	0.10		0.30	0.17	0.37	0.36		0.69	0.47	
Control Delay		51.4	0.6		49.3	4.9	36.1	7.5		58.9	12.8	
Queue Delay		0.0	0.0		0.0	0.0	0.0	0.0		0.0	0.0	
Total Delay		51.4	0.6		49.3	4.9	36.1	7.5		58.9	12.8	
LOS		D	A		D	A	D	A		E	B	
Approach Delay		37.6			23.2			10.4			19.9	
Approach LOS		D			C			B			B	

Intersection Summary			
Area Type:	Other		
Cycle Length: 120			
Actuated Cycle Length: 120			
Offset: 0 (0%), Referenced to phase 2:SBT and 6:NBT, Start of Yellow			
Natural Cycle: 85			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.69			
Intersection Signal Delay: 17.6		Intersection LOS: B	
Intersection Capacity Utilization 53.5%		ICU Level of Service A	
Analysis Period (min) 15			

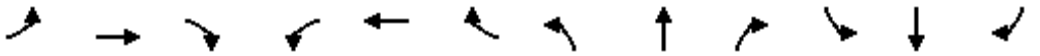
Splits and Phases: 1: Forest Avenue & Falmouth St/Preble St





Lane Group	EBT	EBR	WBT	WBR	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	83	31	62	88	86	766	201	1088
v/c Ratio	0.38	0.10	0.30	0.17	0.37	0.36	0.69	0.47
Control Delay	51.4	0.6	49.3	4.9	36.1	7.5	58.9	12.8
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	51.4	0.6	49.3	4.9	36.1	7.5	58.9	12.8
Queue Length 50th (ft)	61	0	45	0	61	70	148	213
Queue Length 95th (ft)	82	0	78	28	114	141	193	306
Internal Link Dist (ft)	691		1185			724		1088
Turn Bay Length (ft)		150			200		150	
Base Capacity (vph)	460	500	436	590	326	2138	375	2317
Starvation Cap Reductn	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.18	0.06	0.14	0.15	0.26	0.36	0.54	0.47

Intersection Summary

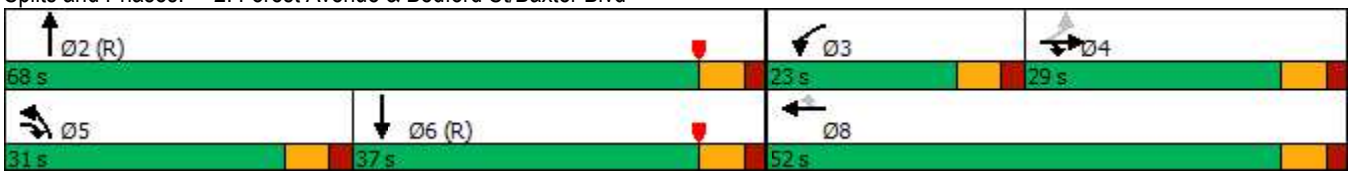


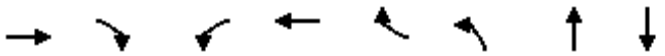
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	16	107	323	218	59	15	408	749	160	0	855	37
Future Volume (vph)	16	107	323	218	59	15	408	749	160	0	855	37
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	0		375	140		75	0		0	0		0
Storage Lanes	0		1	1		1	1		0	0		0
Taper Length (ft)	100			75			25			25		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.95	0.95	1.00	0.95	0.95
Ped Bike Factor		1.00		0.99		0.98		1.00			1.00	
Frt			0.850			0.850		0.974			0.994	
Flt Protected		0.994		0.950			0.950					
Satd. Flow (prot)	0	1656	1439	1608	1676	1454	1608	3068	0	0	3156	0
Flt Permitted		0.963		0.950			0.950					
Satd. Flow (perm)	0	1603	1439	1593	1676	1424	1608	3068	0	0	3156	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			82			82		34			4	
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		609			1168			275			804	
Travel Time (s)		13.8			26.5			6.3			18.3	
Confl. Peds. (#/hr)	5		7	7		5			5			5
Peak Hour Factor	0.83	0.83	0.83	0.92	0.92	0.92	0.97	0.97	0.97	0.96	0.96	0.96
Heavy Vehicles (%)	7%	2%	1%	1%	2%	0%	1%	3%	2%	0%	2%	7%
Adj. Flow (vph)	19	129	389	237	64	16	421	772	165	0	891	39
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	148	389	237	64	16	421	937	0	0	930	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		0			12			18			4	
Link Offset(ft)		0			3			0			0	
Crosswalk Width(ft)		20			10			16			16	
Two way Left Turn Lane												
Headway Factor	1.14	1.14	1.14	1.14	1.14	1.14	1.14	1.14	1.14	1.14	1.14	1.14
Turning Speed (mph)	15		9	15		15	15		9	15		9
Number of Detectors	1	1	1	1	1	1	1	1			1	
Detector Template												
Leading Detector (ft)	50	50	50	50	50	50	50	50			50	
Trailing Detector (ft)	0	0	0	0	0	0	0	0			0	
Detector 1 Position(ft)	0	0	0	0	0	0	0	0			0	
Detector 1 Size(ft)	50	50	50	50	50	50	50	50			50	
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex			Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0			0.0	
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0			0.0	
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0			0.0	
Turn Type	Perm	NA	pt+ov	Prot	NA	Perm	Prot	NA			NA	
Protected Phases		4	4 5	3	8		5	2			6	
Permitted Phases	4					8						
Detector Phase	4	4	4 5	3	8	8	5	2			6	
Switch Phase												

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Minimum Initial (s)	7.0	7.0		5.0	5.0	5.0	5.0	10.0			10.0	
Minimum Split (s)	29.0	29.0		16.0	29.0	29.0	16.0	34.0			34.0	
Total Split (s)	29.0	29.0		23.0	52.0	52.0	31.0	68.0			37.0	
Total Split (%)	24.2%	24.2%		19.2%	43.3%	43.3%	25.8%	56.7%			30.8%	
Maximum Green (s)	23.0	23.0		17.0	46.0	46.0	25.0	62.0			31.0	
Yellow Time (s)	4.0	4.0		4.0	4.0	4.0	4.0	4.0			4.0	
All-Red Time (s)	2.0	2.0		2.0	2.0	2.0	2.0	2.0			2.0	
Lost Time Adjust (s)		-4.0		-4.0	-4.0	-4.0	-4.0	-4.0			-4.0	
Total Lost Time (s)		2.0		2.0	2.0	2.0	2.0	2.0			2.0	
Lead/Lag	Lag	Lag		Lead			Lead				Lag	
Lead-Lag Optimize?												
Vehicle Extension (s)	2.0	2.0		2.0	2.0	2.0	3.5	3.0			3.0	
Recall Mode	None	None		None	None	None	None	C-Min			C-Min	
Walk Time (s)	4.0	4.0			4.0	4.0		4.0			4.0	
Flash Dont Walk (s)	18.0	18.0			18.0	18.0		23.0			23.0	
Pedestrian Calls (#/hr)	10	10			1	1		1			1	
Act Effct Green (s)		24.0	58.3	20.7	46.7	46.7	32.3	69.3			35.0	
Actuated g/C Ratio		0.20	0.49	0.17	0.39	0.39	0.27	0.58			0.29	
v/c Ratio		0.46	0.53	0.86	0.10	0.03	0.97	0.53			1.01	
Control Delay		46.5	19.5	76.0	22.4	0.1	82.4	16.7			67.1	
Queue Delay		0.0	0.0	0.0	0.0	0.0	0.0	0.0			0.0	
Total Delay		46.5	19.5	76.0	22.4	0.1	82.4	16.7			67.1	
LOS		D	B	E	C	A	F	B			E	
Approach Delay		26.9			61.3			37.0			67.1	
Approach LOS		C			E			D			E	

Intersection Summary			
Area Type:	CBD		
Cycle Length: 120			
Actuated Cycle Length: 120			
Offset: 0 (0%), Referenced to phase 2:NBT and 6:SBT, Start of Yellow			
Natural Cycle: 105			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 1.01			
Intersection Signal Delay: 46.7		Intersection LOS: D	
Intersection Capacity Utilization 82.8%		ICU Level of Service E	
Analysis Period (min) 15			

Splits and Phases: 2: Forest Avenue & Bedford St/Baxter Blvd





Lane Group	EBT	EBR	WBL	WBT	WBR	NBL	NBT	SBT
Lane Group Flow (vph)	148	389	237	64	16	421	937	930
v/c Ratio	0.46	0.53	0.86	0.10	0.03	0.97	0.53	1.01
Control Delay	46.5	19.5	76.0	22.4	0.1	82.4	16.7	67.1
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	46.5	19.5	76.0	22.4	0.1	82.4	16.7	67.1
Queue Length 50th (ft)	99	159	180	30	0	~361	225	~409
Queue Length 95th (ft)	149	220	#318	58	0	#565	287	#530
Internal Link Dist (ft)	529			1088			195	724
Turn Bay Length (ft)		375	140		75			
Base Capacity (vph)	360	737	281	698	641	432	1784	923
Starvation Cap Reductn	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.41	0.53	0.84	0.09	0.02	0.97	0.53	1.01

Intersection Summary

~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.



Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	69	0	0	75	0	0
Future Volume (vph)	69	0	0	75	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt						
Flt Protected						
Satd. Flow (prot)	1863	0	0	1863	1863	0
Flt Permitted						
Satd. Flow (perm)	1863	0	0	1863	1863	0
Link Speed (mph)	30			30	30	
Link Distance (ft)	198			771	187	
Travel Time (s)	4.5			17.5	4.3	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	75	0	0	82	0	0
Shared Lane Traffic (%)						
Lane Group Flow (vph)	75	0	0	82	0	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(ft)	0			0	12	
Link Offset(ft)	0			0	0	
Crosswalk Width(ft)	16			16	16	
Two way Left Turn Lane						
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)		9	15		15	9
Sign Control	Free			Free	Stop	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 7.3%		ICU Level of Service A	
Analysis Period (min) 15			



Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	69	0	0	75	0	0
Future Volume (Veh/h)	69	0	0	75	0	0
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	75	0	0	82	0	0
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None			None		
Median storage veh)						
Upstream signal (ft)				771		
pX, platoon unblocked						
vC, conflicting volume			75		157	75
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			75		157	75
tC, single (s)			4.1		6.4	6.2
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
p0 queue free %			100		100	100
cM capacity (veh/h)			1524		834	986

Direction, Lane #	EB 1	WB 1	NB 1
Volume Total	75	82	0
Volume Left	0	0	0
Volume Right	0	0	0
cSH	1700	1524	1700
Volume to Capacity	0.04	0.00	0.00
Queue Length 95th (ft)	0	0	0
Control Delay (s)	0.0	0.0	0.0
Lane LOS			A
Approach Delay (s)	0.0	0.0	0.0
Approach LOS			A

Intersection Summary			
Average Delay	0.0		
Intersection Capacity Utilization	7.3%	ICU Level of Service	A
Analysis Period (min)	15		



Lane Group	SEL	SER	NEL	NET	SWT	SWR
Lane Configurations						
Traffic Volume (vph)	3	9	1	66	74	1
Future Volume (vph)	3	9	1	66	74	1
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt	0.896				0.998	
Flt Protected	0.989			0.999		
Satd. Flow (prot)	1651	0	0	1861	1859	0
Flt Permitted	0.989			0.999		
Satd. Flow (perm)	1651	0	0	1861	1859	0
Link Speed (mph)	30			30	30	
Link Distance (ft)	291			602	198	
Travel Time (s)	6.6			13.7	4.5	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	3	10	1	72	80	1
Shared Lane Traffic (%)						
Lane Group Flow (vph)	13	0	0	73	81	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(ft)	12			0	0	
Link Offset(ft)	0			0	0	
Crosswalk Width(ft)	16			16	16	
Two way Left Turn Lane						
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15	9	15			9
Sign Control	Stop			Free	Free	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization	14.3%	ICU Level of Service	A
Analysis Period (min)	15		



Movement	SEL	SER	NEL	NET	SWT	SWR
Lane Configurations						
Traffic Volume (veh/h)	3	9	1	66	74	1
Future Volume (Veh/h)	3	9	1	66	74	1
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	3	10	1	72	80	1
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type				None	None	
Median storage veh)						
Upstream signal (ft)					969	
pX, platoon unblocked						
vC, conflicting volume	154	80	81			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	154	80	81			
tC, single (s)	6.4	6.2	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.2			
p0 queue free %	100	99	100			
cM capacity (veh/h)	836	980	1517			

Direction, Lane #	SE 1	NE 1	SW 1
Volume Total	13	73	81
Volume Left	3	1	0
Volume Right	10	0	1
cSH	942	1517	1700
Volume to Capacity	0.01	0.00	0.05
Queue Length 95th (ft)	1	0	0
Control Delay (s)	8.9	0.1	0.0
Lane LOS	A	A	
Approach Delay (s)	8.9	0.1	0.0
Approach LOS	A		

Intersection Summary			
Average Delay	0.7		
Intersection Capacity Utilization	14.3%	ICU Level of Service	A
Analysis Period (min)	15		



Lane Group	NWL	NWR	NET	NER	SWL	SWT
Lane Configurations						
Traffic Volume (vph)	11	31	597	0	0	83
Future Volume (vph)	11	31	597	0	0	83
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.850				
Flt Protected	0.950					
Satd. Flow (prot)	1770	1583	1863	0	0	1863
Flt Permitted	0.950					
Satd. Flow (perm)	1770	1583	1863	0	0	1863
Link Speed (mph)	30		30			30
Link Distance (ft)	225		566			440
Travel Time (s)	5.1		12.9			10.0
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	12	34	649	0	0	90
Shared Lane Traffic (%)						
Lane Group Flow (vph)	12	34	649	0	0	90
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Right	Left	Left
Median Width(ft)	12		0			0
Link Offset(ft)	0		0			0
Crosswalk Width(ft)	16		16			16
Two way Left Turn Lane						
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15	9		9	15	
Sign Control	Stop		Free			Free

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization	41.4%	ICU Level of Service	A
Analysis Period (min)	15		



Movement	NWL	NWR	NET	NER	SWL	SWT
Lane Configurations						
Traffic Volume (veh/h)	11	31	597	0	0	83
Future Volume (Veh/h)	11	31	597	0	0	83
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	12	34	649	0	0	90
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type			None			None
Median storage veh)						
Upstream signal (ft)						1049
pX, platoon unblocked						
vC, conflicting volume	739	649			649	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	739	649			649	
tC, single (s)	6.4	6.2			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	97	93			100	
cM capacity (veh/h)	385	470			937	

Direction, Lane #	NW 1	NW 2	NE 1	SW 1
Volume Total	12	34	649	90
Volume Left	12	0	0	0
Volume Right	0	34	0	0
cSH	385	470	1700	937
Volume to Capacity	0.03	0.07	0.38	0.00
Queue Length 95th (ft)	2	6	0	0
Control Delay (s)	14.7	13.3	0.0	0.0
Lane LOS	B	B		
Approach Delay (s)	13.6		0.0	0.0
Approach LOS	B			

Intersection Summary			
Average Delay	0.8		
Intersection Capacity Utilization	41.4%	ICU Level of Service	A
Analysis Period (min)	15		



Lane Group	NWL	NWR	NET	NER	SWL	SWT
Lane Configurations						
Traffic Volume (vph)	0	10	588	176	418	83
Future Volume (vph)	0	10	588	176	418	83
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (ft)	0	0		0	100	
Storage Lanes	1	0		0	1	
Taper Length (ft)	25				25	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt	0.865		0.969			
Flt Protected					0.950	
Satd. Flow (prot)	1611	0	1805	0	1770	1863
Flt Permitted					0.950	
Satd. Flow (perm)	1611	0	1805	0	1770	1863
Link Speed (mph)	30		30			30
Link Distance (ft)	239		440			609
Travel Time (s)	5.4		10.0			13.8
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	0	11	639	191	454	90
Shared Lane Traffic (%)						
Lane Group Flow (vph)	11	0	830	0	454	90
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Right	Left	Left
Median Width(ft)	12		12			12
Link Offset(ft)	0		0			0
Crosswalk Width(ft)	16		16			16
Two way Left Turn Lane						
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15	9		9	15	
Sign Control	Stop		Free			Free

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization	78.1%	ICU Level of Service	D
Analysis Period (min)	15		



Movement	NWL	NWR	NET	NER	SWL	SWT
Lane Configurations						
Traffic Volume (veh/h)	0	10	588	176	418	83
Future Volume (Veh/h)	0	10	588	176	418	83
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	0	11	639	191	454	90
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type			None			None
Median storage veh)						
Upstream signal (ft)						609
pX, platoon unblocked						
vC, conflicting volume	1732	734			830	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	1732	734			830	
tC, single (s)	6.4	6.2			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	100	97			43	
cM capacity (veh/h)	42	420			802	

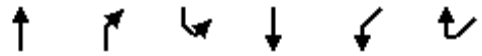
Direction, Lane #	NW 1	NE 1	SW 1	SW 2
Volume Total	11	830	454	90
Volume Left	0	0	454	0
Volume Right	11	191	0	0
cSH	420	1700	802	1700
Volume to Capacity	0.03	0.49	0.57	0.05
Queue Length 95th (ft)	2	0	90	0
Control Delay (s)	13.8	0.0	15.2	0.0
Lane LOS	B		C	
Approach Delay (s)	13.8	0.0	12.7	
Approach LOS	B			

Intersection Summary			
Average Delay	5.1		
Intersection Capacity Utilization	78.1%	ICU Level of Service	D
Analysis Period (min)	15		



Lane Group	NBT	NBR	SBL	SBT	SWL	SWR
Lane Configurations						
Traffic Volume (vph)	319	78	519	306	0	94
Future Volume (vph)	319	78	519	306	0	94
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt	0.973					0.865
Flt Protected				0.970		
Satd. Flow (prot)	1812	0	0	1807	0	1611
Flt Permitted				0.970		
Satd. Flow (perm)	1812	0	0	1807	0	1611
Link Speed (mph)	30			30	30	
Link Distance (ft)	205			164	566	
Travel Time (s)	4.7			3.7	12.9	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	347	85	564	333	0	102
Shared Lane Traffic (%)						
Lane Group Flow (vph)	432	0	0	897	0	102
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(ft)	0			0	0	
Link Offset(ft)	0			0	0	
Crosswalk Width(ft)	16			16	16	
Two way Left Turn Lane						
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)		9	15		15	9
Sign Control	Free			Free	Stop	

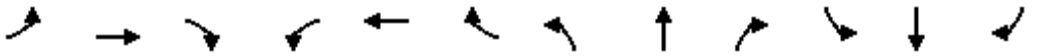
Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 73.0%		ICU Level of Service D	
Analysis Period (min) 15			



Movement	NBT	NBR	SBL	SBT	SWL	SWR
Lane Configurations						
Traffic Volume (veh/h)	319	78	519	306	0	94
Future Volume (Veh/h)	319	78	519	306	0	94
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	347	85	564	333	0	102
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None			None		
Median storage veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume			432		1850	390
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			432		1850	390
tC, single (s)			4.1		6.4	6.2
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
p0 queue free %			50		100	85
cM capacity (veh/h)			1128		41	659

Direction, Lane #	NB 1	SB 1	SW 1
Volume Total	432	897	102
Volume Left	0	564	0
Volume Right	85	0	102
cSH	1700	1128	659
Volume to Capacity	0.25	0.50	0.15
Queue Length 95th (ft)	0	72	14
Control Delay (s)	0.0	9.8	11.5
Lane LOS		A	B
Approach Delay (s)	0.0	9.8	11.5
Approach LOS			B

Intersection Summary			
Average Delay	6.9		
Intersection Capacity Utilization	73.0%	ICU Level of Service	D
Analysis Period (min)	15		

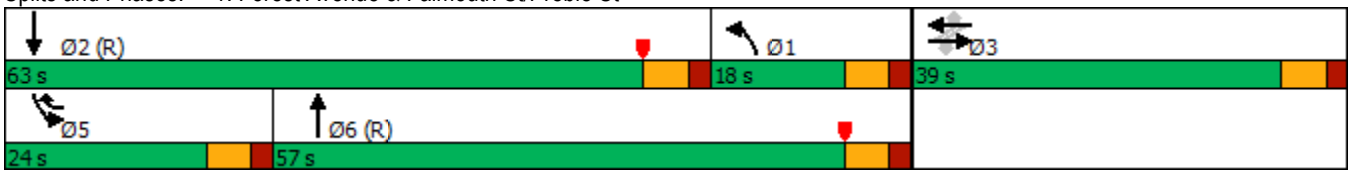


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	45	44	108	20	142	268	93	947	15	102	779	34
Future Volume (vph)	45	44	108	20	142	268	93	947	15	102	779	34
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	0		150	0		0	200		0	150		0
Storage Lanes	0		1	0		1	1		0	1		0
Taper Length (ft)	25			25			75			75		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.95	0.95	1.00	0.95	0.95
Frt			0.850			0.850		0.998			0.994	
Flt Protected		0.975			0.994		0.950			0.950		
Satd. Flow (prot)	0	1852	1615	0	1858	1599	1805	3466	0	1805	3554	0
Flt Permitted		0.482			0.950		0.950			0.950		
Satd. Flow (perm)	0	916	1615	0	1776	1599	1805	3466	0	1805	3554	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			140			82		2			5	
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		675			1256			804			1168	
Travel Time (s)		15.3			28.5			18.3			26.5	
Peak Hour Factor	0.77	0.77	0.77	0.81	0.81	0.81	0.96	0.96	0.96	0.95	0.95	0.95
Growth Factor	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	0%	0%	0%	6%	1%	1%	0%	4%	1%	0%	1%	0%
Adj. Flow (vph)	58	57	140	25	175	331	97	986	16	107	820	36
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	115	140	0	200	331	97	1002	0	107	856	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		0			10			18			16	
Link Offset(ft)		0			-6			0			-2	
Crosswalk Width(ft)		16			16			30			16	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors	1	1	1	1	1	1	1	1		1	1	
Detector Template												
Leading Detector (ft)	50	50	50	50	50	50	50	50		50	50	
Trailing Detector (ft)	0	0	0	0	0	0	0	0		0	0	
Detector 1 Position(ft)	0	0	0	0	0	0	0	0		0	0	
Detector 1 Size(ft)	50	50	50	50	50	50	50	50		50	50	
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Turn Type	Perm	NA	Perm	Perm	NA	pm+ov	Prot	NA		Prot	NA	
Protected Phases		3			3	5	1	6		5	2	
Permitted Phases	3		3	3		3						
Detector Phase	3	3	3	3	3	5	1	6		5	2	
Switch Phase												
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	10.0		5.0	10.0	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Minimum Split (s)	32.0	32.0	32.0	32.0	32.0	16.0	16.0	37.0		16.0	25.0	
Total Split (s)	39.0	39.0	39.0	39.0	39.0	24.0	18.0	57.0		24.0	63.0	
Total Split (%)	32.5%	32.5%	32.5%	32.5%	32.5%	20.0%	15.0%	47.5%		20.0%	52.5%	
Maximum Green (s)	33.0	33.0	33.0	33.0	33.0	18.0	12.0	51.0		18.0	57.0	
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0		4.0	4.0	
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0		2.0	2.0	
Lost Time Adjust (s)		-2.0	-2.0		-2.0	-2.0	-2.0	-2.0		-2.0	-2.0	
Total Lost Time (s)		4.0	4.0		4.0	4.0	4.0	4.0		4.0	4.0	
Lead/Lag						Lead	Lag	Lag		Lead	Lead	
Lead-Lag Optimize?												
Vehicle Extension (s)	2.5	2.5	2.5	2.5	2.5	2.0	2.0	3.0		2.0	3.0	
Recall Mode	None	None	None	None	None	None	None	C-Min		None	C-Min	
Walk Time (s)	4.0	4.0	4.0	4.0	4.0			4.0			4.0	
Flash Dont Walk (s)	21.0	21.0	21.0	21.0	21.0			26.0			14.0	
Pedestrian Calls (#/hr)	4	4	4	4	4			7			4	
Act Effct Green (s)		20.4	20.4		20.4	37.8	21.1	74.2		13.3	66.5	
Actuated g/C Ratio		0.17	0.17		0.17	0.32	0.18	0.62		0.11	0.55	
v/c Ratio		0.74	0.36		0.66	0.59	0.31	0.47		0.54	0.43	
Control Delay		73.4	9.0		56.6	28.8	25.3	4.5		74.7	10.9	
Queue Delay		0.0	0.0		0.0	0.0	0.0	0.0		0.0	0.0	
Total Delay		73.4	9.0		56.6	28.8	25.3	4.5		74.7	10.9	
LOS		E	A		E	C	C	A		E	B	
Approach Delay		38.0			39.3			6.4			18.0	
Approach LOS		D			D			A			B	

Intersection Summary			
Area Type:	Other		
Cycle Length: 120			
Actuated Cycle Length: 120			
Offset: 21 (18%), Referenced to phase 2:SBT and 6:NBT, Start of Yellow			
Natural Cycle: 85			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.74			
Intersection Signal Delay: 19.3		Intersection LOS: B	
Intersection Capacity Utilization 59.0%		ICU Level of Service B	
Analysis Period (min) 15			

Splits and Phases: 1: Forest Avenue & Falmouth St/Preble St

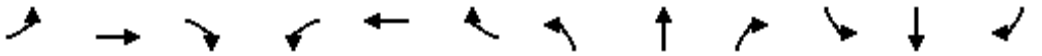




Lane Group	EBT	EBR	WBT	WBR	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	115	140	200	331	97	1002	107	856
v/c Ratio	0.74	0.36	0.66	0.59	0.31	0.47	0.54	0.43
Control Delay	73.4	9.0	56.6	28.8	25.3	4.5	74.7	10.9
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	73.4	9.0	56.6	28.8	25.3	4.5	74.7	10.9
Queue Length 50th (ft)	86	0	147	162	58	56	89	93
Queue Length 95th (ft)	119	31	187	186	m87	41	m119	126
Internal Link Dist (ft)	595		1176			724		1088
Turn Bay Length (ft)		150			200		150	
Base Capacity (vph)	267	570	518	643	317	2144	300	1976
Starvation Cap Reductn	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.43	0.25	0.39	0.51	0.31	0.47	0.36	0.43

Intersection Summary

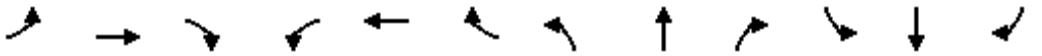
m Volume for 95th percentile queue is metered by upstream signal.



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	45	44	108	20	142	268	93	947	15	102	779	34
Future Volume (vph)	45	44	108	20	142	268	93	947	15	102	779	34
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0	4.0		4.0	4.0	4.0	4.0		4.0	4.0	
Lane Util. Factor		1.00	1.00		1.00	1.00	1.00	0.95		1.00	0.95	
Frt		1.00	0.85		1.00	0.85	1.00	1.00		1.00	0.99	
Flt Protected		0.98	1.00		0.99	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (prot)		1853	1615		1858	1599	1805	3464		1805	3553	
Flt Permitted		0.48	1.00		0.95	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (perm)		917	1615		1775	1599	1805	3464		1805	3553	
Peak-hour factor, PHF	0.77	0.77	0.77	0.81	0.81	0.81	0.96	0.96	0.96	0.95	0.95	0.95
Growth Factor (vph)	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Adj. Flow (vph)	58	57	140	25	175	331	97	986	16	107	820	36
RTOR Reduction (vph)	0	0	116	0	0	59	0	1	0	0	2	0
Lane Group Flow (vph)	0	115	24	0	200	272	97	1001	0	107	854	0
Heavy Vehicles (%)	0%	0%	0%	6%	1%	1%	0%	4%	1%	0%	1%	0%
Turn Type	Perm	NA	Perm	Perm	NA	pm+ov	Prot	NA		Prot	NA	
Protected Phases		3			3	5	1	6		5	2	
Permitted Phases	3		3	3		3						
Actuated Green, G (s)		18.4	18.4		18.4	29.7	19.1	72.3		11.3	64.5	
Effective Green, g (s)		20.4	20.4		20.4	33.7	21.1	74.3		13.3	66.5	
Actuated g/C Ratio		0.17	0.17		0.17	0.28	0.18	0.62		0.11	0.55	
Clearance Time (s)		6.0	6.0		6.0	6.0	6.0	6.0		6.0	6.0	
Vehicle Extension (s)		2.5	2.5		2.5	2.0	2.0	3.0		2.0	3.0	
Lane Grp Cap (vph)		155	274		301	502	317	2144		200	1968	
v/s Ratio Prot						c0.06	0.05	c0.29		0.06	0.24	
v/s Ratio Perm		c0.13	0.01		0.11	0.11						
v/c Ratio		0.74	0.09		0.66	0.54	0.31	0.47		0.54	0.43	
Uniform Delay, d1		47.3	42.0		46.6	36.6	43.1	12.2		50.4	15.7	
Progression Factor		1.00	1.00		1.00	1.00	0.54	0.29		1.35	0.63	
Incremental Delay, d2		16.5	0.1		4.9	0.6	0.1	0.5		1.0	0.5	
Delay (s)		63.8	42.1		51.5	37.2	23.6	4.1		69.3	10.4	
Level of Service		E	D		D	D	C	A		E	B	
Approach Delay (s)		51.9			42.6			5.8			16.9	
Approach LOS		D			D			A			B	

Intersection Summary			
HCM 2000 Control Delay	20.6	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.54		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	59.0%	ICU Level of Service	B
Analysis Period (min)	15		

c Critical Lane Group

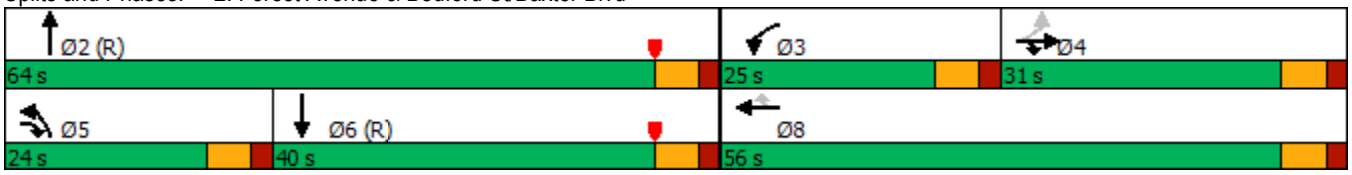


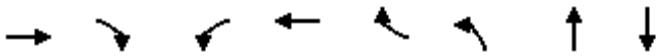
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	57	153	458	299	113	38	256	959	141	0	885	21
Future Volume (vph)	57	153	458	299	113	38	256	959	141	0	885	21
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	0		375	140		75	0		0	0		0
Storage Lanes	0		1	1		1	1		0	0		0
Taper Length (ft)	100			75			25			25		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.95	0.95	1.00	0.95	0.95
Frt			0.850			0.850		0.981			0.996	
Flt Protected		0.987		0.950			0.950					
Satd. Flow (prot)	0	1655	1425	1608	1693	1439	1593	3125	0	0	3173	0
Flt Permitted		0.882		0.950			0.950					
Satd. Flow (perm)	0	1479	1425	1608	1693	1439	1593	3125	0	0	3173	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			82			82		20			2	
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		609			1329			253			804	
Travel Time (s)		13.8			30.2			5.8			18.3	
Peak Hour Factor	0.87	0.87	0.87	0.85	0.85	0.85	0.91	0.91	0.91	0.92	0.92	0.92
Growth Factor	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	2%	2%	2%	1%	1%	1%	2%	2%	2%	2%	2%	2%
Adj. Flow (vph)	66	176	526	352	133	45	281	1054	155	0	962	23
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	242	526	352	133	45	281	1209	0	0	985	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		0			12			18			4	
Link Offset(ft)		0			3			0			0	
Crosswalk Width(ft)		20			10			16			16	
Two way Left Turn Lane												
Headway Factor	1.14	1.14	1.14	1.14	1.14	1.14	1.14	1.14	1.14	1.14	1.14	1.14
Turning Speed (mph)	15		9	15		15	15		9	15		9
Number of Detectors	1	1	1	1	1	1	1	1			1	
Detector Template												
Leading Detector (ft)	50	50	50	50	50	50	50	50			50	
Trailing Detector (ft)	0	0	0	0	0	0	0	0			0	
Detector 1 Position(ft)	0	0	0	0	0	0	0	0			0	
Detector 1 Size(ft)	50	50	50	50	50	50	50	50			50	
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex			Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0			0.0	
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0			0.0	
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0			0.0	
Turn Type	Perm	NA	pt+ov	Prot	NA	Perm	Prot	NA			NA	
Protected Phases		4	4 5	3	8		5	2			6	
Permitted Phases	4					8						
Detector Phase	4	4	4 5	3	8	8	5	2			6	
Switch Phase												
Minimum Initial (s)	7.0	7.0		5.0	5.0	5.0	5.0	10.0			10.0	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Minimum Split (s)	29.0	29.0		16.0	29.0	29.0	16.0	34.0			34.0	
Total Split (s)	31.0	31.0		25.0	56.0	56.0	24.0	64.0			40.0	
Total Split (%)	25.8%	25.8%		20.8%	46.7%	46.7%	20.0%	53.3%			33.3%	
Maximum Green (s)	25.0	25.0		19.0	50.0	50.0	18.0	58.0			34.0	
Yellow Time (s)	4.0	4.0		4.0	4.0	4.0	4.0	4.0			4.0	
All-Red Time (s)	2.0	2.0		2.0	2.0	2.0	2.0	2.0			2.0	
Lost Time Adjust (s)		-4.0		-4.0	-4.0	-4.0	-4.0	-4.0			-4.0	
Total Lost Time (s)		2.0		2.0	2.0	2.0	2.0	2.0			2.0	
Lead/Lag	Lag	Lag		Lead			Lead				Lag	
Lead-Lag Optimize?												
Vehicle Extension (s)	2.0	2.0		2.0	2.0	2.0	3.5	3.0			3.0	
Recall Mode	None	None		None	None	None	None	C-Min			C-Min	
Walk Time (s)	4.0	4.0			4.0	4.0		4.0			4.0	
Flash Dont Walk (s)	18.0	18.0			18.0	18.0		23.0			23.0	
Pedestrian Calls (#/hr)	10	10			1	1		1			1	
Act Effct Green (s)		28.5	53.0	23.0	53.5	53.5	22.5	62.5			38.0	
Actuated g/C Ratio		0.24	0.44	0.19	0.45	0.45	0.19	0.52			0.32	
v/c Ratio		0.69	0.78	1.14	0.18	0.07	0.94	0.74			0.98	
Control Delay		52.9	33.3	139.5	20.6	1.0	88.3	25.6			52.0	
Queue Delay		0.0	0.0	0.0	0.0	0.0	0.0	0.0			0.0	
Total Delay		52.9	33.3	139.5	20.6	1.0	88.3	25.6			52.0	
LOS		D	C	F	C	A	F	C			D	
Approach Delay		39.5			97.9			37.4			52.0	
Approach LOS		D			F			D			D	

Intersection Summary			
Area Type:	CBD		
Cycle Length: 120			
Actuated Cycle Length: 120			
Offset: 9 (8%), Referenced to phase 2:NBT and 6:SBT, Start of Yellow			
Natural Cycle: 105			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 1.14			
Intersection Signal Delay: 50.1		Intersection LOS: D	
Intersection Capacity Utilization 87.9%		ICU Level of Service E	
Analysis Period (min) 15			

Splits and Phases: 2: Forest Avenue & Bedford St/Baxter Blvd



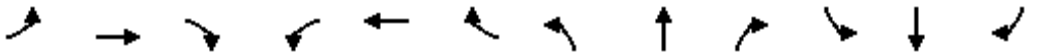


Lane Group	EBT	EBR	WBL	WBT	WBR	NBL	NBT	SBT
Lane Group Flow (vph)	242	526	352	133	45	281	1209	985
v/c Ratio	0.69	0.78	1.14	0.18	0.07	0.94	0.74	0.98
Control Delay	52.9	33.3	139.5	20.6	1.0	88.3	25.6	52.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	52.9	33.3	139.5	20.6	1.0	88.3	25.6	52.0
Queue Length 50th (ft)	171	293	~319	60	0	218	367	407
Queue Length 95th (ft)	253	421	#466	95	3	#392	456	#534
Internal Link Dist (ft)	529			1249			173	724
Turn Bay Length (ft)		375	140		75			
Base Capacity (vph)	357	675	308	761	692	298	1636	1006
Starvation Cap Reductn	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.68	0.78	1.14	0.17	0.07	0.94	0.74	0.98

Intersection Summary

~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	57	153	458	299	113	38	256	959	141	0	885	21
Future Volume (vph)	57	153	458	299	113	38	256	959	141	0	885	21
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		2.0	2.0	2.0	2.0	2.0	2.0	2.0			2.0	
Lane Util. Factor		1.00	1.00	1.00	1.00	1.00	1.00	0.95			0.95	
Frt		1.00	0.85	1.00	1.00	0.85	1.00	0.98			1.00	
Flt Protected		0.99	1.00	0.95	1.00	1.00	0.95	1.00			1.00	
Satd. Flow (prot)		1654	1425	1608	1693	1439	1593	3124			3174	
Flt Permitted		0.88	1.00	0.95	1.00	1.00	0.95	1.00			1.00	
Satd. Flow (perm)		1478	1425	1608	1693	1439	1593	3124			3174	
Peak-hour factor, PHF	0.87	0.87	0.87	0.85	0.85	0.85	0.91	0.91	0.91	0.92	0.92	0.92
Growth Factor (vph)	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Adj. Flow (vph)	66	176	526	352	133	45	281	1054	155	0	962	23
RTOR Reduction (vph)	0	0	46	0	0	25	0	10	0	0	1	0
Lane Group Flow (vph)	0	242	480	352	133	20	281	1199	0	0	984	0
Heavy Vehicles (%)	2%	2%	2%	1%	1%	1%	2%	2%	2%	2%	2%	2%
Turn Type	Perm	NA	pt+ov	Prot	NA	Perm	Prot	NA			NA	
Protected Phases		4	4 5	3	8		5	2			6	
Permitted Phases	4					8						
Actuated Green, G (s)		24.5	49.0	19.0	49.5	49.5	18.5	58.5			34.0	
Effective Green, g (s)		28.5	53.0	23.0	53.5	53.5	22.5	62.5			38.0	
Actuated g/C Ratio		0.24	0.44	0.19	0.45	0.45	0.19	0.52			0.32	
Clearance Time (s)		6.0		6.0	6.0	6.0	6.0	6.0			6.0	
Vehicle Extension (s)		2.0		2.0	2.0	2.0	3.5	3.0			3.0	
Lane Grp Cap (vph)		351	629	308	754	641	298	1627			1005	
v/s Ratio Prot			c0.34	c0.22	0.08		c0.18	0.38			c0.31	
v/s Ratio Perm		0.16				0.01						
v/c Ratio		0.69	0.76	1.14	0.18	0.03	0.94	0.74			0.98	
Uniform Delay, d1		41.7	28.2	48.5	20.0	18.7	48.1	22.4			40.6	
Progression Factor		1.00	1.00	1.00	1.00	1.00	1.00	1.00			0.69	
Incremental Delay, d2		4.5	4.9	95.7	0.0	0.0	37.3	3.0			22.7	
Delay (s)		46.2	33.2	144.2	20.0	18.7	85.4	25.4			50.8	
Level of Service		D	C	F	C	B	F	C			D	
Approach Delay (s)		37.3			102.4			36.7			50.8	
Approach LOS		D			F			D			D	

Intersection Summary			
HCM 2000 Control Delay	49.7	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.93		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	87.9%	ICU Level of Service	E
Analysis Period (min)	15		

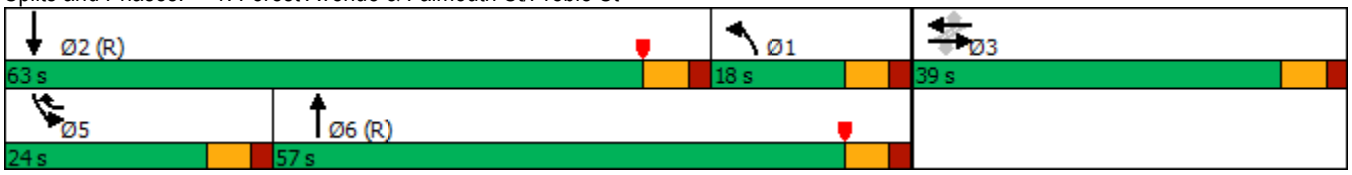
c Critical Lane Group

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	45	44	108	20	141	268	67	947	15	102	786	27
Future Volume (vph)	45	44	108	20	141	268	67	947	15	102	786	27
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	0		150	0		0	200		0	150		0
Storage Lanes	0		1	0		1	1		0	1		0
Taper Length (ft)	25			25			75			75		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.95	0.95	1.00	0.95	0.95
Frt			0.850			0.850		0.998			0.995	
Flt Protected		0.975			0.994		0.950			0.950		
Satd. Flow (prot)	0	1852	1615	0	1858	1599	1805	3466	0	1805	3558	0
Flt Permitted		0.485			0.949		0.950			0.950		
Satd. Flow (perm)	0	922	1615	0	1774	1599	1805	3466	0	1805	3558	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			140			82		2			4	
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		675			1256			804			1168	
Travel Time (s)		15.3			28.5			18.3			26.5	
Peak Hour Factor	0.77	0.77	0.77	0.81	0.81	0.81	0.96	0.96	0.96	0.95	0.95	0.95
Growth Factor	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	0%	0%	0%	6%	1%	1%	0%	4%	1%	0%	1%	0%
Adj. Flow (vph)	58	57	140	25	174	331	70	986	16	107	827	28
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	115	140	0	199	331	70	1002	0	107	855	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		0			10			18			16	
Link Offset(ft)		0			-6			0			-2	
Crosswalk Width(ft)		16			16			30			16	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors	1	1	1	1	1	1	1	1		1	1	
Detector Template												
Leading Detector (ft)	50	50	50	50	50	50	50	50		50	50	
Trailing Detector (ft)	0	0	0	0	0	0	0	0		0	0	
Detector 1 Position(ft)	0	0	0	0	0	0	0	0		0	0	
Detector 1 Size(ft)	50	50	50	50	50	50	50	50		50	50	
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Turn Type	Perm	NA	Perm	Perm	NA	pm+ov	Prot	NA		Prot	NA	
Protected Phases		3			3	5	1	6		5	2	
Permitted Phases	3		3	3		3						
Detector Phase	3	3	3	3	3	5	1	6		5	2	
Switch Phase												
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	10.0		5.0	10.0	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Minimum Split (s)	32.0	32.0	32.0	32.0	32.0	16.0	16.0	37.0		16.0	25.0	
Total Split (s)	39.0	39.0	39.0	39.0	39.0	24.0	18.0	57.0		24.0	63.0	
Total Split (%)	32.5%	32.5%	32.5%	32.5%	32.5%	20.0%	15.0%	47.5%		20.0%	52.5%	
Maximum Green (s)	33.0	33.0	33.0	33.0	33.0	18.0	12.0	51.0		18.0	57.0	
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0		4.0	4.0	
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0		2.0	2.0	
Lost Time Adjust (s)		-2.0	-2.0		-2.0	-2.0	-2.0	-2.0		-2.0	-2.0	
Total Lost Time (s)		4.0	4.0		4.0	4.0	4.0	4.0		4.0	4.0	
Lead/Lag						Lead	Lag	Lag		Lead	Lead	
Lead-Lag Optimize?												
Vehicle Extension (s)	2.5	2.5	2.5	2.5	2.5	2.0	2.0	3.0		2.0	3.0	
Recall Mode	None	None	None	None	None	None	None	C-Min		None	C-Min	
Walk Time (s)	4.0	4.0	4.0	4.0	4.0			4.0			4.0	
Flash Dont Walk (s)	21.0	21.0	21.0	21.0	21.0			26.0			14.0	
Pedestrian Calls (#/hr)	4	4	4	4	4			7			4	
Act Effct Green (s)		20.4	20.4		20.4	37.7	18.6	74.3		13.3	71.3	
Actuated g/C Ratio		0.17	0.17		0.17	0.31	0.16	0.62		0.11	0.59	
v/c Ratio		0.74	0.36		0.66	0.59	0.25	0.47		0.54	0.40	
Control Delay		73.0	9.0		56.6	28.8	25.6	4.7		74.7	9.9	
Queue Delay		0.0	0.0		0.0	0.0	0.0	0.0		0.0	0.0	
Total Delay		73.0	9.0		56.6	28.8	25.6	4.7		74.7	9.9	
LOS		E	A		E	C	C	A		E	A	
Approach Delay		37.9			39.3			6.0			17.1	
Approach LOS		D			D			A			B	

Intersection Summary			
Area Type:	Other		
Cycle Length: 120			
Actuated Cycle Length: 120			
Offset: 21 (18%), Referenced to phase 2:SBT and 6:NBT, Start of Yellow			
Natural Cycle: 85			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.74			
Intersection Signal Delay: 18.9		Intersection LOS: B	
Intersection Capacity Utilization 59.0%		ICU Level of Service B	
Analysis Period (min) 15			

Splits and Phases: 1: Forest Avenue & Falmouth St/Preble St

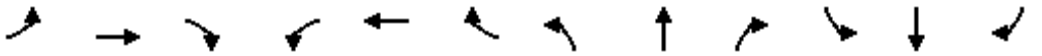




Lane Group	EBT	EBR	WBT	WBR	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	115	140	199	331	70	1002	107	855
v/c Ratio	0.74	0.36	0.66	0.59	0.25	0.47	0.54	0.40
Control Delay	73.0	9.0	56.6	28.8	25.6	4.7	74.7	9.9
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	73.0	9.0	56.6	28.8	25.6	4.7	74.7	9.9
Queue Length 50th (ft)	86	0	146	162	41	57	89	93
Queue Length 95th (ft)	119	31	186	186	m62	49	m119	126
Internal Link Dist (ft)	595		1176			724		1088
Turn Bay Length (ft)		150			200		150	
Base Capacity (vph)	268	570	517	643	300	2146	300	2120
Starvation Cap Reductn	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.43	0.25	0.38	0.51	0.23	0.47	0.36	0.40

Intersection Summary

m Volume for 95th percentile queue is metered by upstream signal.

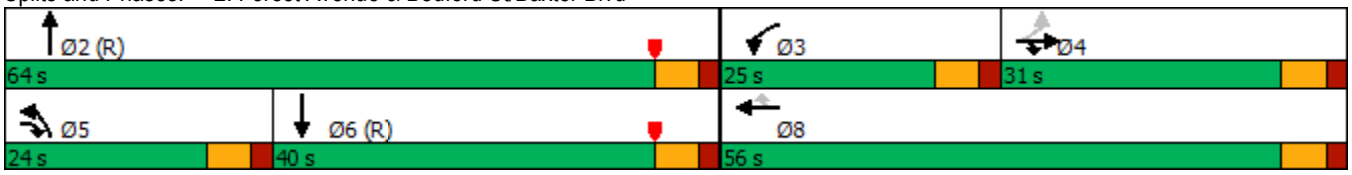


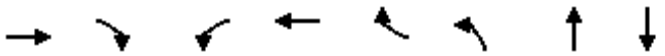
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	72	154	516	299	114	38	282	933	141	0	827	28
Future Volume (vph)	72	154	516	299	114	38	282	933	141	0	827	28
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	0		375	140		75	0		0	0		0
Storage Lanes	0		1	1		1	1		0	0		0
Taper Length (ft)	100			75			25			25		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.95	0.95	1.00	0.95	0.95
Frt			0.850			0.850		0.980			0.995	
Flt Protected		0.984		0.950			0.950					
Satd. Flow (prot)	0	1650	1425	1608	1693	1439	1593	3122	0	0	3169	0
Flt Permitted		0.858		0.950			0.950					
Satd. Flow (perm)	0	1438	1425	1608	1693	1439	1593	3122	0	0	3169	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			82			82		21			3	
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		609			1329			253			804	
Travel Time (s)		13.8			30.2			5.8			18.3	
Peak Hour Factor	0.87	0.87	0.87	0.85	0.85	0.85	0.91	0.91	0.91	0.92	0.92	0.92
Growth Factor	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	2%	2%	2%	1%	1%	1%	2%	2%	2%	2%	2%	2%
Adj. Flow (vph)	83	177	593	352	134	45	310	1025	155	0	899	30
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	260	593	352	134	45	310	1180	0	0	929	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		0			12			18			4	
Link Offset(ft)		0			3			0			0	
Crosswalk Width(ft)		20			10			16			16	
Two way Left Turn Lane												
Headway Factor	1.14	1.14	1.14	1.14	1.14	1.14	1.14	1.14	1.14	1.14	1.14	1.14
Turning Speed (mph)	15		9	15		15	15		9	15		9
Number of Detectors	1	1	1	1	1	1	1	1			1	
Detector Template												
Leading Detector (ft)	50	50	50	50	50	50	50	50			50	
Trailing Detector (ft)	0	0	0	0	0	0	0	0			0	
Detector 1 Position(ft)	0	0	0	0	0	0	0	0			0	
Detector 1 Size(ft)	50	50	50	50	50	50	50	50			50	
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex			Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0			0.0	
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0			0.0	
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0			0.0	
Turn Type	Perm	NA	pt+ov	Prot	NA	Perm	Prot	NA			NA	
Protected Phases		4	4 5	3	8		5	2			6	
Permitted Phases	4					8						
Detector Phase	4	4	4 5	3	8	8	5	2			6	
Switch Phase												
Minimum Initial (s)	7.0	7.0		5.0	5.0	5.0	5.0	10.0			10.0	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Minimum Split (s)	29.0	29.0		16.0	29.0	29.0	16.0	34.0			34.0	
Total Split (s)	31.0	31.0		25.0	56.0	56.0	24.0	64.0			40.0	
Total Split (%)	25.8%	25.8%		20.8%	46.7%	46.7%	20.0%	53.3%			33.3%	
Maximum Green (s)	25.0	25.0		19.0	50.0	50.0	18.0	58.0			34.0	
Yellow Time (s)	4.0	4.0		4.0	4.0	4.0	4.0	4.0			4.0	
All-Red Time (s)	2.0	2.0		2.0	2.0	2.0	2.0	2.0			2.0	
Lost Time Adjust (s)		-4.0		-4.0	-4.0	-4.0	-4.0	-4.0			-4.0	
Total Lost Time (s)		2.0		2.0	2.0	2.0	2.0	2.0			2.0	
Lead/Lag	Lag	Lag		Lead			Lead				Lag	
Lead-Lag Optimize?												
Vehicle Extension (s)	2.0	2.0		2.0	2.0	2.0	3.5	3.0			3.0	
Recall Mode	None	None		None	None	None	None	C-Min			C-Min	
Walk Time (s)	4.0	4.0			4.0	4.0		4.0			4.0	
Flash Dont Walk (s)	18.0	18.0			18.0	18.0		23.0			23.0	
Pedestrian Calls (#/hr)	10	10			1	1		1			1	
Act Effct Green (s)		29.0	53.0	23.0	54.0	54.0	22.0	62.0			38.0	
Actuated g/C Ratio		0.24	0.44	0.19	0.45	0.45	0.18	0.52			0.32	
v/c Ratio		0.75	0.88	1.14	0.18	0.07	1.06	0.73			0.92	
Control Delay		56.9	42.3	139.5	20.5	1.0	116.9	25.3			42.3	
Queue Delay		0.0	0.0	0.0	0.0	0.0	0.0	0.0			0.0	
Total Delay		56.9	42.3	139.5	20.5	1.0	116.9	25.3			42.3	
LOS		E	D	F	C	A	F	C			D	
Approach Delay		46.7			97.8			44.4			42.3	
Approach LOS		D			F			D			D	

Intersection Summary			
Area Type:	CBD		
Cycle Length: 120			
Actuated Cycle Length: 120			
Offset: 9 (8%), Referenced to phase 2:NBT and 6:SBT, Start of Yellow			
Natural Cycle: 105			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 1.14			
Intersection Signal Delay: 51.8		Intersection LOS: D	
Intersection Capacity Utilization 90.3%		ICU Level of Service E	
Analysis Period (min) 15			

Splits and Phases: 2: Forest Avenue & Bedford St/Baxter Blvd





Lane Group	EBT	EBR	WBL	WBT	WBR	NBL	NBT	SBT
Lane Group Flow (vph)	260	593	352	134	45	310	1180	929
v/c Ratio	0.75	0.88	1.14	0.18	0.07	1.06	0.73	0.92
Control Delay	56.9	42.3	139.5	20.5	1.0	116.9	25.3	42.3
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	56.9	42.3	139.5	20.5	1.0	116.9	25.3	42.3
Queue Length 50th (ft)	187	365	~319	61	0	~264	353	377
Queue Length 95th (ft)	#280	#557	#466	96	3	#445	438	#484
Internal Link Dist (ft)	529			1249			173	724
Turn Bay Length (ft)		375	140		75			
Base Capacity (vph)	347	675	308	761	692	292	1623	1005
Starvation Cap Reductn	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.75	0.88	1.14	0.18	0.07	1.06	0.73	0.92

Intersection Summary

~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.



Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	98	0	0	130	0	0
Future Volume (vph)	98	0	0	130	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt						
Flt Protected						
Satd. Flow (prot)	1863	0	0	1863	1863	0
Flt Permitted						
Satd. Flow (perm)	1863	0	0	1863	1863	0
Link Speed (mph)	30			30	30	
Link Distance (ft)	136			675	183	
Travel Time (s)	3.1			15.3	4.2	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Growth Factor	100%	100%	100%	100%	100%	100%
Adj. Flow (vph)	107	0	0	141	0	0
Shared Lane Traffic (%)						
Lane Group Flow (vph)	107	0	0	141	0	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(ft)	0			0	12	
Link Offset(ft)	0			0	0	
Crosswalk Width(ft)	16			16	16	
Two way Left Turn Lane						
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)		9	15		15	9
Sign Control	Free			Free	Stop	

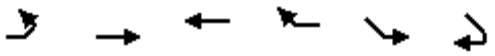
Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization	10.2%	ICU Level of Service	A
Analysis Period (min)	15		



Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	98	0	0	130	0	0
Future Volume (Veh/h)	98	0	0	130	0	0
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	107	0	0	141	0	0
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None			None		
Median storage veh)						
Upstream signal (ft)				675		
pX, platoon unblocked						
vC, conflicting volume			107		248	107
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			107		248	107
tC, single (s)			4.1		6.4	6.2
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
p0 queue free %			100		100	100
cM capacity (veh/h)			1484		740	947

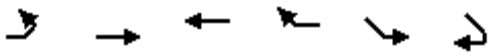
Direction, Lane #	EB 1	WB 1	NB 1
Volume Total	107	141	0
Volume Left	0	0	0
Volume Right	0	0	0
cSH	1700	1484	1700
Volume to Capacity	0.06	0.00	0.00
Queue Length 95th (ft)	0	0	0
Control Delay (s)	0.0	0.0	0.0
Lane LOS			A
Approach Delay (s)	0.0	0.0	0.0
Approach LOS			A

Intersection Summary			
Average Delay	0.0		
Intersection Capacity Utilization	10.2%	ICU Level of Service	A
Analysis Period (min)	15		



Lane Group	EBL	EBT	WBT	WBR	SEL	SER
Lane Configurations						
Traffic Volume (vph)	2	94	122	8	4	3
Future Volume (vph)	2	94	122	8	4	3
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt			0.991		0.942	
Flt Protected		0.999			0.972	
Satd. Flow (prot)	0	1861	1846	0	1706	0
Flt Permitted		0.999			0.972	
Satd. Flow (perm)	0	1861	1846	0	1706	0
Link Speed (mph)		30	30		30	
Link Distance (ft)		733	136		287	
Travel Time (s)		16.7	3.1		6.5	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Growth Factor	100%	100%	100%	100%	100%	100%
Adj. Flow (vph)	2	102	133	9	4	3
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	104	142	0	7	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Left	Left	Right	Left	Right
Median Width(ft)		0	0		12	
Link Offset(ft)		0	0		0	
Crosswalk Width(ft)		16	16		16	
Two way Left Turn Lane						
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15			9	15	9
Sign Control		Free	Free		Stop	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 16.9%		ICU Level of Service A	
Analysis Period (min) 15			



Movement	EBL	EBT	WBT	WBR	SEL	SER
Lane Configurations						
Traffic Volume (veh/h)	2	94	122	8	4	3
Future Volume (Veh/h)	2	94	122	8	4	3
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	2	102	133	9	4	3
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type		None	None			
Median storage veh)						
Upstream signal (ft)			811			
pX, platoon unblocked						
vC, conflicting volume	142				244	138
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	142				244	138
tC, single (s)	4.1				6.4	6.2
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.3
p0 queue free %	100				99	100
cM capacity (veh/h)	1441				744	911

Direction, Lane #	EB 1	WB 1	SE 1
Volume Total	104	142	7
Volume Left	2	0	4
Volume Right	0	9	3
cSH	1441	1700	807
Volume to Capacity	0.00	0.08	0.01
Queue Length 95th (ft)	0	0	1
Control Delay (s)	0.2	0.0	9.5
Lane LOS	A		A
Approach Delay (s)	0.2	0.0	9.5
Approach LOS			A

Intersection Summary			
Average Delay	0.3		
Intersection Capacity Utilization	16.9%	ICU Level of Service	A
Analysis Period (min)	15		



Lane Group	NWL	NWR	NET	NER	SWL	SWT
Lane Configurations						
Traffic Volume (vph)	62	318	368	0	0	267
Future Volume (vph)	62	318	368	0	0	267
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.850				
Flt Protected	0.950					
Satd. Flow (prot)	1770	1583	1863	0	0	1863
Flt Permitted	0.950					
Satd. Flow (perm)	1770	1583	1863	0	0	1863
Link Speed (mph)	30		30			30
Link Distance (ft)	218		550			444
Travel Time (s)	5.0		12.5			10.1
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Growth Factor	100%	100%	100%	100%	100%	100%
Adj. Flow (vph)	67	346	400	0	0	290
Shared Lane Traffic (%)						
Lane Group Flow (vph)	67	346	400	0	0	290
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Right	Left	Left
Median Width(ft)	12		0			0
Link Offset(ft)	0		0			0
Crosswalk Width(ft)	16		16			16
Two way Left Turn Lane						
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15	9		9	15	
Sign Control	Stop		Free			Free

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 45.7%		ICU Level of Service A	
Analysis Period (min) 15			



Movement	NWL	NWR	NET	NER	SWL	SWT
Lane Configurations						
Traffic Volume (veh/h)	62	318	368	0	0	267
Future Volume (Veh/h)	62	318	368	0	0	267
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	67	346	400	0	0	290
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type			None			None
Median storage veh)						
Upstream signal (ft)						1053
pX, platoon unblocked						
vC, conflicting volume	690	400			400	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	690	400			400	
tC, single (s)	6.4	6.2			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	84	47			100	
cM capacity (veh/h)	411	650			1159	

Direction, Lane #	NW 1	NW 2	NE 1	SW 1
Volume Total	67	346	400	290
Volume Left	67	0	0	0
Volume Right	0	346	0	0
cSH	411	650	1700	1159
Volume to Capacity	0.16	0.53	0.24	0.00
Queue Length 95th (ft)	14	79	0	0
Control Delay (s)	15.5	16.7	0.0	0.0
Lane LOS	C	C		
Approach Delay (s)	16.5		0.0	0.0
Approach LOS	C			

Intersection Summary			
Average Delay	6.2		
Intersection Capacity Utilization	45.7%	ICU Level of Service	A
Analysis Period (min)	15		



Lane Group	NBL	NBR	NET	NER	SWL	SWT
Lane Configurations						
Traffic Volume (vph)	0	40	670	26	158	267
Future Volume (vph)	0	40	670	26	158	267
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (ft)	0	0		0	100	
Storage Lanes	1	0		0	1	
Taper Length (ft)	25				25	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt	0.865		0.995			
Flt Protected					0.950	
Satd. Flow (prot)	1611	0	1853	0	1770	1863
Flt Permitted					0.950	
Satd. Flow (perm)	1611	0	1853	0	1770	1863
Link Speed (mph)	30		30			30
Link Distance (ft)	212		444			609
Travel Time (s)	4.8		10.1			13.8
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Growth Factor	100%	100%	100%	100%	100%	100%
Adj. Flow (vph)	0	43	728	28	172	290
Shared Lane Traffic (%)						
Lane Group Flow (vph)	43	0	756	0	172	290
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Right	Left	Left
Median Width(ft)	12		12			12
Link Offset(ft)	0		0			0
Crosswalk Width(ft)	16		16			16
Two way Left Turn Lane						
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15	9		9	15	
Sign Control	Stop		Free			Free

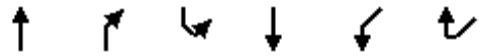
Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 58.9%		ICU Level of Service B	
Analysis Period (min) 15			



Movement	NBL	NBR	NET	NER	SWL	SWT
Lane Configurations						
Traffic Volume (veh/h)	0	40	670	26	158	267
Future Volume (Veh/h)	0	40	670	26	158	267
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	0	43	728	28	172	290
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type			None			None
Median storage veh)						
Upstream signal (ft)						609
pX, platoon unblocked						
vC, conflicting volume	1376	742			756	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	1376	742			756	
tC, single (s)	6.4	6.2			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	100	90			80	
cM capacity (veh/h)	128	416			855	

Direction, Lane #	NB 1	NE 1	SW 1	SW 2
Volume Total	43	756	172	290
Volume Left	0	0	172	0
Volume Right	43	28	0	0
cSH	416	1700	855	1700
Volume to Capacity	0.10	0.44	0.20	0.17
Queue Length 95th (ft)	9	0	19	0
Control Delay (s)	14.7	0.0	10.3	0.0
Lane LOS	B		B	
Approach Delay (s)	14.7	0.0	3.8	
Approach LOS	B			

Intersection Summary			
Average Delay	1.9		
Intersection Capacity Utilization	58.9%	ICU Level of Service	B
Analysis Period (min)	15		



Lane Group	NBT	NBR	SBL	SBT	SWL	SWR
Lane Configurations						
Traffic Volume (vph)	495	57	311	301	0	301
Future Volume (vph)	495	57	311	301	0	301
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt	0.986					0.865
Flt Protected				0.975		
Satd. Flow (prot)	1837	0	0	1816	0	1611
Flt Permitted				0.975		
Satd. Flow (perm)	1837	0	0	1816	0	1611
Link Speed (mph)	30			30	30	
Link Distance (ft)	214			201	550	
Travel Time (s)	4.9			4.6	12.5	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Growth Factor	100%	100%	100%	100%	100%	100%
Adj. Flow (vph)	538	62	338	327	0	327
Shared Lane Traffic (%)						
Lane Group Flow (vph)	600	0	0	665	0	327
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(ft)	0			0	0	
Link Offset(ft)	0			0	0	
Crosswalk Width(ft)	16			16	16	
Two way Left Turn Lane						
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)		9	15		15	9
Sign Control	Free			Free	Stop	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 69.2%		ICU Level of Service C	
Analysis Period (min) 15			



Movement	NBT	NBR	SBL	SBT	SWL	SWR
Lane Configurations						
Traffic Volume (veh/h)	495	57	311	301	0	301
Future Volume (Veh/h)	495	57	311	301	0	301
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	538	62	338	327	0	327
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None			None		
Median storage veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume			600		1572	569
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			600		1572	569
tC, single (s)			4.1		6.4	6.2
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
p0 queue free %			65		100	37
cM capacity (veh/h)			977		79	522

Direction, Lane #	NB 1	SB 1	SW 1
Volume Total	600	665	327
Volume Left	0	338	0
Volume Right	62	0	327
cSH	1700	977	522
Volume to Capacity	0.35	0.35	0.63
Queue Length 95th (ft)	0	39	107
Control Delay (s)	0.0	7.6	22.8
Lane LOS		A	C
Approach Delay (s)	0.0	7.6	22.8
Approach LOS			C

Intersection Summary			
Average Delay	7.9		
Intersection Capacity Utilization	69.2%	ICU Level of Service	C
Analysis Period (min)	15		

MOVEMENT SUMMARY

Site: 101 [AM Peak Hour - 2028 Build - Bedford Garage]

Deering Ave / Brighton Ave / Falmouth St
Portland, ME
Roundabout

Movement Performance - Vehicles											
Mov ID	OD Mov	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
SouthEast: Deering Ave											
21	L2	9	0.0	0.379	6.1	LOS A	2.7	19.3	0.33	0.44	39.5
21a	L1	284	2.4	0.379	5.3	LOS A	2.7	19.3	0.33	0.44	39.1
22	T1	143	1.0	0.379	1.6	LOS A	2.7	19.3	0.33	0.44	39.1
23	R2	25	0.0	0.379	2.2	LOS A	2.7	19.3	0.33	0.44	38.3
Approach		460	1.8	0.379	4.0	LOS A	2.7	19.3	0.33	0.44	39.0
NorthEast: Falmouth St											
24	L2	34	0.0	0.128	8.6	LOS A	0.7	4.8	0.59	0.61	39.1
25	T1	13	0.0	0.128	4.2	LOS A	0.7	4.8	0.59	0.61	38.7
26a	R1	48	0.0	0.128	4.1	LOS A	0.7	4.8	0.59	0.61	38.4
26	R2	4	0.0	0.128	4.7	LOS A	0.7	4.8	0.59	0.61	38.0
Approach		98	0.0	0.128	5.7	LOS A	0.7	4.8	0.59	0.61	38.7
NorthWest: Deering Ave											
27	L2	1	0.0	0.388	9.2	LOS A	2.1	15.3	0.63	0.64	39.4
28	T1	240	5.4	0.388	5.0	LOS A	2.1	15.3	0.63	0.64	39.0
29	R2	10	0.0	0.388	5.4	LOS A	2.1	15.3	0.63	0.64	38.2
29b	R3	2	0.0	0.388	5.8	LOS A	2.1	15.3	0.63	0.64	38.0
Approach		253	5.1	0.388	5.0	LOS A	2.1	15.3	0.63	0.64	39.0
West: Brighton Ave											
10b	L3	1	0.0	0.839	16.9	LOS B	15.0	107.1	1.00	1.13	37.0
10a	L1	40	0.0	0.839	15.4	LOS B	15.0	107.1	1.00	1.13	36.4
12a	R1	704	2.7	0.839	11.7	LOS B	15.0	107.1	1.00	1.13	36.1
12b	R3	2	0.0	0.839	12.7	LOS B	15.0	107.1	1.00	1.13	35.5
Approach		748	2.5	0.839	11.9	LOS B	15.0	107.1	1.00	1.13	36.1
SouthWest: Falmouth St											
30b	L3	1	0.0	0.167	16.1	LOS B	1.1	7.9	0.92	0.90	36.8
30	L2	14	0.0	0.167	15.4	LOS B	1.1	7.9	0.92	0.90	36.5
31	T1	24	0.0	0.167	11.0	LOS B	1.1	7.9	0.92	0.90	36.1
32	R2	20	8.0	0.167	12.1	LOS B	1.1	7.9	0.92	0.90	35.5
Approach		59	2.7	0.167	12.5	LOS B	1.1	7.9	0.92	0.90	36.0
All Vehicles		1618	2.6	0.839	8.3	LOS A	15.0	107.1	0.72	0.81	37.5

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Roundabout LOS Method: SIDRA Roundabout LOS.
Vehicle movement LOS values are based on average delay per movement.
Intersection and Approach LOS values are based on average delay for all vehicle movements.
Roundabout Capacity Model: SIDRA Standard.
SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

MOVEMENT SUMMARY

Site: 101 [PM Peak Hour - 2028 Build - Bedford Garage]

Deering Ave / Brighton Ave / Falmouth St
Portland, ME
Roundabout

Movement Performance - Vehicles											
Mov ID	OD Mov	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
SouthEast: Deering Ave											
21	L2	23	0.0	0.675	6.5	LOS A	7.4	52.6	0.52	0.48	39.1
21a	L1	563	1.7	0.675	5.8	LOS A	7.4	52.6	0.52	0.48	38.7
22	T1	234	0.7	0.675	2.1	LOS A	7.4	52.6	0.52	0.48	38.7
23	R2	30	0.0	0.675	2.6	LOS A	7.4	52.6	0.52	0.48	37.9
Approach		849	1.3	0.675	4.7	LOS A	7.4	52.6	0.52	0.48	38.7
NorthEast: Falmouth St											
24	L2	36	0.0	0.407	14.6	LOS B	2.8	19.8	0.88	0.96	37.1
25	T1	33	0.0	0.407	10.2	LOS B	2.8	19.8	0.88	0.96	36.7
26a	R1	118	0.0	0.407	10.1	LOS B	2.8	19.8	0.88	0.96	36.5
26	R2	13	0.0	0.407	10.7	LOS B	2.8	19.8	0.88	0.96	36.0
Approach		199	0.0	0.407	11.0	LOS B	2.8	19.8	0.88	0.96	36.6
NorthWest: Deering Ave											
27	L2	9	16.7	0.435	16.5	LOS B	2.7	19.0	0.82	0.92	37.0
28	T1	175	0.0	0.435	10.9	LOS B	2.7	19.0	0.82	0.92	36.7
29	R2	7	0.0	0.435	11.4	LOS B	2.7	19.0	0.82	0.92	36.0
29b	R3	1	0.0	0.435	11.9	LOS B	2.7	19.0	0.82	0.92	35.8
Approach		193	0.7	0.435	11.1	LOS B	2.7	19.0	0.82	0.92	36.6
West: Brighton Ave											
10b	L3	1	0.0	0.567	9.5	LOS A	4.9	34.8	0.72	0.66	39.9
10a	L1	33	0.0	0.567	8.0	LOS A	4.9	34.8	0.72	0.66	39.1
12a	R1	472	3.0	0.567	4.3	LOS A	4.9	34.8	0.72	0.66	38.8
12b	R3	1	0.0	0.567	5.3	LOS A	4.9	34.8	0.72	0.66	38.1
Approach		507	2.8	0.567	4.6	LOS A	4.9	34.8	0.72	0.66	38.8
SouthWest: Falmouth St											
30b	L3	4	0.0	0.102	11.4	LOS B	0.6	4.2	0.75	0.71	38.8
30	L2	8	20.0	0.102	11.6	LOS B	0.6	4.2	0.75	0.71	38.4
31	T1	34	0.0	0.102	6.3	LOS A	0.6	4.2	0.75	0.71	38.0
32	R2	13	0.0	0.102	6.8	LOS A	0.6	4.2	0.75	0.71	37.3
Approach		59	2.9	0.102	7.5	LOS A	0.6	4.2	0.75	0.71	38.0
All Vehicles		1806	1.6	0.675	6.1	LOS A	7.4	52.6	0.65	0.63	38.2

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Roundabout LOS Method: SIDRA Roundabout LOS.
Vehicle movement LOS values are based on average delay per movement.
Intersection and Approach LOS values are based on average delay for all vehicle movements.
Roundabout Capacity Model: SIDRA Standard.
SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

Summary of All Intervals

Run Number	1	2	3	4	5	Avg
Start Time	6:57	6:57	6:57	6:57	6:57	6:57
End Time	8:00	8:00	8:00	8:00	8:00	8:00
Total Time (min)	63	63	63	63	63	63
Time Recorded (min)	60	60	60	60	60	60
# of Intervals	2	2	2	2	2	2
# of Recorded Intervals	1	1	1	1	1	1
Vehs Entered	6153	6007	5941	6045	5997	6028
Vehs Exited	6039	5868	5821	5950	5873	5911
Starting Vehs	150	136	152	159	164	151
Ending Vehs	264	275	272	254	288	266
Travel Distance (mi)	2606	2563	2561	2595	2570	2579
Travel Time (hr)	353.7	332.2	450.2	376.6	387.3	380.0
Total Delay (hr)	255.0	235.6	353.4	278.4	290.2	282.5
Total Stops	5096	4881	5040	4951	5263	5042
Fuel Used (gal)	153.3	146.5	172.9	157.1	159.1	157.8

Interval #0 Information Seeding

Start Time	6:57
End Time	7:00
Total Time (min)	3

Volumes adjusted by Growth Factors.

No data recorded this interval.

Interval #1 Information Recording

Start Time	7:00
End Time	8:00
Total Time (min)	60

Volumes adjusted by Growth Factors.

Run Number	1	2	3	4	5	Avg
Vehs Entered	6153	6007	5941	6045	5997	6028
Vehs Exited	6039	5868	5821	5950	5873	5911
Starting Vehs	150	136	152	159	164	151
Ending Vehs	264	275	272	254	288	266
Travel Distance (mi)	2606	2563	2561	2595	2570	2579
Travel Time (hr)	353.7	332.2	450.2	376.6	387.3	380.0
Total Delay (hr)	255.0	235.6	353.4	278.4	290.2	282.5
Total Stops	5096	4881	5040	4951	5263	5042
Fuel Used (gal)	153.3	146.5	172.9	157.1	159.1	157.8

Intersection: 1: Forest Avenue & Falmouth St/Preble St

Movement	EB	EB	WB	WB	NB	NB	NB	SB	SB	SB
Directions Served	LT	R	LT	R	L	T	TR	L	T	TR
Maximum Queue (ft)	120	67	109	47	146	135	169	225	1190	1188
Average Queue (ft)	54	21	35	12	55	25	37	176	892	909
95th Queue (ft)	101	53	84	34	114	86	114	285	1559	1536
Link Distance (ft)	698		1192	1192		669	669		1136	1136
Upstream Blk Time (%)									56	58
Queuing Penalty (veh)									0	0
Storage Bay Dist (ft)		150			200			150		
Storage Blk Time (%)	0					0		9	55	
Queuing Penalty (veh)	0					0		39	90	

Intersection: 2: Forest Avenue & Bedford St/Baxter Blvd

Movement	EB	EB	WB	WB	WB	NB	NB	NB	SB	SB
Directions Served	LT	R	L	T	R	L	T	TR	T	TR
Maximum Queue (ft)	196	316	215	453	82	208	201	210	732	739
Average Queue (ft)	88	155	177	165	7	197	113	129	680	696
95th Queue (ft)	160	258	245	421	38	206	186	202	812	801
Link Distance (ft)	523			1118		192	192	192	669	669
Upstream Blk Time (%)						52	1	2	39	58
Queuing Penalty (veh)						181	2	6	174	259
Storage Bay Dist (ft)		375	140		75					
Storage Blk Time (%)		0	34	1						
Queuing Penalty (veh)		0	26	1						

Intersection: 66: Forest Avenue

Movement	EB	WB	SE	NW	NW	NW
Directions Served	R	R	T	T	T	T
Maximum Queue (ft)	291	432	8	118	40	44
Average Queue (ft)	108	123	0	63	3	3
95th Queue (ft)	222	342	7	132	18	20
Link Distance (ft)	574	1099	53	111	111	111
Upstream Blk Time (%)			0	6		
Queuing Penalty (veh)			0	16		
Storage Bay Dist (ft)						
Storage Blk Time (%)						
Queuing Penalty (veh)						

Zone Summary

Zone wide Queuing Penalty: 795

Summary of All Intervals

Run Number	1	2	3	4	5	Avg
Start Time	3:57	3:57	3:57	3:57	3:57	3:57
End Time	5:00	5:00	5:00	5:00	5:00	5:00
Total Time (min)	63	63	63	63	63	63
Time Recorded (min)	60	60	60	60	60	60
# of Intervals	2	2	2	2	2	2
# of Recorded Intervals	1	1	1	1	1	1
Vehs Entered	8442	8355	8274	8356	8315	8349
Vehs Exited	8136	8046	8007	8007	8053	8054
Starting Vehs	238	195	247	234	227	226
Ending Vehs	544	504	514	583	489	525
Travel Distance (mi)	4083	4033	3997	4040	4018	4034
Travel Time (hr)	533.1	545.8	529.2	497.6	597.7	540.7
Total Delay (hr)	382.5	396.9	381.6	348.6	449.2	391.7
Total Stops	9064	8840	9192	8744	8401	8845
Fuel Used (gal)	233.4	235.2	230.3	223.6	246.3	233.7

Interval #0 Information Seeding

Start Time	3:57
End Time	4:00
Total Time (min)	3

Volumes adjusted by Growth Factors.

No data recorded this interval.

Interval #1 Information Recording

Start Time	4:00
End Time	5:00
Total Time (min)	60

Volumes adjusted by Growth Factors.

Run Number	1	2	3	4	5	Avg
Vehs Entered	8442	8355	8274	8356	8315	8349
Vehs Exited	8136	8046	8007	8007	8053	8054
Starting Vehs	238	195	247	234	227	226
Ending Vehs	544	504	514	583	489	525
Travel Distance (mi)	4083	4033	3997	4040	4018	4034
Travel Time (hr)	533.1	545.8	529.2	497.6	597.7	540.7
Total Delay (hr)	382.5	396.9	381.6	348.6	449.2	391.7
Total Stops	9064	8840	9192	8744	8401	8845
Fuel Used (gal)	233.4	235.2	230.3	223.6	246.3	233.7

Intersection: 1: Forest Avenue & Falmouth St/Preble St

Movement	EB	EB	WB	WB	NB	NB	NB	SB	SB	SB
Directions Served	LT	R	LT	R	L	T	TR	L	T	TR
Maximum Queue (ft)	163	153	187	182	112	235	239	225	1162	1172
Average Queue (ft)	71	65	100	80	49	52	59	144	874	893
95th Queue (ft)	128	119	170	146	94	146	160	285	1510	1495
Link Distance (ft)	604		1193	1193		681	681		1137	1137
Upstream Blk Time (%)									52	57
Queuing Penalty (veh)									0	0
Storage Bay Dist (ft)		150			200			150		
Storage Blk Time (%)	0	0				0		1	54	
Queuing Penalty (veh)	0	0				0		5	55	

Intersection: 2: Forest Avenue & Bedford St/Baxter Blvd

Movement	EB	EB	WB	WB	WB	NB	NB	NB	SB	SB
Directions Served	LT	R	L	T	R	L	T	TR	T	TR
Maximum Queue (ft)	512	399	215	1080	21	185	189	203	735	738
Average Queue (ft)	243	302	211	714	3	172	161	171	678	696
95th Queue (ft)	507	433	232	1284	15	194	210	220	842	815
Link Distance (ft)	525			1275		165	165	165	681	681
Upstream Blk Time (%)	5			8		60	11	20	24	49
Queuing Penalty (veh)	34			0		315	58	103	108	223
Storage Bay Dist (ft)		375	140		75					
Storage Blk Time (%)	1	12	77	0						
Queuing Penalty (veh)	3	28	118	1						

Intersection: 67: Forest Avenue

Movement	EB	WB	SE	NW	NW	NW
Directions Served	R	R	T	T	T	T
Maximum Queue (ft)	297	626	62	133	112	125
Average Queue (ft)	113	212	7	71	23	28
95th Queue (ft)	240	539	35	146	80	89
Link Distance (ft)	574	1099	53	111	111	111
Upstream Blk Time (%)		0	0	11	0	1
Queuing Penalty (veh)		0	2	42	1	3
Storage Bay Dist (ft)						
Storage Blk Time (%)						
Queuing Penalty (veh)						

Zone Summary

Zone wide Queuing Penalty: 1100

Summary of All Intervals

Run Number	1	2	3	4	5	Avg
Start Time	6:57	6:57	6:57	6:57	6:57	6:57
End Time	8:00	8:00	8:00	8:00	8:00	8:00
Total Time (min)	63	63	63	63	63	63
Time Recorded (min)	60	60	60	60	60	60
# of Intervals	2	2	2	2	2	2
# of Recorded Intervals	1	1	1	1	1	1
Vehs Entered	6133	6205	6083	6142	6161	6141
Vehs Exited	6000	6081	5975	5995	6017	6014
Starting Vehs	149	133	181	127	132	139
Ending Vehs	282	257	289	274	276	271
Travel Distance (mi)	2677	2691	2659	2651	2689	2674
Travel Time (hr)	286.5	367.6	356.3	280.2	307.8	319.7
Total Delay (hr)	185.4	266.2	255.9	180.0	206.4	218.8
Total Stops	5079	4791	4821	4914	4906	4905
Fuel Used (gal)	139.5	158.6	154.9	136.8	144.5	146.8

Interval #0 Information Seeding

Start Time	6:57
End Time	7:00
Total Time (min)	3

Volumes adjusted by Growth Factors.

No data recorded this interval.

Interval #1 Information Recording

Start Time	7:00
End Time	8:00
Total Time (min)	60

Volumes adjusted by Growth Factors.

Run Number	1	2	3	4	5	Avg
Vehs Entered	6133	6205	6083	6142	6161	6141
Vehs Exited	6000	6081	5975	5995	6017	6014
Starting Vehs	149	133	181	127	132	139
Ending Vehs	282	257	289	274	276	271
Travel Distance (mi)	2677	2691	2659	2651	2689	2674
Travel Time (hr)	286.5	367.6	356.3	280.2	307.8	319.7
Total Delay (hr)	185.4	266.2	255.9	180.0	206.4	218.8
Total Stops	5079	4791	4821	4914	4906	4905
Fuel Used (gal)	139.5	158.6	154.9	136.8	144.5	146.8

1: Forest Avenue & Falmouth St/Preble St Performance by movement

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Denied Del/Veh (s)	0.1	0.0	0.9	0.2	0.1	0.1	0.0	0.0	0.0	241.8	231.4	272.5
Total Del/Veh (s)	52.0	50.6	31.3	43.1	50.6	6.8	35.7	4.1	3.0	251.9	297.5	360.1

1: Forest Avenue & Falmouth St/Preble St Performance by movement

Movement	All
Denied Del/Veh (s)	114.5
Total Del/Veh (s)	135.2

2: Forest Avenue & Bedford St/Baxter Blvd Performance by movement

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBT	SBR	All
Denied Del/Veh (s)	0.0	0.0	0.0	3.3	0.7	3.5	15.9	11.7	13.4	8.7	0.0	8.7
Total Del/Veh (s)	42.0	40.3	25.3	36.7	21.8	8.9	53.8	14.8	11.4	207.0	215.9	69.8

3: USM & Falmouth St Performance by movement

Movement	EBT	EBR	WBL	WBT	NBL	NBR	All
Denied Del/Veh (s)	0.0	0.0	0.0	0.0	0.1	0.1	0.0
Total Del/Veh (s)	0.3	0.1	4.0	2.0	5.3	2.7	2.0

6: Falmouth St & Oakdale St Performance by movement

Movement	SEL	SER	NEL	NET	SWT	SWR	All
Denied Del/Veh (s)	0.1	0.1		0.2	0.0	0.0	0.1
Total Del/Veh (s)	4.8	2.5		0.1	0.4	0.2	0.5

14: Forest Avenue Performance by movement

Movement	SET	SER	NWT	All
Denied Del/Veh (s)	0.0	0.0	0.0	0.0
Total Del/Veh (s)	1.7	0.9	0.4	1.1

17: Bedford St Performance by movement

Movement	NET	NER	SWL	SWT	All
Denied Del/Veh (s)	0.0	0.0	0.0	0.0	0.0
Total Del/Veh (s)	2.1	1.3	15.6	13.0	7.6

19: Bedford St Performance by movement

Movement	NWL	NWR	NET	SWT	All
Denied Del/Veh (s)	0.1	0.1	0.0	0.0	0.0
Total Del/Veh (s)	9.6	4.4	0.6	1.6	1.2

64: Forest Avenue Performance by movement

Movement	SET	SER	NWT	All
Denied Del/Veh (s)	0.0	0.0	0.0	0.0
Total Del/Veh (s)	0.1	1.0	1.9	1.3

66: Forest Avenue Performance by movement

Movement	EBR	WBR	SET	NWT	All
Denied Del/Veh (s)	0.6	0.2	0.0	0.0	0.2
Total Del/Veh (s)	7.6	13.6	0.4	1.5	3.7

68: Forest Avenue Performance by movement

Movement	SET	SER	NWT	All
Denied Del/Veh (s)	0.0	0.0	0.0	0.0
Total Del/Veh (s)	1.7	1.4	2.6	2.1

72: Forest Avenue Performance by movement

Movement	SET	NWT	NWR	All
Denied Del/Veh (s)	0.0	0.0	0.0	0.0
Total Del/Veh (s)	0.4	0.6	0.5	0.4

74: Forest Avenue Performance by movement

Movement	EBR	SET	All
Denied Del/Veh (s)	0.3	0.0	0.1
Total Del/Veh (s)	4.9	0.4	1.3

75: Forest Avenue Performance by movement

Movement	WBR	SET	NWT	NWR	All
Denied Del/Veh (s)	0.2	0.3	0.4	0.4	0.3
Total Del/Veh (s)	2.1	0.8	8.9	9.6	6.0

255: Deering St & Bedford St Performance by movement

Movement	NBT	NBR	SBL	SBT	SWR	All
Denied Del/Veh (s)	0.3	0.4	3.1	3.2	0.1	2.0
Total Del/Veh (s)	1.4	0.5	7.3	6.7	4.4	5.0

Total Network Performance

Denied Del/Veh (s)	43.0
Total Del/Veh (s)	81.8

Intersection: 1: Forest Avenue & Falmouth St/Preble St

Movement	EB	EB	WB	WB	NB	NB	NB	SB	SB	SB
Directions Served	LT	R	LT	R	L	T	TR	L	T	TR
Maximum Queue (ft)	142	95	79	50	223	168	150	225	1182	1181
Average Queue (ft)	62	34	31	11	112	23	27	175	903	914
95th Queue (ft)	119	71	70	32	193	89	101	288	1559	1536
Link Distance (ft)	698		1192	1192		669	669		1136	1136
Upstream Blk Time (%)									55	57
Queuing Penalty (veh)									0	0
Storage Bay Dist (ft)		150			200			150		
Storage Blk Time (%)	0	0			1	0		9	59	
Queuing Penalty (veh)	0	0			2	0		36	97	

Intersection: 2: Forest Avenue & Bedford St/Baxter Blvd

Movement	EB	EB	WB	WB	WB	NB	NB	NB	SB	SB
Directions Served	LT	R	L	T	R	L	T	TR	T	TR
Maximum Queue (ft)	255	314	208	218	25	203	202	214	730	734
Average Queue (ft)	88	152	131	44	6	183	142	154	671	689
95th Queue (ft)	178	253	194	125	22	225	213	230	836	812
Link Distance (ft)	523			1118		192	192	192	669	669
Upstream Blk Time (%)	0					26	1	3	35	49
Queuing Penalty (veh)	0					92	5	12	156	218
Storage Bay Dist (ft)		375	140		75					
Storage Blk Time (%)		0	7	1						
Queuing Penalty (veh)		0	5	3						

Intersection: 3: USM & Falmouth St

Movement	WB	NB
Directions Served	LT	LR
Maximum Queue (ft)	63	50
Average Queue (ft)	11	19
95th Queue (ft)	41	45
Link Distance (ft)	698	158
Upstream Blk Time (%)		
Queuing Penalty (veh)		
Storage Bay Dist (ft)		
Storage Blk Time (%)		
Queuing Penalty (veh)		

Intersection: 6: Falmouth St & Oakdale St

Movement	SE
Directions Served	LR
Maximum Queue (ft)	35
Average Queue (ft)	12
95th Queue (ft)	37
Link Distance (ft)	262
Upstream Blk Time (%)	
Queuing Penalty (veh)	
Storage Bay Dist (ft)	
Storage Blk Time (%)	
Queuing Penalty (veh)	

Intersection: 14: Forest Avenue

Movement	SE	SE
Directions Served	T	TR
Maximum Queue (ft)	18	46
Average Queue (ft)	1	4
95th Queue (ft)	7	24
Link Distance (ft)	308	308
Upstream Blk Time (%)		
Queuing Penalty (veh)		
Storage Bay Dist (ft)		
Storage Blk Time (%)		
Queuing Penalty (veh)		

Intersection: 17: Bedford St

Movement	NE	SW
Directions Served	TR	LT
Maximum Queue (ft)	42	269
Average Queue (ft)	9	167
95th Queue (ft)	30	260
Link Distance (ft)	505	384
Upstream Blk Time (%)		
Queuing Penalty (veh)		
Storage Bay Dist (ft)		
Storage Blk Time (%)		
Queuing Penalty (veh)		

Intersection: 19: Bedford St

Movement	NW
Directions Served	LR
Maximum Queue (ft)	30
Average Queue (ft)	6
95th Queue (ft)	25
Link Distance (ft)	208
Upstream Blk Time (%)	
Queuing Penalty (veh)	
Storage Bay Dist (ft)	
Storage Blk Time (%)	
Queuing Penalty (veh)	

Intersection: 64: Forest Avenue

Movement	SE	SE	NW	NW	NW
Directions Served	R	R	T	T	T
Maximum Queue (ft)	25	57	54	62	71
Average Queue (ft)	1	4	12	19	8
95th Queue (ft)	12	28	45	61	39
Link Distance (ft)	59	59	110	110	110
Upstream Blk Time (%)	0	0			0
Queuing Penalty (veh)	0	0			0
Storage Bay Dist (ft)					
Storage Blk Time (%)					
Queuing Penalty (veh)					

Intersection: 66: Forest Avenue

Movement	EB	WB	SE	NW	NW	NW
Directions Served	R	R	T	T	T	T
Maximum Queue (ft)	341	180	35	114	27	36
Average Queue (ft)	107	60	1	24	1	3
95th Queue (ft)	232	136	14	84	12	18
Link Distance (ft)	574	1099	53	111	111	111
Upstream Blk Time (%)	0		0	1		
Queuing Penalty (veh)	0		0	3		
Storage Bay Dist (ft)						
Storage Blk Time (%)						
Queuing Penalty (veh)						

Intersection: 68: Forest Avenue

Movement	SE	NW	NW	NW
Directions Served	T	T	T	T
Maximum Queue (ft)	57	72	40	66
Average Queue (ft)	2	38	3	12
95th Queue (ft)	28	90	23	50
Link Distance (ft)	192	53	53	53
Upstream Blk Time (%)	0	17	0	1
Queuing Penalty (veh)	0	59	1	5
Storage Bay Dist (ft)				
Storage Blk Time (%)				
Queuing Penalty (veh)				

Intersection: 72: Forest Avenue

Movement	NW
Directions Served	T
Maximum Queue (ft)	56
Average Queue (ft)	3
95th Queue (ft)	23
Link Distance (ft)	308
Upstream Blk Time (%)	
Queuing Penalty (veh)	
Storage Bay Dist (ft)	
Storage Blk Time (%)	
Queuing Penalty (veh)	

Intersection: 74: Forest Avenue

Movement	EB	SE	SE
Directions Served	R	T	T
Maximum Queue (ft)	125	15	62
Average Queue (ft)	56	1	12
95th Queue (ft)	94	11	40
Link Distance (ft)	1088	84	84
Upstream Blk Time (%)			0
Queuing Penalty (veh)			0
Storage Bay Dist (ft)			
Storage Blk Time (%)			
Queuing Penalty (veh)			

Intersection: 75: Forest Avenue

Movement	SE	NW	NW
Directions Served	T	T	TR
Maximum Queue (ft)	11	144	389
Average Queue (ft)	0	6	25
95th Queue (ft)	5	62	166
Link Distance (ft)	110	1537	1537
Upstream Blk Time (%)			
Queuing Penalty (veh)			
Storage Bay Dist (ft)			
Storage Blk Time (%)			
Queuing Penalty (veh)			

Intersection: 255: Deering St & Bedford St

Movement	NB	SB	SW
Directions Served	TR	LT	R
Maximum Queue (ft)	36	168	71
Average Queue (ft)	3	128	34
95th Queue (ft)	18	185	57
Link Distance (ft)	177	136	505
Upstream Blk Time (%)		13	
Queuing Penalty (veh)		0	
Storage Bay Dist (ft)			
Storage Blk Time (%)			
Queuing Penalty (veh)			

Network Summary

Network wide Queuing Penalty: 696

Intersection: 1: Forest Avenue & Falmouth St/Preble St

Phase	1	2	3	5	6
Movement(s) Served	NBL	SBT	EBWB	SBL	NBT
Maximum Green (s)	21.0	53.0	28.0	24.0	50.0
Minimum Green (s)	5.0	10.0	5.0	5.0	10.0
Recall	None	C-Min	None	None	C-Min
Avg. Green (s)	15.0	75.1	13.1	13.1	78.7
g/C Ratio	NA	NA	NA	-0.01	NA
Cycles Skipped (%)	0	0	0	18	0
Cycles @ Minimum (%)	3	0	0	9	0
Cycles Maxed Out (%)	10	100	0	0	100
Cycles with Peds (%)	0	17	10	0	14

Controller Summary

Average Cycle Length (s): NA
Number of Complete Cycles : 0

Intersection: 2: Forest Avenue & Bedford St/Baxter Blvd

Phase	2	3	4	5	6	8
Movement(s) Served	NBT	WBL	EBTL	NBL	SBT	WBTL
Maximum Green (s)	62.0	17.0	23.0	25.0	31.0	46.0
Minimum Green (s)	10.0	5.0	7.0	5.0	10.0	5.0
Recall	C-Min	None	None	None	C-Min	None
Avg. Green (s)	65.2	14.4	22.9	27.2	32.0	43.7
g/C Ratio	NA	NA	NA	NA	NA	NA
Cycles Skipped (%)	0	0	0	0	0	0
Cycles @ Minimum (%)	0	0	0	0	0	0
Cycles Maxed Out (%)	100	45	57	83	100	59
Cycles with Peds (%)	17	0	30	0	10	14

Controller Summary

Average Cycle Length (s): NA
Number of Complete Cycles : 0

Summary of All Intervals

Run Number	1	2	3	4	5	Avg
Start Time	6:57	6:57	6:57	6:57	6:57	6:57
End Time	8:00	8:00	8:00	8:00	8:00	8:00
Total Time (min)	63	63	63	63	63	63
Time Recorded (min)	60	60	60	60	60	60
# of Intervals	2	2	2	2	2	2
# of Recorded Intervals	1	1	1	1	1	1
Vehs Entered	8387	8198	8395	8526	8292	8362
Vehs Exited	8073	7915	8171	8247	8065	8092
Starting Vehs	195	223	209	224	211	211
Ending Vehs	509	506	433	503	438	477
Travel Distance (mi)	4021	3990	4094	4136	4009	4050
Travel Time (hr)	566.2	604.9	506.5	497.3	515.5	538.1
Total Delay (hr)	417.9	458.2	355.9	345.1	367.8	389.0
Total Stops	8141	8432	8223	8294	8209	8256
Fuel Used (gal)	238.1	246.9	227.5	226.6	227.0	233.2

Interval #0 Information Seeding

Start Time	6:57
End Time	7:00
Total Time (min)	3

Volumes adjusted by Growth Factors.

No data recorded this interval.

Interval #1 Information Recording

Start Time	7:00
End Time	8:00
Total Time (min)	60

Volumes adjusted by Growth Factors.

Run Number	1	2	3	4	5	Avg
Vehs Entered	8387	8198	8395	8526	8292	8362
Vehs Exited	8073	7915	8171	8247	8065	8092
Starting Vehs	195	223	209	224	211	211
Ending Vehs	509	506	433	503	438	477
Travel Distance (mi)	4021	3990	4094	4136	4009	4050
Travel Time (hr)	566.2	604.9	506.5	497.3	515.5	538.1
Total Delay (hr)	417.9	458.2	355.9	345.1	367.8	389.0
Total Stops	8141	8432	8223	8294	8209	8256
Fuel Used (gal)	238.1	246.9	227.5	226.6	227.0	233.2

1: Forest Avenue & Falmouth St/Preble St Performance by movement

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Denied Del/Veh (s)	0.1	0.0	0.6	0.2	0.2	0.2	0.0	0.0	0.0	302.5	287.1	309.3
Total Del/Veh (s)	50.2	43.3	33.8	61.8	52.9	14.4	43.6	6.9	7.1	244.6	346.5	506.6

1: Forest Avenue & Falmouth St/Preble St Performance by movement

Movement	All
Denied Del/Veh (s)	107.7
Total Del/Veh (s)	119.0

2: Forest Avenue & Bedford St/Baxter Blvd Performance by movement

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBT	SBR	All
Denied Del/Veh (s)	0.0	0.3	0.5	3.0	0.9	2.9	0.0	0.0	0.0	8.5	0.0	2.2
Total Del/Veh (s)	48.0	49.7	38.1	44.7	22.1	8.8	71.1	18.2	15.5	190.8	205.2	65.5

5: USM & Falmouth St Performance by movement

Movement	EBT	EBR	WBL	WBT	NBL	NBR	All
Denied Del/Veh (s)	0.0	0.0	0.0	0.0	0.2	0.1	0.0
Total Del/Veh (s)	0.2	0.0	3.8	2.1	5.6	3.2	2.2

12: Falmouth St & Oakdale St Performance by movement

Movement	EBL	EBT	WBT	WBR	SEL	SER	All
Denied Del/Veh (s)	0.1	0.1	0.0	0.0	0.1	0.1	0.1
Total Del/Veh (s)	1.7	0.2	0.4	0.2	5.8	3.3	0.4

14: Forest Avenue Performance by movement

Movement	SET	SER	NWT	All
Denied Del/Veh (s)	0.0	0.0	0.0	0.0
Total Del/Veh (s)	1.9	1.7	0.5	1.2

16: Bedford St Performance by movement

Movement	NET	NER	SWL	SWT	All
Denied Del/Veh (s)	0.0	0.0	0.0	0.0	0.0
Total Del/Veh (s)	0.8	0.6	3.8	1.5	1.3

18: Bedford St Performance by movement

Movement	NBL	NBR	NET	SWT	All
Denied Del/Veh (s)	0.4	0.3	0.0	0.0	0.1
Total Del/Veh (s)	13.1	9.4	0.7	1.5	4.3

64: Forest Avenue Performance by movement

Movement	WBR	SET	NWT	NWR	All
Denied Del/Veh (s)	0.3	3.8	65.8	63.8	35.8
Total Del/Veh (s)	2.6	1.3	173.4	186.0	93.2

65: Forest Avenue Performance by movement

Movement	SET	SER	NWT	All
Denied Del/Veh (s)	0.0	0.0	0.0	0.0
Total Del/Veh (s)	0.3	0.9	2.4	1.7

67: Forest Avenue Performance by movement

Movement	EBR	WBR	SET	NWT	All
Denied Del/Veh (s)	0.4	37.5	0.0	0.1	3.1
Total Del/Veh (s)	11.2	138.0	0.6	3.9	14.6

69: Forest Avenue Performance by movement

Movement	SET	SER	NWT	SWR	All
Denied Del/Veh (s)	0.0	0.0	0.1	107.6	6.3
Total Del/Veh (s)	1.6	1.1	5.2	194.8	13.5

73: Forest Avenue Performance by movement

Movement	SET	NWT	NWR	All
Denied Del/Veh (s)	0.0	0.0	0.0	0.0
Total Del/Veh (s)	0.5	2.4	1.6	1.3

75: Forest Avenue Performance by movement

Movement	EBR	SET	All
Denied Del/Veh (s)	0.3	0.0	0.1
Total Del/Veh (s)	7.5	0.5	2.4

255: Deering St & Bedford St Performance by movement

Movement	NBT	NBR	SBL	SBT	SWT	SWR	All
Denied Del/Veh (s)	0.5	0.4	1.2	1.2	0.0	0.0	0.6
Total Del/Veh (s)	1.3	0.4	8.5	6.1	0.7	9.7	4.8

Total Network Performance

Denied Del/Veh (s)	50.7
Total Del/Veh (s)	111.8

Intersection: 1: Forest Avenue & Falmouth St/Preble St

Movement	EB	EB	WB	WB	NB	NB	NB	SB	SB	SB
Directions Served	LT	R	LT	R	L	T	TR	L	T	TR
Maximum Queue (ft)	182	156	280	183	146	212	238	225	1169	1171
Average Queue (ft)	69	66	116	79	67	59	65	144	902	920
95th Queue (ft)	141	122	218	148	126	156	174	291	1540	1529
Link Distance (ft)	604		1193	1193		681	681		1137	1137
Upstream Blk Time (%)									56	60
Queuing Penalty (veh)									0	0
Storage Bay Dist (ft)		150			200			150		
Storage Blk Time (%)	2	0				0		1	59	
Queuing Penalty (veh)	2	0				0		4	60	

Intersection: 2: Forest Avenue & Bedford St/Baxter Blvd

Movement	EB	EB	WB	WB	WB	NB	NB	NB	SB	SB
Directions Served	LT	R	L	T	R	L	T	TR	T	TR
Maximum Queue (ft)	470	398	214	321	40	181	196	202	738	733
Average Queue (ft)	165	240	167	104	9	163	165	174	676	693
95th Queue (ft)	314	374	231	258	27	204	205	208	835	813
Link Distance (ft)	526			1275		165	165	165	681	681
Upstream Blk Time (%)	0					40	13	22	24	46
Queuing Penalty (veh)	1					210	68	114	108	208
Storage Bay Dist (ft)		375	140		75					
Storage Blk Time (%)		2	20	3						
Queuing Penalty (veh)		4	31	9						

Intersection: 5: USM & Falmouth St

Movement	WB	NB
Directions Served	LT	LR
Maximum Queue (ft)	34	62
Average Queue (ft)	3	35
95th Queue (ft)	21	56
Link Distance (ft)	604	154
Upstream Blk Time (%)		
Queuing Penalty (veh)		
Storage Bay Dist (ft)		
Storage Blk Time (%)		
Queuing Penalty (veh)		

Intersection: 12: Falmouth St & Oakdale St

Movement	EB	SE
Directions Served	LT	LR
Maximum Queue (ft)	6	36
Average Queue (ft)	0	5
95th Queue (ft)	4	24
Link Distance (ft)	710	258
Upstream Blk Time (%)		
Queuing Penalty (veh)		
Storage Bay Dist (ft)		
Storage Blk Time (%)		
Queuing Penalty (veh)		

Intersection: 14: Forest Avenue

Movement	SE	SE	NW	NW
Directions Served	T	TR	T	T
Maximum Queue (ft)	17	56	15	9
Average Queue (ft)	1	3	1	0
95th Queue (ft)	12	23	11	7
Link Distance (ft)	308	308	59	59
Upstream Blk Time (%)			0	0
Queuing Penalty (veh)			0	0
Storage Bay Dist (ft)				
Storage Blk Time (%)				
Queuing Penalty (veh)				

Intersection: 16: Bedford St

Movement	SW
Directions Served	LT
Maximum Queue (ft)	95
Average Queue (ft)	21
95th Queue (ft)	69
Link Distance (ft)	387
Upstream Blk Time (%)	
Queuing Penalty (veh)	
Storage Bay Dist (ft)	
Storage Blk Time (%)	
Queuing Penalty (veh)	

Intersection: 18: Bedford St

Movement	NB	NE
Directions Served	LR	TR
Maximum Queue (ft)	180	6
Average Queue (ft)	89	0
95th Queue (ft)	152	4
Link Distance (ft)	183	387
Upstream Blk Time (%)	1	
Queuing Penalty (veh)	0	
Storage Bay Dist (ft)		
Storage Blk Time (%)		
Queuing Penalty (veh)		

Intersection: 64: Forest Avenue

Movement	WB	SE	NW	NW
Directions Served	R	T	T	TR
Maximum Queue (ft)	22	21	2452	2448
Average Queue (ft)	1	1	1944	1977
95th Queue (ft)	11	15	3062	3034
Link Distance (ft)	874	110	2402	2402
Upstream Blk Time (%)			39	51
Queuing Penalty (veh)			0	0
Storage Bay Dist (ft)				
Storage Blk Time (%)				
Queuing Penalty (veh)				

Intersection: 65: Forest Avenue

Movement	SE	SE	NW	NW	NW
Directions Served	R	R	T	T	T
Maximum Queue (ft)	32	33	55	102	114
Average Queue (ft)	3	4	12	22	18
95th Queue (ft)	24	26	46	76	70
Link Distance (ft)	59	59	110	110	110
Upstream Blk Time (%)	0	0		0	0
Queuing Penalty (veh)	0	0		1	1
Storage Bay Dist (ft)					
Storage Blk Time (%)					
Queuing Penalty (veh)					

Intersection: 67: Forest Avenue

Movement	EB	WB	SE	NW	NW	NW
Directions Served	R	R	T	T	T	T
Maximum Queue (ft)	331	572	51	120	107	120
Average Queue (ft)	115	264	5	42	24	30
95th Queue (ft)	242	848	27	118	79	90
Link Distance (ft)	574	1099	53	111	111	111
Upstream Blk Time (%)		9	0	9	0	0
Queuing Penalty (veh)		0	1	35	1	2
Storage Bay Dist (ft)						
Storage Blk Time (%)						
Queuing Penalty (veh)						

Intersection: 69: Forest Avenue

Movement	SE	NW	NW	NW	SW
Directions Served	T	T	T	T	R
Maximum Queue (ft)	50	75	88	95	465
Average Queue (ft)	3	49	41	58	238
95th Queue (ft)	23	96	92	104	542
Link Distance (ft)	165	53	53	53	565
Upstream Blk Time (%)		30	8	15	15
Queuing Penalty (veh)		141	36	68	0
Storage Bay Dist (ft)					
Storage Blk Time (%)					
Queuing Penalty (veh)					

Intersection: 73: Forest Avenue

Movement	SE	SE	NW	NW	NW
Directions Served	T	T	T	T	TR
Maximum Queue (ft)	13	29	112	23	48
Average Queue (ft)	1	1	17	1	3
95th Queue (ft)	8	15	106	10	27
Link Distance (ft)	111	111	308	308	308
Upstream Blk Time (%)			0		
Queuing Penalty (veh)			0		
Storage Bay Dist (ft)					
Storage Blk Time (%)					
Queuing Penalty (veh)					

Intersection: 75: Forest Avenue

Movement	EB	SE
Directions Served	R	T
Maximum Queue (ft)	164	80
Average Queue (ft)	79	17
95th Queue (ft)	134	55
Link Distance (ft)	1088	84
Upstream Blk Time (%)		0
Queuing Penalty (veh)		1
Storage Bay Dist (ft)		
Storage Blk Time (%)		
Queuing Penalty (veh)		

Intersection: 255: Deering St & Bedford St

Movement	NB	SB	SW
Directions Served	TR	LT	R
Maximum Queue (ft)	34	202	139
Average Queue (ft)	3	108	73
95th Queue (ft)	19	195	118
Link Distance (ft)	185	173	488
Upstream Blk Time (%)		5	
Queuing Penalty (veh)		0	
Storage Bay Dist (ft)			
Storage Blk Time (%)			
Queuing Penalty (veh)			

Network Summary

Network wide Queuing Penalty: 1107

Intersection: 1: Forest Avenue & Falmouth St/Preble St

Phase	1	2	3	5	6
Movement(s) Served	NBL	SBT	EBWB	SBL	NBT
Maximum Green (s)	12.0	57.0	33.0	18.0	51.0
Minimum Green (s)	5.0	10.0	5.0	5.0	10.0
Recall	None	C-Min	None	None	C-Min
Avg. Green (s)	10.7	68.3	25.2	11.2	68.0
g/C Ratio	-0.01	NA	NA	-0.01	NA
Cycles Skipped (%)	7	0	0	21	0
Cycles @ Minimum (%)	11	0	0	9	0
Cycles Maxed Out (%)	21	100	27	3	100
Cycles with Peds (%)	0	10	10	0	14

Controller Summary
Average Cycle Length (s): NA
Number of Complete Cycles : 0

Intersection: 2: Forest Avenue & Bedford St/Baxter Blvd

Phase	2	3	4	5	6	8
Movement(s) Served	NBT	WBL	EBTL	NBL	SBT	WBTL
Maximum Green (s)	58.0	19.0	25.0	18.0	34.0	50.0
Minimum Green (s)	10.0	5.0	7.0	5.0	10.0	5.0
Recall	C-Min	None	None	None	C-Min	None
Avg. Green (s)	58.3	17.8	26.4	18.4	34.0	50.6
g/C Ratio	NA	NA	NA	NA	NA	NA
Cycles Skipped (%)	0	0	0	0	0	0
Cycles @ Minimum (%)	0	0	0	0	0	0
Cycles Maxed Out (%)	100	66	93	97	100	97
Cycles with Peds (%)	0	0	33	0	3	3

Controller Summary
Average Cycle Length (s): NA
Number of Complete Cycles : 0

Summary of All Intervals

Run Number	1	2	3	4	5	Avg
Start Time	6:57	6:57	6:57	6:57	6:57	6:57
End Time	8:00	8:00	8:00	8:00	8:00	8:00
Total Time (min)	63	63	63	63	63	63
Time Recorded (min)	60	60	60	60	60	60
# of Intervals	2	2	2	2	2	2
# of Recorded Intervals	1	1	1	1	1	1
Vehs Entered	6264	6174	6078	6279	5986	6155
Vehs Exited	6178	6019	5931	6119	5853	6021
Starting Vehs	149	145	115	143	155	138
Ending Vehs	235	300	262	303	288	273
Travel Distance (mi)	2784	2691	2644	2753	2646	2704
Travel Time (hr)	296.8	378.5	287.5	275.4	402.5	328.1
Total Delay (hr)	191.9	277.1	187.8	171.6	303.1	226.3
Total Stops	4948	5531	4877	5042	4746	5027
Fuel Used (gal)	144.8	160.9	138.4	138.3	164.6	149.4

Interval #0 Information Seeding

Start Time	6:57
End Time	7:00
Total Time (min)	3

Volumes adjusted by Growth Factors.
No data recorded this interval.

Interval #1 Information Recording

Start Time	7:00
End Time	8:00
Total Time (min)	60

Volumes adjusted by Growth Factors.

Run Number	1	2	3	4	5	Avg
Vehs Entered	6264	6174	6078	6279	5986	6155
Vehs Exited	6178	6019	5931	6119	5853	6021
Starting Vehs	149	145	115	143	155	138
Ending Vehs	235	300	262	303	288	273
Travel Distance (mi)	2784	2691	2644	2753	2646	2704
Travel Time (hr)	296.8	378.5	287.5	275.4	402.5	328.1
Total Delay (hr)	191.9	277.1	187.8	171.6	303.1	226.3
Total Stops	4948	5531	4877	5042	4746	5027
Fuel Used (gal)	144.8	160.9	138.4	138.3	164.6	149.4

1: Forest Avenue & Falmouth St/Preble St Performance by movement

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Denied Del/Veh (s)	0.0	0.0	1.1	0.1	0.1	0.1	0.1	0.0	0.0	2.4	0.3	0.4
Total Del/Veh (s)	53.8	45.4	16.2	56.8	46.7	5.6	47.2	9.5	8.3	50.4	22.1	30.4

1: Forest Avenue & Falmouth St/Preble St Performance by movement

Movement	All
Denied Del/Veh (s)	0.4
Total Del/Veh (s)	22.3

2: Forest Avenue & Bedford St/Baxter Blvd Performance by movement

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBT	SBR	All
Denied Del/Veh (s)	0.0	0.0	0.0	126.7	127.3	104.3	211.1	184.3	174.2	0.3	0.0	90.8
Total Del/Veh (s)	178.7	114.0	87.2	451.9	328.1	255.6	78.1	6.9	5.4	58.7	66.0	89.1

17: Bedford St & Surrenden St Performance by movement

Movement	NWL	NWR	NET	SWT	All
Denied Del/Veh (s)	0.1	0.1	0.0	0.0	0.0
Total Del/Veh (s)	11.8	32.1	12.7	0.2	12.3

19: Bedford St & Winslow St Performance by movement

Movement	NWR	NET	NER	SWL	SWT	All
Denied Del/Veh (s)	0.1	24.8	26.7	0.2	0.2	16.4
Total Del/Veh (s)	44.0	22.0	17.4	52.2	25.7	30.5

66: Forest Avenue Performance by movement

Movement	EBR	WBR	SET	NWT	All
Denied Del/Veh (s)	1.1	98.9	0.0	0.0	7.1
Total Del/Veh (s)	16.5	497.8	0.4	11.4	39.1

Total Zone Performance

Denied Del/Veh (s)	110.1
Total Del/Veh (s)	1230.2

Intersection: 1: Forest Avenue & Falmouth St/Preble St

Movement	EB	EB	WB	WB	NB	NB	NB	SB	SB	SB
Directions Served	LT	R	LT	R	L	T	TR	L	T	TR
Maximum Queue (ft)	129	55	108	52	139	197	225	223	544	590
Average Queue (ft)	51	19	33	12	42	59	76	125	165	210
95th Queue (ft)	100	49	79	36	100	135	163	218	411	449
Link Distance (ft)	698		1192	1192		669	669		1136	1136
Upstream Blk Time (%)										
Queuing Penalty (veh)										
Storage Bay Dist (ft)		150			200			150		
Storage Blk Time (%)	0				0	0		7	7	
Queuing Penalty (veh)	0				0	0		30	12	

Intersection: 2: Forest Avenue & Bedford St/Baxter Blvd

Movement	EB	EB	WB	WB	WB	NB	NB	NB	SB	SB
Directions Served	LT	R	L	T	R	L	T	TR	T	TR
Maximum Queue (ft)	538	400	215	1142	20	208	188	204	699	710
Average Queue (ft)	367	299	201	735	4	195	59	71	411	495
95th Queue (ft)	655	485	246	1442	16	209	152	177	764	744
Link Distance (ft)	523			1118		192	192	192	669	669
Upstream Blk Time (%)	20			34		66	0	1	4	7
Queuing Penalty (veh)	120			0		229	0	2	17	30
Storage Bay Dist (ft)		375	140		75					
Storage Blk Time (%)	23	11	79	1						
Queuing Penalty (veh)	74	13	59	2						

Intersection: 17: Bedford St & Surrenden St

Movement	NW	NW	NE
Directions Served	L	R	TR
Maximum Queue (ft)	30	81	411
Average Queue (ft)	8	26	93
95th Queue (ft)	30	64	369
Link Distance (ft)	195	195	505
Upstream Blk Time (%)			1
Queuing Penalty (veh)			8
Storage Bay Dist (ft)			
Storage Blk Time (%)			
Queuing Penalty (veh)			

Intersection: 19: Bedford St & Winslow St

Movement	NW	NE	SW	SW
Directions Served	LR	TR	L	T
Maximum Queue (ft)	47	380	125	502
Average Queue (ft)	11	150	119	325
95th Queue (ft)	35	428	147	563
Link Distance (ft)	203	372		523
Upstream Blk Time (%)		13		1
Queuing Penalty (veh)		80		3
Storage Bay Dist (ft)			100	
Storage Blk Time (%)			40	0
Queuing Penalty (veh)			33	1

Intersection: 66: Forest Avenue

Movement	EB	WB	SE	NW	NW	NW
Directions Served	R	R	T	T	T	T
Maximum Queue (ft)	488	1056	29	118	34	36
Average Queue (ft)	172	573	2	96	4	2
95th Queue (ft)	415	1209	18	156	22	17
Link Distance (ft)	574	1099	53	111	111	111
Upstream Blk Time (%)	2	18	0	39		
Queuing Penalty (veh)	0	0	1	110		
Storage Bay Dist (ft)						
Storage Blk Time (%)						
Queuing Penalty (veh)						

Zone Summary

Zone wide Queuing Penalty: 827

Intersection: 1: Forest Avenue & Falmouth St/Preble St

Phase	1	2	3	5	6
Movement(s) Served	NBL	SBT	EBWB	SBL	NBT
Maximum Green (s)	11.0	66.0	25.0	33.0	44.0
Minimum Green (s)	5.0	10.0	5.0	5.0	10.0
Recall	None	C-Min	None	None	C-Min
Avg. Green (s)	12.0	68.5	11.9	13.5	56.6
g/C Ratio	-0.01	NA	NA	-0.01	NA
Cycles Skipped (%)	13	0	0	8	0
Cycles @ Minimum (%)	23	0	3	11	3
Cycles Maxed Out (%)	7	100	0	0	100
Cycles with Peds (%)	0	15	13	0	19

Controller Summary

Average Cycle Length (s): NA
Number of Complete Cycles : 0

Intersection: 2: Forest Avenue & Bedford St/Baxter Blvd

Phase	2	3	4	5	6	8
Movement(s) Served	NBT	WBL	EBTL	NBL	SBT	WBTL
Maximum Green (s)	78.0	7.0	17.0	45.0	27.0	30.0
Minimum Green (s)	10.0	5.0	7.0	5.0	10.0	5.0
Recall	C-Min	None	None	None	C-Min	None
Avg. Green (s)	160.3	11.6	21.1	44.3	110.0	38.4
g/C Ratio	-0.01	-0.01	-0.01	-0.01	-0.01	-0.01
Cycles Skipped (%)	41	41	41	39	41	41
Cycles @ Minimum (%)	0	0	0	0	0	0
Cycles Maxed Out (%)	59	55	55	54	59	55
Cycles with Peds (%)	14	0	45	0	10	14

Controller Summary

Average Cycle Length (s): NA
Number of Complete Cycles : 0

Summary of All Intervals

Run Number	1	2	3	4	5	Avg
Start Time	3:57	3:57	3:57	3:57	3:57	3:57
End Time	5:00	5:00	5:00	5:00	5:00	5:00
Total Time (min)	63	63	63	63	63	63
Time Recorded (min)	60	60	60	60	60	60
# of Intervals	2	2	2	2	2	2
# of Recorded Intervals	1	1	1	1	1	1
Vehs Entered	8588	8525	8539	8742	8580	8593
Vehs Exited	8369	8215	8252	8443	8288	8316
Starting Vehs	243	249	253	245	238	243
Ending Vehs	462	559	540	544	530	521
Travel Distance (mi)	4240	4170	4158	4277	4164	4202
Travel Time (hr)	425.3	497.7	442.6	434.8	480.7	456.2
Total Delay (hr)	269.3	344.0	289.5	277.5	327.5	301.5
Total Stops	9205	9600	9351	9467	9375	9402
Fuel Used (gal)	212.3	226.6	213.8	215.8	223.2	218.3

Interval #0 Information Seeding

Start Time	3:57
End Time	4:00
Total Time (min)	3

Volumes adjusted by Growth Factors.

No data recorded this interval.

Interval #1 Information Recording

Start Time	4:00
End Time	5:00
Total Time (min)	60

Volumes adjusted by Growth Factors.

Run Number	1	2	3	4	5	Avg
Vehs Entered	8588	8525	8539	8742	8580	8593
Vehs Exited	8369	8215	8252	8443	8288	8316
Starting Vehs	243	249	253	245	238	243
Ending Vehs	462	559	540	544	530	521
Travel Distance (mi)	4240	4170	4158	4277	4164	4202
Travel Time (hr)	425.3	497.7	442.6	434.8	480.7	456.2
Total Delay (hr)	269.3	344.0	289.5	277.5	327.5	301.5
Total Stops	9205	9600	9351	9467	9375	9402
Fuel Used (gal)	212.3	226.6	213.8	215.8	223.2	218.3

1: Forest Avenue & Falmouth St/Preble St Performance by movement

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Denied Del/Veh (s)	0.2	0.2	2.2	0.1	0.2	0.2	0.0	0.0	0.0	2.5	0.2	0.3
Total Del/Veh (s)	49.0	41.2	29.9	41.7	45.4	14.4	45.0	9.1	8.0	79.9	75.1	108.5

1: Forest Avenue & Falmouth St/Preble St Performance by movement

Movement	All
Denied Del/Veh (s)	0.3
Total Del/Veh (s)	39.7

2: Forest Avenue & Bedford St/Baxter Blvd Performance by movement

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBT	SBR	All
Denied Del/Veh (s)	1.8	3.3	5.2	111.3	126.9	133.7	0.0	0.0	0.0	1.9	0.5	16.1
Total Del/Veh (s)	135.3	151.8	88.7	373.5	275.5	264.3	68.3	11.7	10.8	121.5	131.3	101.9

16: Bedford St & Surrenden St Performance by movement

Movement	NWL	NWR	NET	SWT	All
Denied Del/Veh (s)	3.7	3.7	0.0	0.0	1.4
Total Del/Veh (s)	11.2	23.6	3.4	0.4	9.6

18: Bedford St & Winslow St Performance by movement

Movement	NBR	NET	NER	SWL	SWT	All
Denied Del/Veh (s)	6.2	0.2	0.0	0.0	0.0	0.4
Total Del/Veh (s)	151.4	24.2	21.6	18.8	2.2	23.5

67: Forest Avenue Performance by movement

Movement	EBR	WBR	SET	NWT	All
Denied Del/Veh (s)	0.5	0.3	0.0	0.0	0.1
Total Del/Veh (s)	15.6	84.8	0.6	3.7	10.4

Total Zone Performance

Denied Del/Veh (s)	18.7
Total Del/Veh (s)	888.2

Intersection: 1: Forest Avenue & Falmouth St/Preble St

Movement	EB	EB	WB	WB	NB	NB	NB	SB	SB	SB
Directions Served	LT	R	LT	R	L	T	TR	L	T	TR
Maximum Queue (ft)	143	143	195	180	110	235	290	224	858	882
Average Queue (ft)	70	70	100	79	45	88	97	114	329	371
95th Queue (ft)	120	129	173	151	93	190	217	230	760	779
Link Distance (ft)	604		1193	1193		681	681		1137	1137
Upstream Blk Time (%)									0	0
Queuing Penalty (veh)									0	0
Storage Bay Dist (ft)		150			200			150		
Storage Blk Time (%)	0	0				1		1	28	
Queuing Penalty (veh)	0	0				0		5	29	

Intersection: 2: Forest Avenue & Bedford St/Baxter Blvd

Movement	EB	EB	WB	WB	WB	NB	NB	NB	SB	SB
Directions Served	LT	R	L	T	R	L	T	TR	T	TR
Maximum Queue (ft)	542	400	215	1306	41	182	188	200	737	735
Average Queue (ft)	474	385	212	963	7	170	141	159	626	661
95th Queue (ft)	654	452	229	1644	27	192	208	219	867	847
Link Distance (ft)	525			1275		165	165	165	681	681
Upstream Blk Time (%)	24			47		47	5	10	12	28
Queuing Penalty (veh)	168			0		249	25	53	54	129
Storage Bay Dist (ft)		375	140		75					
Storage Blk Time (%)	11	40	88	4	0					
Queuing Penalty (veh)	57	90	134	12	0					

Intersection: 16: Bedford St & Surrenden St

Movement	NW	NW	NE
Directions Served	L	R	TR
Maximum Queue (ft)	179	212	153
Average Queue (ft)	49	107	23
95th Queue (ft)	146	204	93
Link Distance (ft)	188	188	488
Upstream Blk Time (%)	7	10	
Queuing Penalty (veh)	0	0	
Storage Bay Dist (ft)			
Storage Blk Time (%)			
Queuing Penalty (veh)			

Intersection: 18: Bedford St & Winslow St

Movement	NB	NE	SW	SW
Directions Served	LR	TR	L	T
Maximum Queue (ft)	147	385	122	179
Average Queue (ft)	63	201	68	12
95th Queue (ft)	151	475	119	81
Link Distance (ft)	178	375		525
Upstream Blk Time (%)	8	6		
Queuing Penalty (veh)	0	41		
Storage Bay Dist (ft)			100	
Storage Blk Time (%)			6	
Queuing Penalty (veh)			15	

Intersection: 67: Forest Avenue

Movement	EB	WB	SE	NW	NW	NW
Directions Served	R	R	T	T	T	T
Maximum Queue (ft)	401	450	69	119	101	107
Average Queue (ft)	150	180	6	57	19	14
95th Queue (ft)	311	598	37	134	77	61
Link Distance (ft)	574	1099	53	111	111	111
Upstream Blk Time (%)	0	1	0	8	0	0
Queuing Penalty (veh)	0	0	1	31	1	0
Storage Bay Dist (ft)						
Storage Blk Time (%)						
Queuing Penalty (veh)						

Zone Summary

Zone wide Queuing Penalty: 1095

Intersection: 1: Forest Avenue & Falmouth St/Preble St

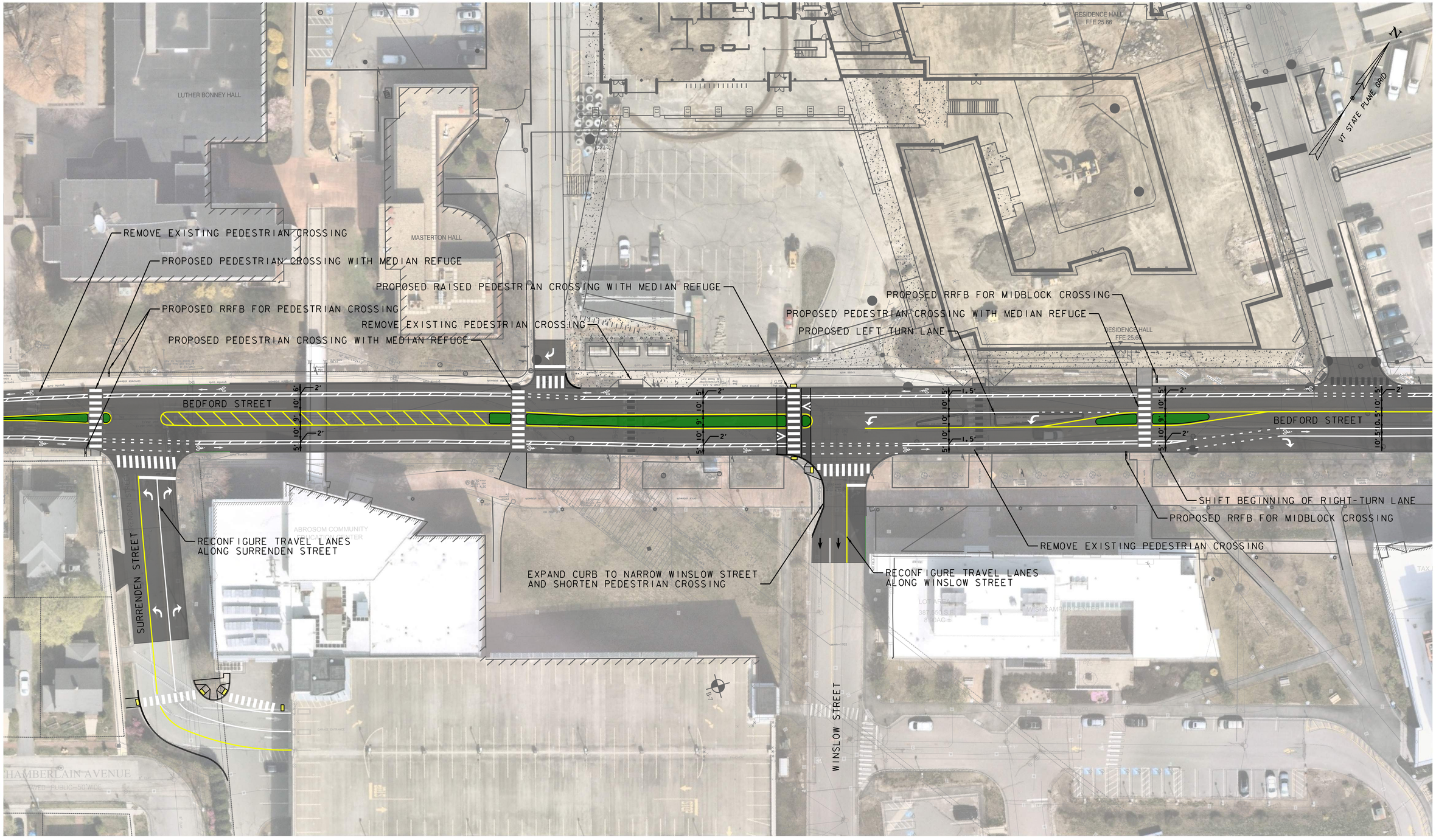
Phase	1	2	3	5	6
Movement(s) Served	NBL	SBT	EBWB	SBL	NBT
Maximum Green (s)	12.0	57.0	33.0	18.0	51.0
Minimum Green (s)	5.0	10.0	5.0	5.0	10.0
Recall	None	C-Min	None	None	C-Min
Avg. Green (s)	12.0	72.7	22.5	11.5	66.7
g/C Ratio	-0.01	NA	NA	-0.01	NA
Cycles Skipped (%)	21	0	0	14	0
Cycles @ Minimum (%)	18	0	0	9	0
Cycles Maxed Out (%)	4	100	7	0	100
Cycles with Peds (%)	0	13	7	0	20

Controller Summary
Average Cycle Length (s): NA
Number of Complete Cycles : 0

Intersection: 2: Forest Avenue & Bedford St/Baxter Blvd

Phase	2	3	4	5	6	8
Movement(s) Served	NBT	WBL	EBTL	NBL	SBT	WBTL
Maximum Green (s)	72.0	7.0	23.0	21.0	45.0	36.0
Minimum Green (s)	10.0	5.0	7.0	5.0	10.0	5.0
Recall	C-Min	None	None	None	C-Min	None
Avg. Green (s)	72.0	7.0	23.3	21.0	45.0	36.0
g/C Ratio	NA	NA	NA	NA	NA	NA
Cycles Skipped (%)	0	0	0	0	0	0
Cycles @ Minimum (%)	0	0	0	0	0	0
Cycles Maxed Out (%)	100	100	100	100	100	100
Cycles with Peds (%)	3	0	83	0	0	0

Controller Summary
Average Cycle Length (s): NA
Number of Complete Cycles : 0



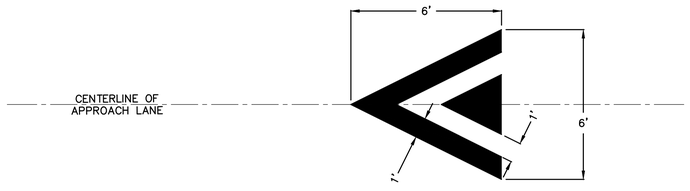
SCALE 1" = 30'-0"
30 0 30

PROJECT NAME:	USM INTERSECTION IMPROVEMENTS
PROJECT NUMBER:	52718.01
FILE NAME: bdr_concepts.dgn	PLOT DATE: 11/04/21
PROJECT LEADER: J.A. CONLEY	DRAWN BY: D.A. GINGRAS
DESIGNED BY: D.A. GINGRAS	CHECKED BY: J.A. CONLEY
BEDFORD STREET CONCEPT	SHEET 1 OF 1



NOTES:
1. CONTRACTOR TO SUBMIT SHOP DRAWINGS FOR STREET NAME SIGN ASSEMBLIES.
2. SIGNS TO BE MOUNTED ON DOUBLE 4"X4" POSTS.
3. GUIDE SIGNS ARE WHITE ON GREEN BACKGROUND WITH WHITE BORDER.
4. SHEETING SHALL BE ASTM TYPE III "HIGH INTENSITY" PRISMATIC RETRO-REFLECTIVITY OR APPROVED EQUAL.
5. PAYMENT FOR REMOVAL OF EXISTING SIGNS NOT DESIGNATED TO BE RELOCATED SHALL BE CONSIDERED INCIDENTAL TO THE CONTRACT. ALL EXISTING SIGNAGE CONFLICTING WITH NEW TRAFFIC PATTERN SHALL BE REMOVED.

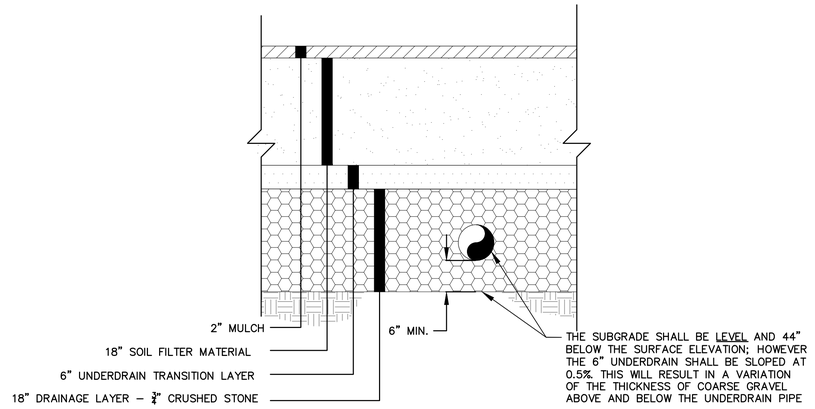
CIRCULAR INTERSECTION DESTINATION SIGNAGE
NOT TO SCALE



PAVEMENT MARKING

TRANSITION DETAIL

TYPICAL RAISED CROSSWALK DETAIL
NOT TO SCALE



SOIL FILTER MATERIAL SHALL HAVE PERMEABILITY OF 2 IN/HR TO 4 IN/HR. UNDERDRAIN SAND SHALL HAVE A PERMEABILITY OF AT LEAST 4 IN/HR.

* CONTRACTOR SHALL PROVIDE PERMEABILITY TEST PER ASTM D2434

SOIL FILTERS SHALL BE CONSTRUCTED IN CONFORMANCE WITH SECTION 900 OF THE SUPPLEMENTAL SPECIFICATIONS.

SOIL FILTER MATERIAL SHALL BE A LOAMY SAND SOIL COMBINED WITH 30% BY VOLUME OF MODERATELY FINE, WOOD FIBER OR BARK MULCH. THE RESULTING MIXTURE SHALL HAVE NO LESS THAN 10% PASSING THE 200 SIEVE. SOIL FILTER MEDIA SHALL BE A UNIFORM MIX, FREE OF STONES, STUMPS, ROOTS, OR OTHER SIMILAR OBJECTS LARGER THAN 2 INCHES. SUBCOMPONENTS OF THE SOIL FILTER MEDIA INCLUDE:

LOAMY SAND SHALL CONSIST OF NATIVE LOAMY SAND (AS DEFINED BY THE UNITED STATES DEPARTMENT OF AGRICULTURE) THAT CONTAINS NO LESS THAN 10% PASSING THE #200 SIEVE AND BETWEEN 2 – 5% CLAY AS DETERMINED THROUGH SOIL TEXTURAL ANALYSIS.

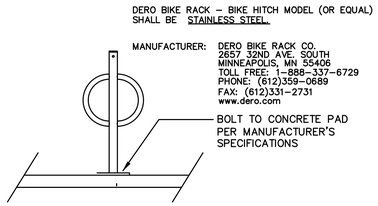
WOOD FIBER MULCH SHALL CONSIST OF A MODERATELY FINE, WELL COMPOSTED HARDWOOD BARK FREE OF REFUSE, PHYSICAL CONTAMINANTS, AND MATERIAL TOXIC TO PLANT GROWTH. MULCH SHALL HAVE 100% PASSING A 1" SCREEN.

THE CONTRACTOR SHALL SUBMIT A CONSTRUCTION SEQUENCE PLAN THAT OUTLINES THE OVERALL WORK IN RELATION TO THE CONSTRUCTION OF SOIL FILTER SYSTEMS, SPECIFICALLY CONSIDERING SITE STABILIZATION, SOIL FILTER INSTALLATION, AND VEGETATION PLACEMENT IN AND AROUND THE FILTER SYSTEMS. THE SOIL FILTER MEDIA MUST NOT BE INSTALLED UNTIL THE ENTIRE AREA THAT DRAINS TO THE FILTER HAS BEEN PERMANENTLY STABILIZED WITH PAVEMENT, VEGETATION, EROSION CONTROL MATTING, OR OTHER STRUCTURES UNLESS THE RUNOFF IS DIVERTED AROUND THE FILTER OR UNLESS THE FILTER IS COMPLETELY WRAPPED AND PROTECTED BY A NON-WOVEN GEOTEXTILE LINER WHICH CAN BE REMOVED FROM THE SURFACE PRIOR TO FINAL STABILIZATION.

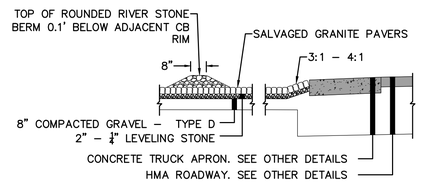
THE AREA THAT DRAINS TO THE SOIL FILTER SHALL BE KEPT STABLE, AVOIDING EROSION AND DEPOSITION OF SEDIMENTS INTO THE STORMWATER MANAGEMENT SYSTEM. ABSOLUTELY NO RUNOFF IS TO ENTER THE FILTER UNTIL ALL CONTRIBUTING DRAINAGE AREAS HAVE BEEN SUFFICIENTLY STABILIZED. IF FILTER MEDIA BECOMES CLOGGED, IT SHALL BE REPLACED BY THE CONTRACTOR AT NO ADDITIONAL COST

ADDITIONAL SURFACE LOAM MAY BE UTILIZED TO PROMOTE VEGETATION SURVIVAL. LOAM SHALL CONSIST OF NO MORE THAN ½ DEPTH OF NATIVE SANDY LOAM LIGHTLY RAKED INTO SOIL SURFACE.

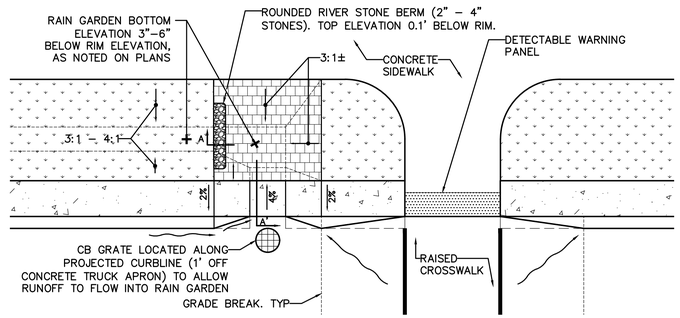
RAIN GARDEN - TYPICAL SECTION
NOT TO SCALE



BIKE RACK DETAIL
NOT TO SCALE



SECTION A–A'



TYPICAL RAIN GARDEN INLET DETAIL
NOT TO SCALE

Project:
Deering's Corner Roundabout
Design Plans
WIN # 18624.00

Prepared for:
City of Portland
389 Congress Street
Portland, Maine

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Consulting, Inc.
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Portland, Maine 04101
Tel (207) 772-2891
Fax (207) 772-3248
www.ransomenv.com

MTJ ENGINEERING
tjd&a
DuBois & King inc.

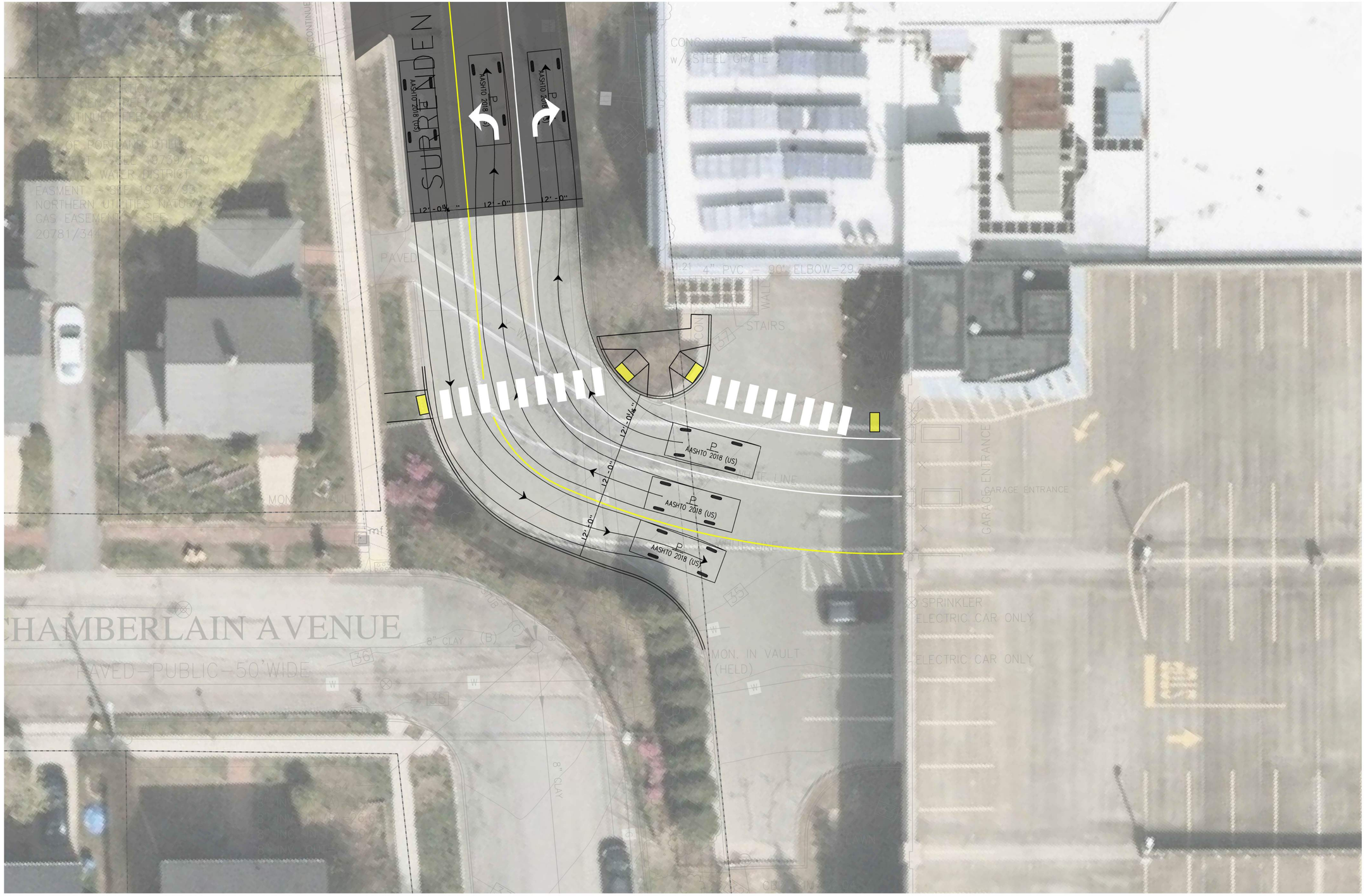
STATE OF MAINE
John I. Mahoney
#12340
LICENSED PROFESSIONAL ENGINEER

Details
Stormwater & Others

No.	Revision/Issue	Date
B	For Bidding	12–18–19
A	City MaineDOT Review	11–25–19

Design by: JIM
Checked by: SJB
Drawn by: JIM
Approved by: SJB
Project: 141.06013

Sheet No:
14.7



SCALE 1" = 10'-0"
10 0 10

vhb

PROJECT NAME:	USM GARAGE
PROJECT NUMBER:	52718.01
FILE NAME: ppms*/Section/------.dgn	PLOT DATE: 11/4/2021
PROJECT LEADER: J.A. CONLEY	DRAWN BY: K.M. SENTOFF
DESIGNED BY: K.M. SENTOFF	CHECKED BY: ------
------ ------	SHEET 1 OF 1

COMMITMENT & INTEGRITY
DRIVE RESULTS

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

T 800.426.4262
T 207.774.2112
F 207.774.6635

Att. U

Via Electronic Mail

November 23, 2021

Jimmy Dealaman, Planner
Planning and Urban Development Department
City Hall, 389 Congress Street, 4th Floor
Portland, Maine 04101

Re: 50 Bedford Street – Response to Site Plan Application Review Comments on Supplemental Materials for Transportation Demand Management Plan and Traffic Movement Permit

Dear Jimmy:

The following are responses to comments received from the City of Portland via email dated November 12, 2021; the comments received are provided below for your reference, followed by our response in italics:

Site Plan – Supplemental Materials for Traffic Movement Permit Review Comments

Traffic Consultant Reviewer – TyLin International

1. The applicant shall provide conceptual design plans, preliminary and final plans and specifications for Bedford Street Improvements as detailed on the plan prepared by VHB dated xxxx (Plans continue to be reviewed and approval is pending). Said improvements shall be constructed by the applicant prior to completion of a parking garage structure and Final design plans will need to be stamped by a professional engineer.

   RESPONSE: The applicant concurs with the inclusion of this as a condition of approval.

2. The applicant shall provide conceptual design plans, preliminary and final plans and specifications for Traffic calming / pedestrian improvements at the Falmouth Street / Oakdale Street intersection for review and approval by the Department of Public Works and Planning Authority. Said improvements shall be constructed by the applicant prior to completion of a parking garage structure or five years from TMP approval, whichever is sooner.

   RESPONSE: The applicant concurs with the inclusion of this as a condition of approval.

3. The applicant shall be responsible for the implementation of do not block driveway pavement markings and signage on Forest Avenue at the Oakhurst driveway. The applicant shall provide conceptual design plans, preliminary and final plans and specifications to the City for review and approval. Final design plans will need to be stamped by a professional engineer and implementation prior to completion of a parking garage structure.

   RESPONSE: The applicant concurs with the inclusion of this as a condition of approval.

4. The applicant shall be responsible for implementing traffic signal equipment improvements at the Forest Avenue/Bedford Street intersection. This upgrade shall include all equipment necessary for a traffic signal system that is fully active and functioning within the Surtrac Adaptive network. The proposed system shall be coordinated with Rapidflow Technologies and shall be field tested and

verified before being accepted by the City. Said improvements shall be constructed by the applicant prior to completion of a parking garage structure.

RESPONSE: The applicant has committed to procure, install, and field test the detection equipment required to replace the failed detection at this intersection.

5. The applicant shall provide conceptual design plans, preliminary and final plans and specifications for improvements at the Forest Avenue/Bedford Street/Baxter Boulevard intersection based on the Smart Corridor Study recommendations for review and approval by the Department of Public Works and Planning Authority. These shall include geometric modifications to the corners on the Baxter Boulevard approach and upgrades to pedestrian traffic signal equipment. The applicant shall construct the said improvements prior Certificate of Occupancy, with all work complying with ADA standards.

   RESPONSE: The applicant concurs with the inclusion of this as a condition of approval.

6. The applicant shall provide details on installing a dynamic sign message system that provides flexibility in using Surrenden Street for garage access if vehicle queues extend to Forest Avenue. I'm concerned about traffic queues backing up into Forest Avenue. The applicant shall also provide a parking management plan that defines how garage access/egress conditions may change as a function of traffic demand.

   RESPONSE: The applicant has concerns with the confusion caused by a dynamic sign message system. Alternatively, a modification to the circulation is proposed to reduce the queuing at Winslow Street. The attached Ground Level Floor Plan dated 11/17/21 illustrates a revised garage circulation that addresses the City's concerns regarding queuing by continuing to use Surrenden Street as the access for the commuter traffic, while creating a residents only entrance (by pass) for the Winslow Street entrance. The volume at Winslow Street is significantly lower than the commuter demand and provides an option for 24-hour access to residents when the commuter garage may be closed overnight.

7. The applicant shall conduct traffic modeling that evaluates bus stop configuration on Bedford Street to help inform the design of roadway improvements.

   RESPONSE: USM has conducted the requested modeling and with the circulation changes outlined above, the in-line bus stop configuration will not cause excessive delays or queues.

8. I continue to review the construction management plan, but the applicant should also provide construction management plans for the Bedford Street improvements.

   RESPONSE: This plan will be prepared and submitted once the Bedford Street improvements are agreed upon by the City.

Site Plan – Supplemental Materials for Transportation Demand Management (TDM) Plan Review Comments

Mobility Context, Section 2

Updates made to the parking lot figures presented in Figure 7 on page 16. The figure represented the lots on November 11th, 2020. The applicant misstated the date in the narrative.

RESPONSE: This typo has been corrected in the attached revised TDM Addendum.

Monitoring and Reporting Plan, Section 7

Inclusion of EV ownership would stay in the annual transportation survey, as outlined on page 43. This is important for GHG calculations.

The Transportation Manager is also seeking to confirm in the document that USM will still be submitting reports in the meantime while the garage is under construction (in the reporting and monitoring section it looks like the project won't be submitting a report until 2024.) It would be helpful to clarify in the monitoring section what the effective date is for these updates (ex. upon completion of the student center/dormitory and parking garage).

RESPONSE: TDM Reports relevant to existing infrastructure will be submitted prior to 2024 and full TDM reporting will begin in 2024.

In addition to the survey data, the University will provide an EV Use and Forecast Report to the City on or before June 1st of each year beginning in calendar year 2024, summarizing EV ownership and EV charging station use statistics. The Report will also include a proposal regarding the number of EV charging stations for the coming school year, based upon the supply and demand statistics from the previous year. In alignment with the other reporting activities outlined in the TDM plan, the University commits to annual reporting through 2030, the horizon of the Facilities Master Plan, after which a new TDM plan may be proposed.

Planning will be sending out a city-wide email update switching TDM reporting to a May 15th report due date so the June 1st date in the monitoring section should be modified to May 15th.

RESPONSE: The University acknowledges that the City will switch to a May 15th report date and will work to produce annual reports as soon as data is available following the end of the Spring semester.

Site Plan – Additional Site Plan Review Comments

Design

The proposed project meets the design standards. Please add a schedule of materials' indicating type and color to the elevations.

RESPONSE: The materials schedule on Drawings A200 and A201 have been revised with the requested information.

Parking

At the previous Planning Board workshop, the board was interested in understanding if there is an anticipated rate for premium overnight parking available? Please provide more information if available.

RESPONSE: $500-$600 per year is currently planned. This will be reassessed prior to opening day.

EV Waiver

-At the previous Planning Board workshop, the board was interested in data showing the number of current EV vehicle users (registered) on campus. Please share any estimates as general material. Also, it would be helpful to supplement this data with total number of vehicles (registered) on campus.

RESPONSE: Historically, the University has not collected data on which vehicles were fully electric (EV) or plug-in hybrid (PHEV). Therefore, in order to estimate the maximum number of EVs or PHEVs likely to be on campus, the Office of Sustainability surveyed industry and governmental websites to find lists of all potential EV or PHEV model vehicles sold in or prior to 2020. Then these models were identified in parking registration data as possible candidates among the generic makes and models. Given that many of these generic makes and models were not specifically indicated to be EV or PHEV, researchers had to survey market sales data to estimate what percentage of possible EV or PHEV models sold are actually EV or PHEV versions. Researchers used sales data from the last couple of years to develop the percentages. These percentages are likely to be overestimates since significantly more EV and PHEV versions of popular models are being sold now than prior to 2018, and the majority of the vehicle fleet are not brand-new vehicles. Regardless, the result was a maximum estimate of 56 EV or PHEV vehicles belonging to students, staff, and faculty on the Portland campus in 2020, out of 3,158 permits. Moving forward, the University is beginning to collect data on whether vehicles are EV or PHEV for new registrations.

- At the previous Planning Board workshop there was some interest in understanding the costs of the EV charging stations. If available please share what is the cost per EV charging space, and the total cost of providing all necessary conduit and wiring for future EV installation?

RESPONSE: The current estimate is $11,000 per EV charger, or $5,500 per charging space. The estimated cost for the pathways and wiring for power and communications is approximately $1,100 per space. Additionally, we estimate another $2,000/charger or $1,000/space for high level power distribution in the garage related to the chargers. This cost is for EV dedicated electrical panels and feeders. This money also covers the increased size of the main distribution panel related to EV charging. For example, if there was no EV charging, the main distribution panel could likely be 600-amps instead of 1,000-amps.

- Rather than seeking a waiver for the remaining EV chargers, have electrical outlets capable of providing Level 2 EV charging or higher been considered?

RESPONSE: The applicant has considered all options to provide EV charging capability within the garage, including electrical outlets. Electrical outlets (60amp 220V) can offer comparable Level 2 charging; however, they do not provide for an ability to track and charge a fee for users. In addition to helping to recover the electrical cost, charging a fee is a means to encourage turnover at the charging stations when not in use and increase availability. Uncontrolled outlets also present significant risk to the University's ability to control demand charges from the utility company, an issue that the more expensive "smart" stations can address through toggling capabilities, lowering the flow of power when necessary. So, although installing non-smart outlets may seem cheaper, it may not be. For these reasons, installing electrical outlets for EV charging purposes is not a viable alternative solution to the University's request for a waiver. The University remains confident in its assessment of EV demand and that the number of charging stations proposed will meet that need. Further, we remain committed to providing an EV Use

and Forecast Report annually to the City as proposed in our TDM, and as demand increases, increasing the number of EV charging stations.

Wayfinding

Please clarify the locations of any proposed outdoor wayfinding signage. The narrative refers to new 'traffic signage will be provided as shown on the drawings,' but it's unclear how the new garage entrance will be indicated to users and where it will be located. Please also see TMP comments which may apply to wayfinding.

RESPONSE: With the proposed modification to garage circulation, Surrenden Street will continue to be the main entrance to the garage and will be signed as such. Existing signage includes an informational sign on Bedford Street westbound on the far side of Winslow Street indicating that the garage is located on the next left as well as official USM signage at Surrenden Street indicating parking in that direction. Similar signage would be anticipated in the future.

CPTED

It's understood that the garage provides indoor security cameras, but staff are wondering if the outdoor area at the rear of the building includes any surveillance or security monitoring?

RESPONSE: The applicant will be providing camera coverage for the area at the rear of the building.

LIGHTING

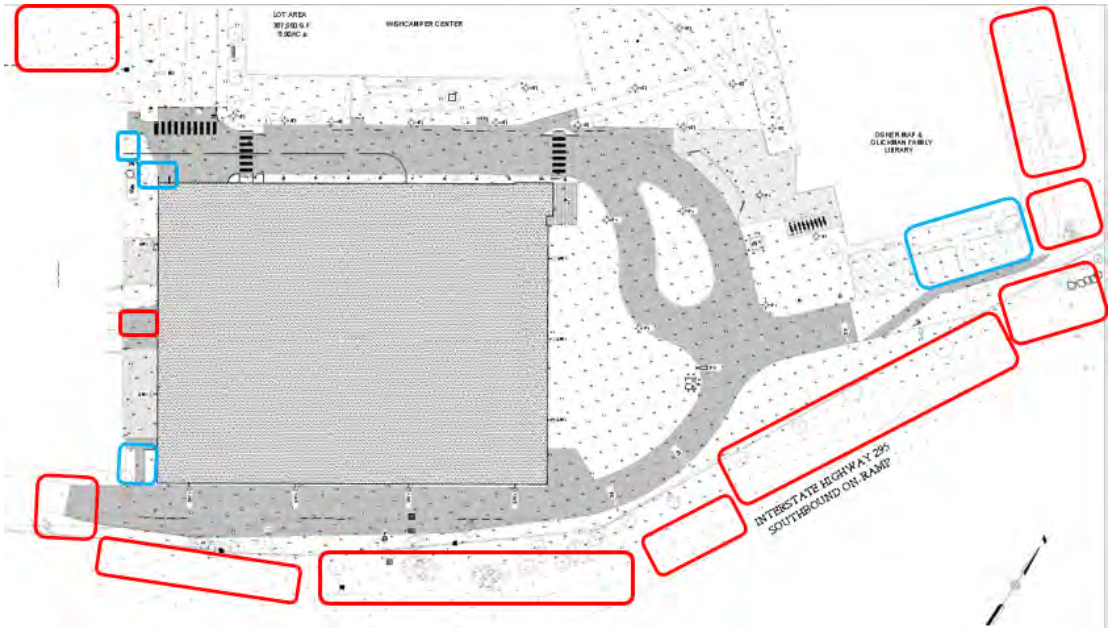
- Please submit a lighting plan for the interior of the parking garage structure. [Note: Please ensure the indoor lighting fixtures do not exceed 20,000 lumens. Additionally, if fixtures are seeking to exceed the max 4.0 foot candles maximum for structured parking, please include this in a waiver request.]

RESPONSE: A photometric plan of the interior of the parking garage will be uploaded separately to Eplan. It will meet the guidelines of the Technical Manual.

-Please see image below identifying areas that appear to be below the required 0.2 foot candles. It's understood the site includes existing site and street lighting which aren't being modeled in the photometric plan provided. However, a written waiver should still be requested (to Section 12.3.2 for illumination levels) stating those reasons why areas of the site are not shown on the plan as meeting the foot candle minimum.

RESPONSE: The calculation points falling outside of the scope of work boundary and outside the property lines of this project will be removed for clarity and a new photometric plan will be uploaded separately to Eplan.

-In blue (see image below), staff would like some additional attention given to these areas as it remains unclear whether locations are sufficiently lit by existing lighting, and appears additional lighting may be needed. Please update the plan as necessary to ensure site lighting promotes natural visibility and safety on the site.



RESPONSE: Existing lighting fixtures were omitted from the lighting calculation. The rightmost blue circled boundary area is outside the scope of this project and will not be included in our calculations. The other blue boundaries will be addressed and corrected and a new photometric plan will be uploaded to Eplan.

-The color temperature of the fixtures exceeds the 3,000K color temperature minimum specified in Section 12.3.5 of the Technical Manual. If the fixtures are necessary to promote safety and adequate lighting/visibility, please include this as a basis for being considered for a waiver. A written waiver should then be requested to Section 12.3.5 Luminaire Types.

RESPONSE: 4,000K color temperature fixtures were selected to match the existing fixtures immediately adjacent to the scope of work area. A revised waiver request table is attached.

-Please clarify what the height is for the wall mounted exterior lights proposed. Please see the City's Technical Manual Section 12.3.8 to reference the height requirements.

RESPONSE: Wall mounted light fixtures are shown on the east, south, and west elevations. These have been revised according to suggestions above. The height of the fixtures varies between 10' and 12' above adjacent grade, meeting the requirements of 12.3.8.

Fire Department/Life Safety -

-The Fire Department Connection (FDC) must be within 150 feet of the fire hydrant. Please revisit the location of the proposed FDC.

RESPONSE: The FDC has been relocated to the front of the building, along the Wishcamper Drive, across from the fire hydrant. A revised Grading & Utility Plan has been provided.

Thank you for your feedback and comments as we continue to move forward with this project. Please contact me should you have any questions.

Sincerely,

WOODARD & CURRAN, INC.

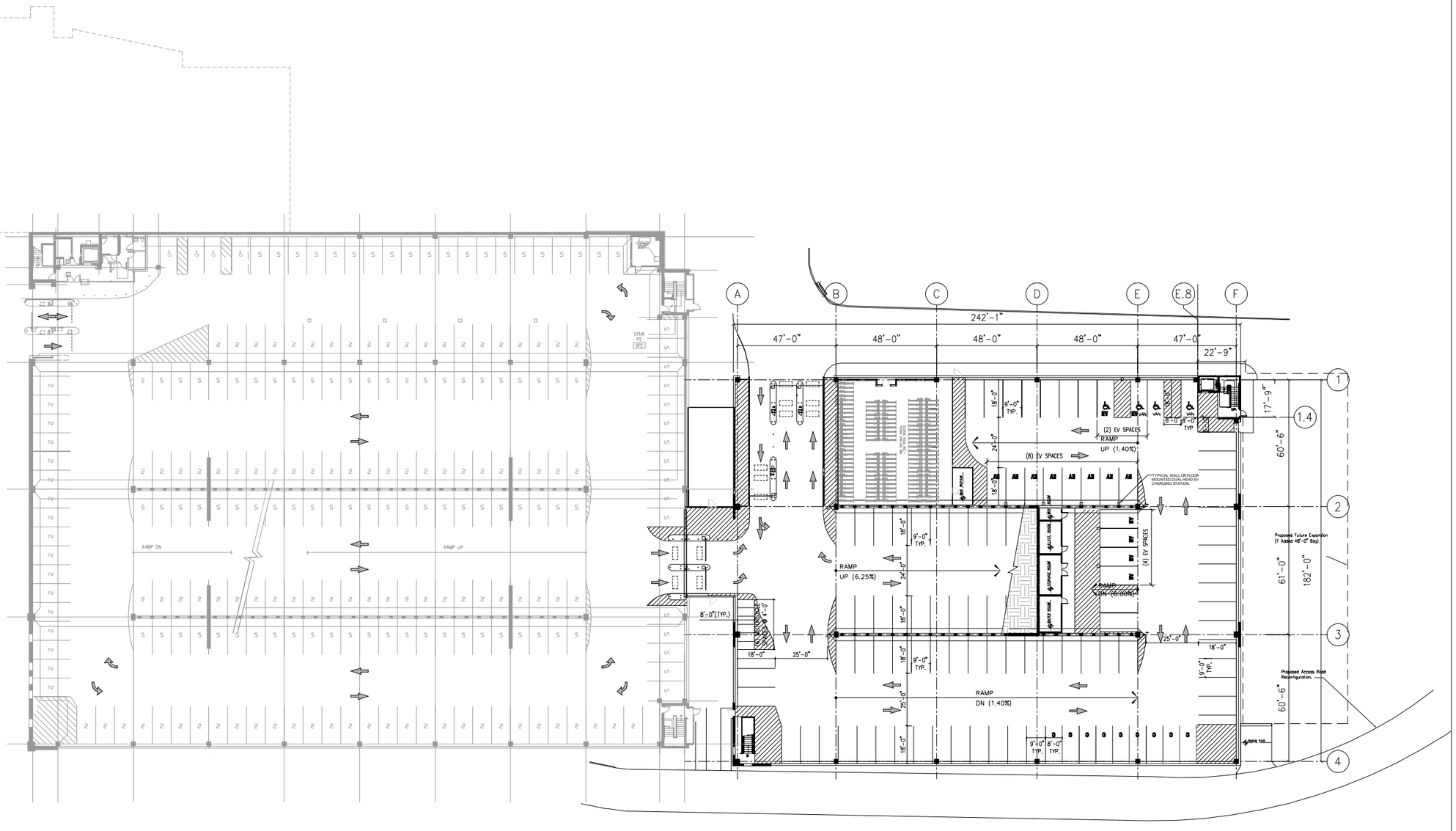
Darrin Stairs, PE
Project Manager

/DS

Enclosure(s)

- Revised Parking Garage Ground Floor Striping Plan dated November 17, 2021 (uploaded separately to Eplan)
- Revised TDM Addendum dated November 22, 2021
- Drawings A200 and A201 dated November 22, 2021
- Photometric Plans (uploaded separately to Eplan)
- Updated Waiver Request Table
- Drawing C-104 Grading & Utility Plan (uploaded separately to Eplan)

cc: Wes Wilson, Desman Design Management
Ann Vashon, USM



1 SITE PLAN
SCALE: 1" = 30'

NORTH

UNIVERSITY OF SOUTHERN MAINE
25 Bedford Street, Portland, ME 04104
207.712.5183 | USM.MAINE.EDU

PROJECT TEAM:

CLIENT
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PRIME CONSULTANT
& STRUCTURAL ENGINEER
DESMAN Design Management
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CIVIL ENGINEER
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MICHAEL BOUCHER LANDSCAPE ARCHITECTURE
457 US ROUTE 1 SUITE 2
FREEPORT, ME 04032

MEP/FP ENGINEER
ALLIED ENGINEERING
160 VERANDA STREET
PORTLAND, ME 04103

GEOTECHNICAL ENGINEER
S.W. COLE
286 PORTLAND ROAD
GREY, ME 04039

TRAFFIC ENGINEER
VANASSE HANGEN BRUSTLIN INC
40 IDX DR 100 #200, SOUTH
BURLINGTON, VT 05403

COST ESTIMATOR
PREFERRED CONSTRUCTION MGMT
94 AUBURN ST.
PORTLAND, ME 04103

SEAL / SIGNATURE

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2021

PROJECT:

USM - Structured Parking Garage

Address

50 Bedford Street,
Portland ME 04104

REVISIONS:

No.	Date	Description
1	9/1/21	Response to City Comments
2	10/25/21	Ping Brd W.S. #2 Updates

SUBMISSIONS:

Date	Issued For:
08/09/21	Schematic Design

SCALE	**1" = 20'-0"**
DATE ISSUED	**11/04/2021**
PROJECT NO	**20-20145.00-1**
DRAWN BY	**C.M.**
CHECKED BY	**W.W.**

SHEET TITLE:

SITE PLAN

A-100

Addendum to University of Southern Maine Portland Campus Transportation Demand Management (TDM) Plan

11-22-2021

The changes below represent modifications to the plan due to changes in the University's structured garage proposal and other dynamic changes (internal & external to USM) that have occurred over the last 12 months. These include:

- The University siting the proposed structured parking on the Wishcamper lot
- Maine Law School moving off campus
- The University downsizing the proposed size of the structured parking, as a result of the Maine Law School move and feedback received from the Planning Board
- The City of Portland adding a requirement for electric vehicle charging stations to its Technical Manual

Mobility Context, Section 2-

The following updates are made to the parking lots represented in Figure 7 on page 16. The figure represented the lots on November 11th, 2020. These updated figures are current as of November 9th, 2021:

- The Woodbury lot - 130 spaces were displaced due to construction of the residence hall and Career & Student Success Center ("CSSC")
- The Facilities lot - 41 spaces were displaced due to construction of the residence hall and CSSC
- The Heat Plant lot - 21 spaces will be reduced to 15 spaces due to construction of the residence hall and CSSC
- The Brighton Ave lot- 26 spaces were displaced from the City roundabout project
- The Wishcamper lot -91 spaces are proposed to be displaced from the new parking garage at this location

TDM Coordinator, Section 4-

The roles of the two point people from the University have been changed, in part to help support the TDM effort:

- The University's TDM Coordinator will still be Aaron Witham, whose new title is Director of Sustainability. The inclusion of TDM duties into his new job description demonstrate the University's commitment to TDM success.
- The supporting role will now be an Associate Vice President of Administration position, rather than Director of Auxiliary Services. This change also represents an increase in focus and attention to transportation matters.

Transportation Demand Reduction Goals, Section 5-

Trip Reduction Goal- This goal stays the same because even though the structured parking will be located in a different area, the trips are not created by the garage, and thus don't change

as a result of location. Even though trips from the Law School won't happen anymore, VHB thought it would be best to be conservative and not deduct those trips from our analysis, so that we can ensure that the traffic mitigation measures proposed are overly sufficient.

Parking Demand Reduction Goal-
The goal remains a 10-14% reduction at the hour of peak demand. The gross number translation, however, changes from the published 159-222 vehicles to 144-201, to reflect a loss of Maine Law School demand in the campus-wide base demand number.

GHG Reduction Goal-

The goal of 20% reduction in GHG emissions from transportation remains the same, as it is a per capita goal, not impacted by the size of the population. How the University plans to achieve this goal is constantly evolving based on the proportion of electric vehicle commuters and based on fuel economy standards, both of which are impacted as much or more by evolving national forces, as they are by University policies.

Summary of Targets-

TDM Plan: Baseline Data, Targets & Monitoring/Reporting

Date of TDM Plan: 11-3-2020				11-4-2021 Addendum
Provide Data in Percentages and Absolute Numbers, where applicable		*Baseline Data (at time of TDM plan adoption*	*TDM Plan Reduction Target (if applicable)*	*Current Reporting Period Data*
Vehicular Trips	*Off-Peak*	N/A	N/A	Report forthcoming in 2024
	AM Peak Hr	581	3-6% (17-35 trips)	Report forthcoming in 2024
	PM Peak Hr	381	3-6% (12-23 trips)	Report forthcoming in 2024
Mode Split (future data may be reported as	*Single-Occupancy Vehicle*	75%	70%	Report forthcoming in 2024

SOV & Non-SOV)	*Non-SOV*	25%	30%	Report forthcoming in 2024
	Carpool	8%	Not specific	Report forthcoming in 2024
	Bicycle	*11% (shared with walk)	Not specific	Report forthcoming in 2024
	Walk	*11% (shared with bike)	Not specific	Report forthcoming in 2024
	Transit	6%	Not specific	Report forthcoming in 2024
On-site Parking (Peak)		Was 1,587 (adjusted to 1,435)	10-14% (144-201)	Report forthcoming in 2024
GHG Emissions Targets		2 MT of CO2e per capita	20% (or .4 MT of CO2e per capita)	Report forthcoming in 2024
Other:_____				

*Adjusted On-site parking number is due to deducting Maine Law School from total demand in the baseline, so that the TDM reduction target accounts for the change in actual conditions on the ground

Trip, Parking, Mode Split & GHG Reduction Strategies, Section 6-

The existing strategy, "Build Additional EV Charging Stations" is clarified to mean the University will endeavor to match demonstrated demand with supply of electric vehicle charging stations, so that demand would not exceed supply.

A year into strategizing implementation of our TDM plan, we have adjusted some launch dates. Some have adjusted to earlier and some later. Please see new launch dates written in red in the table below.

Table 3: Overview of TDM Initiatives for USM

STRATEGY	LAUNCH DATE	INFRASTRUCTURE	INCENTIVES	EDUCATION
Walking				
Create Walk Spot Maps	Fall 2023			X
Publicize the "Complete City Project"	Spring 2022			X
Hold Fitness Challenges	Spring 2022		X	
Biking				
*Co-launch City Bikeshare	Spring 2023	X		
Build Bicycle Repair Station	Spring 2023	X		X
Promote Local Bike Activities	Spring 2022		X	X
Offer Discounted Bike Supplies	Fall 2022		X	
*Improve Bike Infrastructure	Spring 2023	X		
Apply for Bike Friendly University Certification	Fall 2022	X	X	X
Transit				
*Continue METRO Pass Program	Ongoing	X	X	
Propose Husky Line Improvements	Fall 2023	X		
Propose Transit Service Expansion Beyond Husky Line	Spring 2022	X		
Install Transit Screen	Spring 2023	X		
****Carpooling, Telecommuting & Time-of-Day***				
Establish Vanpool Vehicles	Fall 2022	X	X	
Designate Carpool/Vanpool Spaces	Fall 2022	X	X	

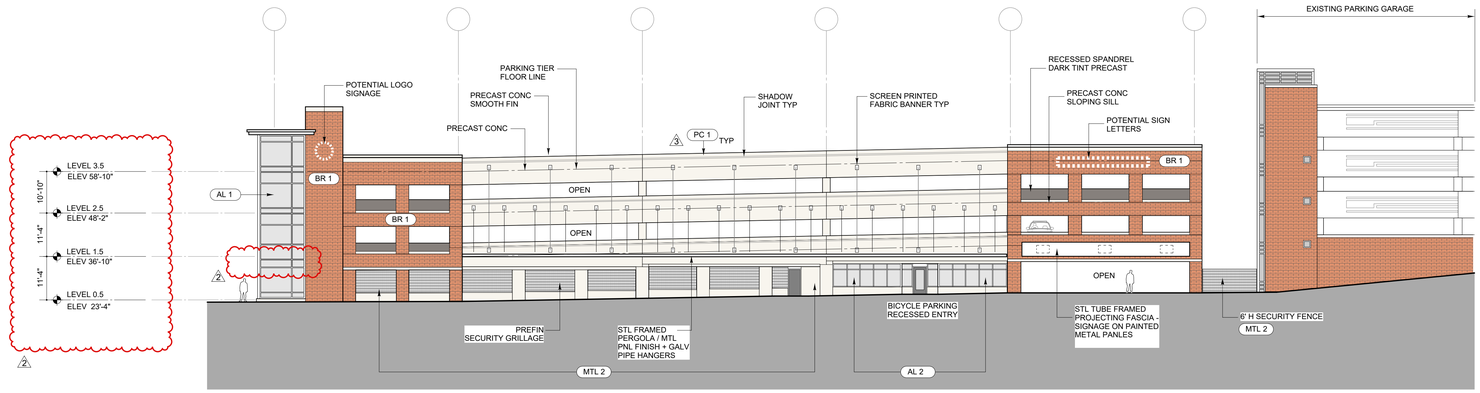
Develop Rideshare Matching Platform	Fall 2022	X		
Promote Telework & Flexwork	Ongoing		X	X
Restructure Course Schedule	Ongoing	X		
Parking Pricing				
Establish Commuter Parking Buyout Program	Fall 2022		X	
*Establish Residential Parking Buyout Program	Fall 2023		X	
Host Carshare Program to Support Buyouts	Spring 2023	X	X	
*Unbundle Student Parking Fees	Fall 2022		X	X
Build Additional EV Charging Stations	Spring 2023	X		
Review Parking Price Levels	Fall 2022		X	
Communications & Marketing				
*Hold New Student & Employee Orientations for Transportation	Spring 2022		X	X
*Revise Transportation Website	Fall 2021			X
*Publish Access Guide	Fall 2021			X
Offer Guaranteed Ride Home Service	Spring 2023		X	

*Core strategies that the University is committing to are indicated by *. In the case of the Carpooling, Telecommuting & Time-of-Day category, the category itself is considered core, but the University will maintain flexibility in which of these strategies it implements, depending on future conditions

Monitoring and Reporting Plan, Section 7-

Inclusion of EV ownership would stay in the annual transportation survey, as outlined on page 43. This is important for GHG calculations.

In addition to the survey data, the University will provide an EV Use and Forecast Report to the City on or before June 1st of each year beginning in calendar year 2024, summarizing EV ownership and EV charging station use statistics. The Report will also include a proposal regarding the number of EV charging stations for the coming school year, based upon the supply and demand statistics from the previous year. In alignment with the other reporting activities outlined in the TDM plan, the University commits to annual reporting through 2030, the horizon of the Facilities Master Plan, after which a new TDM plan may be proposed.



NORTH ELEVATION

1/16" = 1' - 0"

1 ADDED:
- SECURITY FENCE BETWEEN EXISTING AND NEW GARAGE
- RECESSED ENTRY TO BIKE STORAGE
- GLAZED ALUM STOREFRONT AT BIKE STORAGE
- PIERS TO SUBDIVIDE BAYS AT GROUND LEVEL
- STEEL PERGOLA IN LIEU OF FULL CANOPY
- EXTENDED GLASS AT EAST STAIR TO GRADE LEVEL
- ALUM SUNSCREEN FEATURE AT EAST STAIR

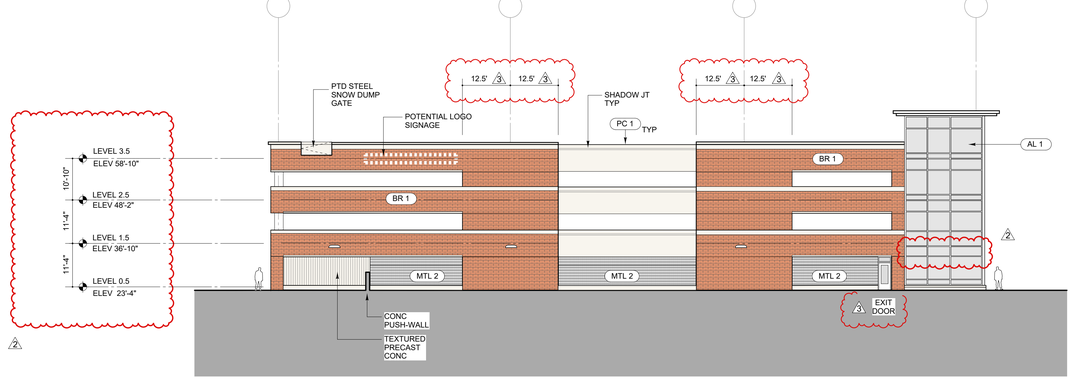
2 DELETED:
- ONE PARKING TIER
- ALUM SUNSCREEN FEATURE AT EAST STAIR

3 • MEDIUM SANDBLASTED FINISH DELETED

MATERIALS SCHEDULE

3 • MATERIALS LEGEND DELETED
• MORE MATERIALS INFORMATION ADDED
• BRICK SELECTION REVISED

KEY	MATERIAL	COLOR	NOTES
AL 1	ALUMINUM FRAMED CURTAINWALL	CLEAR ANODIZED	CLEAR GLASS (UNTINTED)
BR 1	THIN BRICK	 MIXED REDS	THIN BRICK INTEGRAL TO PRECAST UNITS METRO BRICK #350 MAIN STREET FLASHED
MTL 1	FENCING		BLACK VINLY COATED CHAIN-LINK
MTL 2	STEEL SECURITY BAR GRATING		1/8" x 1" BARS 2" x 5" OPENINGS PREFINISHED BLACK
PC 1	PRECAST STRUCTURAL CONCRETE	 BUFF / TAN COLOR	MIXED WITH WHITE PORTLAND CEMENT LIGHTLY SANDBLASTED SIMILAR TO EXISTING GARAGE NO EXPOSED AGGREGATE PRECAST CONCRETE INSTITUTE MIX #113



EAST ELEVATION

1/16" = 1' - 0"

1 • DELETED CANOPY
* ADDED ALUM SUNSHADE FEATURE

2 • DELETED ONE TIER AND ALUM SUNSHADE

3 • WIDEN SHEAR WALLS FROM 12' TO 25'
• STAIR EXIT MOVED FURTHER SOUTH
• MEDIUM SANDBLASTED FINISH DELETED

16 0 16 32

BAR SCALE

1" = 16'

CHECK GRAPHIC SCALE BEFORE USING

UNIVERSITY OF SOUTHERN MAINE

25 Bedford Street, Portland, ME 04104
207.712.5183 | USM.MAINE.EDU

PROJECT TEAM:

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CIVIL ENGINEER
WOODARD & CURRAN
41 HUTCHINS DRIVE
PORTLAND, ME 04102

LANDSCAPE ARCHITECT
MICHAEL BOUCHER
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REVISIONS:

No.	Date	Description
1	09/07/21	Response to City Comments
2	10/25/21	Plng Brd W.S. #2 Updates
3	11/22/21	Plng Brd W.S. #3 Updates

SUBMISSIONS:

Date	Issued For:
07/30/21	Site Plan Submittal

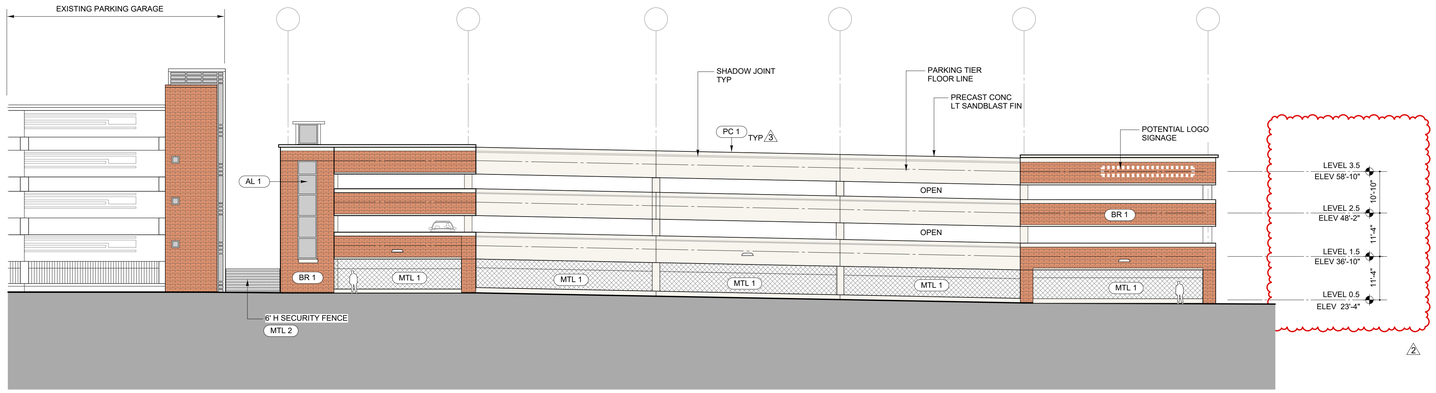
SCALE	1/16" = 1'-0"
DATE ISSUED	07/30/2021
PROJECT NO	20-20145.00-1
DRAWN BY	
CHECKED BY	

SHEET TITLE:

Building Elevations

A - 200

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SOUTH ELEVATION

1/16" = 1' - 0"

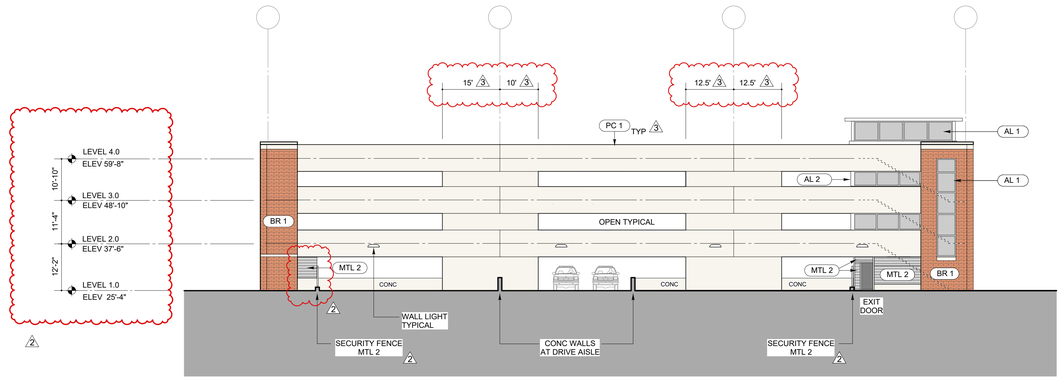
2 DELETED ONE PARKING TIER
VINYL COATED CHAIN LINK FOR OPENINGS INFILL

3 • MEDIUM SANDBLAST FINISH DELETED

MATERIALS SCHEDULE

3 • MATERIALS LEGEND DELETED
• MORE MATERIALS INFORMATION ADDED
• BRICK SELECTION REVISED

KEY	MATERIAL	COLOR	NOTES
AL 1	ALUMINUM FRAMED CURTAINWALL	CLEAR ANODIZED	CLEAR GLASS (UNTINTED)
BR 1	THIN BRICK	 MIXED REDS	THIN BRICK INTEGRAL TO PRECAST UNITS METRO BRICK #350 MAIN STREET FLASHED
MTL 1	FENCING		BLACK VINLY COATED CHAIN-LINK
MTL 2	STEEL SECURITY BAR GRATING		1/8" x 1" BARS 2" x 5" OPENINGS PREFINISHED BLACK
PC 1	PRECAST STRUCTURAL CONCRETE	 BUFF / TAN COLOR	MIXED WITH WHITE PORTLAND CEMENT LIGHTLY SANDBLASTED SIMILAR TO EXISTING GARAGE NO EXPOSED AGGREGATE PRECAST CONCRETE INSTITUTE MIX #113



WEST ELEVATION

1/16" = 1' - 0"

1 • WALL LIGHTS CALLED OUT
• CONCRETE KNEEWALLS ADDED
• SOUTHWEST STAIR ENCLOSURE MODIFIED
• PIERS TO SUBDIVIDE BAYS AT GROUND LEVEL
• STEEL PERGOLA IN LIEU OF FULL CANOPY
• EXTENDED GLASS AT EAST STAIR TO GRADE LEVEL
• ALUM SUNSCREEN FEATURE AT EAST STAIR

2 • DELETED ONE PARKING TIER

3 • SHEAR WALLS WIDTH INCREASED FROM 12' TO 25'
• ADD SECURITY GRILLE AT NORTH SIDE
• CHANGE SECURITY FENCE FROM MTL-1 TO MTL-2
• MEDIUM SANDBLAST FINISH DELETED

16 0 16 32

BAR SCALE

1" = 16'

CHECK GRAPHIC SCALE BEFORE USING

7/2/2021 3:16:33 PM

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Date	Issued For:
07/30/21	Site Plan Submittal

SCALE	1/16" = 1'-0"
DATE ISSUED	07/30/2021
PROJECT NO	20-20145.00-1
DRAWN BY	
CHECKED BY	

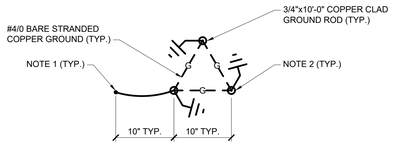
SHEET TITLE:

Building Elevations

A - 501

—OH—	OVERHEAD WIRING, TYPE AS INDICATED
— — — —	UNDERGROUND OR UNDERSLAB WIRING, TYPE AS INDICATED
	UTILITY POLE
	FUSED DISCONNECT SWITCH
	NON-FUSED DISCONNECT SWITCH
	MOTOR
	GROUNDING SYSTEM
(J)	JUNCTION BOX, WALL MOUNTED
J	JUNCTION BOX, IN-GROUND
(M)	ELECTRICAL MANHOLE, COORDINATE LOCATION WITH OTHER UNDERGROUND UTILITIES
(T)	COMMUNICATIONS MANHOLE, COORDINATE LOCATION WITH OTHER UNDERGROUND UTILITIES
T / P S / F	PADMOUNT TRANSFORMER ~ F= FRONT
PB	4'X6' PULL BOX WITH 32" COVER PLATE IN ACCORDANCE WITH UTILITY STANDARDS
P	PEDESTAL LOCATION, PEDESTAL BY SERVICE PROVIDER, STUB UP (2) 2" CONDUITS WITH CONNECTORS AND BUSHINGS FROM HANDHOLE
H	HANDHOLE, MINIMUM 18"x36"x24", SIZE PER NEC FOR NUMBER OF CONDUITS INSTALLED
M	METER & CT CABINET, PEDESTAL MOUNTED
	SINGLE POLE MOUNTED LIGHT
	DOUBLE POLE MOUNTED LIGHT
	WALL MOUNTED LIGHT FIXTURE
	SINGLE POLE HOMERUN: (2)#12+(1)#12G UNO, CONNECT TO PANEL INDICATED
	SINGLE-PHASE HOMERUN OR MULTIPLE HOMERUN UTILIZING THE SAME CONDUIT, CONNECT TO PANEL INDICATED
	3-PHASE HOMERUN OR MULTIPLE HOMERUN UTILIZING THE SAME CONDUIT, CONNECT TO PANEL INDICATED
A1 / ES-000	DETAIL CALL-OUT
A1 / ES-000	SECTION/ELEVATION CALL-OUT

A1 ELECTRICAL SITE LEGEND

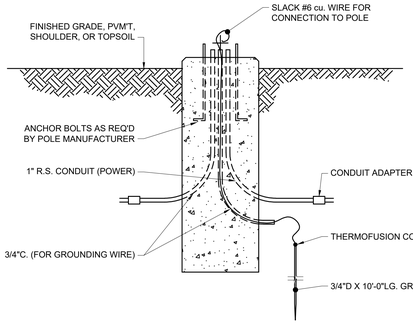


NOTES:

1. RUN #4/0 BARE STRANDED CU GROUND CABLE DOWN IN 1" PVC CONCEALED UNDER ROOF, CEILING AND WALLS. TYPICAL FOR ALL DOWNERS OUT TO GROUNDING COUNTERPOISE.
2. COPPER CLAD STEEL GROUND RODS 3/4"x10'-0", TOP OF RODS BURIED 2'-0" BELOW TOP OF FINISHED GRADE.

B1 GROUNDING ROD DETAILS

DO NOT SCALE

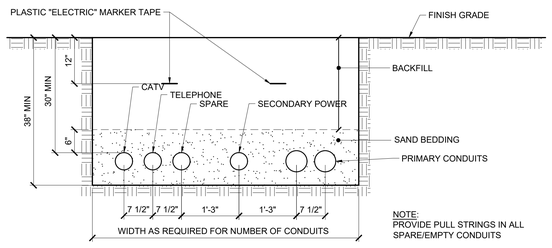


NOTES:

1. LIGHT POLE FOUNDATION SHALL BE PROVIDED BY DIVISION 2. ELECTRICAL SUBCONTRACTOR SHALL FURNISH CONDUITS, AND ANCHOR BOLTS TO CIVIL CONTRACTOR FOR CASTING INTO POLE BASE. THIS DETAIL REFERS TO SITE PARKING LOT AND ROAD LIGHTING FIXTURES ONLY. SEE CIVIL DRAWINGS FOR CONSTRUCTION INFORMATION.
2. ELECTRICAL CONTRACTOR SHALL INSTALL GROUND ROD AND PULL GROUNDING WIRE.

B2 SITE LIGHTING POLE BASE DETAIL

DO NOT SCALE

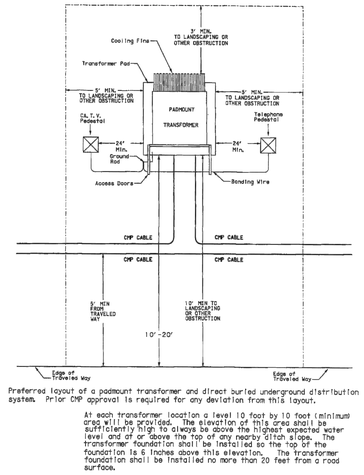


NOTE:
PROVIDE PULL STRINGS IN ALL SPARE/EMPTY CONDUITS

DETAIL INDICATES TYPICAL SPACING BETWEEN CONDUITS OF VARIOUS SYSTEMS, REFER TO SITE PLAN FOR SIZES AND NUMBER OF CONDUITS

B3 TYPICAL SEPARATION OF UTILITIES

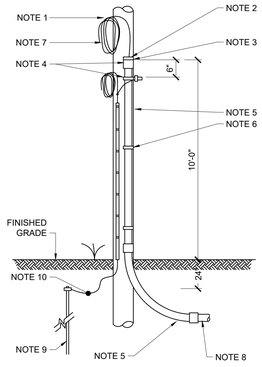
DO NOT SCALE



Preferred layout of a padmount transformer and direct buried underground distribution system. Prior CMP approval is required for any deviation from this layout.

At each transformer location a level 10 foot by 10 foot (minimum) area will be provided. The elevation of this area shall be sufficiently high to always be above the highest expected water level and at or above the top of any nearby ditch slope. The transformer foundation shall be installed so the top of the foundation is 6 inches above this elevation. The transformer foundation shall be installed no more than 20 feet from a road surface.

B5 TRANSFORMER CLEARANCE DETAILS



NOTES:

1. PRIMARY CABLES TO BE INSTALLED BY UTILITY COMPANY.
2. CONDUIT SEAL BY CONTRACTOR.
3. INSULATING BUSHING.
4. GALVANIZED STEEL CONDUIT AND BEND SHALL BE GROUNDED BY BONDING TO APPROVED GROUND CLAMP 6" FROM TOP OF THE CONDUIT. A CONDUCTOR OF SUFFICIENT LENGTH SHALL BE PROVIDED TO EXTEND TO UTILITY COMPANY SECONDARY NEUTRAL.
5. PROVIDE 2-4" GALVANIZED STEEL CONDUITS. 2 TOTAL 10 FEET CONDUITS SHALL RISE ON THE SIDE OF THE POLE AWAY FROM THE ROAD, AND SPARE CONDUITS SHALL BE CAPPED 6" ABOVE GRADE.
6. PIPE STRAPS, INSTALL AT NOT MORE THAN 30" INTERVALS.
7. CONTRACTOR TO SEAL CABLE ENDS TO PREVENT ENTRANCE OF MOISTURE.
8. ADAPTER COUPLING STEEL TO PVC.
9. GROUND ROD - 3/4"D.x10'-0" LONG. INSTALL MINIMUM 3 FEET FROM THE POLE.
10. PROVIDE #4cu. GROUND WIRE.

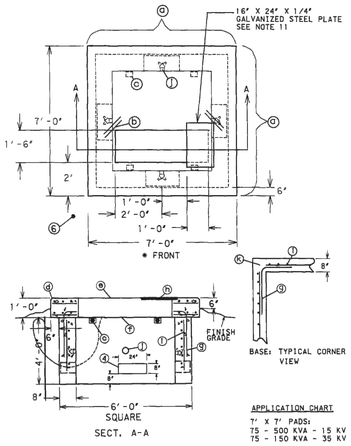
B4 RISER POLE CONDUIT DETAIL

DO NOT SCALE

NOTES:

1. ● FRONT denotes the side on which the access doors are located. The concrete base shall be set on a suitable gravel base and located so the FRONT is accessible by truck and suitably protected from plow and traffic damage.
2. Before installing or requiring any active drainage structure (e.g., drain pipe) into the foundation or pad, the contractor, CMP Line Supervisor, or CMP Distribution Engineer must contact Central Maine Power Company's Environmental Services Department at 623-3521 ext. 3479 to request a site inspection.
3. Finish grade shall be graded in such manner to allow surface water to flow away from the pad.
4. Provide 8" x 24" cable holes (band outs) 8' up the wall from the base. Locate one cable hole per wall, more if necessary. Line up cable holes with trench.
5. Conduits entering concrete stuctures shall be set back from the inside wall 1 to 2 inches and the space within the knockout surrounding the conduits completely filled with mortar to prevent soil from entering structure. Inside the structure the mortar shall be finished and beveled from the conduit ends to the inside wall face to cover and smooth the edges of the knockouts.
6. A 3/4"X 8' galvanized ground rod is to be installed six inches in front of the left FRONT corner of the foundation. The top of the ground is to be 6 inches below final grade.
7. A ground wire shall be installed from the ground rod through the cable hole at the bottom of the pad. 10 Feet of ground wire shall be provided so that it can be installed through the two grounding lugs and connected to the neutral spade.
8. Concrete compressive strength shall be 4000 PSI @ 28 days. For cast-in-place early high strength may be used with a minimum of seven day cure time.
9. Reinforcing steel to have: FY = 60 KSI.
10. For precast units: The precast supplier shall provide lifting lugs in the slab (foundation) and base; the precast supplier shall assemble the slab to the base prior to shipping to the site to ensure that the slab and base fit properly (with no rocking of the slab evident).
11. A 16" x 24" x 1/4" galvanized steel plate to cover a portion of the cable hole when the transformer does not completely cover it. Cut the steel plate to fit, if necessary.

a. 7-#5 Rebar evenly spaced each way top to bottom.
b. 2-#4 Corner diagonal rebar 2'-0" long top and bottom.
c. 4"x 4"x 1/2" angle 6' long with 2-3/4" diameter expansion anchors typical - 4 places (two place precast only).
d. Chamfer typical
e. 2" Concrete cover over top rebar.
f. 3" Concrete cover over bottom rebar.
g. #5 L-Bar @ 12" (cast-in-place only)
h. 16"x 24"x1/4" galvanized steel plate. MID*6000621790
i. #5 Rebar on 12" centers.
j. Pulling eye insert, for use with5/4" national course thread eye-bolt, (Richmond LCB-1 or equivalent). Located opposite each cable hole and 2' (two feet) from the bottom.
k. All rebar ends to be covered by 1' of concrete, minimum.



APPLICATION CHART

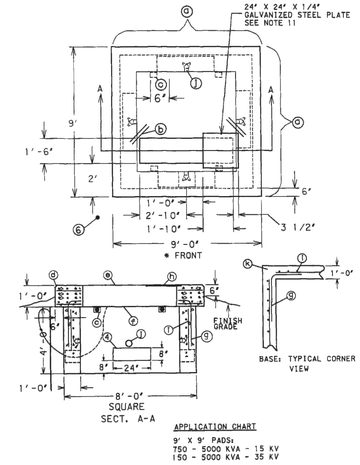
7' X 7' PADS:
75 - 500 KVA - 15 KV
75 - 150 KVA - 35 KV

B6 SMALL TRANSFORMER PAD DETAILS

NOTES:

1. ● FRONT denotes the side on which the access doors are located. The concrete base shall be set on a suitable gravel base and located so the FRONT is accessible by truck and suitably protected from plow and traffic damage.
2. Before installing or requiring any active drainage structure (e.g., drain pipe) into the foundation or pad, the contractor, CMP Line Supervisor, or CMP Distribution Engineer must contact Central Maine Power Company's Environmental Services Department at 623-3521 ext. 3479 to request a site inspection.
3. Finish grade shall be graded in such manner to allow surface water to flow away from the pad.
4. Provide 8" X 24" cable holes (band outs) 8' up the wall from the base. Locate one cable hole per wall, more if necessary. Line up cable holes with trench.
5. Conduits entering concrete stuctures shall be set back from the inside wall 1 to 2 inches and the space within the knockout surrounding the conduits completely filled with mortar to prevent soil from entering structure. Inside the structure the mortar shall be finished and beveled from the conduit ends to the inside wall face to cover and smooth the edges of the knockouts.
6. A 3/4" x 8' galvanized ground rod is to be installed six inches in front of the left FRONT corner of the foundation. The top of the ground rod is to be 6 inches below final grade.
7. A ground wire shall be installed from the ground rod through the cable hole at the bottom of the pad. 20 Feet of ground wire shall be provided so that it can be installed through the two grounding lugs and connected to the neutral spade.
8. Concrete compressive strength shall be 4000 PSI @ 28 days. For cast-in-place early high strength may be used with a minimum of seven day cure time.
9. Reinforcing steel to have: FY = 60 KSI.
10. For precast units: The precast supplier shall provide lifting lugs in the slab (foundation) and base; the precast supplier shall assemble the slab to the base prior to shipping to the site to ensure that the slab and base fit properly (with no rocking of the slab evident).
11. Use a 24" x 24" x 1/4" galvanized steel plate to cover a portion of the cable hole when the transformer does not completely cover it. Cut the steel plate to fit, if necessary.

a. 9-#5 Rebar evenly spaced each way top to bottom.
b. 2-#4 Corner diagonal rebar 2'-0" long top and bottom.
c. 4" x 4" x 1/2" angle 6' long with 2-3/4" diameter expansion anchors typical - 4 placed (two place precast only).
d. Chamfer typical
e. 2" Concrete cover over top rebar.
f. 3" Concrete cover over bottom rebar.
g. #5 L-Bar @ 12" (cast-in-place only)
h. 24" x 24" x 1/4" galvanized steel plate. MID*6000621795
i. #5 Rebar on 12" centers.
j. Pulling eye insert, for use with 3/4" national course thread eye-bolt, (Richmond LCB-1 or equivalent). Located opposite each cable hole and 2' (two feet) from the bottom.
k. All rebar ends to be covered by 1' of concrete, minimum.



APPLICATION CHART

9' X 9' PADS:
750 - 5000 KVA - 15 KV
150 - 5000 KVA - 35 KV

B6 LARGE TRANSFORMER PAD DETAILS

7/2/2021 3:16:33 PM

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PROJECT:

USM - Structured Parking Garage

Address

50 Bedford Street,
Portland ME 04104

REVISIONS:

No.	Date	Description

SUBMISSIONS:

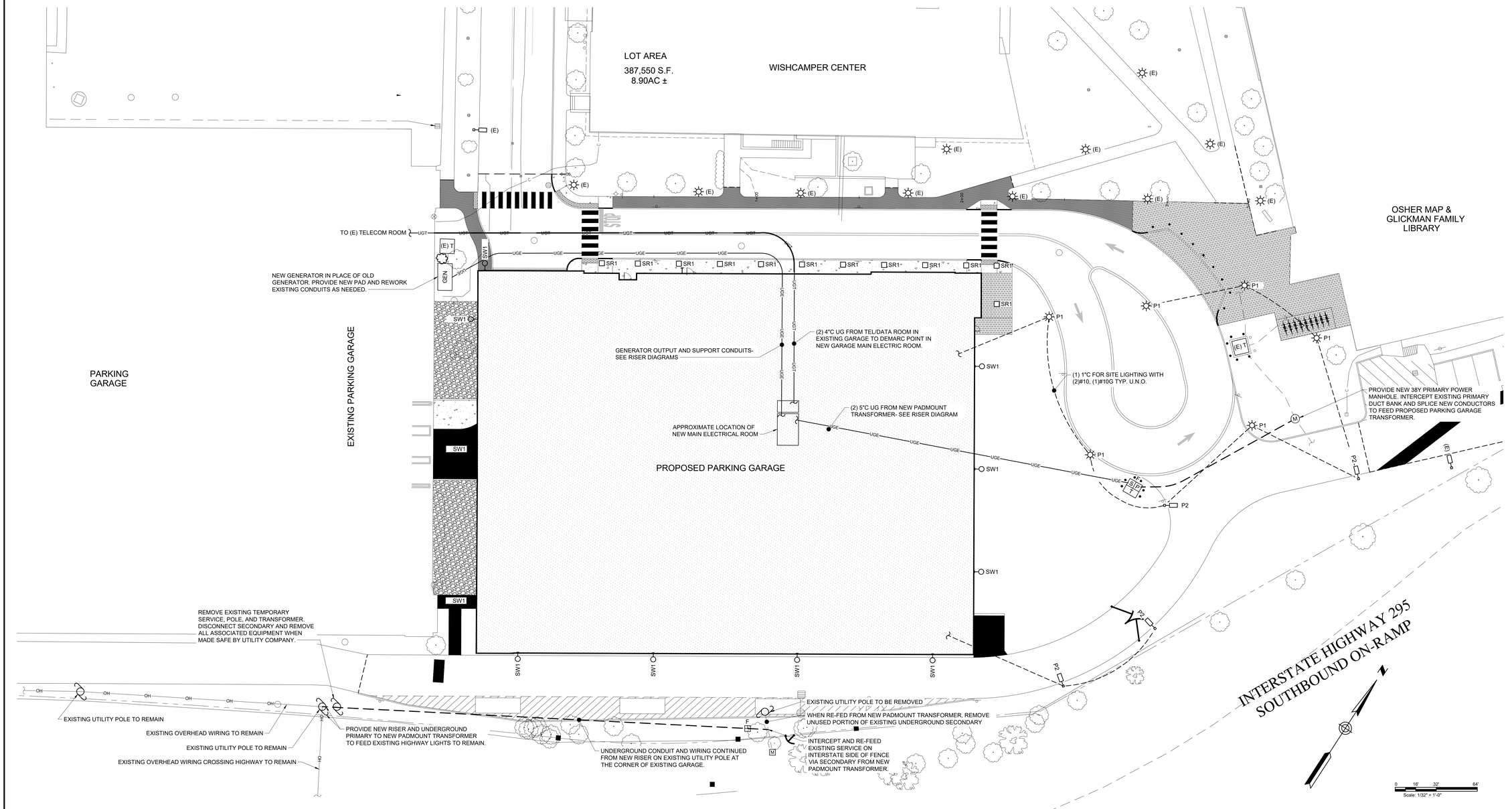
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11/23/21	Foundations, Site, Landscape Pkg

SCALE	**AS NOTED**
DATE ISSUED	**11/23/2021**
PROJECT NO	**20-20145.00-1**
DRAWN BY	**GMC**
CHECKED BY	**BTG**

SHEET TITLE:

ELECTRICAL SITE LEGEND, DETAILS, AND NOTES

ES-000



A1	ELECTRICAL SITE PLAN
SCALE: 1"=20'-0"	

7/2/2021 3:16:33 PM

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SHEET TITLE:

ELECTRICAL SITE PLAN AND NOTES

ES-100

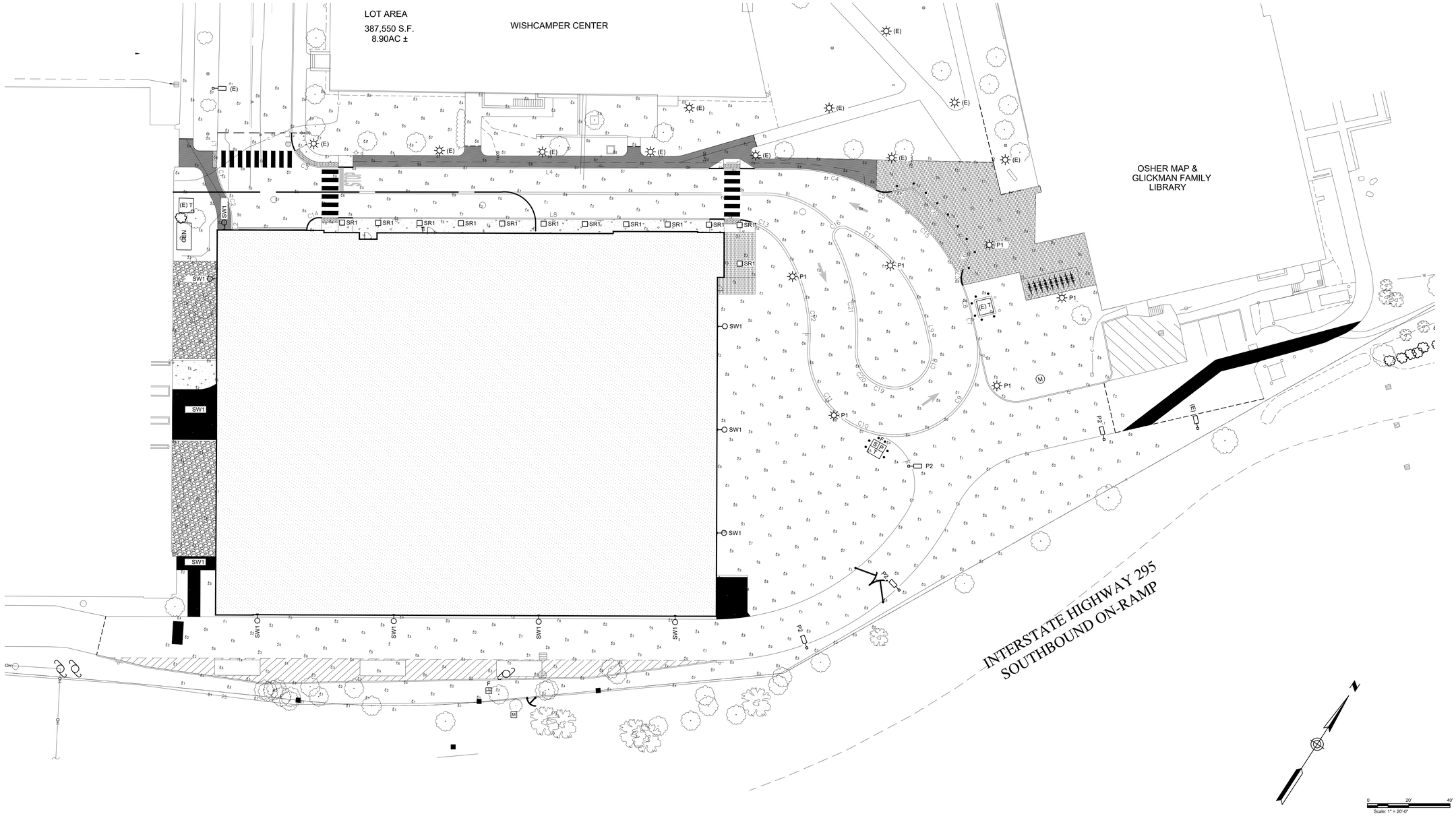
LUMINAIRE SCHEDULE ~ SITE

TYPE	DESCRIPTION	MFR	CATALOG SERIES NUMBER SEE NOTE 1	MOUNTING, U.N.O.	VOLTS	LAMP				KEY NOTES
						QTY PER FIXTURE	WATTS	LUMENS	TYPE	
P1	SITE LIGHT AND POLE, "ICE CREAM CONE" SHAPE	SEE NOTE 8		14' POLE	277	1	24	3,330	LED ARRAY ~ 4000K	8,9
P2	SITE LIGHT AND POLE, "SHOEBOX" SHAPE	SEE NOTE 8		14' POLE	277	1	18	2,160	LED ARRAY ~ 4000K	8,10
SW1	WALL MOUNTED EXTERIOR LIGHT	LITHONIA	KAXW-LED-P1-40K-R4-MVOLT	KEYNOTE 5	UNV	1	29	3,643	LED ARRAY ~ 4000K	5
SR1	RECESSED CANOPY LIGHT	LITHONIA	LDN4SQ-40-07-LS4-AR-LSS-MVOLT	RECESSED CANOPY	UNV	1	8.6	620	LED ARRAY ~ 4000K	

	NOTES
1	**NOTE THAT THESE NUMBERS ARE NOT COMPLETE CATALOG NUMBERS. PROVIDE ALL REQUIREMENTS ON SCHEDULE, NOTES, SPECS, AND DRAWINGS COMBINED.**
2	**CATALOG SERIES NUMBERS ARE USED TO ESTABLISH A LEVEL OF QUALITY AND NOT INTENDED TO LIMIT COMPETITION. SERIES NUMBERS ARE NOT COMPLETE CATALOG NUMBERS. COMPLY WITH ADDITIONAL REQUIREMENTS IN SPECIFICATIONS AND DRAWINGS.**
3	PROVIDE WALL,CEILING, OR PENDANT MOUNTING AS INDICATED ON PLANS. PROVIDE NUMBER OF FACES AND ARROWS AS INDICATED.
4	VERIFY CEILING STRUCTURE AND MOUNTING HEIGHT PRIOR TO ORDERING ANY LIGHT FIXTURES.
5	COORDINATE MOUNTING HEIGHT WITH STRUCTURAL AND ARCHITECTURAL DRAWINGS.
6	PROVIDE COLD WEATHER OPTION.
7	CONFIRM EXACT FIXTURE CONFIGURATION AND OPTIONS WITH MUNICIPALITY PRIOR TO ORDERING FIXTURE.
8	FIXTURE AND POLE SHALL BE PROVIDED BY OWNER FROM EXISTING OWNER'S STOCK.
9	PROVIDE SCREW-IN LED RETROFIT LAMP. BASIS OF DESIGN IS MFG. BY LIGHT EFFICIENT DESIGN, PART NO. LED-8029E345-A.
10	PROVIDE SCREW-IN LED RETROFIT LAMP. BASIS OF DESIGN IS MFG. BY LIGHT EFFICIENT DESIGN, PART NO. LED-8039E40-A.

Calculation Summary

Label	CalcType	Units	Avg	Max	Min	Avg/Min	Max/Min
DRIVES	Illuminance	Fc	0.99	3.5	0.2	5.15	17.50
WALKWAY- GLICKMAN	Illuminance	Fc	1.00	1.3	0.5	2.00	2.60
WALKWAY- NEW GARAGE	Illuminance	Fc	1.42	1.7	1.2	1.18	1.42



A1	PHOTOMETRIC SITE PLAN
SCALE: 1"=20'-0"	

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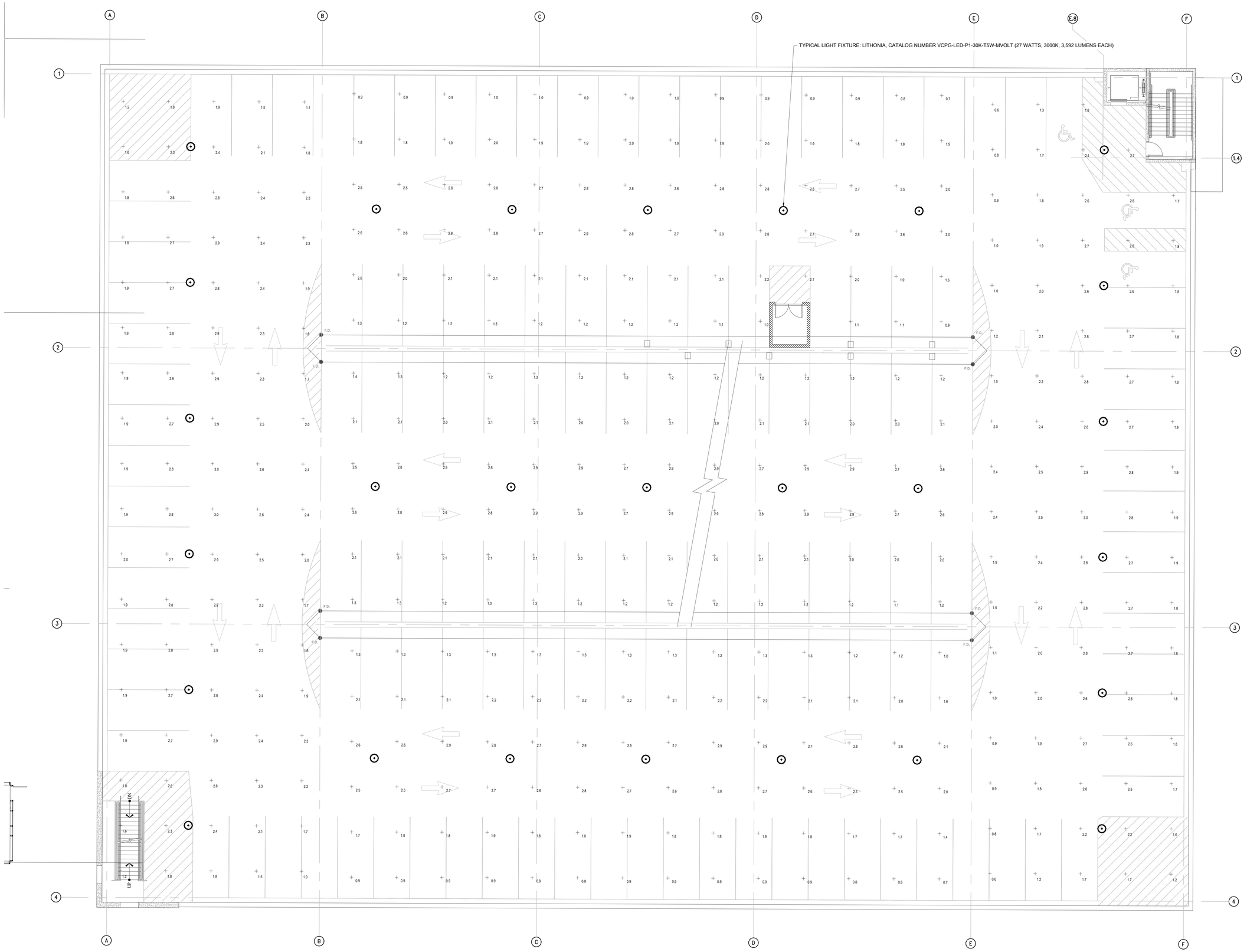
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SHEET TITLE:

SITE PHOTOMETRIC PLAN AND SCHEDULES

SL-100

Calculation Summary							
Label	CalcType	Units	Avg	Max	Min	Avg/Min	Max/Min
PARKING DECK OVERALL	Illuminance	Fc	2.02	3.0	0.6	3.37	5.00



A1 TYPICAL INTERIOR PARKING DECK PHOTOMETRIC PLAN

SCALE: 1/8"=1'-0"

7/2/2021 3:16:33 PM

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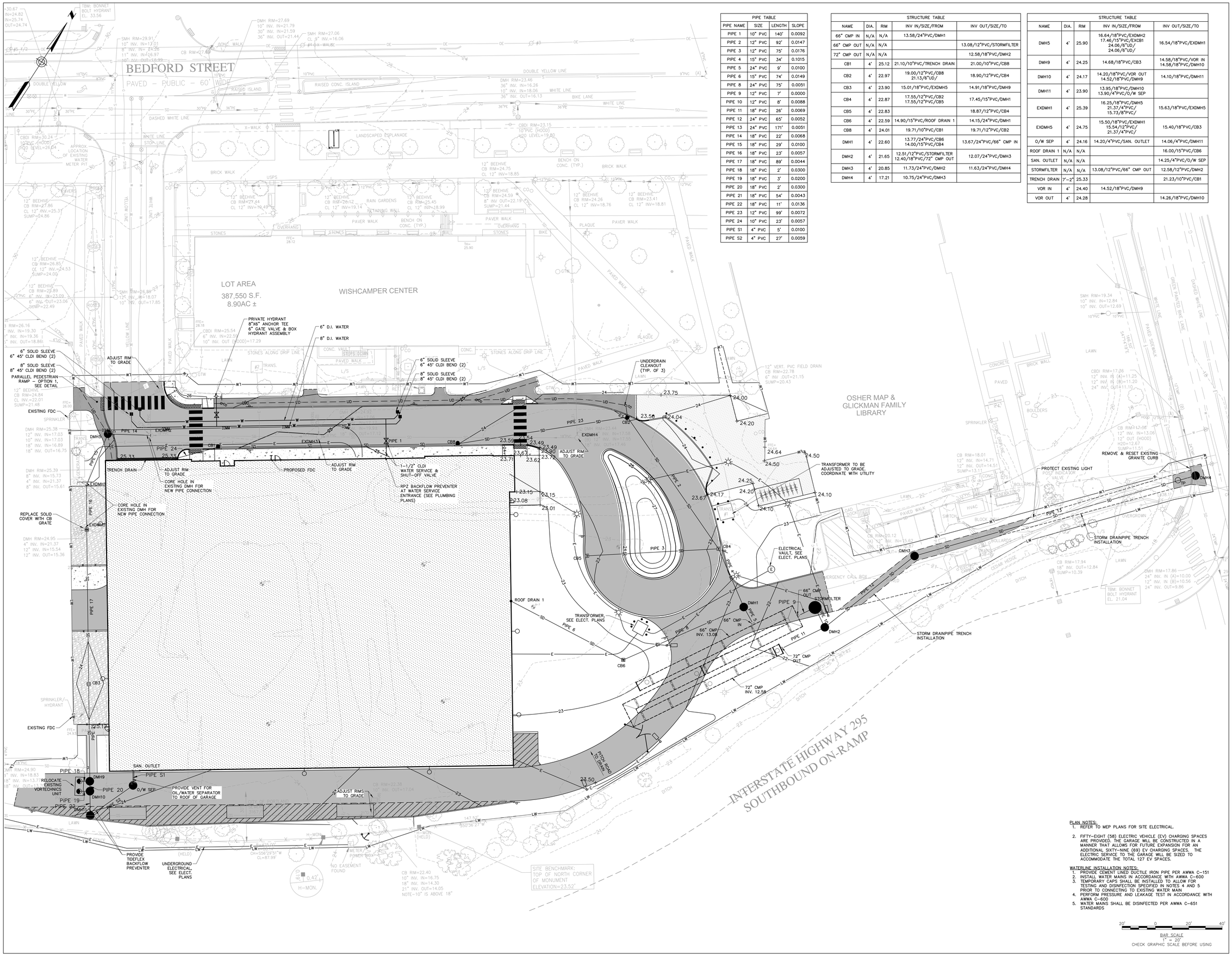
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SHEET TITLE:

TYPICAL INTERIOR PARKING DECK PHOTOMETRIC PLAN

SL-101

Standard to be Waived: Cite Ordinance or Technical Manual Standard	Cite Standard Language: Cite specific language of applicable Ordinance or Technical Manual Standard	Waiver Being Sought: Describe waiver being sought. Ex. – We are requesting a two-way parking lot drive aisle width of 20' feet.	Justification for Waiver: Address specific waiver criteria, if applicable, and document reasons for the waiver request.
City of Portland Technical Manual Section 1 - Transportation Systems - Subsection 1.17 Electric Vehicle Infrastructure	New structured garages shall provide EV charging to 20% of parking spaces. Remaining spaces must be served by sufficient conduit, wiring, and electrical service to allow for future installation of electric vehicle supply equipment.	58 Charging Stations (9% of garage spaces), tracking usage and forecasting demand, commitment to meet EV charging demand in future and sizing electrical infrastructure to accommodate growth as described in attached narrative.	See Section 8.1 of the Site Plan Narrative for waiver justification.
Technical Manual Section 12.3.5: Luminaire Types	All fixtures must be LED and shall not exceed 3000K Correlated Color Temperature (CCT). Screw in light fixtures must have LED lamps specified to be maximum of 3000K CCT.	Applicant requests a waiver to allow 4,000K CCT fixtures versus 3,000K CCT fixtures.	4,000K color temperature fixtures were selected to match the existing fixtures immediately adjacent to the scope of work area.



PIPE TABLE			
PIPE NAME	SIZE	LENGTH	SLOPE
PIPE 1	10" PVC	140'	0.0092
PIPE 2	12" PVC	92'	0.0147
PIPE 3	12" PVC	75'	0.0176
PIPE 4	15" PVC	34'	0.1015
PIPE 5	24" PVC	9'	0.0100
PIPE 6	15" PVC	74'	0.0149
PIPE 8	24" PVC	75'	0.0051
PIPE 9	12" PVC	7'	0.0000
PIPE 10	12" PVC	8'	0.0088
PIPE 11	18" PVC	26'	0.0069
PIPE 12	24" PVC	65'	0.0052
PIPE 13	24" PVC	171'	0.0051
PIPE 14	18" PVC	22'	0.0068
PIPE 15	18" PVC	29'	0.0100
PIPE 16	18" PVC	23'	0.0057
PIPE 17	18" PVC	89'	0.0044
PIPE 18	18" PVC	2'	0.0300
PIPE 19	18" PVC	3'	0.0200
PIPE 20	18" PVC	2'	0.0300
PIPE 21	18" PVC	54'	0.0043
PIPE 22	18" PVC	11'	0.0136
PIPE 23	12" PVC	99'	0.0072
PIPE 24	10" PVC	23'	0.0057
PIPE S1	4" PVC	5'	0.0100
PIPE S2	4" PVC	27'	0.0059

STRUCTURE TABLE				
NAME	DIA.	RIM	INV IN/SIZE/FROM	INV OUT/SIZE/TO
66" CMP IN	N/A	N/A	13.58/24"PVC/DMH1	
66" CMP OUT	N/A	N/A		13.08/12"PVC/STORMFILTER
72" CMP OUT	N/A	N/A		12.58/18"PVC/DMH2
CB1	4'	25.12	21.10/10"PVC/TRENCH DRAIN	21.00/10"PVC/CB8
CB2	4'	22.97	19.00/12"PVC/CB8 21.13/6"UD/	18.90/12"PVC/CB4
CB3	4'	23.90	15.01/18"PVC/EXDMH5	14.91/18"PVC/DMH9
CB4	4'	22.87	17.55/12"PVC/CB2 17.55/12"PVC/CB5	17.45/15"PVC/DMH1
CB5	4'	22.83		18.87/12"PVC/CB4
CB6	4'	22.59	14.90/15"PVC/ROOF DRAIN 1	14.15/24"PVC/DMH1
CB8	4'	24.01	19.71/10"PVC/CB1	19.71/12"PVC/CB2
DMH1	4'	22.60	13.77/24"PVC/CB6 14.00/15"PVC/CB4	13.67/24"PVC/66" CMP IN
DMH2	4'	21.65	12.51/12"PVC/STORMFILTER 12.40/18"PVC/72" CMP OUT	12.07/24"PVC/DMH3
DMH3	4'	20.85	11.73/24"PVC/DMH2	11.63/24"PVC/DMH4
DMH4	4'	17.21	10.75/24"PVC/DMH3	

STRUCTURE TABLE				
NAME	DIA.	RIM	INV IN/SIZE/FROM	INV OUT/SIZE/TO
DMH5	4'	25.90	16.64/18"PVC/EXDMH2 17.46/15"PVC/EXCB1 24.06/6"UD/ 24.06/6"UD/	16.54/18"PVC/EXDMH1
DMH9	4'	24.25	14.68/18"PVC/CB3	14.58/18"PVC/VOR IN 14.58/18"PVC/DMH10
DMH10	4'	24.17	14.20/18"PVC/VOR OUT 14.52/18"PVC/DMH9	14.10/18"PVC/DMH11
DMH11	4'	23.90	13.95/18"PVC/DMH10 13.90/4"PVC/O/W SEP	
EXDMH1	4'	25.39	16.25/18"PVC/DMH5 21.37/4"PVC/ 15.73/8"PVC/	15.63/18"PVC/EXDMH5
EXDMH5	4'	24.75	15.50/18"PVC/EXDMH1 15.54/12"PVC/ 21.37/4"PVC/	15.40/18"PVC/CB3
O/W SEP	4'	24.16	14.20/4"PVC/SAN. OUTLET	14.06/4"PVC/DMH11
ROOF DRAIN 1	N/A	N/A		16.00/15"PVC/CB6
SAN. OUTLET	N/A	N/A		14.25/4"PVC/O/W SEP
STORMFILTER	N/A	N/A	13.08/12"PVC/66" CMP OUT	12.58/12"PVC/DMH2
TRENCH DRAIN	7'-2"	25.33		21.23/10"PVC/CB1
VOR IN	4'	24.40	14.52/18"PVC/DMH9	
VOR OUT	4'	24.28		14.26/18"PVC/DMH10

PLAN NOTES:
1. REFER TO MEP PLANS FOR SITE ELECTRICAL.
2. FIFTY-EIGHT (58) ELECTRIC VEHICLE (EV) CHARGING SPACES ARE PROVIDED. THE GARAGE WILL BE CONSTRUCTED IN A MANNER THAT ALLOWS FOR FUTURE EXPANSION FOR AN ADDITIONAL SIXTY-NINE (69) EV CHARGING SPACES. THE ELECTRIC SERVICE TO THE GARAGE WILL BE SIZED TO ACCOMMODATE THE TOTAL 127 EV SPACES.

WATERLINE INSTALLATION NOTES:
1. PROVIDE CEMENT LINED DUCTILE IRON PIPE PER AWWA C-151
2. INSTALL WATER MAINS IN ACCORDANCE WITH AWWA C-600
3. TEMPORARY CAPS SHALL BE INSTALLED TO ALLOW FOR TESTING AND DISINFECTION SPECIFIED IN NOTES 4 AND 5 PRIOR TO CONNECTING TO EXISTING WATER MAIN
4. PERFORM PRESSURE AND LEAKAGE TEST IN ACCORDANCE WITH AWWA C-600
5. WATER MAINS SHALL BE DISINFECTED PER AWWA C-651 STANDARDS

20' 0 20' 40'
BAR SCALE
1" = 20'
CHECK GRAPHIC SCALE BEFORE USING

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STATE OF MAINE
DARRIN B. STAIRS
No. 15118
LICENSED PROFESSIONAL ENGINEER

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DRAWN BY	**B.C.M.**
CHECKED BY	**D.B.S.**

SHEET TITLE:

UTILITY & GRADING PLAN

C-104

\\wsdodcdcurran.net\shared\Projects\20233035.00 USM - Falmouth Street Garage\wip\Drawings\Civil\233035.00 C104.dwg, Nov 22, 2021 - 8:59am RMCDEVITT

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

Att. V

Via Electronic Mail

December 3, 2021

Jimmy Dealaman, Planner
Planning and Urban Development Department
City Hall, 389 Congress Street, 4th Floor
Portland, Maine 04101

Re: 50 Bedford Street – Additional Response to Site Plan Application Review Comments on Supplemental Materials for Transportation Demand Management Plan and Traffic Movement Permit

Dear Jimmy:

The following are additional responses to comments received from the City of Portland in an email dated November 19, 2021, pertaining to the project and suggested garage access/egress plan; the comments received are provided below for your reference, followed by our response in italics:

- The City finds the revised garage entry/exit plan to be acceptable based on the results of the traffic modeling. The final acceptance of this change will be pending the review of revised materials including an updated Section 7 Traffic Study and Bedford Street improvement plan.

  RESPONSE: VHB is currently revising the Section 7 documentation to include the analysis shared with the City's peer review consultant on November 19th and will provide that to the City no later than Tuesday, December 7th. Attached please find the revised Bedford Street concept that reflects this circulation change.

- The applicant shall provide details on how traffic will be managed on Surrenden Street under a reversible garage gate scenario. This is related to traffic control entering and exiting the garage (signage, pavement markings, etc.).

  RESPONSE: As shown on the attached Bedford Street Concept Plan, Surrenden Street will be modified to accommodate two exiting lanes at Bedford Street that taper back to a single lane in each direction at the crosswalk and widen at the garage entrance to accommodate two lanes of traffic for at least three vehicles (including the vehicle at the gate). Entry and exits will include active/LED signage inside and outside the garage indicating traffic flow direction at each lane. Please see the attached Entry Signage Plan. Based on queuing analysis, this will accommodate the peak load on Surrenden. This also improves the safety of the crossing by reducing conflicting traffic to a single lane in each direction.

- There are safety concerns for pedestrians crossing Surrenden Street near the Garage entry under a two-lane entry scenario (pedestrians having to navigate through two lanes of queued vehicles). The applicant shall develop a concept plan for a sidewalk to be located on the east side of Surrenden Street.

  RESPONSE: The applicant proposes to improve the pedestrian connection across Surrenden from the garage to the existing sidewalk on the west side. This will formalize the pedestrian space coming

out of the garage and provide refuge and a more direct crossing located with clear sight lines from the garage and from Bedford Street.

As indicated above, the design of Surrenden Street now includes a single lane of traffic in each direction at the crosswalk to provide a safe pedestrian crossing while continuing to accommodate the anticipated peak queue demand entering the garage. The pedestrian demand lines from this side of the garage are to points west, including the Maine Law School site and the "white houses" along Bedford Street. There is no anticipated desire line that results in a need to exit the garage on foot and travel to the east on Bedford Street, lessening the need for a second sidewalk on Surrenden Street. A sidewalk on the east side of Surrenden is not proposed at this time.

- Per the recommendations in the most recent version of the Section 7 Traffic Study, the applicant shall be responsible for the installation of a vehicle queue detection system for the I-295 Southbound Off-Ramp that is compatible with the RapidFlow signal system at Forest/Bedford/Baxter intersection.

  RESPONSE: The applicant is agreeable to this as a permit condition.

- The applicant shall provide a revised Section 7 Traffic Study. The Study shall include LOS/Delay/Queue information from SimTraffic for No-Build (not the Falmouth site) and Build conditions for easy comparison of project impacts.

  RESPONSE: As indicated above, VHB is currently revising the Section 7 documentation and will include the LOS/Delay/Queue information from SimTraffic for No-Build and Build conditions for easy comparison of project impacts. We will provide that to the City no later than Tuesday, December 7th

Thank you for your feedback and comments as we continue to move forward with this project. Please contact me should you have any questions.

Sincerely,

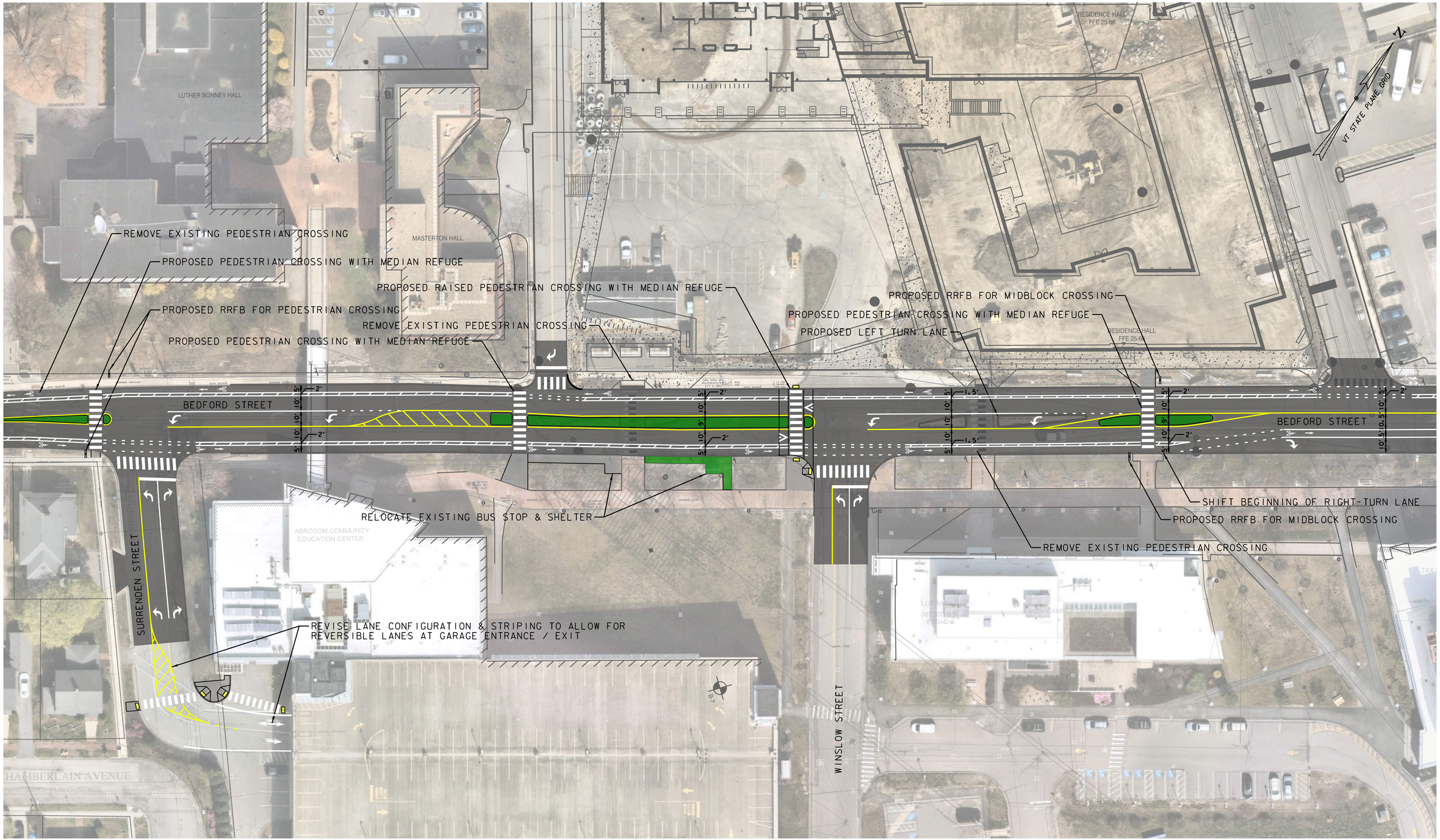
WOODARD & CURRAN, INC.

Darrin Stairs, PE
Project Manager

/DS

Enclosure(s):
- Bedford Street Concept Plan, VHB, dated 12/01/21
- Entry-Exit Signage Plan, Desman Design Management, dated 12/02/21

cc: Wes Wilson, Desman Design Management
Ann Vashon, USM

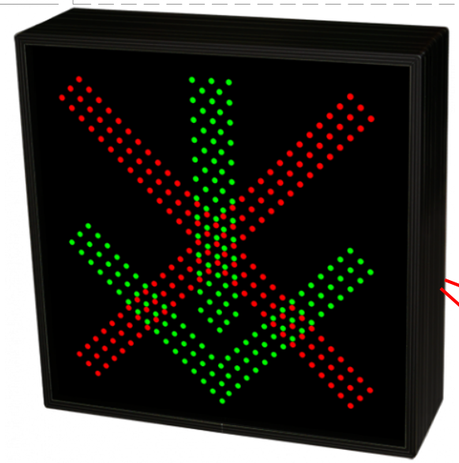


SCALE 1" = 30'-0"
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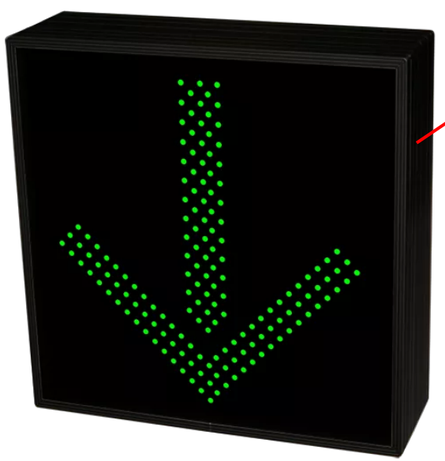
PROJECT NAME:	USM INTERSECTION IMPROVEMENTS
PROJECT NUMBER:	52718.01

FILE NAME: bdr_concepts.dgn	PLOT DATE: 12/01/21
PROJECT LEADER: J.A. CONLEY	DRAWN BY: D.A. GINGRAS
DESIGNED BY: D.A. GINGRAS	CHECKED BY: J.A. CONLEY
BEDFORD STREET CONCEPT	SHEET 1 OF 1

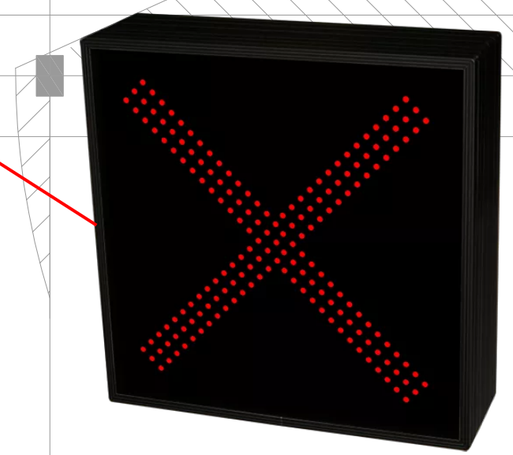
To aid entry/exit traffic flow these signs will be added above each lane



Red X / Green Arrow to align with traffic flow of reversible lane



Green Arrow only



To aid entry/exit traffic flow these signs can be added above each lane

Green Arrow Only

Red X Only

Red X Only

8'-0"(TYP.)

MOTORCYCLE SPACES @ 4'-0"

TWO TIER BIKE RACKS - 250 TOTAL SPACES

BIKE REPAIR

RAMP UP (6.25%)

24'-0"

18'-0"

Att. W

University of Southern Maine

Traffic Movement Permit

Revised Section 7

Proposed Residence Hall, Student Center, and Parking Garage

December 2021

Introduction

VHB has conducted a technical analysis in support of a Traffic Movement Permit (TMP) modification for development of a new residence hall and Student Center on the University of Southern Maine (USM) campus. Although in the approved TMP for Project ID PL-001040-2020, a parking garage was not the primary subject of the permit application, for the purposes of the traffic analysis, the proposed parking garage location was situated off of Falmouth Street. Anticipated new trips to and from the campus were assumed to utilize the new parking garage structure.

The proposed location of the parking garage has since been relocated as a response to neighborhood feedback and a site evaluation process. The locations of the 580-bed residence hall and Student Center that were previously permitted have not changed. The new parking garage will now be located adjacent to the existing parking structure on campus with joint access to and from Bedford Street. As a result, the traffic that had previously been assigned to the garage on Falmouth Street will instead access the proposed parking structure location on Bedford Street. This traffic was redistributed across the adjacent street network and reevaluated to assess the resulting traffic impacts.

Future Conditions

The future traffic conditions in the study area were analyzed with the proposed project in place and compared to the conditions outlined in the TMP traffic analysis. The TMP future traffic volumes and intersection operations for the future horizon year of 2028 were analyzed for the Build condition, with the parking garage located off of Bedford Street. At the request of the City of Portland's Traffic Engineering Consultant, the results were compared to a condition without the garage located at either location.

Infrastructure Improvements

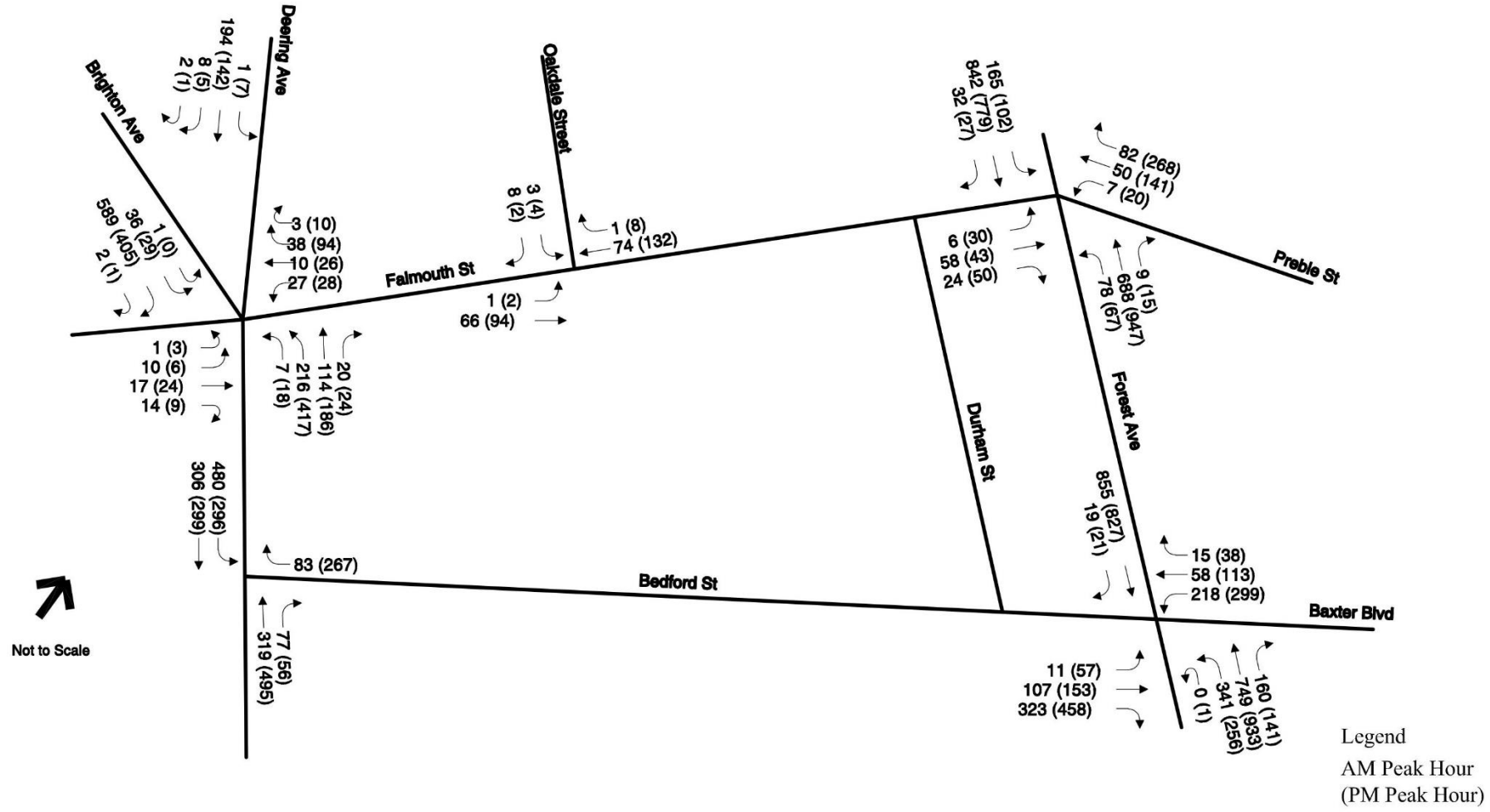
Construction of a roundabout at the intersection of Falmouth Street, Brighton Avenue and Deering Avenue is currently being completed. As such, the TMP permit traffic analysis as well as the traffic analysis for the current garage location on Bedford Street both include a completed roundabout at this location.

The traffic volume data collected at the intersection of Falmouth Street, Brighton Avenue and Deering Avenue was redistributed to represent the volumes that will exist at the five-leg roundabout in the future, rather than the current six-leg condition.

Baseline Traffic Conditions

The TMP traffic analysis included a one percent per year background traffic growth rate and the traffic associated with identified projects in the area. Although the enrollment growth was previously discussed during permitted of the residence hall and garage on Falmouth Street, that traffic was not included in the analysis that follows. The traffic networks from the 2028 No Build conditions are illustrated in Figure 1.

Figure 1. 2028 No Build Network



In anticipation of the proposed garage location on Bedford Street with access to and from the parking garage via Surrenden Street and Winslow Street, baseline data for the intersections would be necessary. The existing parking garage is the primary purpose for trips into or out of either Surrenden Street or Winslow Street. Therefore, data from the existing garage was representative of the entering and exiting movements at these two intersections with Bedford Street. As such, the peak AM and peak PM enters and exits to the existing garage were used as the basis for the baseline turning movements at the intersections.

The peak periods of the adjacent roadway network were reviewed for a three-day garage activity report counted from October 21, 2019 through October 23, 2019 to identify the peak AM and peak PM garage enters and exits. The time period was consistent with the campus-wide parking study which noted 90% occupancy of the parking garage. The AM peak hour had 474 enters and 9 exits and the PM peak hour had 70 enters and 309 exits. These data were distributed on to the network on Bedford Street based on the distributions for the study and adjusted to reflect the directional distribution noted in Bedford Street counts. Additional volumes were added at the intersection of Bedford Street and Winslow Street to address imbalances in the network and the drop off and pick up trips associated with the Wishcamper Center and Glickman Library. A figure outlining the baseline garage count data for the intersections of Bedford Street with Surrenden Street and Winslow Street is included in the appendix.

Trip Generation Assignment

To determine the impact of the proposed garage location, VHB assigned the trips destined for the proposed parking garage to the location on Bedford Street. As a reminder, based on industry standards and MaineDOT guidance, the number of new peak hour trips anticipated with the growth in enrollment is 160 trips (125 in and 35 out) in the highest AM peak hour and 160 trips (51 and 109 out) in the highest PM peak hour with no adjustments for the high portion of transit trips to and from the campus. It is important to note that existing campus mode shares are already high and with additional Transportation Demand Management initiatives, the number of students and employees walking, biking, riding transit, or carpooling is expected to rise. To remain conservative, the trip generation for this analysis was not reduced to reflect the existing or anticipated mode split based on TDM measures.

In order to confirm that the trips estimated based on the anticipated growth in enrollment represents the anticipated trips at a garage on this campus, an addition analysis was conducted. At the completion of this Section 7, the proposed garage was anticipated to accommodate approximately 631 parking spaces which would have consisted of 396 parking spaces associated with the residence hall and an additional 235 spaces that will accommodate parking spaces relocated from elsewhere on campus (i.e. lots closed for development of campus center and residence hall as well as parking at Wishcamper center). Although it is likely that many of the trips relocating from Wishcamper parking are accounted for in the 2019 adjusted volumes, in the event that these are new commuter trips, the anticipated impact was calculated.

The 2019 trip rate at the existing garage was 0.42 trips per parking space during the AM peak hour and 0.33 trips per parking space during the PM peak hour. As the proposed non-residential spaces will likely follow the commuter student pattern of the existing garage, these rates were applied to the 235 non-residential spaces in the proposed garage resulting in 99 AM peak hour trips and 78 PM peak hour trips. Subtracting these commuter trips from the proposed total proposed garage trip generation of 160 trips during each the AM and PM peak hour results in the residential portion of the garage generating 61 AM peak hour trips and 79 PM peak hour trips. The trip rate associated with these residential spaces is 0.15 trips per parking space during the AM peak hour and 0.20 trips per parking space during the PM peak hour. It is reasonable that the residential spaces would result in only 35% of the trips a commuter space would generate during the AM peak hour. The PM peak hour rate for the residential spaces

would calculate to 60% of the trips associated with a commuter space. These ratios reflect what is likely an overestimate of the trips that will be generated by a residential student. Therefore, the trip generation calculated by ITE appears to be conservative when compared to the trip patterns of the existing garage. With the reduction in parking spaces associated with the removal of a garage level, the ITE trip generation based on enrollment is a highly conservative estimate of the likely trips to the proposed garage.

The trips associated with the proposed garage are anticipated to enter and exit at Winslow Street while the existing garage trips are anticipated to continue to enter at Surrenden Street and exit at Winslow Street. The proposed trips to and from the proposed garage were added to the 2028 No Build networks to determine the 2028 Build networks. The trip reassignment based on the new proposed garage location is shown in Figure 2. The resulting 2028 Build networks for the TMP Modification are shown in Figure 3.

Figure 2. Distribution of Parking Garage Trip Generation

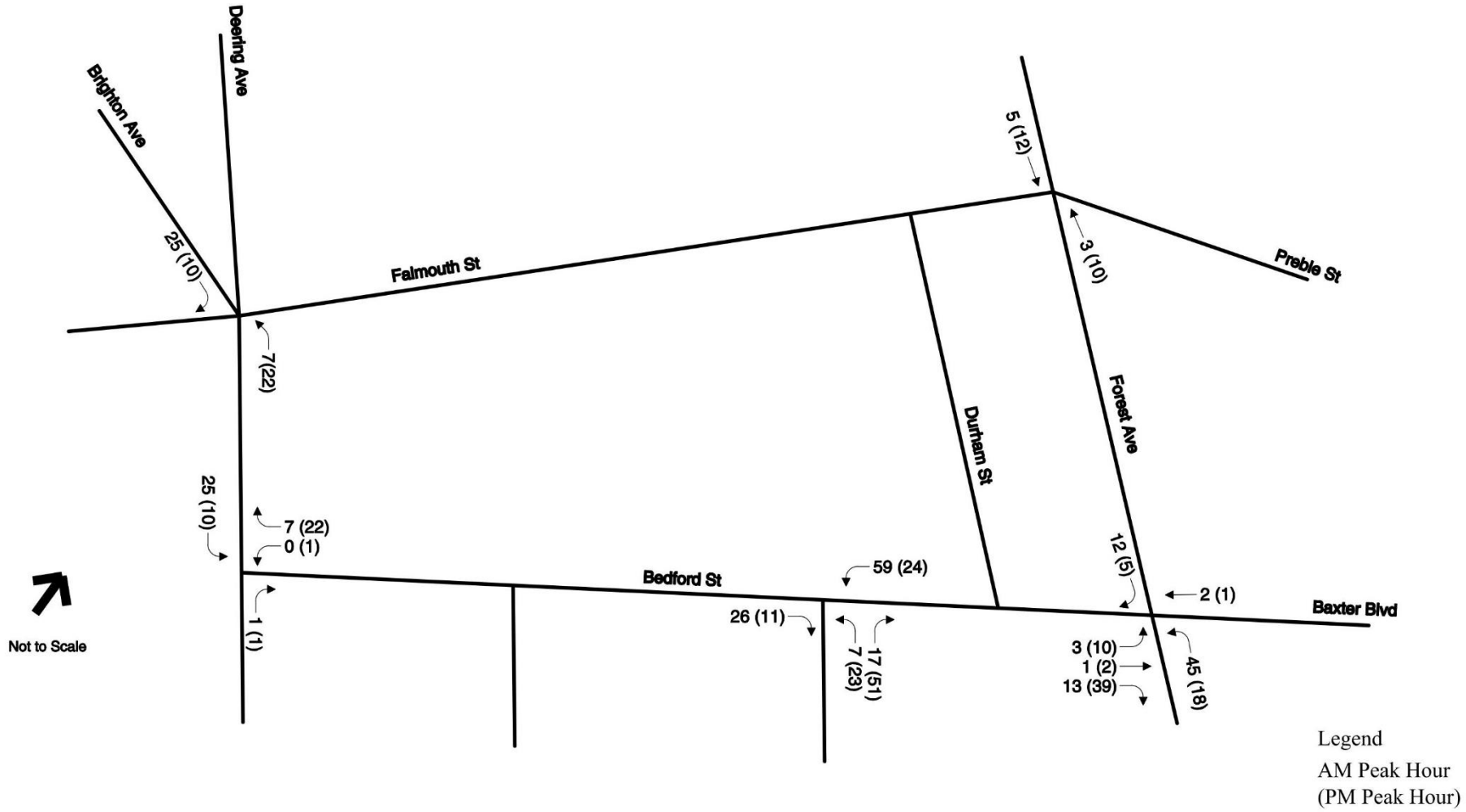
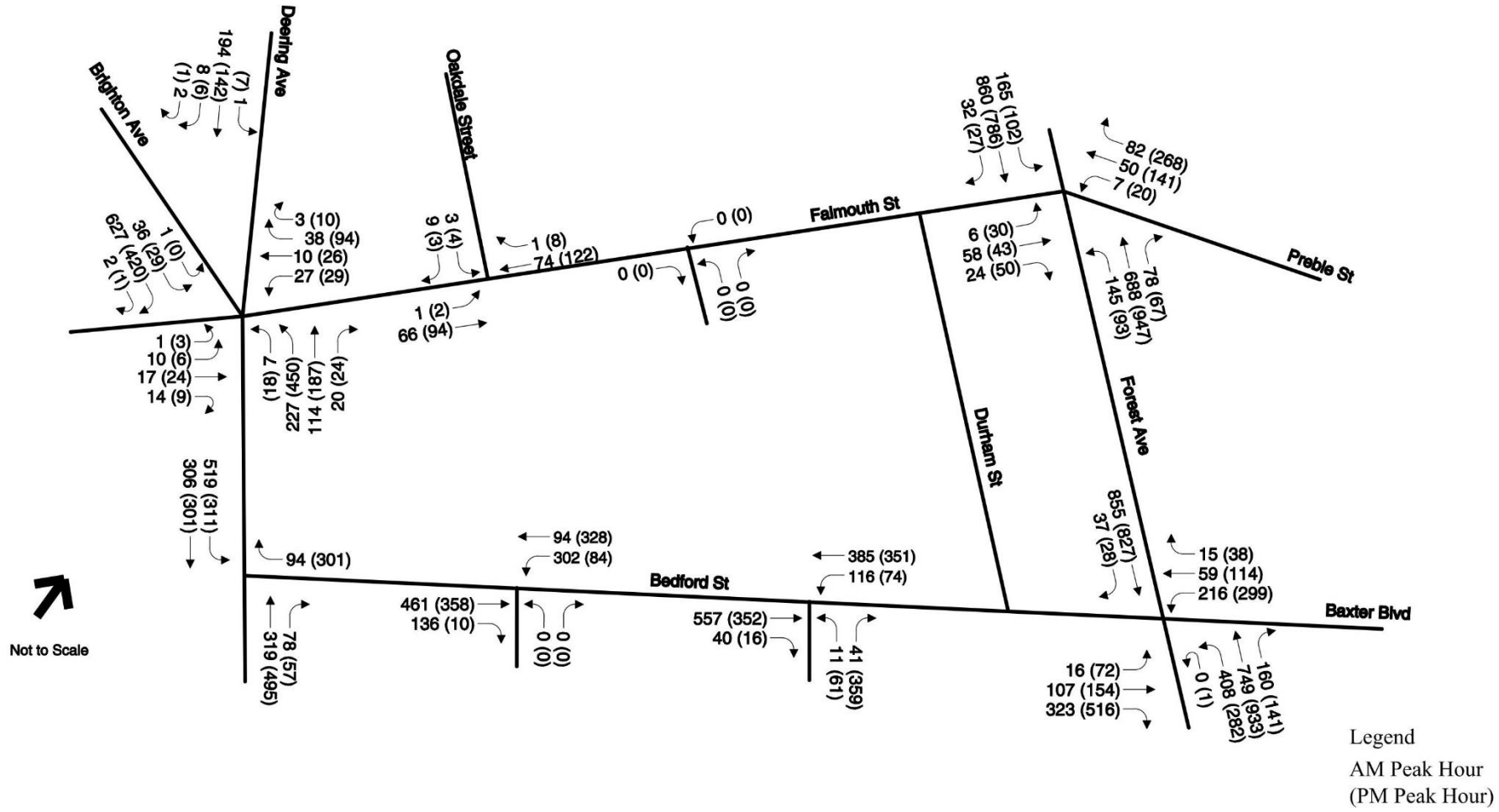


Figure 3. 2028 TMP Modification Build Condition Traffic Volumes



TRAFFIC ANALYSES

Intersection Capacity Analyses

Intersection capacity analyses were performed for the study area intersections based on microsimulations in SimTraffic of the study area network. With delay metrics from the simulations as a basis, levels of service (LOS) were calculated based on the criteria published in the *2000 Highway Capacity Manual*.[1] Level of service is the term that defines the conditions that may occur on a given roadway or at an intersection when accommodating various traffic volume loads. Levels of service range from A to F with LOS A representing generally free flowing operating conditions and LOS F representing generally congested conditions. SimTraffic 11 was used to determine the delays, LOS, and queues at intersections and Sidra Intersection 8 was used to determine the LOS at the proposed roundabout. Copies of the LOS calculations are provided in the Appendix.

SimTraffic Analysis

Simulations in SimTraffic were observed and modified to reflect the operation of the Forest Avenue corridor with the Adaptive Traffic Signal system in place. As shown, the delays at the Forest Avenue intersections fall into range associated with poor levels of service but some of this is due to the simulation requiring vehicles to move into a lane early in anticipation of the ramp downstream. Table 1 provides the delays and queues reported from the simulation for the signalized intersections during the 2028 weekday AM and PM peak hours under No Build (no garage) and Build (Bedford Street garage location) conditions.

As shown, the intersection of Forest Avenue at Falmouth Street is expected to operate at overall LOS B/C in 2028.. Overall delays increased slightly by just over two seconds in the PM peak hour compared to the No Build condition, a negligible increase. Under the Build conditions, the southbound left movement would experience an increase to LOS E during the PM peak hour. However, this change in LOS is the result of an increase in delay of less than two seconds per vehicle, a relatively negligible increase.

The signalized intersection of Forest Avenue at Bedford Street is expected to operate at LOS E in 2028 both in the No Build condition and Build condition. The improvements in delay during the AM peak hour can be attributed to reallocation of green time among the different approaches. While some approaches have modest improvements to their delay during the AM peak hour, the northbound left from Forest Avenue onto Bedford Street experiences an increase in turning volumes and significant increase in delay as a result. During the PM peak hour, with additional trips on all approaches resulting from the proposed garage location, increases in delay across all approaches are anticipated. In general, most movements at the intersection would perform at LOS E/F. The optimization possible through the adaptive signal control system in place at the intersection will help to ensure that operations are responsive to the heaviest volume movements and approaches are served optimally throughout the day.

[1] Highway Capacity Manual, Federal Highway Administration, Transportation Research Board, 2000.

Table 1. Signalized Intersection Operation Summary – SimTraffic Analysis

Intersection		2028 No Build			2028 Build (Bedford Site)		
Peak Hour	SL^	Delay (sec/veh)	LOS	95th Percentile Queue (ft)	Delay (sec/veh)	LOS	95th Percentile Queue (ft)
Forest Avenue at Falmouth Street/Preble Street							
AM Peak Hour							
Falmouth Avenue, EBLT	210	37.2	D	105	52.3	D	113
Falmouth Avenue, EBR	150	16.2	B	45	9.0	A	50
Preble Street, WBLT	630	49.5	D	72	43.5	D	85
Preble Street, WBR	630	5.7	A	35	5.4	A	42
Forest Avenue, NBL	200	33.8	C	98	38.2	D	151
Forest Avenue, NBT/TR	700	10.5	B	179	9.8	A	187
Forest Avenue, SBL	150	47.6	D	238	52.6	D	209
Forest Avenue, SBT/TR	250	22.9	C	374	16.6	B	326
Overall		**21.4**	**C**		**19.4**	**B**	
PM Peak Hour							
Falmouth Avenue, EBLT	210	50.7	D	116	46.6	D	107
Falmouth Avenue, EBR	150	10.0	A	65	10.5	B	60
Preble Street, WBLT	630	43.3	D	183	50.2	D	180
Preble Street, WBR	630	13.5	B	143	12.6	B	150
Forest Avenue, NBL	200	40.9	D	106	38.1	D	101
Forest Avenue, NBT/TR	700	11.0	B	249	11.6	B	137
Forest Avenue, SBL	150	54.7	D	169	56.5	E	260
Forest Avenue, SBT/TR	250	17.5	B	296	19.6	B	332
Overall		**18.2**	**B**		**20.4**	**C**	
Forest Avenue at Bedford Street/Baxter Blvd							
AM Peak Hour							
Bedford Street, EBLT	530	43.7	D	144	38.8	D	169
Bedford Street, EBR	375	25.5	C	254	29.1	C	285
Baxter Blvd, WBL	140	71.0	E	240	63.1	E	231
Baxter Blvd, WBT	690	71.5	E	374	22.6	C	250
Baxter Blvd, WBR	75	3.6	A	29	7.8	A	16
Forest Avenue, NBL	1000+	67.5	E	303	102.2	F	245
Forest Avenue, NBT/TR	1000+	15.9	B	251	14.2	B	248
Forest Avenue, SBT/TR	700	110.3	F	745	78.9	E	655
Overall		**56.4**	**E**		**47.9**	**D**	
PM Peak Hour							
Bedford Street, EBLT	530	52.5	D	490	60.3	E	566
Bedford Street, EBR	375	48.5	D	416	56.7	E	460
Baxter Blvd, WBL	140	183.3	F	234	196.5	F	238
Baxter Blvd, WBT	690	103.8	F	1141	114.1	F	1255
Baxter Blvd, WBR	75	98.0	F	12	102.6	F	14
Forest Avenue, NBL	1000+	92.5	F	274	117.0	F	252
Forest Avenue, NBT/TR	1000+	22.7	C	270	19.3	B	274
Forest Avenue, SBT/TR	700	59.1	E	524	65.9	E	611
Overall		**59.5**	**E**		**67.4**	**E**	

^ Storage length measured in feet, length of turning lane or distance to adjacent intersection

+ Volume to capacity ratio

* Delay expressed in seconds per vehicles

** Level of Service

Queue measured in feet

s Queue lengths determined from SimTraffic simulation

Note: Where multiple movements share a lane group, the maximum movement delay and queue lengths have been expressed in this summary table.

Based on the impact associated with the new garage location trips at the intersection of Forest Avenue at Bedford Street and Baxter Boulevard, potential improvements were investigated. Pedestrian accommodations are being improved at this location by USM as a part of the permit condition for the residence hall and student center. However, vehicular delays will also be impacted. As such, it will be imperative that the adaptive signal control system is operating optimally. Adjustments to the detection and parameters of the system as these changes are adopted will ensure that the adaptive signal system is capturing all of the information it needs to optimize service to each movement at the intersection.

Table **2** provides the delays and queues reported from the simulation for the unsignalized intersections. At the intersection of Bedford Street at Surrenden Street, the traffic is anticipated to experience LOS B conditions during both the AM and PM peak hours, with the highest delay of about 13 seconds occurring for the AM peak hour for those making the left to enter. The driveway proposed for the joint garage on Bedford Street at Winslow Street is anticipated to have about five to seven seconds of delay during both the AM and PM peak hours to enter the garage by making the left turn from Bedford Street. It is anticipated that these left turning movements will be accommodated in a separate left turn lane.

At the I-295 SB ramps, the introduction of additional trips to the garage along both Forest Avenue and the SB exit ramp increase the delays at both the exit ramp location and along northbound Forest Avenue. The ramp operation experiences an increase of about 35 seconds of delay per vehicle. In the PM peak hour there is a more modest increase in delay on the ramp, from LOS A in the No Build condition to LOS B in the Build condition, with an increase of less than eight seconds of delay per vehicle.

Table 2. Unsignalized Intersection Operation Summary – SimTraffic Analysis

Intersection	2028 No Build			2028 Build (Bedford Site)		
Peak Hour	Delay (sec/veh)	LOS	95th Percentile Queue (ft)	Delay (sec/veh)	LOS	95th Percentile Queue (ft)
Bedford St & Surrenden St						
AM Peak Hour						
Bedford St, NETR	2.0	A	31	2.1	A	30
Bedford St, SWLT	12.5	B	146	12.5	B	146
Overall	**4.7**	**A**		**4.7**	**A**	
PM Peak Hour						
Bedford St, NETR	0.8	A	3	0.8	A	0
Bedford St, SWLT	3.7	A	47	3.7	A	52
Overall	**0.9**	**A**		**1.0**	**A**	
Bedford St & Winslow St						
AM Peak Hour						
Winslow St, NWL	13.3	B	16	19.5	C	34
Winslow St, NWR	4.7	A	29	5.6	A	50
Bedford St, NET	0.7	A	0	1.1	A	12
Bedford St, SWT	1.8	A	0	7.0	A	32
Overall	**1.3**	**A**		**2.2**	**A**	
PM Peak Hour						
Winslow St, NWL	14.7	B	102	14.3	B	181
Winslow St, NWR	9.5	A	128	16.8	B	155
Bedford St, NET	0.8	A	8	2.2	A	77
Bedford St, SWT	1.4	A	0	5.4	A	58
Overall	**4.2**	**A**		**7.3**	**A**	
Forest Avenue at I-295						
AM Peak Hour						
I-295, EBR	3.5	A	65	4.7	A	135
I-295, WBR	4.0	A	72	39.2	D	261
Forest Avenue, SET	0.1	A	0	0.1	A	3
Forest Ave, NWT	10.2	B	132	31.7	C	160
Overall	**2.5**	**A**		**14.7**	**B**	
PM Peak Hour						
I-295, EBR	2.7	A	45	2.8	A	54
I-295, WBR	4.5	A	89	12.0	B	156
Forest Avenue, SET	0.1	A	2	0.2	A	4
Forest Ave, NWT	1.9	A	64	11.4	B	171
Overall	**1.5**	**A**		**5.2**	**A**	

^ Storage length measured in feet, length of turning lane or distance to adjacent intersection
+ Volume to capacity ratio
* Delay expressed in seconds per vehicles
** Level of Service
Queue measured in feet
Note: Where multiple movements share a lane group, the maximum movement delay and queue lengths have been expressed in this summary table.

Roundabout Analysis

Table 3 summarizes the operational analysis at the Brighton Avenue, Deering Avenue and Falmouth Street roundabout during the 2028 weekday AM and PM peak hours under No Build and Build conditions. As shown, even with anticipated growth and project related traffic, the proposed infrastructure will result in a LOS B or better condition for all approaches during the peak hours.

Table 3. Roundabout Levels of Service

Peak Hour		2028 No Build				2028 Build (Bedford Site)			
Movement	**SL^**	**v/c+**	**Delay***	**LOS****	**Queue**	**v/c+**	**Delay***	**LOS****	**Queue**
Falmouth Street at Deering Street and Brighton Avenue									
AM Peak Hour									
Deering Ave, SE	200	0.368	4.0	A	6	0.379	4.0	A	6
Falmouth St, NE	290	0.13	5.6	A	1	0.128	5.7	A	1
Deering Ave, NW	420	0.38	4.9	A	5	0.388	5.0	A	5
Brighton Ave, E	165	0.794	9.9	A	26	0.839	11.9	B	33
Falmouth St, SW	625	0.152	11.6	B	2	0.167	12.5	B	2
Overall		**0.794**	**7.2**	**A**		**0.839**	**8.3**	**A**	
PM Peak Hour									
Deering Ave, SE	200	0.643	4.6	A	14	0.675	4.7	A	16
Falmouth St, NE	290	0.378	9.6	A	5	0.407	11	B	6
Deering Ave, NW	420	0.41	9.9	A	5	0.435	11.1	B	6
Brighton Ave, E	165	0.548	4.3	A	10	0.567	4.6	A	11
Falmouth St, SW	625	0.099	7.3	A	1	0.102	7.5	A	1
Overall		**0.643**	**5.8**	**A**		**0.675**	**6.1**	**A**	

^ Storage length measured in feet, distance to adjacent intersection
+ Volume to capacity ratio
* Delay expressed in seconds per vehicles
** Level of Service
Queue measured in feet

Bedford Street Concept

Updated traffic circulation for access and egress to the existing and proposed parking garages will compel updates to the Bedford Street corridor. It is proposed that vehicles will enter and exit the new parking garage via Winslow Street as previously discussed and depicted in Figure 4 below.

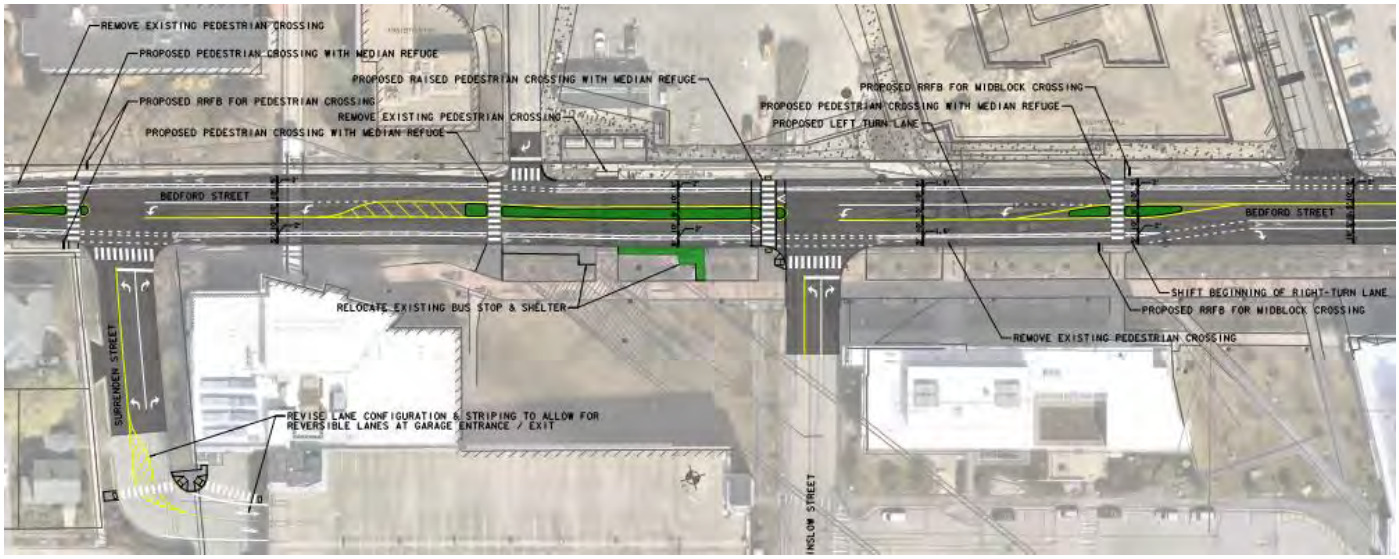
For entering vehicles, a dedicated left turn lane will be provided for vehicles traveling westbound on Bedford Street and entering the parking garage via Winslow Street. The left turn lane will require replacement of the raised median island and crosswalk currently set back from the intersection on the east leg. This crosswalk will be replaced by a raised crossing on the west leg of the intersection, limiting the number of vehicular lanes pedestrians will need to cross to two with a pedestrian refuge island between the lanes.

Although the predominant traffic flow on Surrenden Street will continue to be accessing the existing garage, there will be the potential for an entry lane to be used as an exit lane at peak times.

Along the length of Bedford Street, other multimodal improvements are proposed. Crosswalks with rectangular rapid flashing beacons (RRFBs) are proposed to the west of Surrenden Street and midblock between Winslow Street and Durham Street. The latter is anticipated to serve a desire line between the residence hall and student center to the north and the library and parking garage to the south. A crossing is proposed midblock between Winslow Street and Surrenden Street, shifting the existing crossing approximately 70' west. The raised island separating opposing traffic on Bedford Street is proposed to extend from the raised crossing at Winslow Street through the midblock crossing between Winslow Street and Surrenden Street, creating a protected, mid-crossing pedestrian refuge. Buffered bike lanes are proposed to flank the eastbound and westbound travel lanes, providing 1 ½ to 2 feet of striped buffer width between vehicular and bicycle modes. The buffered bike lanes and median treatments will narrow the travel lanes to approximately 10'. These features will help to discourage vehicles from passing busses at the bus stops on the north and south sides of Bedford Street and help to reduce vehicular speeds through this critical multimodal area.

To enhance the pedestrian route to points west, a new crosswalk will be painted connecting from the existing parking garage to the sidewalk provided on the west side of Surrenden Street. The revised location will provide better sight lines in each direction. In addition, traffic will be narrowed to a single lane in each direction at the crosswalk and a pedestrian refuge provided. This will improve the predominate pedestrian route at this side of the garage (points to and from the west on Bedford Street and beyond).

Figure 4. Conceptual Plan for Bedford Street and Parking Garage Circulation



Garage Queuing

In order to understand the queuing anticipated at the entry and exit points of the garage facilities, a queuing analysis was conducted for during and post construction scenarios. For analysis purposes, it was assumed that 1148 spaces are served during construction and 1780 spaces are served during post construction, and that the per space trip rate will be the same for the new garage as observed for the existing garage in October 2019. Further, observations from the existing garage on transaction times for permit parkers, transient parkers using pay-on-foot, and transient parkers using pay-at-exit were all factored into the analysis. Based on the analysis, during construction the garage entrance and exit would each require a minimum of 2 lanes with an anticipated design queue of 3 cars per entrance lane and 1

car per exit lane. Following construction, with both garages operational, it is anticipated that 3 entrance and 2 exit lanes will be required for peak operation. Given that the analysis evaluated more spaces than are now anticipated in the new garage and that the predominant use of the new garage is expected to be residential users with less per space trip making than the existing garage serving commuters, the analysis was conservative. The details of the analysis are outlined in the memorandum and supporting calculations included in the appendices.

Transportation Demand Management (TDM)

The University of Southern Maine (USM) has recently developed a Transportation Demand Management (TDM) plan that provides a cohesive strategy for establishing and implementing a successful TDM program for the Portland campus. The TDM plan seeks to enhance multimodal accessibility, ensure the use of non-vehicular modes, and discourage the use of driving through parking management, to achieve and build upon the university's parking demand reduction goals for the campus. The TDM Plan presents a suite of strategies and timeframe for when USM intends to implement the various strategies. The strategies aim at promoting walking and bicycling, improving transit service to promote ridership, promoting carpooling, changing time-of-day travel demands to eliminate or reduce vehicle trips, and managing parking demand via changes to USM's pricing and permit policies. The implementation of TDM will reduce the vehicle trips to the site and reduce delays at area intersections.

Neighbor Concern – Oakhurst Dairy

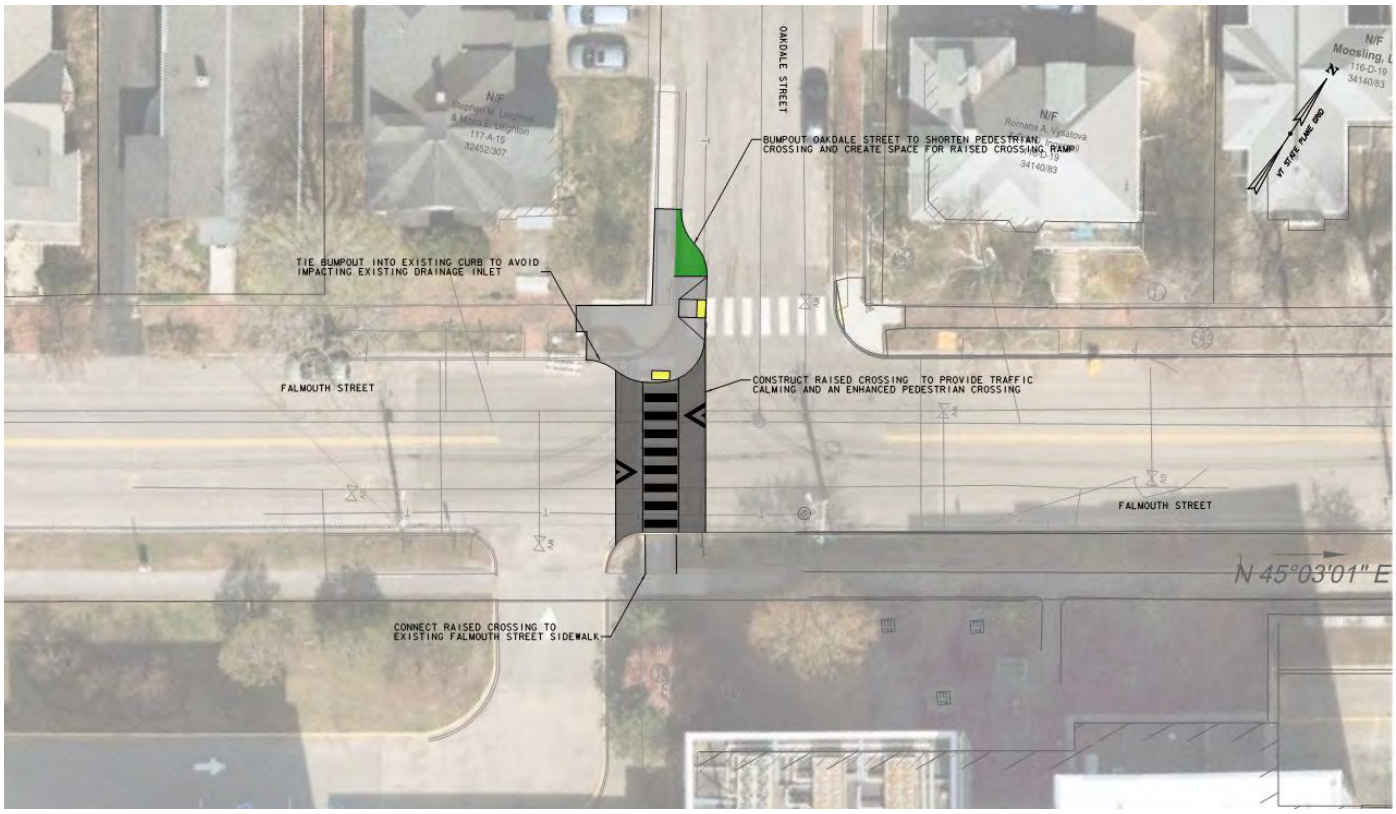
USM has worked with Oakhurst Dairy to understand their concerns associated with the proposed project. Oakhurst Dairy has raised a number of concerns with the queuing along Forest Avenue and the operation of the signals at the intersections of Bedford Street / Baxter Boulevard and Falmouth Street / Preble Street. One concern raised by Oakhurst Dairy is the length of queue on Forest Avenue northbound and that it causes a backup on the I-295 off ramp. As indicated above, USM is committed to addressing this concern. Oakhurst is even more concerned with queues blocking the Oakhurst driveway on Forest Avenue. Although the Bedford Street garage site reduces the anticipated additional volume along the Oakhurst block of Forest Avenue compared to the Falmouth garage site, queuing through this area remains a concern. Further, recent traffic signal operation at Forest Avenue at Bedford Street and Baxter Boulevard has resulted in longer queues. A discussion with the City Traffic Engineer revealed that the City has had an issue with vehicle detection at this location and as a result the signal is not operating optimally. A representative from Oakhurst shared video that documents these queuing concerns. As such, USM is committed to working with the City to replace the camera causing the detection issue at the intersection. Because Oakhurst remains concerned about the operation at their driveway and the queues on Forest Avenue that block that driveway, USM is committed to work with Oakhurst and the City to develop a plan to discourage vehicles from blocking the driveway, including signage and/or striping to not "Block the Box".

Neighbor Concern – Falmouth Street/Oakdale Street and Bedford Street

USM has worked with neighborhood since the previous permitting process to ensure that their concerns are being addressed. USM held an open meeting with residential neighbors on August 26th to discuss traffic impacts and proposed mitigation measures. The neighborhood had previously expressed concern with traffic speed and volumes on Falmouth Street, and as such an undefined traffic calming measure was written into a condition of approval on the residence hall & student center project. The University shared a conceptual draft of the Falmouth Street traffic calming measure at the meeting with the neighborhood (see Figure 5 below). The neighborhood's reception of the drawing seemed favorable. However, the neighborhood expressed some concerns about traffic along Bedford Street and that traffic would be made worse by pedestrian safety measures such as pedestrian island improvements and by higher

volumes of vehicles entering/exiting the South side of Bedford. Several items were brought up from individuals along the lines of wanting traffic to flow efficiently, but one specific item brought up by multiple residents was concern that USM was not proposing bus pull-outs for the METRO, and that this could lead to traffic backing up behind stopped buses. USM explored this issue at length internally, and also had two meetings with METRO to discuss it. Ultimately, USM decided that pedestrian safety should outweigh vehicular traffic efficiency when the two are opposed as an in-line bus stop would minimize the ability of vehicles to drive past buses that are offloading people. USM feels that the suite of measures currently proposed offers the best trade-off between efficiency and safety given the siting of the garage on Bedford Street. Bedford Street was the location the neighborhood favored over Falmouth Street and Deering Avenue, and this was one of the most important factors in deciding on the garage's location.

Figure 5. Conceptual Plan for Pedestrian Improvements at Falmouth Street at Oakdale Street



Conclusions and Recommendations

The proposal to relocate the parking garage to Bedford Street is positive for a number of reasons. However, adding these trips to the roadway network at the new proposed parking garage location along Bedford Street results in some delay increases at the intersection of Forest Avenue with Bedford Street and Baxter Boulevard as compared to the garage location along Falmouth Street. Advance queue detection should be considered in order to ensure that the addition of this traffic to the intersection of Forest Avenue with Bedford Street and Baxter Boulevard does not cause an impact beyond the available queue storage and impact the operation of the I-295 off ramp. In addition, USM is committed to creating a Bedford Street that is hospitable to pedestrians, transit and bicyclists. To assist our neighbor Oakhurst, we proposed to create signage and striping to reduce incidents when traffic blocks that driveway. Finally, USM is working to improve the operations at Forest Street at Bedford Street and Baxter Boulevard in the short term to ensure that the traffic signal is operating as it was intended with the replacement of the detection camera. Overall, this proposed location for the parking garage is not anticipated to adversely affect traffic operations in the vicinity of the USM campus.

Memorandum

Technical Appendix

Existing USM Parking Garage Activity Report

Time		October 21, 2019							October 22, 2019							October 23, 2019						
		Entry			Exit			Entry/Exit	Entry			Exit			Entry/Exit	Entry			Exit			Entry/Exit
		Credential	Transient	Total	Credential	Transient	Total	Total	Credential	Transient	Total	Credential	Transient	Total	Total	Credential	Transient	Total	Credential	Transient	Total	Total
								0							0							0
0:00 -		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1:00 -		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2:00 -		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
3:00 -		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4:00 -		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:00 -		2	0	2	1	0	1	3	2	0	2	1	0	1	3	1	0	1	0	1	1	2
6:00 -		10	0	10	6	0	6	16	8	0	8	3	0	3	11	15	0	15	0	6	6	21
7:00 -		79	4	83	6	0	6	89	68	0	68	8	0	8	76	71	4	75	10	0	10	85
8:00 -		433	41	**474**	5	4	**9**	483	410	13	423	9	1	10	433	401	16	417	5	1	6	423
9:00 -		317	14	331	26	4	30	361	384	23	407	11	6	17	424	317	12	329	28	3	31	360
10:00 -		174	8	182	103	13	116	298	204	13	217	124	5	129	346	202	21	223	116	6	122	345
11:00 -		221	5	226	241	5	246	472	228	19	247	291	20	311	558	184	45	229	217	9	226	455
12:00 -		223	15	238	128	6	134	372	252	11	263	119	6	125	388	221	55	276	149	8	157	433
13:00 -		117	8	125	198	5	203	328	115	8	123	174	6	180	303	116	11	127	149	5	154	281
14:00 -		134	9	143	286	7	293	436	139	12	151	283	10	293	444	153	12	165	259	12	271	436
15:00 -		144	11	155	195	21	216	371	187	22	209	221	11	232	441	151	13	164	189	18	207	371
16:00 -		61	3	64	255	20	275	339	73	75	148	224	6	230	378	58	12	**70**	260	49	**309**	379
17:00 -		40	16	56	164	3	167	223	78	48	126	99	144	243	369	40	18	58	241	44	285	343
18:00 -		5	6	11	179	12	191	202	14	5	19	0	301	301	320	13	5	18	169	10	179	197
19:00 -		3	3	6	91	10	101	107	4	1	5	0	171	171	176	5	3	8	75	8	83	91
20:00 -		2	0	2	49	16	65	67	0	1	1	0	84	84	85	3	0	3	45	8	53	56
21:00 -		2	0	2	12	1	13	15	0	0	0	0	24	24	24	1	0	1	19	5	24	25
22:00 -		1	0	1	3	0	3	4	1	0	1	0	6	6	7	1	0	1	6	1	7	8
23:00 -		0	0	0	1	0	1	1	0	0	0	0	2	2	2	0	0	0	2	1	3	3
Total		1,968	143	2,111	1949	127	2076	2203	2167	251	2418	1567	803	2370	3173	1953	227	2180	1939	195	2134	2329

To: University of Southern Maine

Date: August 20, 2021

Memorandum

Project #: 52718.01

From: Jennifer Conley, PE, PTOE
Bill Cranshaw

Re: **DRAFT** Garage Queuing Analysis

VHB has reviewed the operations of the existing and proposed USM parking garages and analyzed the queues that are expected to occur under both the construction (existing) and final (existing and proposed) conditions.

Key assumptions

1. The existing parking garage has 1,148 spaces. The new garage will add 632 spaces.
2. The two garages will use the same entry and exit lanes.
    a. The entry lanes will be located between the two garages. The current concept is for there to be three entry lanes, one of which is reversable as a additional exit lane.
    b. The primary exit will be at the southwest corner of the existing garage, where the entrance to that garage is currently.
3. The garages will be used by a mix of permit holders and transient parkers.
    a. Permit holders have RFID hangtags
    a. Transient parkers pull a ticket at the entry and either pre-pay before exiting or pay at the exit. Based on information from the existing garage, ten percent of transient parkers are expected to pay at the exit.
4. Hourly volumes for October 21-23, 2019 show the following:
    a. The busiest hour for entries was consistently from 8-9 am. The highest single-day hourly entry volume was 474, with 433 permit holders and 43 transients entering.
    b. The busiest hour for exit varied each day – from late morning, to mid-afternoon, to late afternoon. The highest single-day hour exit volume was 311, with 291 permit holders and 20 transients exiting.
    c. The daily percentage of transient parkers ranged from 6 to 10 percent.
    d. The garage was never full during the three days. Peak occupancy ranged from 1,027 to 1,060 cars, approximately 90 to 92 percent of capacity.
5. **The analysis of future volumes, with both garages in operation, assume the same per-space trip rate as the existing garage (conservatively high assumption).** Those rates, calculated from the peak hourly volumes of the 2019 data, are listed below. Two sets of "per-space" rates are calculated, one based on the full garage capacity and one based on the maximum number of spaces used. The higher rates are used in the analysis.
    a. Entering volume = 0.41 cars per space (based on garage capacity)
    b. Exiting volume -= 0.27 cars per space (based on garage capacity)
    c. Entering volume = 0.46 cars per occupied space
    d. Exiting volume = 0.30 cars per occupied space
6. Transaction times are based on information provided by USM.
    a. Permit parkers: 10 seconds at the entrance and 10 seconds at the exit
    b. Transient parkers using pay-on-foot: 15 seconds at the entrance and 17 seconds at the exit

Memorandum

   a. Transient parkers paying at the exit: 15 seconds at the entrance and 120 seconds at the exit.
7. The service rate, i.e., the maximum number of cars per hour that can be accommodated in a lane, is calculated from the transaction times, weighted to reflect the mix of permit and transient cars in the peak hour.
   a. The service rate for entry lanes is 350 cars per hour
   b. The service rate for exit lanes is 335 cars per hour.

Number of Lanes

The determination of the number of lanes required is a two-step process.

1. The first is a simple check on the number of entry/exit lanes by comparing the anticipated hourly volumes with the service capacity of the lanes to ensure that the arriving volumes are not higher than the maximum processing capacity through the lanes.
2. The second next step is to evaluate the anticipate queuing based on the minimum number of lanes, to determine if there may be operational problems related to queuing or excessive delays for drivers

Table 1 presents the results of the calculations.

- The results show that during construction, with the existing garage fully used, two entry and two exit lanes are needed, and that the design queues are 3 and 1 car, respectively.
- Post construction, with the two garages fully used and sharing entry and exit plazas, the minimum number of lanes is 3 for the entry and 2 for the exit. At about 80% lane utilization, both the entry and exit plaza would require queuing space for 4 cars at each lane.

Table 1: Garage Entry/Exit Lane Calculations

	During Construction		Post Construction	
	Entrance	Exit	Entrance	Exit
Spaces	1148	1148	1780	1780
Hourly Rate/Space	0.46	0.30	0.46	0.3
Hourly Volume (V)	528	344	819	534
Max. Service Rate (SR)	350	335	350	335
V/SR	1.5	>1.0	2.3	1.6
Minimum # of Lanes	2	2	3	2
Lane Utilization (SR/V)	75%	51%	78%	80%
Average Queue	2	1	3	2
Design Queue	3	1	4	4

Notes: Average Queue and Design Queue are the number of cars per lane, including the car at the gate.
Queuing calculations assume multichannel queuing, where entry or exit lanes are in the same location and equally accessible to approaching drivers.

Lane Configuration During Construction

There are many factors affecting the proper design and layout of entry and exit plazas. One of the more important is how the service rate throughput of the lanes night be affected the ease for drivers to approach the lane and the ticket/car readers. If drivers need to make a turn as they approach the gate some may have trouble positioning themselves and accessing, say, a payment machine at the exit. This would reduce the effective service rate and thus increase queuing and might increase the number of required lanes.

The service rate used in the Table 1 calculations reflects field measurements made at the existing equipment. However, the proposed temporary lane configuration for the entrance involves a sharp turn towards the entrance plaza immediately after entering the garage.

Such a sharp turn to position a car in the entry lane can reduce the service rate by 25 percent or more, however, in this case the potential reduction is likely relatively small and any adverse impacts can likely be mitigated.
The reason that the potential reduction is relatively small is that the vast majority (90% or more) of parkers use RFID hangtags and an RFID system does not require as precise a vehicle alignment at the gate as would a swipe-card or ticket issuance system. Nonetheless, care should be taken to ensure that the entry lanes are effectively positioned. This could be done by moving the proposed gate location slightly farther into the garage, or by having the entry plaza located outside of the garage.

Garage Queueing Calculations

ENTRY	Spaces	Rate per Space	Volume	Max Service Rate	V/S	No. of Lanes
Typical Occupancy	1148	0.41	471	350	1.3	2
Full Occupancy	1148	0.46	528	350	1.5	2

EXIT	Spaces	Rate per Space	Volume	85% of Service Rate	Ratio	No. of Lanes
Typical Occupancy	1148	0.27	310	335	0.9	1
Full Occupancy	1148	0.30	344	335	1.0	1

ENTRY	Spaces	Rate per Space	Volume	85% of Service Rate	Ratio	No. of Lanes
Typical Occupancy	1780	0.41	730	350	2.1	3
Full Occupancy	1780	0.46	819	350	2.3	3

EXIT	Spaces	Rate per Space	Volume	85% of Service Rate	Ratio	No. of Lanes
Typical Occupancy	1780	0.27	481	335	1.4	2
Full Occupancy	1780	0.30	534	335	1.6	2

350	3	1050	819	0.78	Q =3 cars behind space
335	2	670	534	0.797014925	Q = 3 cars behind space

Typical Occupancy

	Existing		Proposed		New Garage	
	Entrance	**Exit**	**Entrance**	**Exit**	**Entrance**	**Exit**
Spaces	1148	1148	1780	1780	632	632
Hourly Rate/Space	0.46	0.3	0.46	0.3	0.46	0.3
Hourly Volume	528	344	819	534	291	190
Max. Service Rate	350	335	350	335	360	335
Volume/Service Rate	1.5	1.0	2.3	1.6	0.8	0.6
Minimum # of Lanes	2	2.0	3	2	1	1
Lane Utiliization (SR/V)	75%	51%	78%	80%	81%	57%
Average Queue	2	1	2	2	2	1
Design Queue	3	1	4	4	4	2

Garage Queuing Calculations

Observations in Existing Garage (by Dewey)

Using hangtag (USM students, staff & faculty):
Entry takes 10 seconds
Exit also takes 10 seconds

Pulling a ticket (visitors & conference goers):
Entry takes 10 seconds if you know exactly what you are doing (we think adding 5 seconds to get to 15 total is more representative of an actual visitor who doesn't know what they are doing and has to read the signs)
Exit takes 12 seconds)+5 for 17 total per logic explained above.
*Additionally, Dewey estimates 10% of this visitor population will try to pay at the exit gate instead of pre-paying (even after accounting for signs and education to deter this behavior). For those 10%, he estimates that exit will take at least 90 seconds, but probably more.

ENTRY	Time (seconds)	Actual Service Rate Per Hour		Hourly Volume			1 Lane	2 Lane	3 Lane						
USM	10	360		443	92%	329.5041					10	443	4430		
Transient				41							15	41	615		
Transient pre-pay	15	240	90%	36	7%	17.85124						484	5045	10.42355	secs per
Transient exit-pay	15	240	10%	5	1%	2.479339									
				484		349.8347	Service Rate	**1.38**	**0.69**	**0.46**	484				

EXIT	Time (seconds)	Actual Service Rate Per Hour		Hourly Volume				1 Lane	2 Lane	3 Lane					
USM	10	360		260	84%	302.9126						10	443	4430	
Transient				49											
Transient pre-pay	17	212	90%	44	14%	30.1542						17	44	748	
Transient exit-pay	120	30	10%	5	2%	0.485437						120	4	480	
													491	5658	11.52342 secs per
				309		333.5523	Service Rate	**1.45**	**0.73**	**0.48**	484				

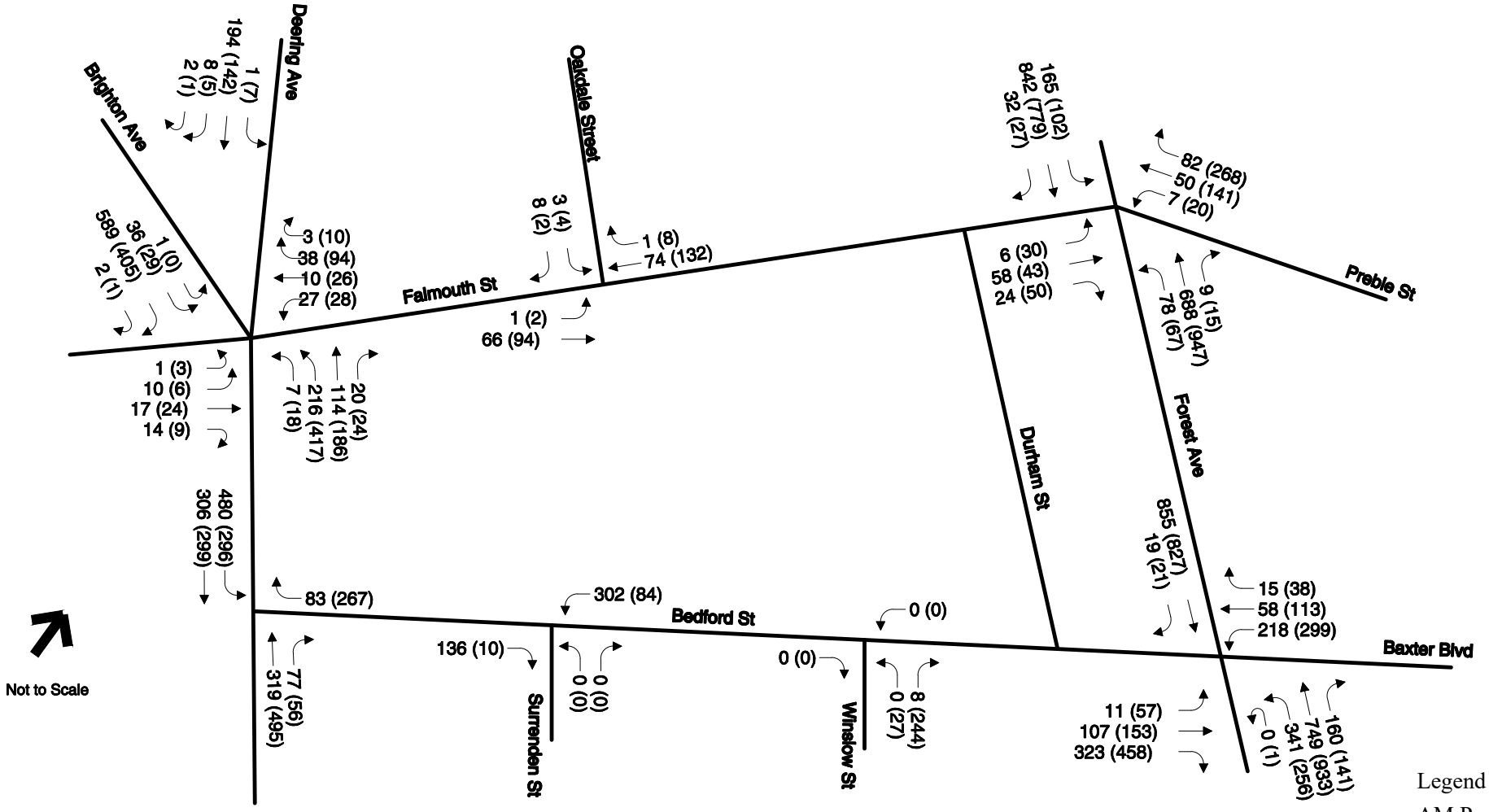
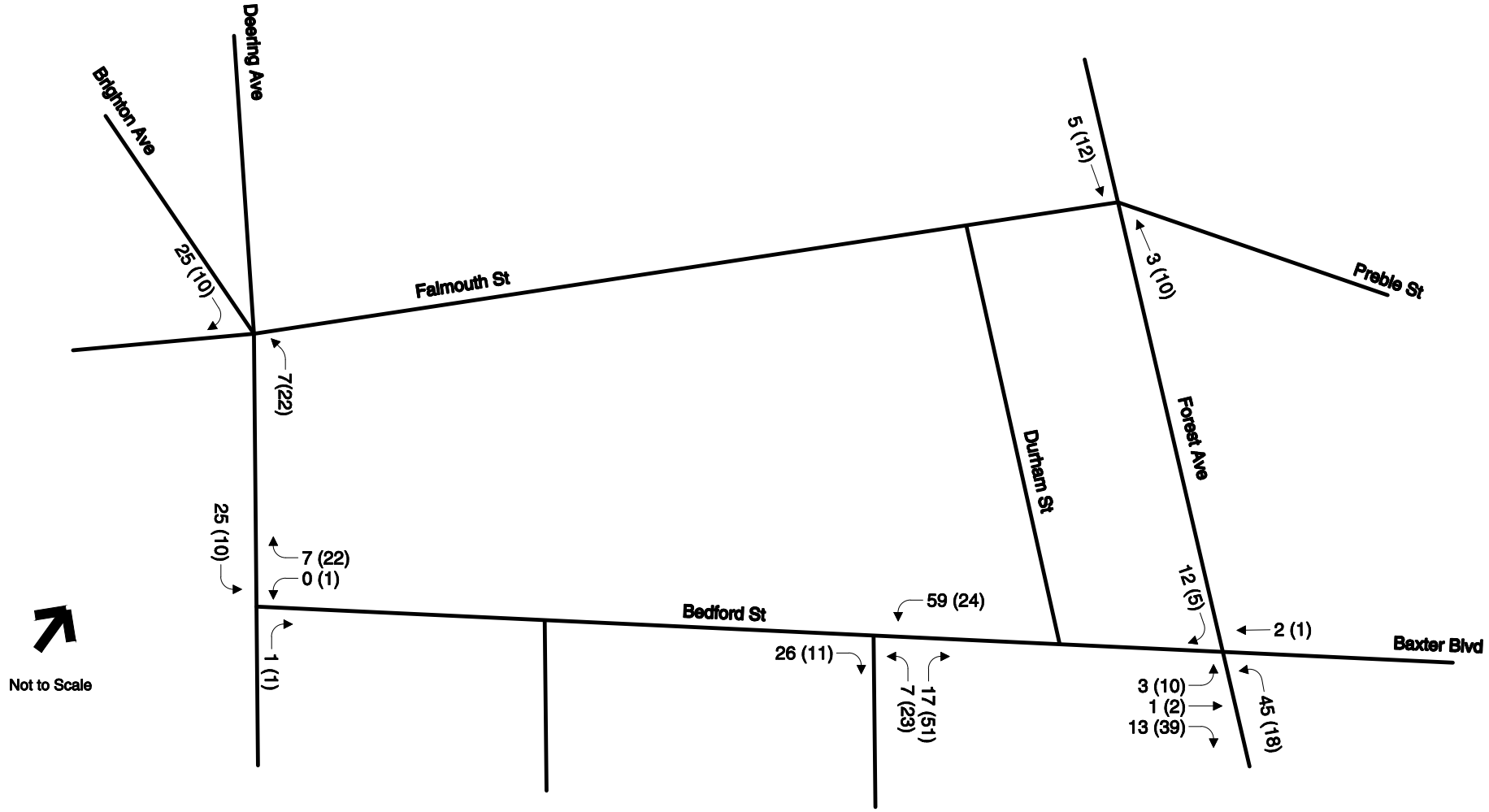
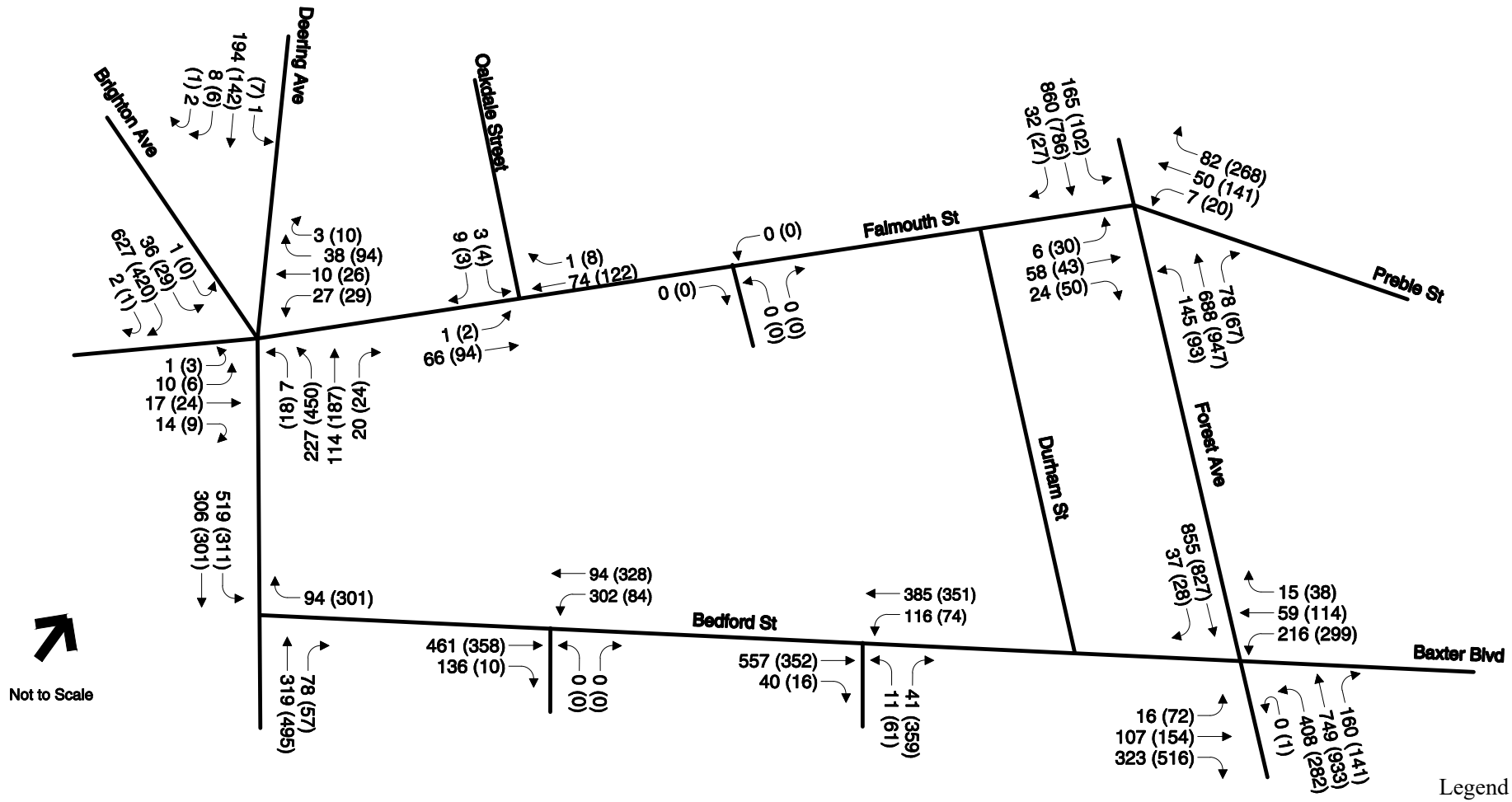


Figure 3
2028 No Build
Weekday Peak Hour Traffic Volumes



Trip Generation

2028 TMP Modification Traffic Volumes



Legend

AM Peak Hour
(PM Peak Hour)

2028 Build Traffic Volumes
(TMP Modification)

MOVEMENT SUMMARY

Site: 101 [AM 2028 Peak Hour - No Build]

Deering Ave / Brighton Ave / Falmouth St
Portland, ME
Site Category: (None)
Roundabout

Movement Performance - Vehicles

Mov ID	Turn	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate	Aver. No. Cycles	Average Speed km/h
SouthEast: Deering Ave												
21	L2	9	0.0	0.368	6.0	LOS A	2.6	18.4	0.32	0.43	0.32	39.5
21a	L1	270	2.4	0.368	5.3	LOS A	2.6	18.4	0.32	0.43	0.32	39.1
22	T1	143	1.0	0.368	1.6	LOS A	2.6	18.4	0.32	0.43	0.32	39.1
23	R2	25	0.0	0.368	2.2	LOS A	2.6	18.4	0.32	0.43	0.32	38.3
Approach		446	1.8	0.368	4.0	LOS A	2.6	18.4	0.32	0.43	0.32	39.1
NorthEast: Falmouth St												
24	L2	34	0.0	0.126	8.5	LOS A	0.7	4.7	0.58	0.60	0.58	39.2
25	T1	13	0.0	0.126	4.1	LOS A	0.7	4.7	0.58	0.60	0.58	38.8
26a	R1	48	0.0	0.126	4.0	LOS A	0.7	4.7	0.58	0.60	0.58	38.5
26	R2	4	0.0	0.126	4.6	LOS A	0.7	4.7	0.58	0.60	0.58	38.0
Approach		98	0.0	0.126	5.6	LOS A	0.7	4.7	0.58	0.60	0.58	38.7
NorthWest: Deering Ave												
27	L2	1	0.0	0.382	9.1	LOS A	2.1	15.1	0.62	0.62	0.62	39.5
28	T1	240	5.4	0.382	4.8	LOS A	2.1	15.1	0.62	0.62	0.62	39.1
29	R2	10	0.0	0.382	5.2	LOS A	2.1	15.1	0.62	0.62	0.62	38.3
29b	R3	2	0.0	0.382	5.7	LOS A	2.1	15.1	0.62	0.62	0.62	38.1
Approach		253	5.1	0.382	4.9	LOS A	2.1	15.1	0.62	0.62	0.62	39.0
West: Brighton Ave												
10b	L3	1	0.0	0.794	14.8	LOS B	12.1	86.7	0.95	1.02	1.26	37.8
10a	L1	40	0.0	0.794	13.3	LOS B	12.1	86.7	0.95	1.02	1.26	37.1
12a	R1	662	2.7	0.794	9.6	LOS A	12.1	86.7	0.95	1.02	1.26	36.8
12b	R3	2	0.0	0.794	10.6	LOS B	12.1	86.7	0.95	1.02	1.26	36.2
Approach		706	2.5	0.794	9.9	LOS A	12.1	86.7	0.95	1.02	1.26	36.8
SouthWest: Falmouth St												
30b	L3	1	0.0	0.152	15.2	LOS B	1.0	7.1	0.90	0.87	0.90	37.1
30	L2	14	0.0	0.152	14.5	LOS B	1.0	7.1	0.90	0.87	0.90	36.8
31	T1	24	0.0	0.152	10.1	LOS B	1.0	7.1	0.90	0.87	0.90	36.5
32	R2	20	8.0	0.152	11.1	LOS B	1.0	7.1	0.90	0.87	0.90	35.8
Approach		59	2.7	0.152	11.6	LOS B	1.0	7.1	0.90	0.87	0.90	36.3
All Vehicles		1562	2.6	0.794	7.2	LOS A	12.1	86.7	0.69	0.76	0.83	37.9

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Roundabout LOS Method: SIDRA Roundabout LOS.
Vehicle movement LOS values are based on average delay per movement.
Intersection and Approach LOS values are based on average delay for all vehicle movements.
Roundabout Capacity Model: SIDRA Standard.
SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

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MOVEMENT SUMMARY

Site: 101 [AM 2028 Peak Hour - No Build]

Deering Ave / Brighton Ave / Falmouth St
Portland, ME
Site Category: (None)
Roundabout

Movement Performance - Vehicles

Mov ID	Turn	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate	Aver. No. Cycles	Average Speed km/h
SouthEast: Deering Ave												
21	L2	9	0.0	0.368	6.0	LOS A	2.6	18.4	0.32	0.43	0.32	39.5
21a	L1	270	2.4	0.368	5.3	LOS A	2.6	18.4	0.32	0.43	0.32	39.1
22	T1	143	1.0	0.368	1.6	LOS A	2.6	18.4	0.32	0.43	0.32	39.1
23	R2	25	0.0	0.368	2.2	LOS A	2.6	18.4	0.32	0.43	0.32	38.3
Approach		446	1.8	0.368	4.0	LOS A	2.6	18.4	0.32	0.43	0.32	39.1
NorthEast: Falmouth St												
24	L2	34	0.0	0.126	8.5	LOS A	0.7	4.7	0.58	0.60	0.58	39.2
25	T1	13	0.0	0.126	4.1	LOS A	0.7	4.7	0.58	0.60	0.58	38.8
26a	R1	48	0.0	0.126	4.0	LOS A	0.7	4.7	0.58	0.60	0.58	38.5
26	R2	4	0.0	0.126	4.6	LOS A	0.7	4.7	0.58	0.60	0.58	38.0
Approach		98	0.0	0.126	5.6	LOS A	0.7	4.7	0.58	0.60	0.58	38.7
NorthWest: Deering Ave												
27	L2	1	0.0	0.382	9.1	LOS A	2.1	15.1	0.62	0.62	0.62	39.5
28	T1	240	5.4	0.382	4.8	LOS A	2.1	15.1	0.62	0.62	0.62	39.1
29	R2	10	0.0	0.382	5.2	LOS A	2.1	15.1	0.62	0.62	0.62	38.3
29b	R3	2	0.0	0.382	5.7	LOS A	2.1	15.1	0.62	0.62	0.62	38.1
Approach		253	5.1	0.382	4.9	LOS A	2.1	15.1	0.62	0.62	0.62	39.0
West: Brighton Ave												
10b	L3	1	0.0	0.794	14.8	LOS B	12.1	86.7	0.95	1.02	1.26	37.8
10a	L1	40	0.0	0.794	13.3	LOS B	12.1	86.7	0.95	1.02	1.26	37.1
12a	R1	662	2.7	0.794	9.6	LOS A	12.1	86.7	0.95	1.02	1.26	36.8
12b	R3	2	0.0	0.794	10.6	LOS B	12.1	86.7	0.95	1.02	1.26	36.2
Approach		706	2.5	0.794	9.9	LOS A	12.1	86.7	0.95	1.02	1.26	36.8
SouthWest: Falmouth St												
30b	L3	1	0.0	0.152	15.2	LOS B	1.0	7.1	0.90	0.87	0.90	37.1
30	L2	14	0.0	0.152	14.5	LOS B	1.0	7.1	0.90	0.87	0.90	36.8
31	T1	24	0.0	0.152	10.1	LOS B	1.0	7.1	0.90	0.87	0.90	36.5
32	R2	20	8.0	0.152	11.1	LOS B	1.0	7.1	0.90	0.87	0.90	35.8
Approach		59	2.7	0.152	11.6	LOS B	1.0	7.1	0.90	0.87	0.90	36.3
All Vehicles		1562	2.6	0.794	7.2	LOS A	12.1	86.7	0.69	0.76	0.83	37.9

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Roundabout LOS Method: SIDRA Roundabout LOS.
Vehicle movement LOS values are based on average delay per movement.
Intersection and Approach LOS values are based on average delay for all vehicle movements.
Roundabout Capacity Model: SIDRA Standard.
SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

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MOVEMENT SUMMARY

Site: 101 [AM Peak Hour - 2028 Build - Bedford Garage]

Deering Ave / Brighton Ave / Falmouth St
Portland, ME
Roundabout

Movement Performance - Vehicles											
Mov ID	OD Mov	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
SouthEast: Deering Ave											
21	L2	9	0.0	0.379	6.1	LOS A	2.7	19.3	0.33	0.44	39.5
21a	L1	284	2.4	0.379	5.3	LOS A	2.7	19.3	0.33	0.44	39.1
22	T1	143	1.0	0.379	1.6	LOS A	2.7	19.3	0.33	0.44	39.1
23	R2	25	0.0	0.379	2.2	LOS A	2.7	19.3	0.33	0.44	38.3
Approach		460	1.8	0.379	4.0	LOS A	2.7	19.3	0.33	0.44	39.0
NorthEast: Falmouth St											
24	L2	34	0.0	0.128	8.6	LOS A	0.7	4.8	0.59	0.61	39.1
25	T1	13	0.0	0.128	4.2	LOS A	0.7	4.8	0.59	0.61	38.7
26a	R1	48	0.0	0.128	4.1	LOS A	0.7	4.8	0.59	0.61	38.4
26	R2	4	0.0	0.128	4.7	LOS A	0.7	4.8	0.59	0.61	38.0
Approach		98	0.0	0.128	5.7	LOS A	0.7	4.8	0.59	0.61	38.7
NorthWest: Deering Ave											
27	L2	1	0.0	0.388	9.2	LOS A	2.1	15.3	0.63	0.64	39.4
28	T1	240	5.4	0.388	5.0	LOS A	2.1	15.3	0.63	0.64	39.0
29	R2	10	0.0	0.388	5.4	LOS A	2.1	15.3	0.63	0.64	38.2
29b	R3	2	0.0	0.388	5.8	LOS A	2.1	15.3	0.63	0.64	38.0
Approach		253	5.1	0.388	5.0	LOS A	2.1	15.3	0.63	0.64	39.0
West: Brighton Ave											
10b	L3	1	0.0	0.839	16.9	LOS B	15.0	107.1	1.00	1.13	37.0
10a	L1	40	0.0	0.839	15.4	LOS B	15.0	107.1	1.00	1.13	36.4
12a	R1	704	2.7	0.839	11.7	LOS B	15.0	107.1	1.00	1.13	36.1
12b	R3	2	0.0	0.839	12.7	LOS B	15.0	107.1	1.00	1.13	35.5
Approach		748	2.5	0.839	11.9	LOS B	15.0	107.1	1.00	1.13	36.1
SouthWest: Falmouth St											
30b	L3	1	0.0	0.167	16.1	LOS B	1.1	7.9	0.92	0.90	36.8
30	L2	14	0.0	0.167	15.4	LOS B	1.1	7.9	0.92	0.90	36.5
31	T1	24	0.0	0.167	11.0	LOS B	1.1	7.9	0.92	0.90	36.1
32	R2	20	8.0	0.167	12.1	LOS B	1.1	7.9	0.92	0.90	35.5
Approach		59	2.7	0.167	12.5	LOS B	1.1	7.9	0.92	0.90	36.0
All Vehicles		1618	2.6	0.839	8.3	LOS A	15.0	107.1	0.72	0.81	37.5

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Roundabout LOS Method: SIDRA Roundabout LOS.
Vehicle movement LOS values are based on average delay per movement.
Intersection and Approach LOS values are based on average delay for all vehicle movements.
Roundabout Capacity Model: SIDRA Standard.
SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

MOVEMENT SUMMARY

Site: 101 [PM Peak Hour - 2028 Build - Bedford Garage]

Deering Ave / Brighton Ave / Falmouth St
Portland, ME
Roundabout

Movement Performance - Vehicles											
Mov ID	OD Mov	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
SouthEast: Deering Ave											
21	L2	23	0.0	0.675	6.5	LOS A	7.4	52.6	0.52	0.48	39.1
21a	L1	563	1.7	0.675	5.8	LOS A	7.4	52.6	0.52	0.48	38.7
22	T1	234	0.7	0.675	2.1	LOS A	7.4	52.6	0.52	0.48	38.7
23	R2	30	0.0	0.675	2.6	LOS A	7.4	52.6	0.52	0.48	37.9
Approach		849	1.3	0.675	4.7	LOS A	7.4	52.6	0.52	0.48	38.7
NorthEast: Falmouth St											
24	L2	36	0.0	0.407	14.6	LOS B	2.8	19.8	0.88	0.96	37.1
25	T1	33	0.0	0.407	10.2	LOS B	2.8	19.8	0.88	0.96	36.7
26a	R1	118	0.0	0.407	10.1	LOS B	2.8	19.8	0.88	0.96	36.5
26	R2	13	0.0	0.407	10.7	LOS B	2.8	19.8	0.88	0.96	36.0
Approach		199	0.0	0.407	11.0	LOS B	2.8	19.8	0.88	0.96	36.6
NorthWest: Deering Ave											
27	L2	9	16.7	0.435	16.5	LOS B	2.7	19.0	0.82	0.92	37.0
28	T1	175	0.0	0.435	10.9	LOS B	2.7	19.0	0.82	0.92	36.7
29	R2	7	0.0	0.435	11.4	LOS B	2.7	19.0	0.82	0.92	36.0
29b	R3	1	0.0	0.435	11.9	LOS B	2.7	19.0	0.82	0.92	35.8
Approach		193	0.7	0.435	11.1	LOS B	2.7	19.0	0.82	0.92	36.6
West: Brighton Ave											
10b	L3	1	0.0	0.567	9.5	LOS A	4.9	34.8	0.72	0.66	39.9
10a	L1	33	0.0	0.567	8.0	LOS A	4.9	34.8	0.72	0.66	39.1
12a	R1	472	3.0	0.567	4.3	LOS A	4.9	34.8	0.72	0.66	38.8
12b	R3	1	0.0	0.567	5.3	LOS A	4.9	34.8	0.72	0.66	38.1
Approach		507	2.8	0.567	4.6	LOS A	4.9	34.8	0.72	0.66	38.8
SouthWest: Falmouth St											
30b	L3	4	0.0	0.102	11.4	LOS B	0.6	4.2	0.75	0.71	38.8
30	L2	8	20.0	0.102	11.6	LOS B	0.6	4.2	0.75	0.71	38.4
31	T1	34	0.0	0.102	6.3	LOS A	0.6	4.2	0.75	0.71	38.0
32	R2	13	0.0	0.102	6.8	LOS A	0.6	4.2	0.75	0.71	37.3
Approach		59	2.9	0.102	7.5	LOS A	0.6	4.2	0.75	0.71	38.0
All Vehicles		1806	1.6	0.675	6.1	LOS A	7.4	52.6	0.65	0.63	38.2

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Roundabout LOS Method: SIDRA Roundabout LOS.
Vehicle movement LOS values are based on average delay per movement.
Intersection and Approach LOS values are based on average delay for all vehicle movements.
Roundabout Capacity Model: SIDRA Standard.
SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

Summary of All Intervals

Run Number	1	2	3	4	5	Avg
Start Time	6:45	6:45	6:45	6:45	6:45	6:45
End Time	8:00	8:00	8:00	8:00	8:00	8:00
Total Time (min)	75	75	75	75	75	75
Time Recorded (min)	60	60	60	60	60	60
# of Intervals	2	2	2	2	2	2
# of Recorded Intervals	1	1	1	1	1	1
Vehs Entered	5503	5387	5471	5533	5493	5475
Vehs Exited	5501	5384	5457	5510	5548	5479
Starting Vehs	177	166	181	174	200	174
Ending Vehs	179	169	195	197	145	173
Travel Distance (mi)	2769	2740	2744	2782	2762	2759
Travel Time (hr)	180.8	191.4	172.9	182.7	167.6	179.1
Total Delay (hr)	80.8	92.5	73.6	82.3	67.6	79.4
Total Stops	5862	6133	5594	6064	5545	5837
Fuel Used (gal)	115.0	116.3	112.6	115.5	111.8	114.2

Interval #0 Information Seeding

Start Time	6:45
End Time	7:00
Total Time (min)	15

Volumes adjusted by Growth Factors.

No data recorded this interval.

Interval #1 Information Recording

Start Time	7:00
End Time	8:00
Total Time (min)	60

Volumes adjusted by Growth Factors.

Run Number	1	2	3	4	5	Avg
Vehs Entered	5503	5387	5471	5533	5493	5475
Vehs Exited	5501	5384	5457	5510	5548	5479
Starting Vehs	177	166	181	174	200	174
Ending Vehs	179	169	195	197	145	173
Travel Distance (mi)	2769	2740	2744	2782	2762	2759
Travel Time (hr)	180.8	191.4	172.9	182.7	167.6	179.1
Total Delay (hr)	80.8	92.5	73.6	82.3	67.6	79.4
Total Stops	5862	6133	5594	6064	5545	5837
Fuel Used (gal)	115.0	116.3	112.6	115.5	111.8	114.2

1: Forest Avenue & Falmouth St/Preble St Performance by lane

Lane	EB	EB	WB	WB	NB	NB	NB	SB	SB	SB	All
Movements Served	LT	R	LT	R	L	T	TR	L	T	TR	
Denied Del/Veh (s)											0.1
Total Del/Veh (s)	37.2	16.2	49.5	5.7	33.8	10.5	10.0	47.6	22.9	21.7	21.4

2: Forest Avenue & Bedford St/Baxter Blvd Performance by lane

Lane	EB	EB	WB	WB	WB	NB	NB	NB	SB	SB	All
Movements Served	LT	R	L	T	R	L	T	TR	T	TR	
Denied Del/Veh (s)											0.6
Total Del/Veh (s)	43.7	25.5	71.0	71.5	3.6	67.5	15.7	15.9	90.9	110.3	56.4

17: Bedford St & Surrenden St Performance by lane

Lane	NE	SW	SW	All
Movements Served	TR	L	T	
Denied Del/Veh (s)				0.0
Total Del/Veh (s)	2.0	16.2	16.7	7.9

19: Bedford St & Winslow St Performance by lane

Lane	NW	NW	NE	SW	All
Movements Served	L	R	TR	T	
Denied Del/Veh (s)					0.0
Total Del/Veh (s)	13.3	4.7	0.7	1.8	1.3

66: Forest Avenue & I-295 SB Performance by lane

Lane	EB	WB	SE	SE	NW	NW	NW	All
Movements Served	R	R	T	T	T	T	T	
Denied Del/Veh (s)								0.2
Total Del/Veh (s)	3.5	4.0	0.1	0.1	10.2	1.4	1.4	2.5

Total Zone Performance

Denied Del/Veh (s)	1.7
Total Del/Veh (s)	1626.6

Intersection: 1: Forest Avenue & Falmouth St/Preble St

Movement	EB	EB	WB	WB	NB	NB	NB	SB	SB	SB
Directions Served	LT	R	LT	R	L	T	TR	L	T	TR
Maximum Queue (ft)	126	47	88	60	140	197	217	224	427	442
Average Queue (ft)	57	18	30	11	43	70	77	141	176	190
95th Queue (ft)	105	45	72	35	98	159	179	238	363	374
Link Distance (ft)	698		1192	1192		669	669		1103	1103
Upstream Blk Time (%)										
Queuing Penalty (veh)										
Storage Bay Dist (ft)		150			200			150		
Storage Blk Time (%)	0				0	0		9	10	
Queuing Penalty (veh)	0				0	0		38	17	

Intersection: 2: Forest Avenue & Bedford St/Baxter Blvd

Movement	EB	EB	WB	WB	WB	NB	NB	NB	SB	SB
Directions Served	LT	R	L	T	R	L	T	TR	T	TR
Maximum Queue (ft)	177	305	214	381	47	261	255	258	664	675
Average Queue (ft)	86	155	171	126	5	234	152	154	464	500
95th Queue (ft)	144	254	240	374	29	303	251	247	715	745
Link Distance (ft)	662			1118		192	192	192	669	669
Upstream Blk Time (%)						45	4	4	5	7
Queuing Penalty (veh)						187	15	16	22	32
Storage Bay Dist (ft)		375	140		75					
Storage Blk Time (%)		0	31	1						
Queuing Penalty (veh)		0	23	1						

Intersection: 17: Bedford St & Surrenden St

Movement	NE	SW	SW
Directions Served	TR	L	T
Maximum Queue (ft)	38	234	280
Average Queue (ft)	10	163	22
95th Queue (ft)	31	250	145
Link Distance (ft)	387		353
Upstream Blk Time (%)			
Queuing Penalty (veh)			
Storage Bay Dist (ft)		210	
Storage Blk Time (%)		2	
Queuing Penalty (veh)		1	

Intersection: 19: Bedford St & Winslow St

Movement	NW	NW
Directions Served	L	R
Maximum Queue (ft)	30	34
Average Queue (ft)	3	7
95th Queue (ft)	16	29
Link Distance (ft)	198	
Upstream Blk Time (%)		
Queuing Penalty (veh)		
Storage Bay Dist (ft)		150
Storage Blk Time (%)		
Queuing Penalty (veh)		

Intersection: 66: Forest Avenue & I-295 SB

Movement	EB	WB	NW	NW	NW
Directions Served	R	R	T	T	T
Maximum Queue (ft)	102	90	142	108	87
Average Queue (ft)	17	35	36	14	9
95th Queue (ft)	65	72	132	70	56
Link Distance (ft)	574	1099	111	111	111
Upstream Blk Time (%)			9	1	0
Queuing Penalty (veh)			33	3	1
Storage Bay Dist (ft)					
Storage Blk Time (%)					
Queuing Penalty (veh)					

Zone Summary

Zone wide Queuing Penalty: 390

Summary of All Intervals

Run Number	1	2	3	4	5	Avg
Start Time	3:45	3:45	3:45	3:45	3:45	3:45
End Time	5:00	5:00	5:00	5:00	5:00	5:00
Total Time (min)	75	75	75	75	75	75
Time Recorded (min)	60	60	60	60	60	60
# of Intervals	2	2	2	2	2	2
# of Recorded Intervals	1	1	1	1	1	1
Vehs Entered	6568	6619	6665	6414	6499	6553
Vehs Exited	6529	6559	6592	6372	6557	6521
Starting Vehs	226	211	229	173	287	220
Ending Vehs	265	271	302	215	229	254
Travel Distance (mi)	3578	3690	3701	3535	3661	3633
Travel Time (hr)	231.8	245.1	272.1	271.3	237.5	251.6
Total Delay (hr)	103.1	112.2	138.9	144.1	105.3	120.7
Total Stops	6682	7036	7123	6644	6840	6863
Fuel Used (gal)	147.2	152.4	158.4	154.7	150.1	152.5

Interval #0 Information Seeding

Start Time	3:45
End Time	4:00
Total Time (min)	15

Volumes adjusted by Growth Factors.

No data recorded this interval.

Interval #1 Information Recording

Start Time	4:00
End Time	5:00
Total Time (min)	60

Volumes adjusted by Growth Factors.

Run Number	1	2	3	4	5	Avg
Vehs Entered	6568	6619	6665	6414	6499	6553
Vehs Exited	6529	6559	6592	6372	6557	6521
Starting Vehs	226	211	229	173	287	220
Ending Vehs	265	271	302	215	229	254
Travel Distance (mi)	3578	3690	3701	3535	3661	3633
Travel Time (hr)	231.8	245.1	272.1	271.3	237.5	251.6
Total Delay (hr)	103.1	112.2	138.9	144.1	105.3	120.7
Total Stops	6682	7036	7123	6644	6840	6863
Fuel Used (gal)	147.2	152.4	158.4	154.7	150.1	152.5

1: Forest Avenue & Falmouth St/Preble St Performance by movement

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Denied Del/Veh (s)	0.0	0.0	0.0	0.2	0.2	0.2	0.0	0.0	0.0	0.6	0.1	0.1
Total Del/Veh (s)	50.7	11.0	10.0	42.7	43.3	13.5	40.9	11.0	8.7	54.7	17.5	15.3

1: Forest Avenue & Falmouth St/Preble St Performance by movement

Movement	All
Denied Del/Veh (s)	0.1
Total Del/Veh (s)	18.2

2: Forest Avenue & Bedford St/Baxter Blvd Performance by movement

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBT	SBR	All
Denied Del/Veh (s)	0.0	0.0	0.0	4.2	1.7	3.5	0.4	0.0	0.1	0.0	0.0	0.5
Total Del/Veh (s)	52.0	52.5	48.5	183.3	103.8	98.0	92.5	22.7	19.3	49.9	59.1	59.5

16: Bedford St & Surrenden St. Performance by movement

Movement	NET	NER	SWL	SWT	All
Denied Del/Veh (s)	0.1	0.2	0.0	0.0	0.0
Total Del/Veh (s)	0.8	0.6	4.0	0.7	0.9

18: Winslow St. & Bedford St Performance by movement

Movement	NWL	NWR	NET	SWT	All
Denied Del/Veh (s)	1.4	3.9	0.0	0.0	1.0
Total Del/Veh (s)	14.7	9.5	0.8	1.4	4.2

67: Forest Avenue & I-295 SB Performance by movement

Movement	EBR	WBR	SET	NWT	All
Denied Del/Veh (s)	0.5	0.2	0.0	0.0	0.1
Total Del/Veh (s)	2.7	4.5	0.1	1.9	1.5

Total Zone Performance

Denied Del/Veh (s)	1.5
Total Del/Veh (s)	695.3

Intersection: 1: Forest Avenue & Falmouth St/Preble St

Movement	EB	EB	WB	WB	NB	NB	NB	SB	SB	SB
Directions Served	LT	R	LT	R	L	T	TR	L	T	TR
Maximum Queue (ft)	143	82	234	179	164	306	320	216	312	348
Average Queue (ft)	62	26	104	77	47	96	106	89	118	148
95th Queue (ft)	116	65	183	143	106	231	249	169	251	296
Link Distance (ft)	604		1193	1193		681	681		1103	1103
Upstream Blk Time (%)										
Queuing Penalty (veh)										
Storage Bay Dist (ft)		150			200			150		
Storage Blk Time (%)	0	0				2		3	6	
Queuing Penalty (veh)	0	0				1		13	6	

Intersection: 2: Forest Avenue & Bedford St/Baxter Blvd

Movement	EB	EB	WB	WB	WB	NB	NB	NB	SB	SB
Directions Served	LT	R	L	T	R	L	T	TR	T	TR
Maximum Queue (ft)	593	400	215	1051	17	247	256	244	489	532
Average Queue (ft)	212	274	210	597	2	207	190	202	256	294
95th Queue (ft)	490	416	234	1141	12	274	266	270	469	524
Link Distance (ft)	660			1275		165	165	165	681	681
Upstream Blk Time (%)	1			3		53	16	22		
Queuing Penalty (veh)	3			0		234	70	99		
Storage Bay Dist (ft)		375	140		75					
Storage Blk Time (%)	0	8	73	1						
Queuing Penalty (veh)	2	17	110	5						

Intersection: 16: Bedford St & Surrenden St.

Movement	NE	SW
Directions Served	TR	L
Maximum Queue (ft)	4	63
Average Queue (ft)	0	16
95th Queue (ft)	3	47
Link Distance (ft)	362	
Upstream Blk Time (%)		
Queuing Penalty (veh)		
Storage Bay Dist (ft)		210
Storage Blk Time (%)		
Queuing Penalty (veh)		

Intersection: 18: Winslow St. & Bedford St

Movement	NW	NW	NE
Directions Served	L	R	TR
Maximum Queue (ft)	114	152	6
Average Queue (ft)	50	69	1
95th Queue (ft)	102	128	8
Link Distance (ft)	188		384
Upstream Blk Time (%)	1	0	
Queuing Penalty (veh)	0	0	
Storage Bay Dist (ft)		150	
Storage Blk Time (%)	0	1	
Queuing Penalty (veh)	0	1	

Intersection: 67: Forest Avenue & I-295 SB

Movement	EB	WB	SE	NW	NW	NW
Directions Served	R	R	T	T	T	T
Maximum Queue (ft)	70	107	4	92	106	89
Average Queue (ft)	13	42	0	15	12	10
95th Queue (ft)	45	89	2	64	60	55
Link Distance (ft)	574	1099	53	111	111	111
Upstream Blk Time (%)				1	0	0
Queuing Penalty (veh)				2	1	1
Storage Bay Dist (ft)						
Storage Blk Time (%)						
Queuing Penalty (veh)						

Zone Summary

Zone wide Queuing Penalty: 566

Summary of All Intervals

Run Number	1	2	3	4	5	Avg
Start Time	6:45	6:45	6:45	6:45	6:45	6:45
End Time	8:00	8:00	8:00	8:00	8:00	8:00
Total Time (min)	75	75	75	75	75	75
Time Recorded (min)	60	60	60	60	60	60
# of Intervals	2	2	2	2	2	2
# of Recorded Intervals	1	1	1	1	1	1
Vehs Entered	6043	5793	6055	6039	5893	5963
Vehs Exited	5965	5766	5986	6020	5869	5920
Starting Vehs	222	225	219	234	211	222
Ending Vehs	300	252	288	253	235	261
Travel Distance (mi)	3191	3087	3198	3199	3146	3164
Travel Time (hr)	314.3	342.7	276.6	325.6	353.8	322.6
Total Delay (hr)	199.3	231.3	161.2	210.0	240.7	208.5
Total Stops	7786	7168	7414	7793	7391	7508
Fuel Used (gal)	159.1	162.8	149.2	160.7	165.4	159.4

Interval #0 Information Seeding

Start Time	6:45
End Time	7:00
Total Time (min)	15

Volumes adjusted by Growth Factors.

No data recorded this interval.

Interval #1 Information Recording

Start Time	7:00
End Time	8:00
Total Time (min)	60

Volumes adjusted by Growth Factors.

Run Number	1	2	3	4	5	Avg
Vehs Entered	6043	5793	6055	6039	5893	5963
Vehs Exited	5965	5766	5986	6020	5869	5920
Starting Vehs	222	225	219	234	211	222
Ending Vehs	300	252	288	253	235	261
Travel Distance (mi)	3191	3087	3198	3199	3146	3164
Travel Time (hr)	314.3	342.7	276.6	325.6	353.8	322.6
Total Delay (hr)	199.3	231.3	161.2	210.0	240.7	208.5
Total Stops	7786	7168	7414	7793	7391	7508
Fuel Used (gal)	159.1	162.8	149.2	160.7	165.4	159.4

1: Forest Avenue & Falmouth St/Preble St Performance by movement

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Denied Del/Veh (s)	0.0	0.0	0.0	0.2	0.1	0.1	0.8	0.0	0.1	1.1	0.1	0.2
Total Del/Veh (s)	52.3	39.9	9.0	40.4	43.5	5.4	38.2	9.8	7.6	52.6	16.6	14.1

1: Forest Avenue & Falmouth St/Preble St Performance by movement

Movement	All
Denied Del/Veh (s)	0.2
Total Del/Veh (s)	19.4

2: Forest Avenue & Bedford St/Baxter Blvd Performance by movement

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBT	SBR	All
Denied Del/Veh (s)	0.0	0.0	0.0	3.0	0.6	2.9	0.0	0.0	0.0	0.1	0.0	0.3
Total Del/Veh (s)	38.8	17.1	29.1	63.1	22.6	7.8	102.2	14.2	12.5	70.7	78.9	47.9

16: Bedford St & Surrenden St Performance by movement

Movement	NET	NER	SWL	SWT	All
Denied Del/Veh (s)	0.0	0.0	0.0	0.0	0.0
Total Del/Veh (s)	2.1	1.3	12.5	1.7	4.7

18: Bedford St & Winslow St Performance by movement

Movement	NBL	NBR	NET	NER	SWL	SWT	All
Denied Del/Veh (s)	0.2	4.2	0.1	0.1	0.0	0.0	0.2
Total Del/Veh (s)	19.5	5.6	1.1	0.6	7.0	1.8	2.2

67: Forest Avenue & I-295 SB Performance by movement

Movement	EBR	WBR	SET	NWT	All
Denied Del/Veh (s)	0.5	0.2	0.0	25.1	8.7
Total Del/Veh (s)	4.7	39.2	0.1	31.3	14.7

Total Zone Performance

Denied Del/Veh (s)	13.2
Total Del/Veh (s)	687.3

Intersection: 1: Forest Avenue & Falmouth St/Preble St

Movement	EB	EB	WB	WB	NB	NB	NB	SB	SB	SB
Directions Served	LT	R	LT	R	L	T	TR	L	T	TR
Maximum Queue (ft)	155	72	108	62	179	218	219	224	376	368
Average Queue (ft)	57	16	38	18	74	74	80	125	142	170
95th Queue (ft)	113	50	85	42	151	174	187	209	294	326
Link Distance (ft)	604		1193	1193		681	681		1103	1103
Upstream Blk Time (%)										
Queuing Penalty (veh)										
Storage Bay Dist (ft)		150			200			150		
Storage Blk Time (%)	1				0	0		7	5	
Queuing Penalty (veh)	0				1	0		31	8	

Intersection: 2: Forest Avenue & Bedford St/Baxter Blvd

Movement	EB	EB	WB	WB	WB	NB	NB	NB	SB	SB
Directions Served	LT	R	L	T	R	L	T	TR	T	TR
Maximum Queue (ft)	239	347	214	302	24	256	215	231	625	668
Average Queue (ft)	83	163	160	83	4	233	78	106	361	409
95th Queue (ft)	169	285	231	250	16	245	199	248	604	655
Link Distance (ft)	514			1275		165	165	165	681	681
Upstream Blk Time (%)	0					85	3	9	0	0
Queuing Penalty (veh)	0					372	15	38	0	0
Storage Bay Dist (ft)		375	140		75					
Storage Blk Time (%)		0	23	0						
Queuing Penalty (veh)		1	17	1						

Intersection: 16: Bedford St & Surrenden St

Movement	NE	SW	SW
Directions Served	TR	L	T
Maximum Queue (ft)	37	143	130
Average Queue (ft)	9	94	13
95th Queue (ft)	30	146	93
Link Distance (ft)	487		375
Upstream Blk Time (%)			
Queuing Penalty (veh)			
Storage Bay Dist (ft)		120	
Storage Blk Time (%)		3	
Queuing Penalty (veh)		3	

Intersection: 18: Bedford St & Winslow St

Movement	NB	NB	NE	SW
Directions Served	L	R	TR	L
Maximum Queue (ft)	39	60	25	94
Average Queue (ft)	10	24	2	32
95th Queue (ft)	34	50	12	66
Link Distance (ft)	178		375	
Upstream Blk Time (%)				
Queuing Penalty (veh)				
Storage Bay Dist (ft)		120		100
Storage Blk Time (%)				0
Queuing Penalty (veh)				0

Intersection: 67: Forest Avenue & I-295 SB

Movement	EB	WB	SE	NW	NW	NW
Directions Served	R	R	T	T	T	T
Maximum Queue (ft)	191	290	6	187	146	149
Average Queue (ft)	52	110	0	160	72	74
95th Queue (ft)	135	261	3	205	156	161
Link Distance (ft)	574	1099	53	111	111	111
Upstream Blk Time (%)				84	13	15
Queuing Penalty (veh)				310	49	55
Storage Bay Dist (ft)						
Storage Blk Time (%)						
Queuing Penalty (veh)						

Zone Summary

Zone wide Queuing Penalty: 902

Summary of All Intervals

Run Number	1	2	3	4	5	Avg
Start Time	3:45	3:45	3:45	3:45	3:45	3:45
End Time	5:00	5:00	5:00	5:00	5:00	5:00
Total Time (min)	75	75	75	75	75	75
Time Recorded (min)	60	60	60	60	60	60
# of Intervals	2	2	2	2	2	2
# of Recorded Intervals	1	1	1	1	1	1
Vehs Entered	6276	6469	6471	6391	6308	6387
Vehs Exited	6196	6486	6406	6406	6337	6366
Starting Vehs	218	246	249	245	258	239
Ending Vehs	298	229	314	230	229	253
Travel Distance (mi)	3341	3539	3428	3465	3459	3446
Travel Time (hr)	328.2	307.7	362.4	309.8	337.3	329.1
Total Delay (hr)	207.4	180.0	238.1	184.2	212.1	204.4
Total Stops	7116	7265	7219	7205	7511	7265
Fuel Used (gal)	163.2	164.4	173.1	162.1	168.7	166.3

Interval #0 Information Seeding

Start Time	3:45
End Time	4:00
Total Time (min)	15

Volumes adjusted by Growth Factors.

No data recorded this interval.

Interval #1 Information Recording

Start Time	4:00
End Time	5:00
Total Time (min)	60

Volumes adjusted by Growth Factors.

Run Number	1	2	3	4	5	Avg
Vehs Entered	6276	6469	6471	6391	6308	6387
Vehs Exited	6196	6486	6406	6406	6337	6366
Starting Vehs	218	246	249	245	258	239
Ending Vehs	298	229	314	230	229	253
Travel Distance (mi)	3341	3539	3428	3465	3459	3446
Travel Time (hr)	328.2	307.7	362.4	309.8	337.3	329.1
Total Delay (hr)	207.4	180.0	238.1	184.2	212.1	204.4
Total Stops	7116	7265	7219	7205	7511	7265
Fuel Used (gal)	163.2	164.4	173.1	162.1	168.7	166.3

1: Forest Avenue & Falmouth St/Preble St Performance by movement

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Denied Del/Veh (s)	0.0	0.1	0.9	0.2	0.2	0.2	0.1	0.0	0.1	0.9	0.1	0.1
Total Del/Veh (s)	41.0	46.6	10.5	50.2	47.2	12.6	38.1	11.6	9.2	56.5	19.6	18.6

1: Forest Avenue & Falmouth St/Preble St Performance by movement

Movement	All
Denied Del/Veh (s)	0.1
Total Del/Veh (s)	20.4

2: Forest Avenue & Bedford St/Baxter Blvd Performance by movement

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBT	SBR	All
Denied Del/Veh (s)	0.8	0.2	1.0	10.6	8.1	8.9	0.0	0.0	0.1	0.0	0.0	1.6
Total Del/Veh (s)	58.3	60.3	56.7	196.5	114.1	102.6	117.0	19.3	18.9	59.8	65.9	67.4

16: Bedford St & Surrenden St Performance by movement

Movement	NET	NER	SWL	SWT	All
Denied Del/Veh (s)	0.0	0.0	0.0	0.0	0.0
Total Del/Veh (s)	0.8	0.5	3.7	0.7	1.0

18: Bedford St & Winslow St Performance by movement

Movement	NBL	NBR	NET	NER	SWL	SWT	All
Denied Del/Veh (s)	5.9	6.8	0.0	0.0	0.0	0.0	2.4
Total Del/Veh (s)	14.3	16.8	2.2	1.5	5.4	1.5	7.3

67: Forest Avenue & I-295 SB Performance by movement

Movement	EBR	WBR	SET	NWT	All
Denied Del/Veh (s)	0.4	0.2	0.0	1.4	0.6
Total Del/Veh (s)	2.8	12.0	0.2	11.4	5.2

Total Zone Performance

Denied Del/Veh (s)	4.0
Total Del/Veh (s)	1493.0

Intersection: 1: Forest Avenue & Falmouth St/Preble St

Movement	EB	EB	WB	WB	NB	NB	NB	SB	SB	SB
Directions Served	LT	R	LT	R	L	T	TR	L	T	TR
Maximum Queue (ft)	129	82	216	198	202	312	335	215	411	444
Average Queue (ft)	55	27	102	75	58	107	118	91	135	167
95th Queue (ft)	107	60	180	150	137	233	260	164	295	332
Link Distance (ft)	604		1193	1193		681	681		1103	1103
Upstream Blk Time (%)										
Queuing Penalty (veh)										
Storage Bay Dist (ft)		150			200			150		
Storage Blk Time (%)	0				0	2		2	7	
Queuing Penalty (veh)	0				1	2		6	7	

Intersection: 2: Forest Avenue & Bedford St/Baxter Blvd

Movement	EB	EB	WB	WB	WB	NB	NB	NB	SB	SB
Directions Served	LT	R	L	T	R	L	T	TR	T	TR
Maximum Queue (ft)	517	400	215	1128	24	266	236	235	596	617
Average Queue (ft)	280	326	208	622	3	232	154	171	302	346
95th Queue (ft)	566	460	238	1255	14	252	257	274	562	611
Link Distance (ft)	514			1275		165	165	165	681	681
Upstream Blk Time (%)	4			10		81	10	15	0	0
Queuing Penalty (veh)	30			0		367	43	69	0	1
Storage Bay Dist (ft)		375	140		75					
Storage Blk Time (%)	0	16	72	2						
Queuing Penalty (veh)	2	37	109	8						

Intersection: 16: Bedford St & Surrenden St

Movement	SW
Directions Served	L
Maximum Queue (ft)	59
Average Queue (ft)	21
95th Queue (ft)	52
Link Distance (ft)	
Upstream Blk Time (%)	
Queuing Penalty (veh)	
Storage Bay Dist (ft)	120
Storage Blk Time (%)	
Queuing Penalty (veh)	

Intersection: 18: Bedford St & Winslow St

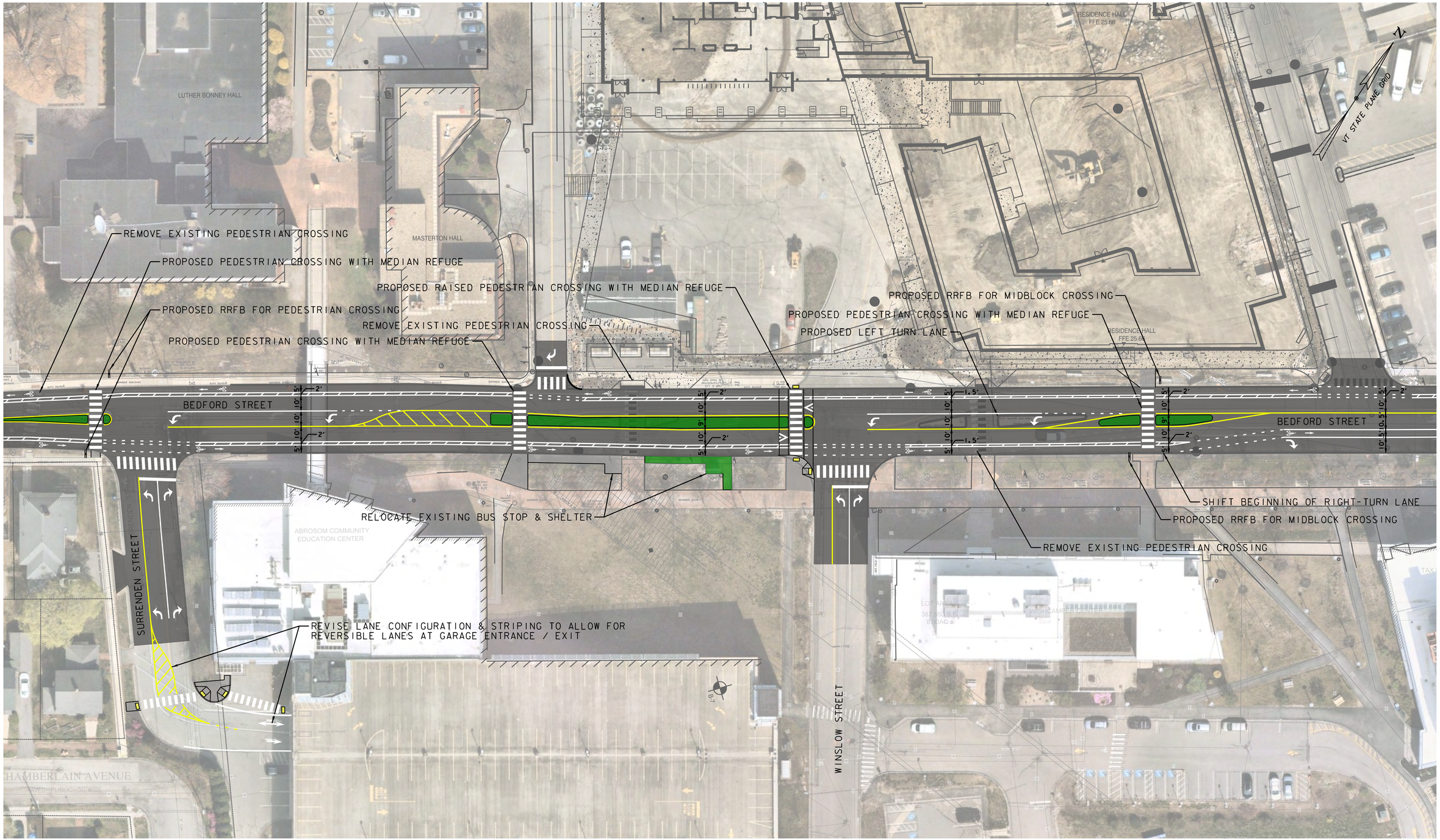
Movement	NB	NB	NE	SW
Directions Served	L	R	TR	L
Maximum Queue (ft)	205	145	132	81
Average Queue (ft)	69	93	15	23
95th Queue (ft)	181	155	77	58
Link Distance (ft)	178		375	
Upstream Blk Time (%)	10			
Queuing Penalty (veh)	0			
Storage Bay Dist (ft)		120		100
Storage Blk Time (%)	0	16		0
Queuing Penalty (veh)	0	10		0

Intersection: 67: Forest Avenue & I-295 SB

Movement	EB	WB	SE	NW	NW	NW
Directions Served	R	R	T	T	T	T
Maximum Queue (ft)	78	212	7	148	138	125
Average Queue (ft)	16	63	0	76	46	38
95th Queue (ft)	54	156	4	171	133	120
Link Distance (ft)	574	1099	53	111	111	111
Upstream Blk Time (%)				27	6	4
Queuing Penalty (veh)				87	20	12
Storage Bay Dist (ft)						
Storage Blk Time (%)						
Queuing Penalty (veh)						

Zone Summary

Zone wide Queuing Penalty: 812



SCALE 1" = 30'-0"
30 0 30

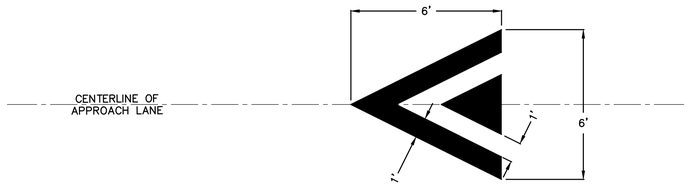
PROJECT NAME:	USM INTERSECTION IMPROVEMENTS
PROJECT NUMBER:	52718.01

FILE NAME: bdr_concepts.dgn	PLOT DATE: 12/01/21
PROJECT LEADER: J.A. CONLEY	DRAWN BY: D.A. GINGRAS
DESIGNED BY: D.A. GINGRAS	CHECKED BY: J.A. CONLEY
BEDFORD STREET CONCEPT	SHEET 1 OF 1



NOTES:
1. CONTRACTOR TO SUBMIT SHOP DRAWINGS FOR STREET NAME SIGN ASSEMBLIES.
2. SIGNS TO BE MOUNTED ON DOUBLE 4"X4" POSTS.
3. GUIDE SIGNS ARE WHITE ON GREEN BACKGROUND WITH WHITE BORDER.
4. SHEETING SHALL BE ASTM TYPE III "HIGH INTENSITY" PRISMATIC RETRO-REFLECTIVITY OR APPROVED EQUAL.
5. PAYMENT FOR REMOVAL OF EXISTING SIGNS NOT DESIGNATED TO BE RELOCATED SHALL BE CONSIDERED INCIDENTAL TO THE CONTRACT. ALL EXISTING SIGNAGE CONFLICTING WITH NEW TRAFFIC PATTERN SHALL BE REMOVED.

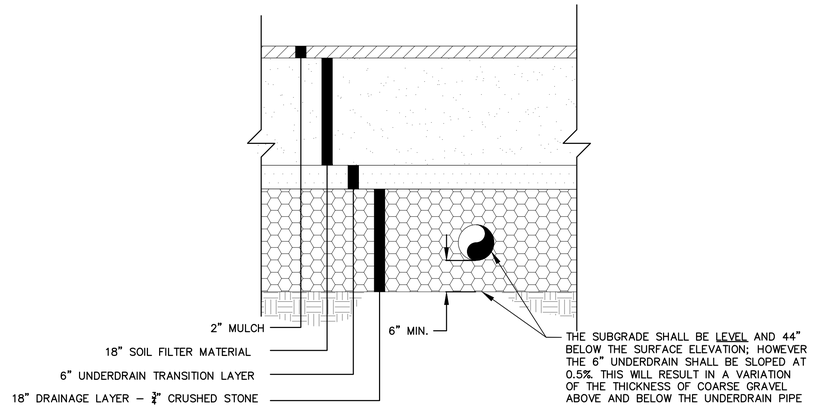
CIRCULAR INTERSECTION DESTINATION SIGNAGE
NOT TO SCALE



PAVEMENT MARKING

TRANSITION DETAIL

TYPICAL RAISED CROSSWALK DETAIL
NOT TO SCALE



SOIL FILTER MATERIAL SHALL HAVE PERMEABILITY OF 2 IN/HR TO 4 IN/HR. UNDERDRAIN SAND SHALL HAVE A PERMEABILITY OF AT LEAST 4 IN/HR.

* CONTRACTOR SHALL PROVIDE PERMEABILITY TEST PER ASTM D2434

SOIL FILTERS SHALL BE CONSTRUCTED IN CONFORMANCE WITH SECTION 900 OF THE SUPPLEMENTAL SPECIFICATIONS.

SOIL FILTER MATERIAL SHALL BE A LOAMY SAND SOIL COMBINED WITH 30% BY VOLUME OF MODERATELY FINE, WOOD FIBER OR BARK MULCH. THE RESULTING MIXTURE SHALL HAVE NO LESS THAN 10% PASSING THE 200 SIEVE. SOIL FILTER MEDIA SHALL BE A UNIFORM MIX, FREE OF STONES, STUMPS, ROOTS, OR OTHER SIMILAR OBJECTS LARGER THAN 2 INCHES. SUBCOMPONENTS OF THE SOIL FILTER MEDIA INCLUDE:

LOAMY SAND SHALL CONSIST OF NATIVE LOAMY SAND (AS DEFINED BY THE UNITED STATES DEPARTMENT OF AGRICULTURE) THAT CONTAINS NO LESS THAN 10% PASSING THE #200 SIEVE AND BETWEEN 2 – 5% CLAY AS DETERMINED THROUGH SOIL TEXTURAL ANALYSIS.

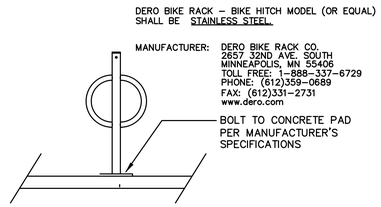
WOOD FIBER MULCH SHALL CONSIST OF A MODERATELY FINE, WELL COMPOSTED HARDWOOD BARK FREE OF REFUSE, PHYSICAL CONTAMINANTS, AND MATERIAL TOXIC TO PLANT GROWTH. MULCH SHALL HAVE 100% PASSING A 1" SCREEN.

THE CONTRACTOR SHALL SUBMIT A CONSTRUCTION SEQUENCE PLAN THAT OUTLINES THE OVERALL WORK IN RELATION TO THE CONSTRUCTION OF SOIL FILTER SYSTEMS, SPECIFICALLY CONSIDERING SITE STABILIZATION, SOIL FILTER INSTALLATION, AND VEGETATION PLACEMENT IN AND AROUND THE FILTER SYSTEMS. THE SOIL FILTER MEDIA MUST NOT BE INSTALLED UNTIL THE ENTIRE AREA THAT DRAINS TO THE FILTER HAS BEEN PERMANENTLY STABILIZED WITH PAVEMENT, VEGETATION, EROSION CONTROL MATTING, OR OTHER STRUCTURES UNLESS THE RUNOFF IS DIVERTED AROUND THE FILTER OR UNLESS THE FILTER IS COMPLETELY WRAPPED AND PROTECTED BY A NON-WOVEN GEOTEXTILE LINER WHICH CAN BE REMOVED FROM THE SURFACE PRIOR TO FINAL STABILIZATION.

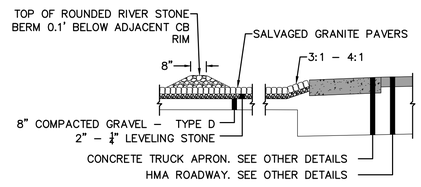
THE AREA THAT DRAINS TO THE SOIL FILTER SHALL BE KEPT STABLE, AVOIDING EROSION AND DEPOSITION OF SEDIMENTS INTO THE STORMWATER MANAGEMENT SYSTEM. ABSOLUTELY NO RUNOFF IS TO ENTER THE FILTER UNTIL ALL CONTRIBUTING DRAINAGE AREAS HAVE BEEN SUFFICIENTLY STABILIZED. IF FILTER MEDIA BECOMES CLOGGED, IT SHALL BE REPLACED BY THE CONTRACTOR AT NO ADDITIONAL COST

ADDITIONAL SURFACE LOAM MAY BE UTILIZED TO PROMOTE VEGETATION SURVIVAL. LOAM SHALL CONSIST OF NO MORE THAN ½ DEPTH OF NATIVE SANDY LOAM LIGHTLY RAKED INTO SOIL SURFACE.

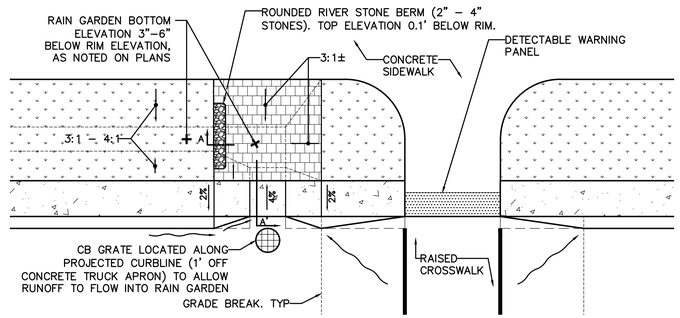
RAIN GARDEN - TYPICAL SECTION
NOT TO SCALE



BIKE RACK DETAIL
NOT TO SCALE



SECTION A–A'



TYPICAL RAIN GARDEN INLET DETAIL
NOT TO SCALE

Project:
Deering's Corner Roundabout
Design Plans
WIN # 18624.00

Prepared for:
City of Portland
389 Congress Street
Portland, Maine

RANSOM
Consulting, Inc.
400 Commercial Street, Suite 404,
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www.ransomenv.com

MTJ ENGINEERING
tjd&a
DuBois & King inc.

STATE OF MAINE
John I. Mahoney
#12340
LICENSED PROFESSIONAL ENGINEER

Details
Stormwater & Others

No.	Revision/Issue	Date
B	For Bidding	12–18–19
A	City MaineDOT Review	11–25–19

Design by: JIM
Checked by: SJB
Drawn by: JIM
Approved by: SJB
Project: 141.06013

Sheet No:
14.7

Addendum to University of Southern Maine Portland Campus Transportation Demand Management (TDM) Plan

11-22-2021

The changes below represent modifications to the plan due to changes in the University's structured garage proposal and other dynamic changes (internal & external to USM) that have occurred over the last 12 months. These include:

- The University siting the proposed structured parking on the Wishcamper lot
- Maine Law School moving off campus
- The University downsizing the proposed size of the structured parking, as a result of the Maine Law School move and feedback received from the Planning Board
- The City of Portland adding a requirement for electric vehicle charging stations to its Technical Manual

Mobility Context, Section 2-

The following updates are made to the parking lots represented in Figure 7 on page 16. The figure represented the lots on November 11th, 2020. These updated figures are current as of November 9th, 2021:

- The Woodbury lot - 130 spaces were displaced due to construction of the residence hall and Career & Student Success Center ("CSSC")
- The Facilities lot - 41 spaces were displaced due to construction of the residence hall and CSSC
- The Heat Plant lot - 21 spaces will be reduced to 15 spaces due to construction of the residence hall and CSSC
- The Brighton Ave lot- 26 spaces were displaced from the City roundabout project
- The Wishcamper lot -91 spaces are proposed to be displaced from the new parking garage at this location

TDM Coordinator, Section 4-

The roles of the two point people from the University have been changed, in part to help support the TDM effort:

- The University's TDM Coordinator will still be Aaron Witham, whose new title is Director of Sustainability. The inclusion of TDM duties into his new job description demonstrate the University's commitment to TDM success.
- The supporting role will now be an Associate Vice President of Administration position, rather than Director of Auxiliary Services. This change also represents an increase in focus and attention to transportation matters.

Transportation Demand Reduction Goals, Section 5-

Trip Reduction Goal- This goal stays the same because even though the structured parking will be located in a different area, the trips are not created by the garage, and thus don't change

as a result of location. Even though trips from the Law School won't happen anymore, VHB thought it would be best to be conservative and not deduct those trips from our analysis, so that we can ensure that the traffic mitigation measures proposed are overly sufficient.

Parking Demand Reduction Goal-
The goal remains a 10-14% reduction at the hour of peak demand. The gross number translation, however, changes from the published 159-222 vehicles to 144-201, to reflect a loss of Maine Law School demand in the campus-wide base demand number.

GHG Reduction Goal-

The goal of 20% reduction in GHG emissions from transportation remains the same, as it is a per capita goal, not impacted by the size of the population. How the University plans to achieve this goal is constantly evolving based on the proportion of electric vehicle commuters and based on fuel economy standards, both of which are impacted as much or more by evolving national forces, as they are by University policies.

Summary of Targets-

TDM Plan: Baseline Data, Targets & Monitoring/Reporting

Date of TDM Plan: 11-3-2020				11-4-2021 Addendum
Provide Data in Percentages and Absolute Numbers, where applicable		*Baseline Data (at time of TDM plan adoption*	*TDM Plan Reduction Target (if applicable)*	*Current Reporting Period Data*
Vehicular Trips	*Off-Peak*	N/A	N/A	Report forthcoming in 2024
	AM Peak Hr	581	3-6% (17-35 trips)	Report forthcoming in 2024
	PM Peak Hr	381	3-6% (12-23 trips)	Report forthcoming in 2024
Mode Split (future data may be reported as	*Single-Occupancy Vehicle*	75%	70%	Report forthcoming in 2024

SOV & Non-SOV)	*Non-SOV*	25%	30%	Report forthcoming in 2024
	Carpool	8%	Not specific	Report forthcoming in 2024
	Bicycle	*11% (shared with walk)	Not specific	Report forthcoming in 2024
	Walk	*11% (shared with bike)	Not specific	Report forthcoming in 2024
	Transit	6%	Not specific	Report forthcoming in 2024
On-site Parking (Peak)		Was 1,587 (adjusted to 1,435)	10-14% (144-201)	Report forthcoming in 2024
GHG Emissions Targets		2 MT of CO2e per capita	20% (or .4 MT of CO2e per capita)	Report forthcoming in 2024
Other:_____				

*Adjusted On-site parking number is due to deducting Maine Law School from total demand in the baseline, so that the TDM reduction target accounts for the change in actual conditions on the ground

Trip, Parking, Mode Split & GHG Reduction Strategies, Section 6-

The existing strategy, "Build Additional EV Charging Stations" is clarified to mean the University will endeavor to match demonstrated demand with supply of electric vehicle charging stations, so that demand would not exceed supply.

A year into strategizing implementation of our TDM plan, we have adjusted some launch dates. Some have adjusted to earlier and some later. Please see new launch dates written in red in the table below.

Table 3: Overview of TDM Initiatives for USM

STRATEGY	LAUNCH DATE	INFRASTRUCTURE	INCENTIVES	EDUCATION
Walking				
Create Walk Spot Maps	Fall 2023			X
Publicize the "Complete City Project"	Spring 2022			X
Hold Fitness Challenges	Spring 2022		X	
Biking				
*Co-launch City Bikeshare	Spring 2023	X		
Build Bicycle Repair Station	Spring 2023	X		X
Promote Local Bike Activities	Spring 2022		X	X
Offer Discounted Bike Supplies	Fall 2022		X	
*Improve Bike Infrastructure	Spring 2023	X		
Apply for Bike Friendly University Certification	Fall 2022	X	X	X
Transit				
*Continue METRO Pass Program	Ongoing	X	X	
Propose Husky Line Improvements	Fall 2023	X		
Propose Transit Service Expansion Beyond Husky Line	Spring 2022	X		
Install Transit Screen	Spring 2023	X		
****Carpooling, Telecommuting & Time-of-Day***				
Establish Vanpool Vehicles	Fall 2022	X	X	
Designate Carpool/Vanpool Spaces	Fall 2022	X	X	

Develop Rideshare Matching Platform	Fall 2022	X		
Promote Telework & Flexwork	Ongoing		X	X
Restructure Course Schedule	Ongoing	X		
Parking Pricing				
Establish Commuter Parking Buyout Program	Fall 2022		X	
*Establish Residential Parking Buyout Program	Fall 2023		X	
Host Carshare Program to Support Buyouts	Spring 2023	X	X	
*Unbundle Student Parking Fees	Fall 2022		X	X
Build Additional EV Charging Stations	Spring 2023	X		
Review Parking Price Levels	Fall 2022		X	
Communications & Marketing				
*Hold New Student & Employee Orientations for Transportation	Spring 2022		X	X
*Revise Transportation Website	Fall 2021			X
*Publish Access Guide	Fall 2021			X
Offer Guaranteed Ride Home Service	Spring 2023		X	

*Core strategies that the University is committing to are indicated by *. In the case of the Carpooling, Telecommuting & Time-of-Day category, the category itself is considered core, but the University will maintain flexibility in which of these strategies it implements, depending on future conditions

Monitoring and Reporting Plan, Section 7-

Inclusion of EV ownership would stay in the annual transportation survey, as outlined on page 43. This is important for GHG calculations.

In addition to the survey data, the University will provide an EV Use and Forecast Report to the City on or before June 1st of each year beginning in calendar year 2024, summarizing EV ownership and EV charging station use statistics. The Report will also include a proposal regarding the number of EV charging stations for the coming school year, based upon the supply and demand statistics from the previous year. In alignment with the other reporting activities outlined in the TDM plan, the University commits to annual reporting through 2030, the horizon of the Facilities Master Plan, after which a new TDM plan may be proposed.

Att. Y

USM Parking Assessment: Existing and Future Conditions

Presented by
LOURENÇO DANTAS, AICP
FEDERICO TALLIS, AICP

January 17, 2020

Contents

- Study Purpose
- Current Parking Supply
- Future Parking Supply
- Current Parking Demand
- Enrollment and Parking Demand Forecasts
- Future Parking Supply vs. Demand
- Key Takeaways
- Appendix
  - Parking Demand by Lot/Facility
  - Proposed USM TDM Strategies

Study Purpose

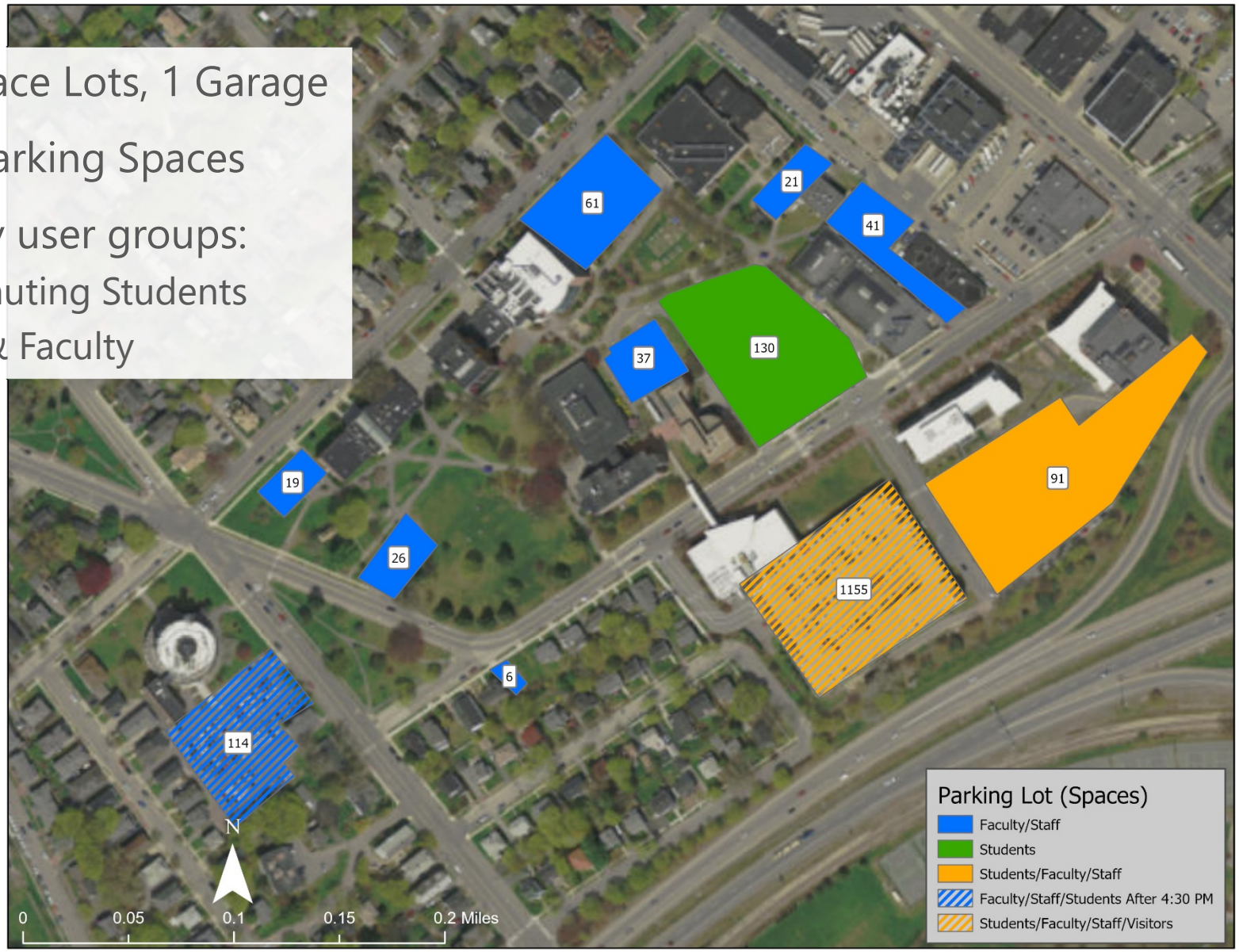
To develop a comprehensive profile of current on-campus parking conditions and to estimate future parking demand levels based upon projections of student enrollment, employment growth, and changes to campus activities.

Key milestones include:

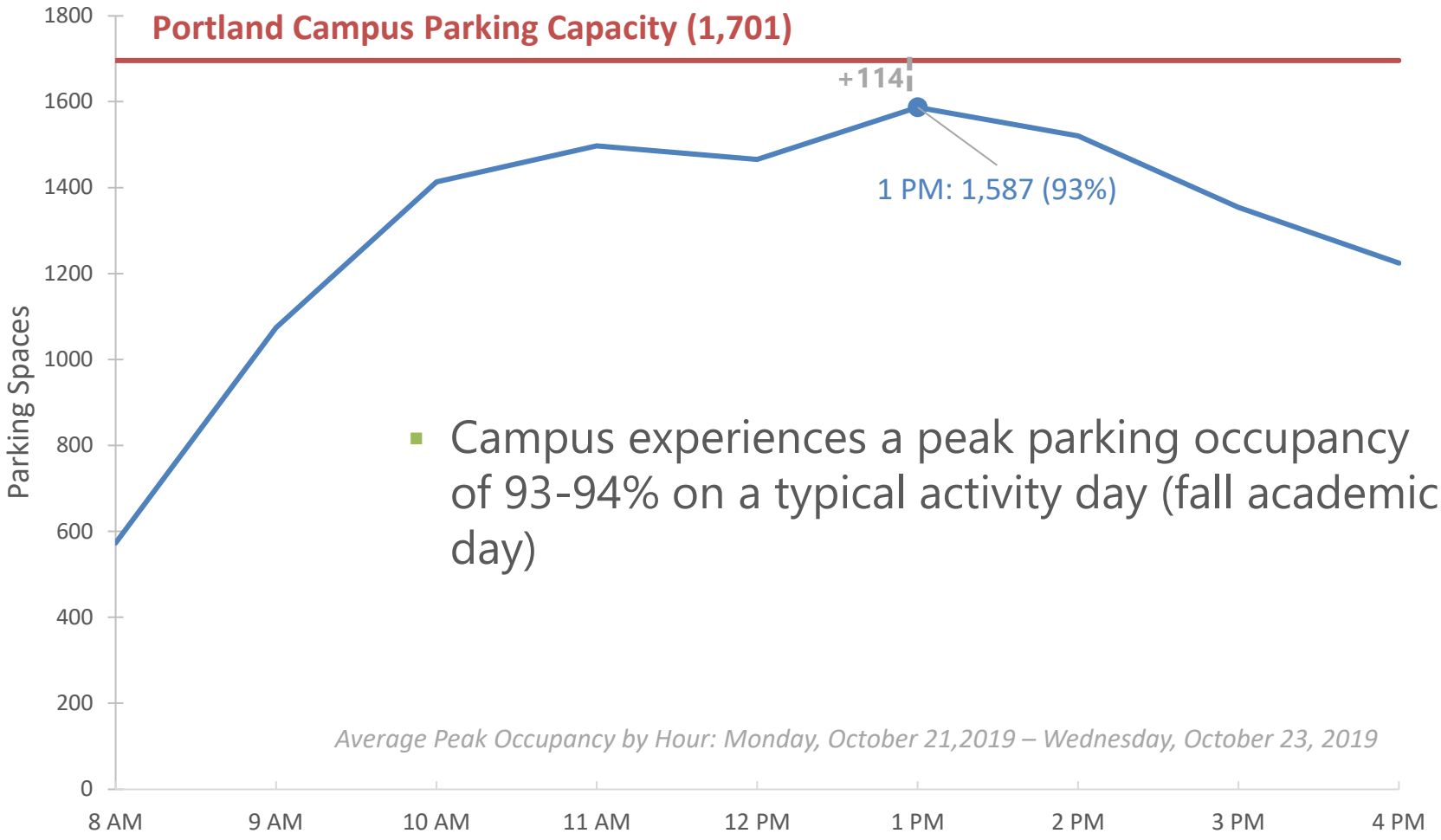
- 2022 – completion of student center & residence hall, including loss of Woodbury parking lot (P2)
- 2025 & 2030

Current Parking Supply

- 10 Surface Lots, 1 Garage
- 1,701 Parking Spaces
- Two key user groups:
  - Commuting Students
  - Staff & Faculty



Current Parking Demand

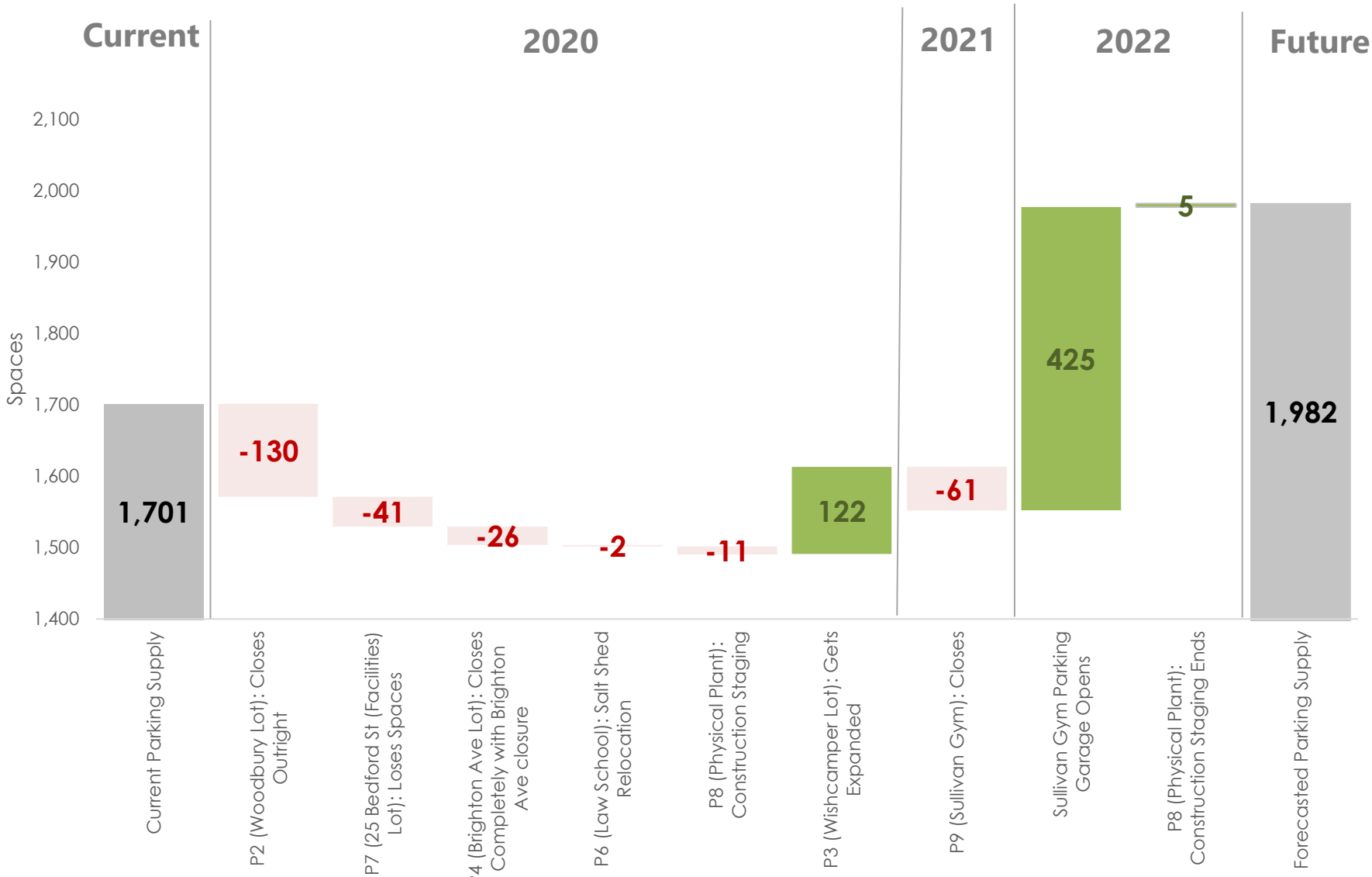


- Campus experiences a peak parking occupancy of 93-94% on a typical activity day (fall academic day)

Current Parking Demand

- Current Parking Peak Hour occurs at 1 PM
- Campus is currently at 93% occupancy during peak, typical activity day
- 5 of 11 lots noted occupancy beyond capacity (see details in appendix) including:
  - P2 Campus Center (Woodbury Parking Lot)
  - P3 Wishcamper Center/Library
  - P4 Off Brighton Ave
  - P5 92-120 Bedford
  - P10 Payson Smith

Future Parking Supply



Future Parking Supply

On-Campus	2019	2020	2021	2022	Milestone Notes (from USM)
Parking Garage	1155	1155	1155	1155	
P1 Luther Bonney & Masterton Halls	37	37	37	37	
P2 Campus Center (Woodbury Parking Lot)	130	0	0	0	Lose all of Woodbury parking lot permanently
P3 Wishcamper Center/Library	91	213	213	213	Wishcamper parking lot will be temporarily lost for the summer 2020 Gain 122 spots in new Wishcamper surface lot by September 2020
P4 Off Brighton Ave	26	0	0	0	Lose Brighton Ave extension parking lot by May 2020
P5 92-120 Bedford	6	6	6	6	
P6 Law Building	114	112	112	112	Salt shed being relocated to this lot to make way for construction of new buildings
P7 Facilities Building	41	0	0	0	Lose all of this lot, except access to oil fill in June of 2020
P8 Physical Plant	21	10	10	15	Lose half of this lot in 2020 and 2021 for use as a laydown/staging area for construction of new buildings and creation of service area
P9 Sullivan Recreation	61	61	0	0	Lose lot to construction zone for new parking garage
P10 Payson Smith	19	19	19	19	
USM Sullivan Lot Garage	0	0	0	425	Parking garage with 425 spaces
Total	**1,701**	**1,613**	**1,552**	**1,982**	

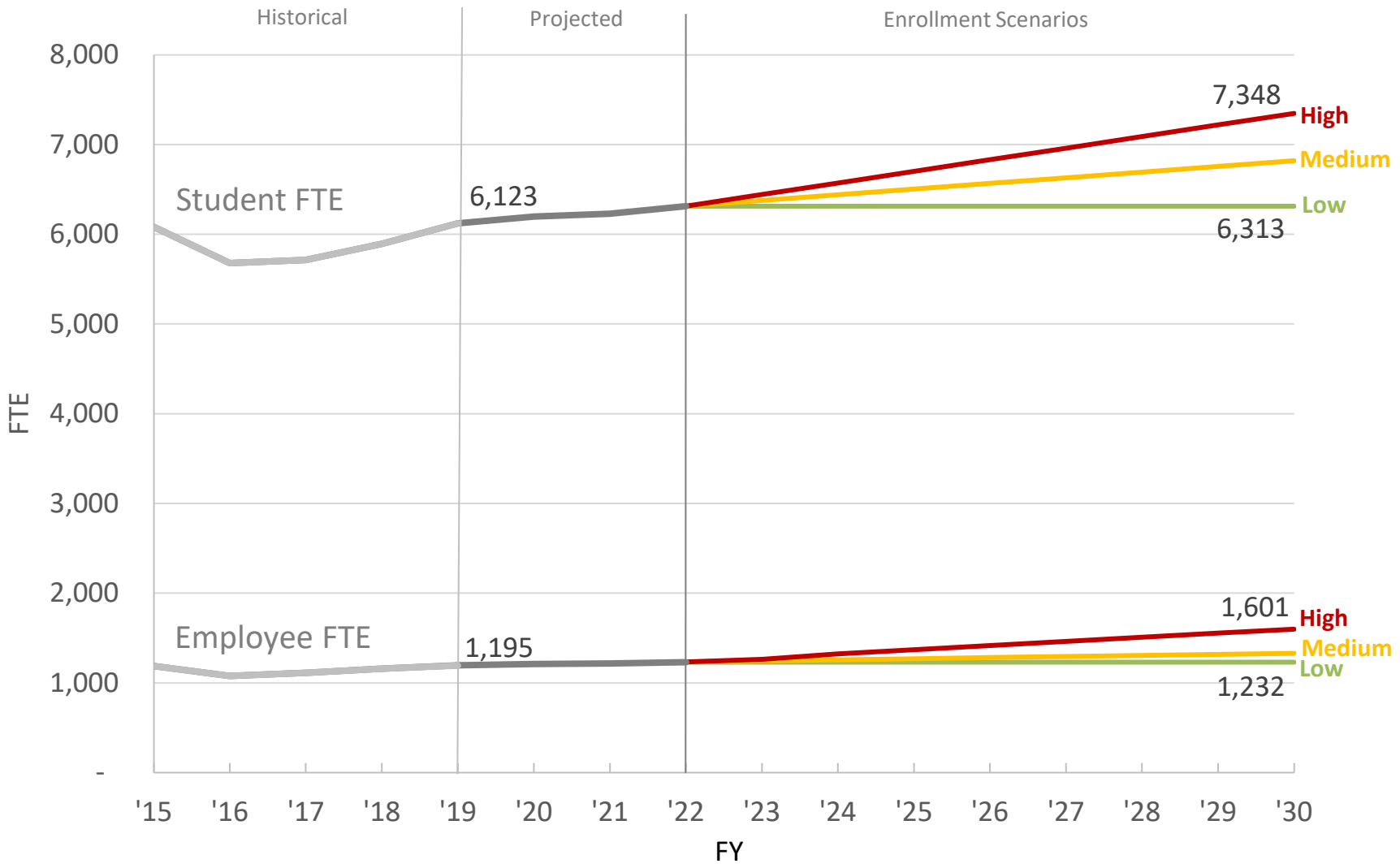
Enrollment Forecast Methodology

- What we know:
  - 2019 Student and Employee FTE
    - Student FTE: 6,123
    - Employee FTE: 1,195
  - Projected Student Growth Through 2022
    - 2020 Student FTE: 6,199
    - 2021 Student FTE: 6,230
    - 2022 Student FTE: 6,313
- What we don't know:
  - 2020 – 2022 Employee FTE
    - Employee FTE was grown proportionally to student enrollment using 2019 ratios for 2020 – 2022; could have a different growth rate
  - How USM will grow beyond 2022

Enrollment Forecast Methodology

- To determine demand beyond 2022 three scenarios were determined:
  - **Low:** Student enrollment and employment remains flat beyond 2022
    - Average Annual Growth Rate: 0%
  - **Mid:** Student enrollment continues to grow steadily based on growth from 2019 to 2022. Employment grows proportionally to student enrollment.
    - Average Annual Growth Rate: 1%
  - **High:** Student enrollment and employment grows back to peak enrollment, 2006 levels.
    - Average Annual Growth Rate: 2%

Student and Employee FTE Projections



Translating Enrollment to Parking Demand

- What we know:
  - Portland Campus Parking Demand
    - Peak hour demand: 1,587 (93%)
  - USM Portland Campus Headcount vs Total USM Enrollment
    - From Master Plan: Portland has 64% of total USM student headcount
  - Employee vs. Student Parking Demand
    - From parking count, 44% of Portland campus permits are from employees whereas 56% are from students
  - Residential Student Parking Permit Demand
    - From Master Plan 1,200 beds in Gorham and 815 registered permits from permit data = 0.68 parking space/bed.
    - Based on demographic of expected student population, a higher 0.75 parking space/bed rate was used.

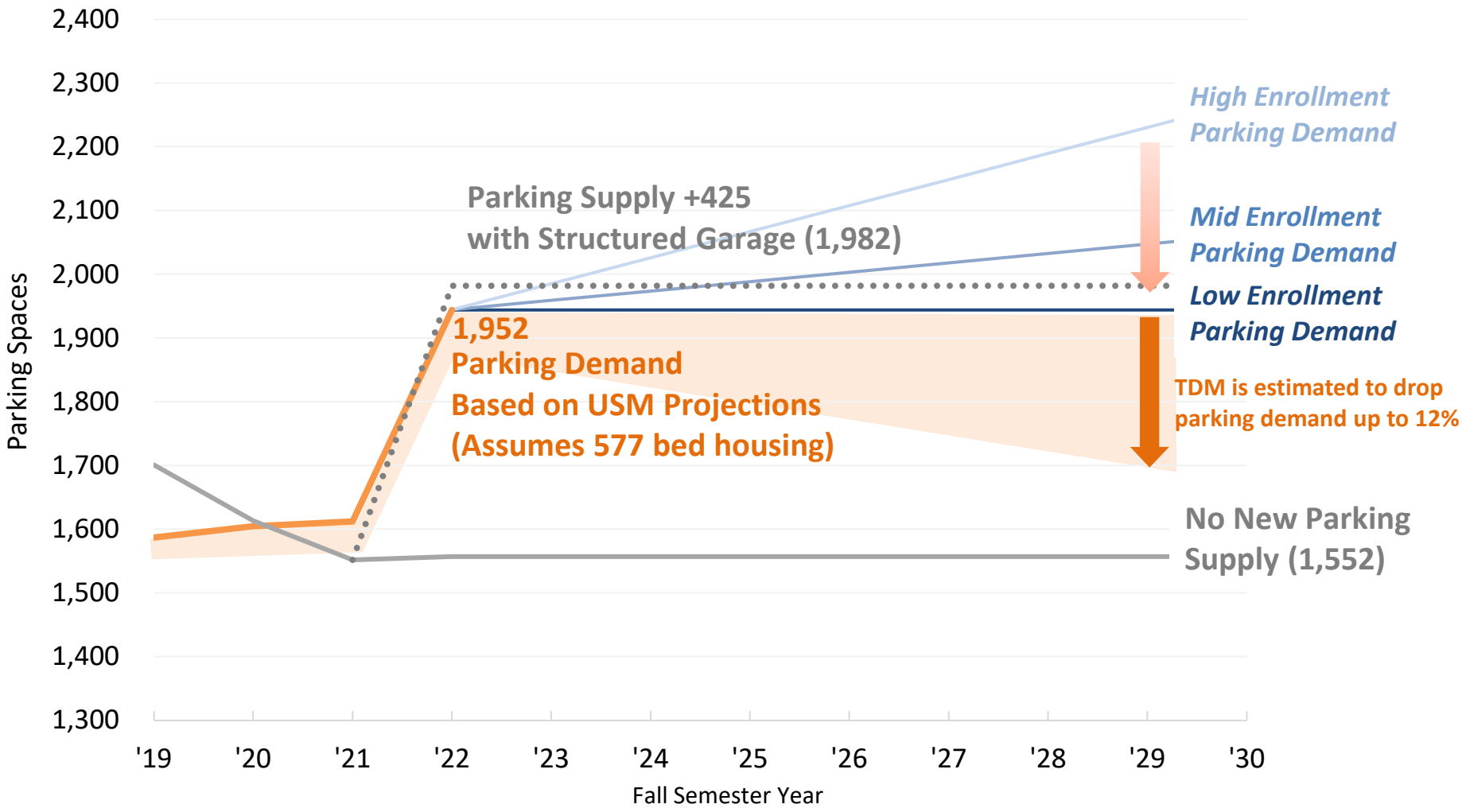
Translating Enrollment to Parking Demand

- To Calculate Parking Demand:
  1. USM Student Enrollment was translated to Portland Campus Student Enrollment
  2. For each forecasted year Portland student enrollment was split into two categories: Commuter student vs Residential student
     - 577 residents assumed on-campus from 2022 into the future.
     - Commuter students equal to total Portland headcount minus on-campus students
  3. Commuter student, residential student, employee, OLLI, and conference attendee parking rates were calculated:
     - Commuter student, employee, OLLI, and conference parking rates were calculated using existing permit demand data ratios
     - Residential student rates were calculated based on Gorham bed counts and resident student permits registered
  4. Calculated parking rates were multiplied by expected population for each year to determine final parking demand by group
  5. Final commuter student, residential student, and employee parking demand were summed to determine total parking demand

Calculating TDM Reduction

- To Calculate the impacts of a TDM program on USM:
  1. A laundry list of appropriate TDM strategies were chosen for USM based the peer review and the assessment of existing transportation conditions.
  2. Impact vs. cost of individual strategies were determined based on USM permit data sales and the transportation survey.
  3. USM narrowed laundry list from step 1 based on political and financial feasibility.
  4. VHB took final package of strategies and simulated potential mode split based on USM permit data and transportation survey.
  5. Mode split was translated to parking reduction based on existing mode split vs. parking demand patterns.
- A list of proposed TDM Strategies are contained in the appendix.

Future Parking Supply vs. Demand

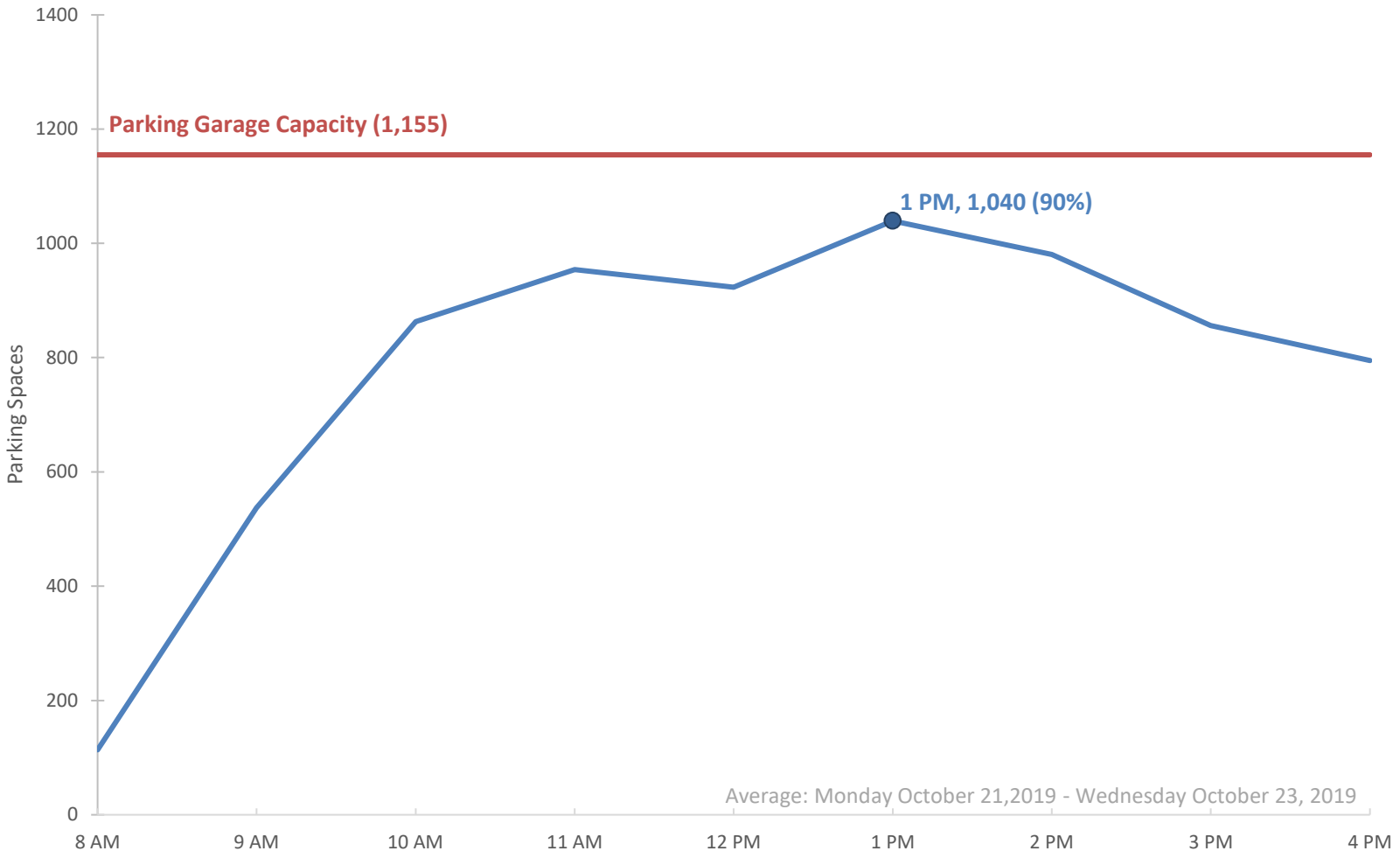


Takeaways

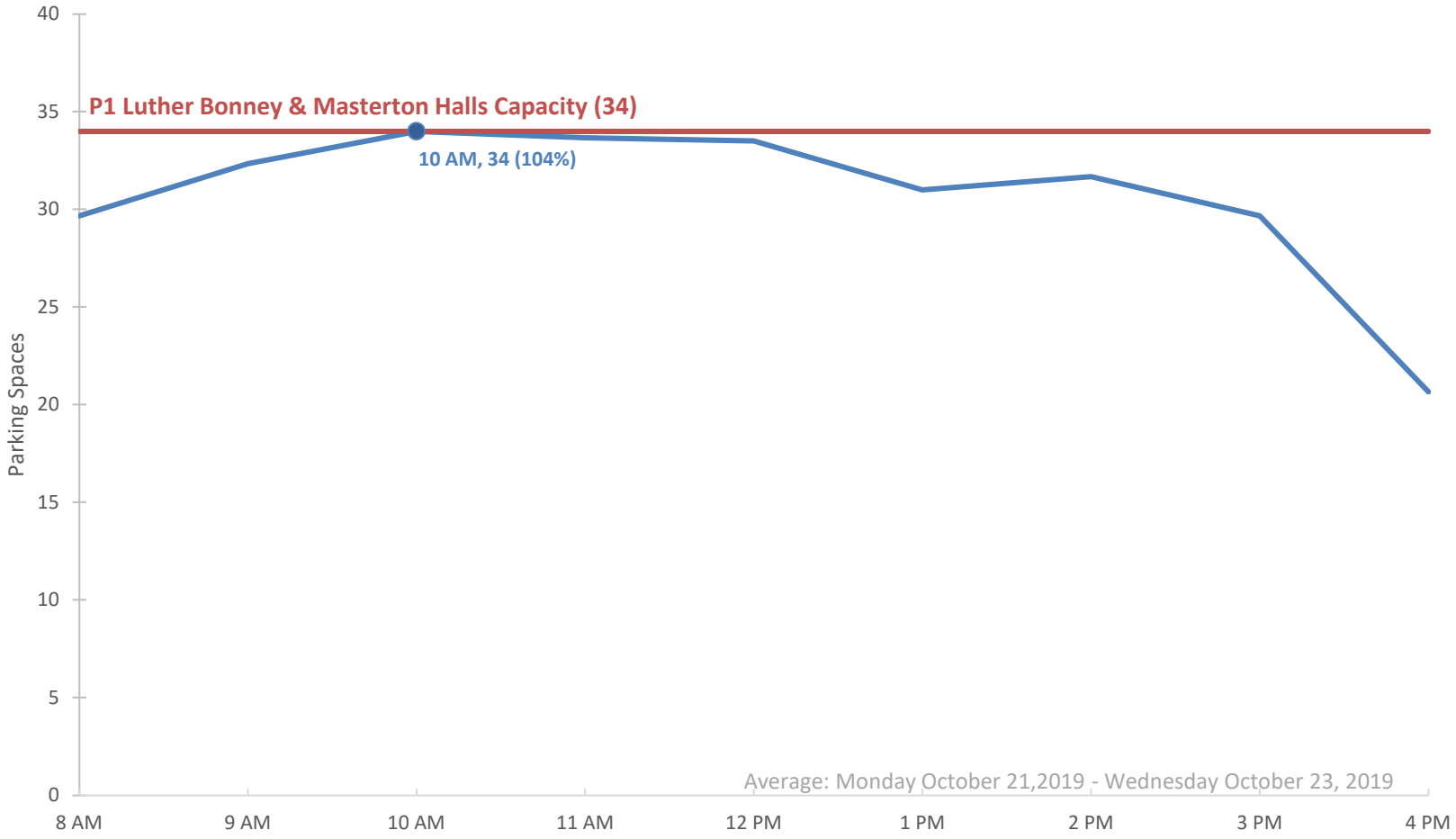
- With construction of a new residence hall and student center, new parking capacity is needed and/or parking demand needs to decrease
  - A moderately aggressive TDM program of strategies, including parking pricing and policy changes, could result in demand reductions of up to about 12 percent for USM
- Depending on enrollment projections, parking supply may not be adequate. USM would have to consider building more parking supply or further reducing parking demand
  - Not anticipated to be an issue until at least 2026 (under a modest 1 percent annual growth in student enrollment and without TDM implementation)
- Enrollment growth may not always directly contribute to growth during the peak demand hour:
  - E.g. Evening classes, distribution of classes among campuses, use of campus for conferences and at-large community events

Appendix:
Hourly Demand Charts by Parking Facility

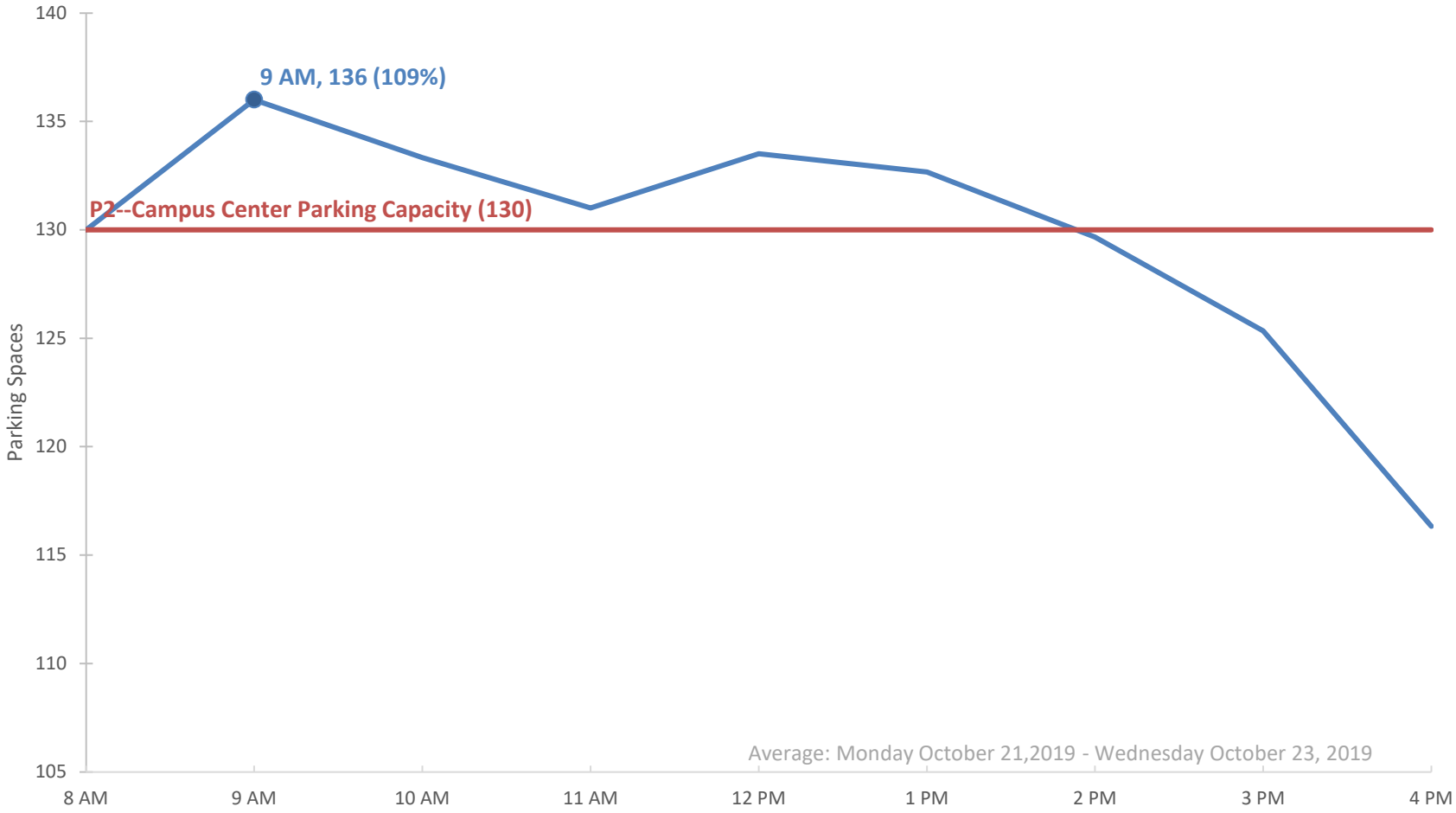
Parking Garage Demand



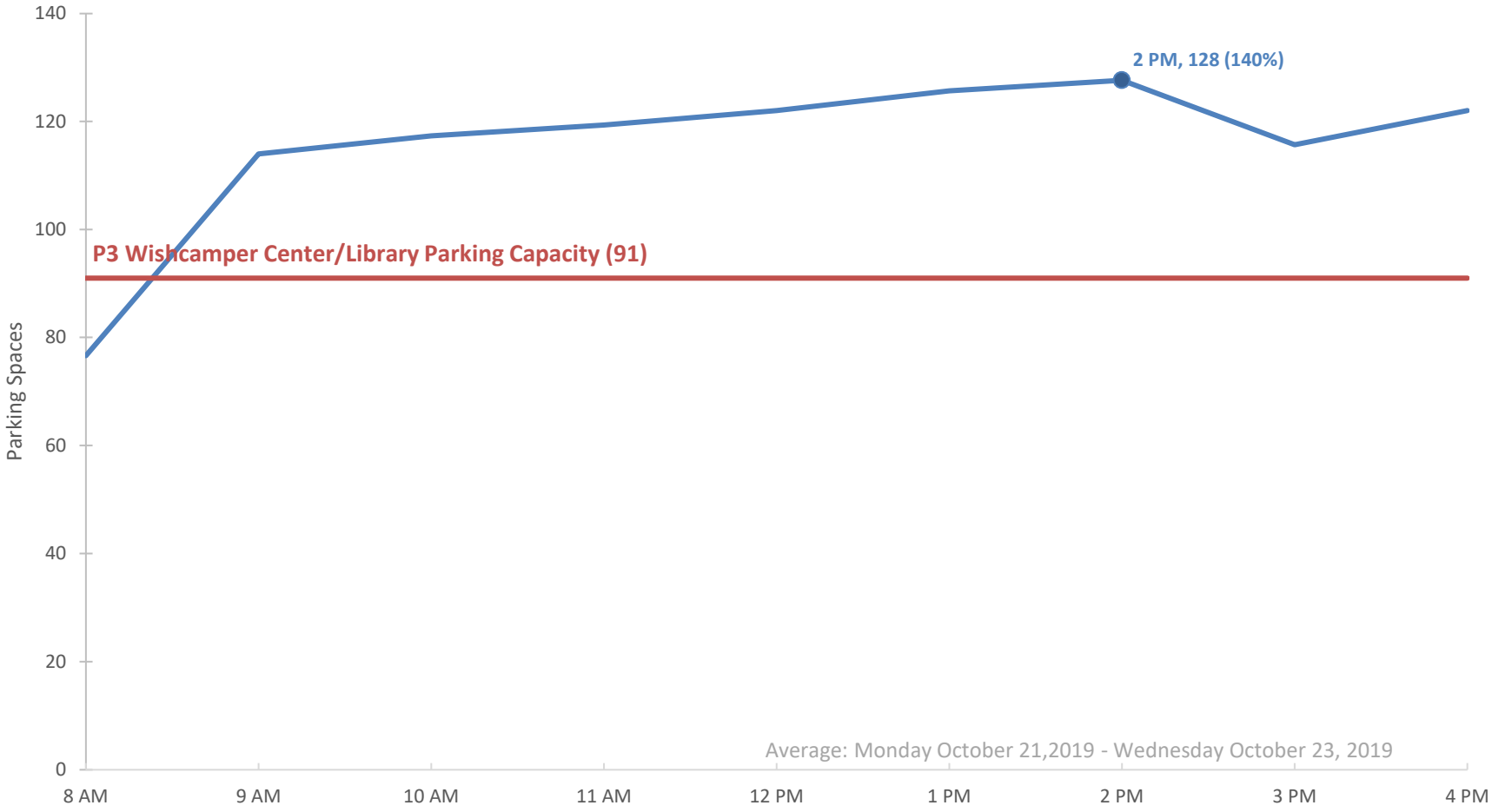
P1 Luther Bonney & Masterton Halls Parking Demand



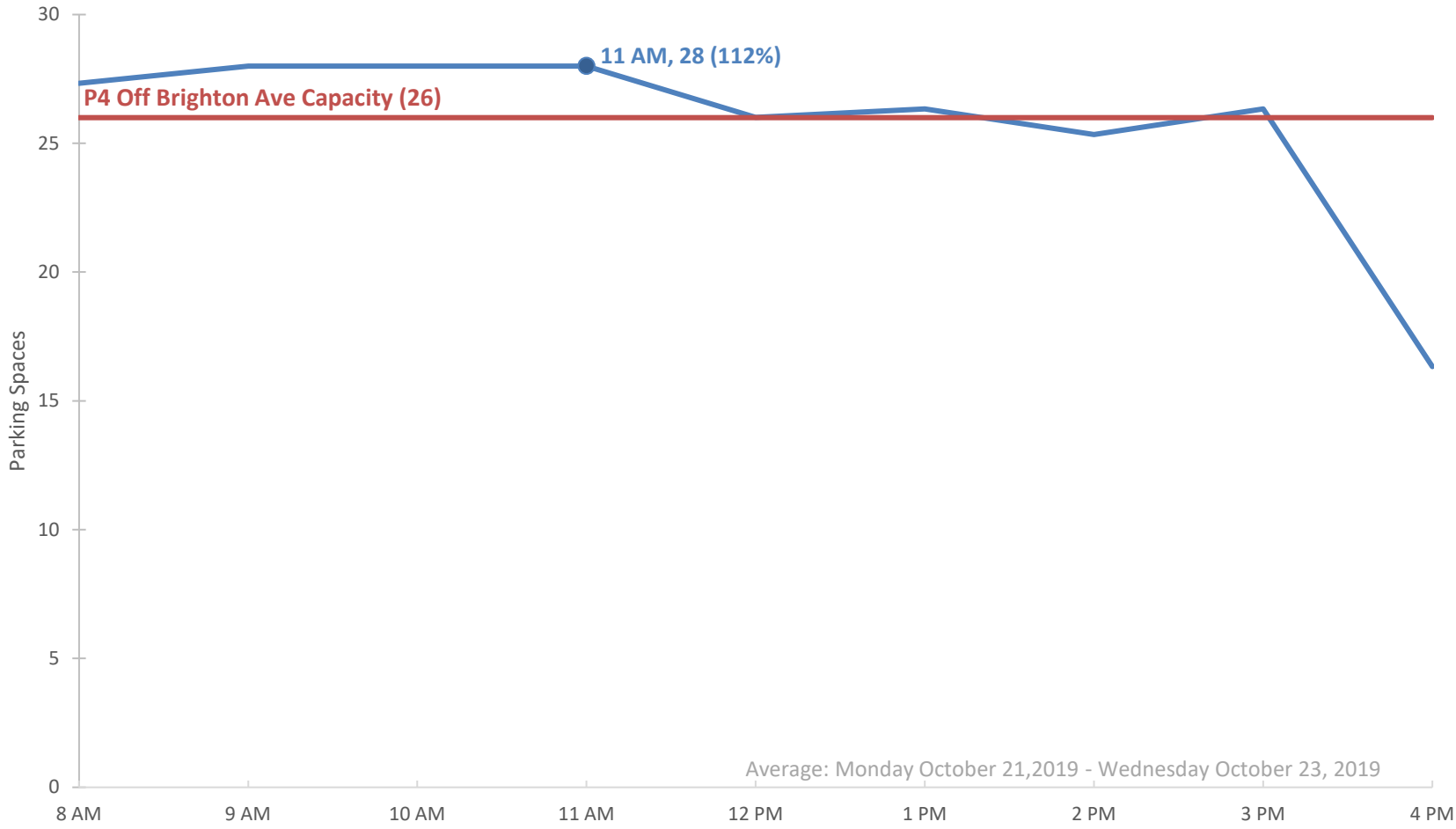
P2 Campus Center (Woodbury Parking Lot)



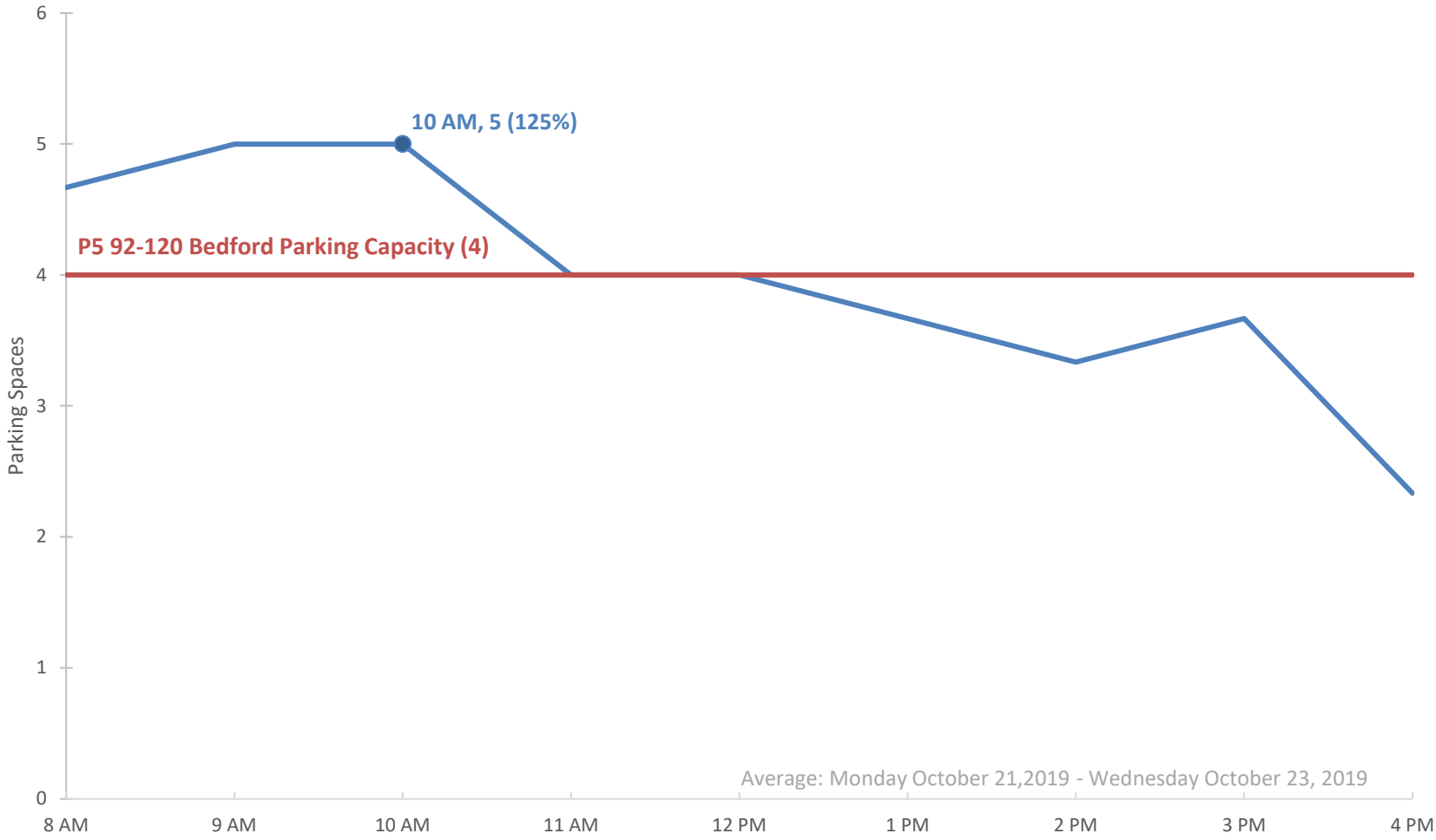
P3 Wishcamper Center/Library Parking Demand



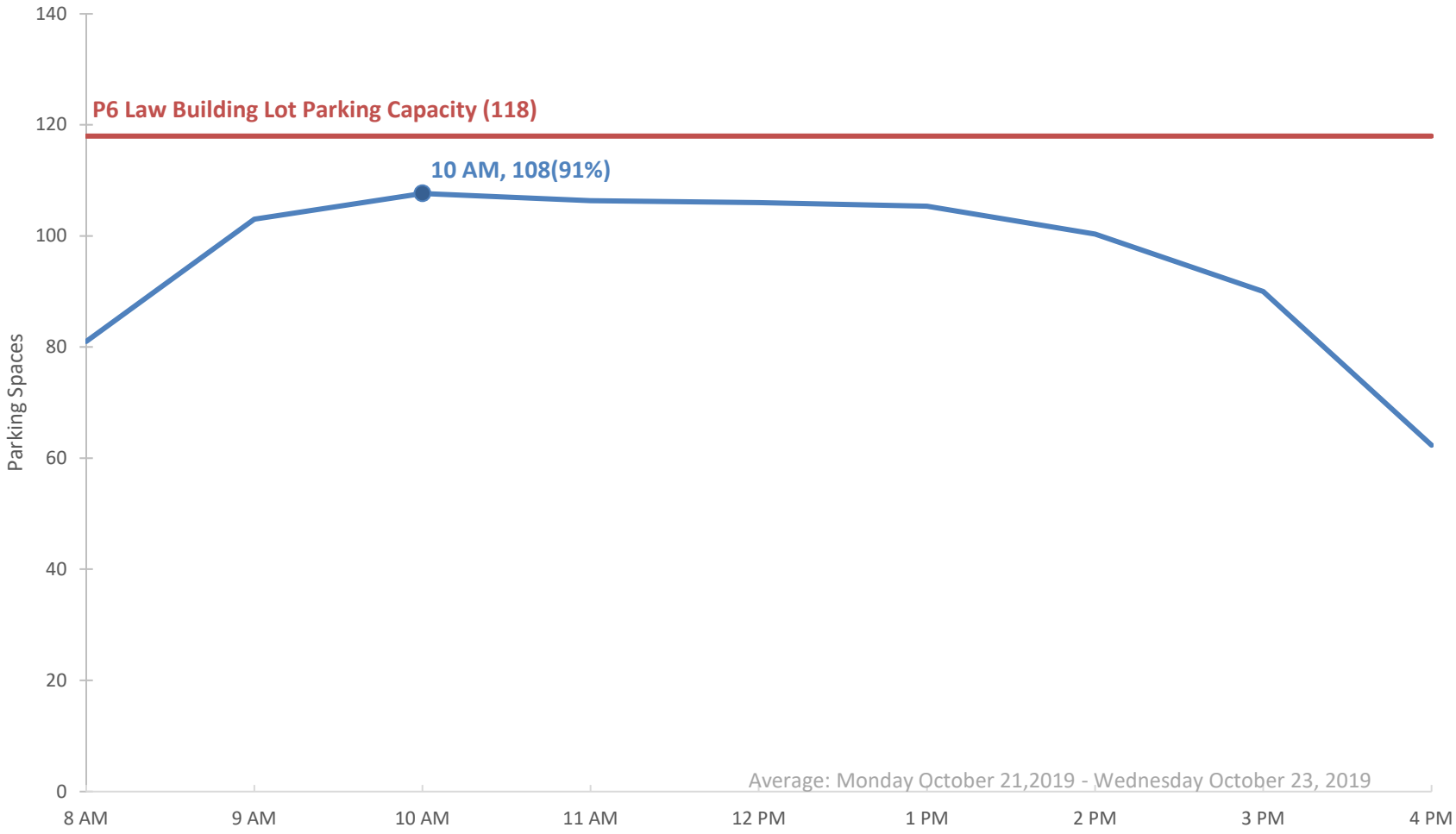
P4 Off Brighton Ave Parking Demand



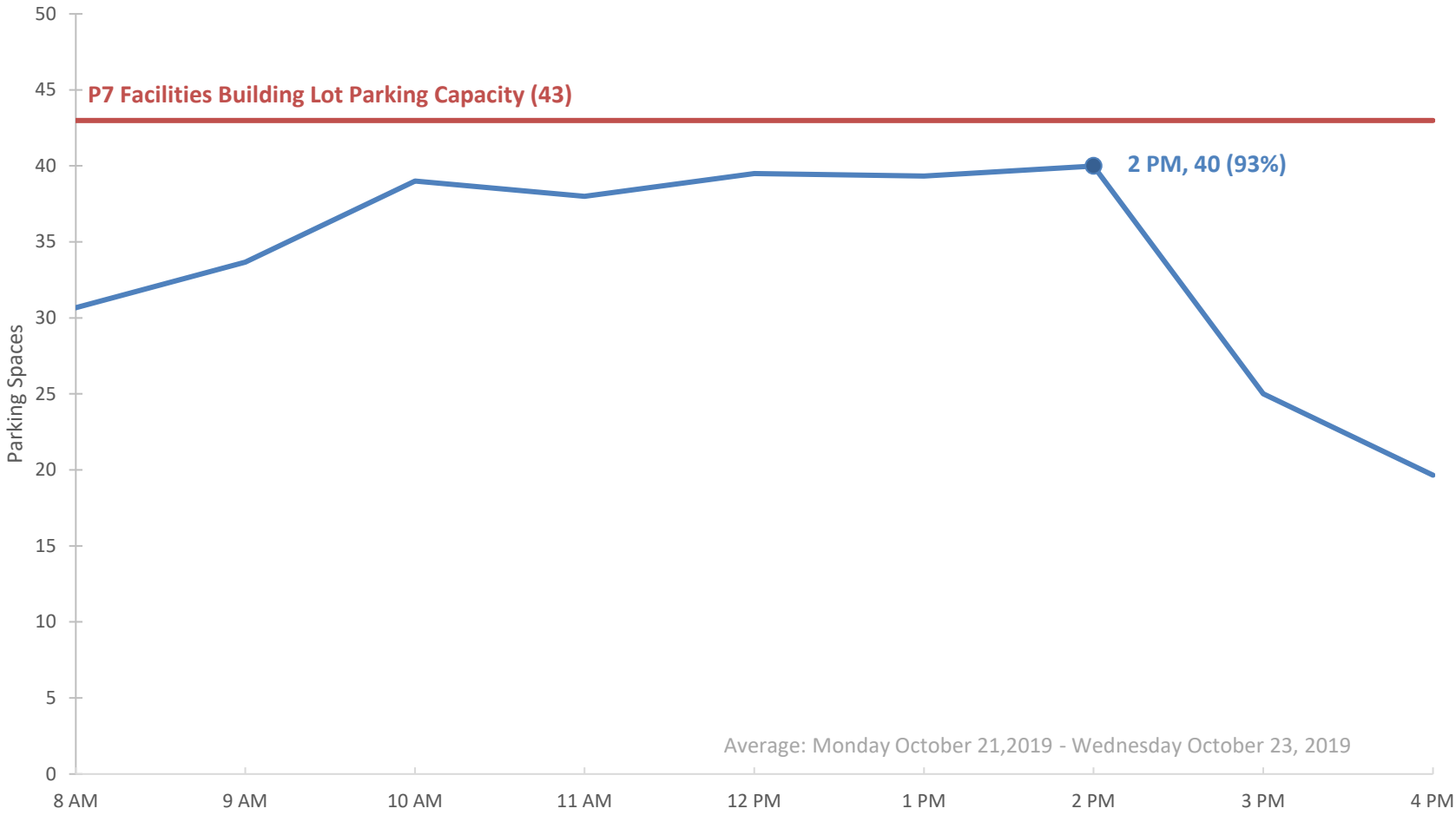
P5 92-120 Bedford Parking Demand



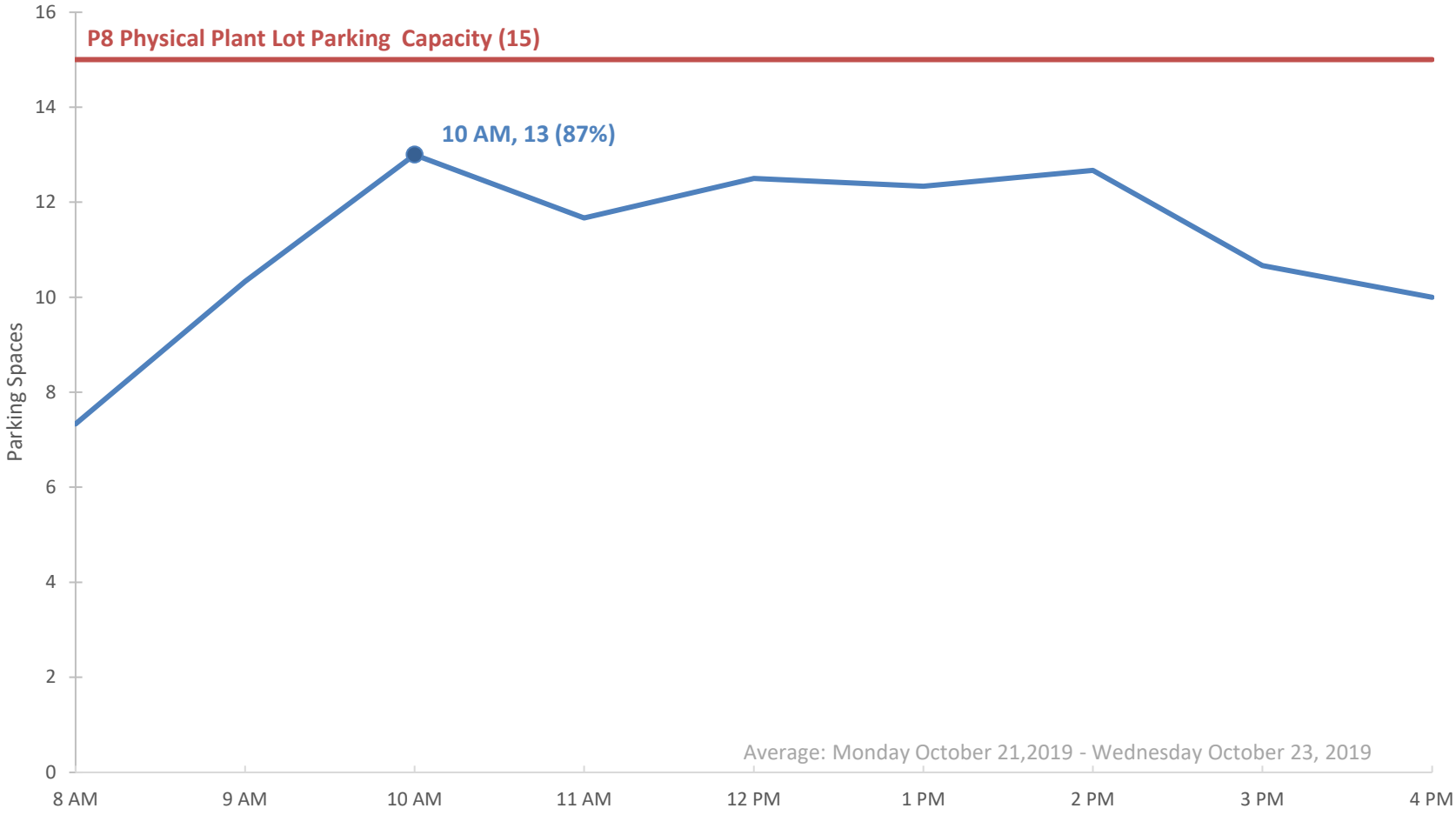
P6 Law Building Lot Parking Demand



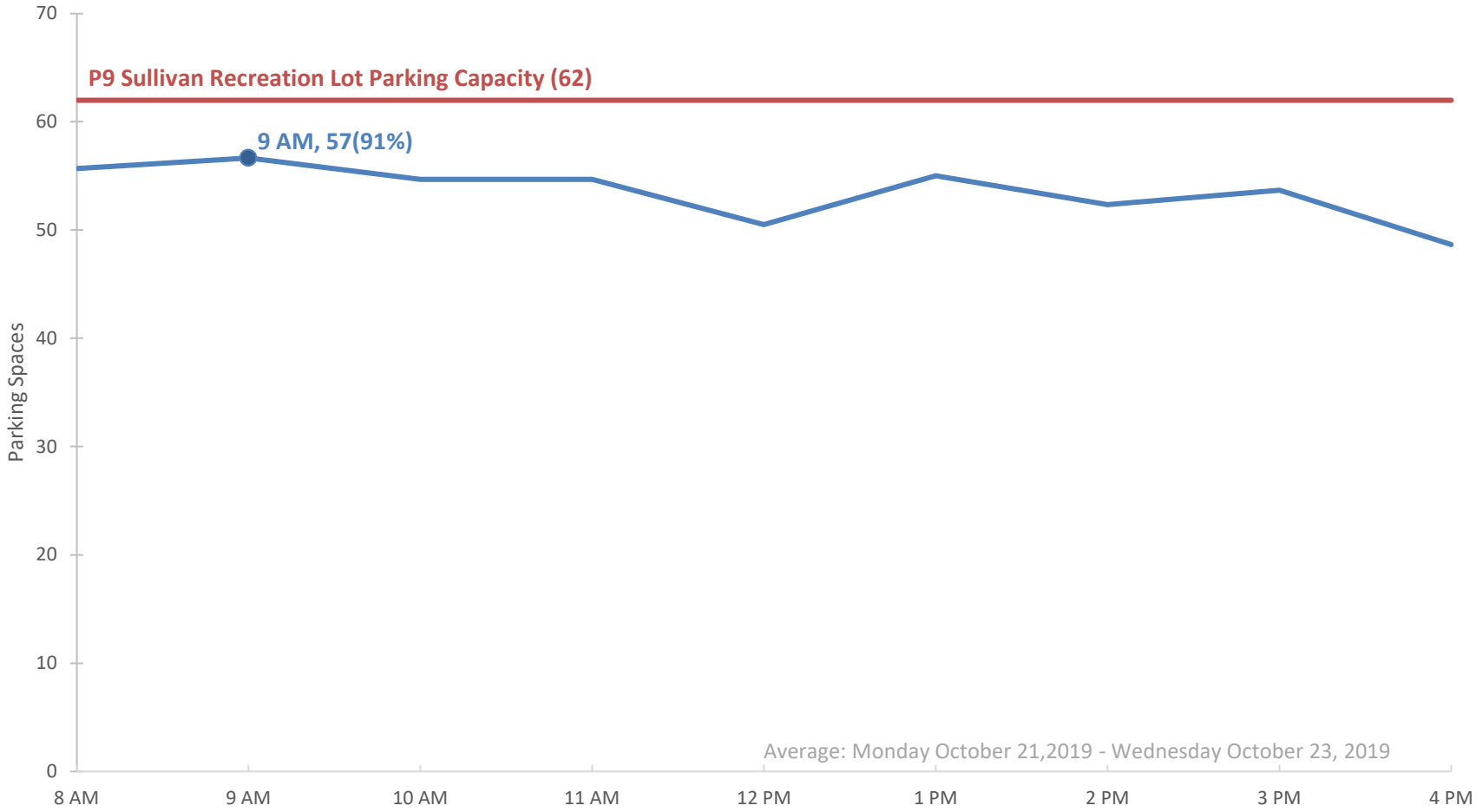
P7 Facilities Building Lot Parking Demand



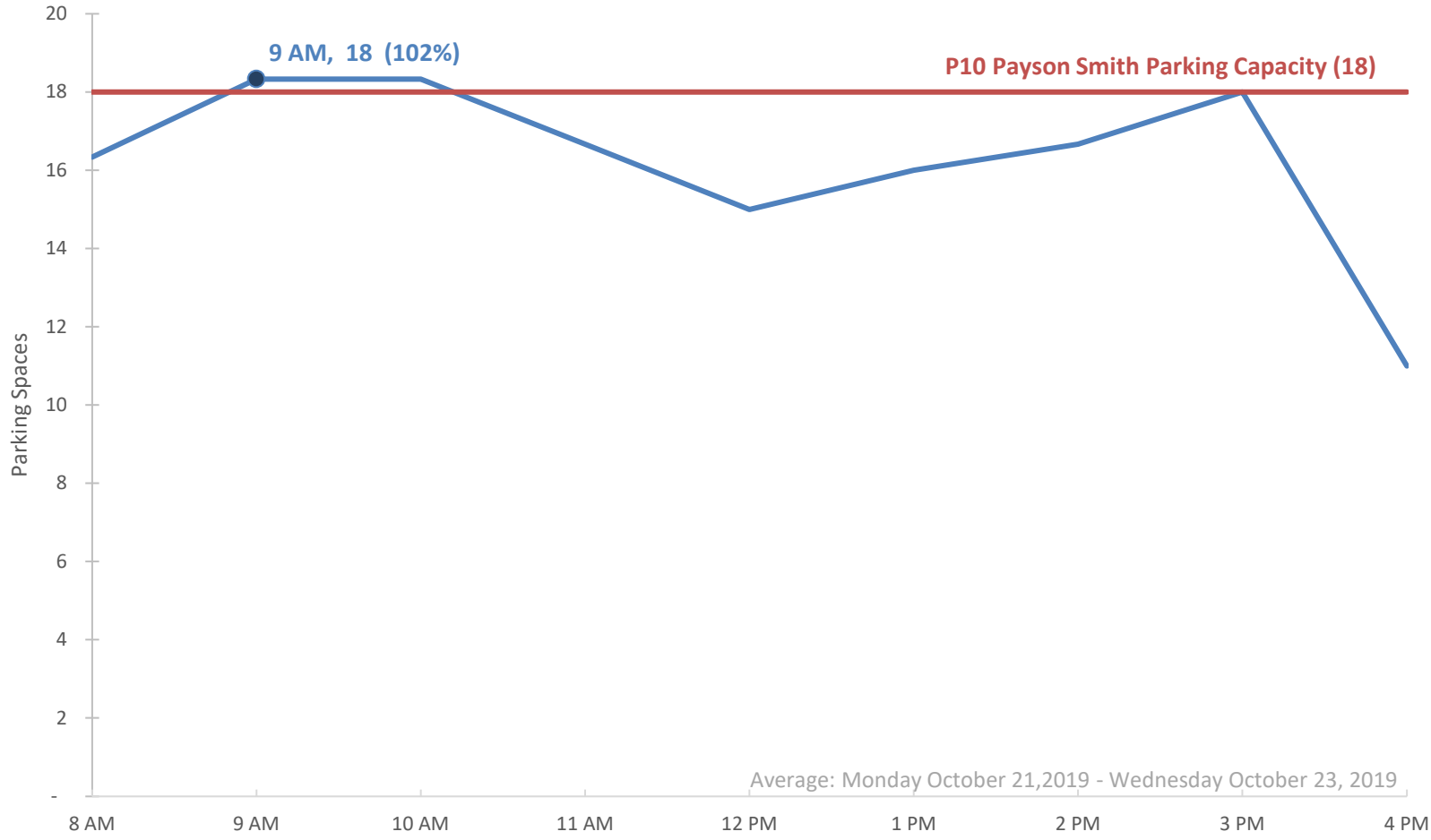
P8 Physical Plant Lot Parking Demand



P9 Sullivan Recreation Lot Parking Demand



P10 Payson Smith Parking Demand



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

Att. Z

Via Electronic Mail

October 13, 2021

Department of Planning & Development
Attn: Jimmy Dealaman
City of Portland
389 Congress Street
Portland, ME 04101

Re: USM Parking Garage – 50 Bedford Street - Neighborhood Meeting Certification

Dear Jimmy:

I, Darrin Stairs, PE of Woodard & Curran, hereby certify that a neighborhood meeting was held on September 22, 2021, at 6:00 p.m., via in person at the USM Glickman Library and virtual platform, regarding the Major Site Plan Application submittal for the proposed USM Parking Garage project located at 50 Bedford Street.

I also certify that on September 10, 2021, invitations were mailed to the following:

1. All addresses on the abutters list provided by the Planning Division which includes property owners within 500 feet of the proposed development.

2. Residents on the "interested parties" list.

Signed,

WOODARD & CURRAN INC.

Darrin Stairs, PE
Project Manager

Attached to this certification are:

1. Copy of the Invitation Sent
2. Meeting Attendance Report
3. Meeting Notes

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

September 10, 2021

Dear Neighbor:

On behalf of the University of Southern Maine (Applicant), please join us either in person or via Zoom conference call for a neighborhood meeting to discuss our plans for a parking garage located at 44 Bedford Street in Portland, Maine. A Major Site Plan Application for the proposed development has been filed with the City of Portland Planning Department.

Meeting Location: The University Events Room, Glickman Library, 7th Floor – 314 Forest Avenue, Portland, Maine*

Remote Call-in Information: https://bit.ly/3DETXZS

Meeting Date: Wednesday, September 22, 2021

Meeting Time: 6:00-7:00 PM

***Masks are required indoors for all USM buildings regardless of vaccination status.**

The Land Use Code requires that neighboring property owners and residents on an "interested parties list" be invited to participate in this neighborhood meeting. A sign-in sheet will be circulated, and a record of the meeting will be taken. Both the sign-in sheet and record will be submitted to the Planning Board.

Accommodations can be provided upon request. If you're in need of an accommodation, please contact Katie Andrews at (207) 780-4484 by September 21, 2021; if requests are received after this date, we may not have sufficient time to make necessary arrangements.

If you have any questions, please contact Darrin Stairs at (207)558-3662 or via email at dstairs@woodardcurran.com.

Sincerely,

WOODARD & CURRAN INC.

Darrin B. Stairs, PE
Project Manager

Note: Under the City of Portland land use code, an applicant for a major site plan is required to hold a neighborhood meeting within 30 days of an application being deemed complete and no less than seven calendar days before a public hearing. Should you wish to offer additional comments on this proposed development, you may forward them by e-mail to planning@portlandmaine.gov or by mail to the Planning and Urban Development Department, Planning Division, 4th Floor, 389 Congress Street Portland, ME 04101.

WHO BUT W.B.MASON

9/22/21

NAME	ADDRESS
Katie Andrews	USM
BARRY SHEFF	W&C
John Southern	USM
Alec Jordan	USM
Ann Vashon	USM

ZOOM

Mary Cashgan
Gretchen Giumarro
Richard Freund
Tom Blanchard
Lisa Bloss - Washburn
Jean Conley
Paul Connolly - Oakhurst
Wes Wilson
Aaron Witham
Jeff Henriksen
Justin Swift
Paul Kuplinski
Dan Stairs
Brenda Nicholas - Chamberlain
Mark Wilcox
Kristin Sweeney - walks through neighborhood
Linda Simpson neighbor
Annie Leahy neighbor

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

MEETING MINUTES

USM – Neighborhood Meeting

PROJECT: USM – Parking Garage

MEETING DATE: 9/22/2021

LOCATION: University Events Room – Glickman Library (7th Floor) and via virtual platform

ISSUED DATE: 10/13/2021

ATTENDEES:

USM Team Members:

Katie Andrews – USM
Aaron Witham – USM
John Souther – USM
Alec Porteous – USM
Richard Freund – USM
Ann Vashon – USM
Tom Blanchard – USM
Paul Kuplinski – USM
Justin Swift - USM
Wes Wilson – Desman Design
Barry Sheff – W&C
Darrin Stairs – W&C
Mark Wilcox – WSA
Jenn Conley – VHB
Gretchen Giumarro - MLBA

Public

Mary Costigan
Lisa Bloss – Washburn
Paul Connolly – Oakhurst
Jeff Henrikson
Brenda Nicholas – Chamberlain
Kristin Sweeney
Linda Stimpson
Annie Leahy

In person and virtual meeting began at 6:00 p.m.

1. **Welcome (Alec Porteous, USM)**
   a. Intro and background
   b. Updates
      - Ongoing neighborhood meetings
      - Board of Trustees Meeting in fall for authorization of construction spending
   c. Agenda
2. **Presentation (Darrin Stairs, W&C)**
   a. Site Plan Application
      - Application has been submitted to the City
      - Comments can be made with the Planning Board
      - Workshop with the City scheduled for September 28th

- TMP Amendment (Aaron Witham, USM)
  - Draft permit has been prepared
  - Scoping meeting to be scheduled with the City

b. Location Overview
- Adjacent to existing garage

c. Garage Details
- 5 Levels
- 637 spaces – 207 spaces displaced with a net gain of 430 spaces
- 58 EV spaces
- 250 bike spaces
- Connected at ground level to existing garage

d. Site Plan Overview
- Loop road
- Pedestrian plaza
- Pathways
- Landscaping

e. Architecture (Mark Wilcox)
- Birds Eye View
- Match existing garage height
- Scale
- Ramping
- Building materials review
- Plaza View
- Entrance/exit
- Bike room
- Stair elevation tower (east view)

3. Questions and Comments

- Paul Connelly, Oakhurst
  - Positive feedback on proposed location.
  - Forest Avenue - traffic analysis concerns; already a problem.
  - Impact on roundabout.
  - No signalized light at Bedford Street for years. What degree will the intersection improve? Does data reflect the real movement? No recognition of Oakhurst Intersection being

blocked and perception that City is dismissive of intersection. More work needs to be done and will share data.

  - Bus traffic flow to off Ramp, to I295, and Bedford – backups block Durham Street. Studied traffic counts but may only improve with a signalized intersection.
  - Bus turnouts would benefit thru traffic. Not all stops are 10 seconds, has seen bus stopped and a car going over the median too avoid. Concerned about traffic stops and backup. Hard for traffic to recover from bus stops.
  - Oakhurst to have continued conversations with USM to address concerns.

- Jenn Connelly, VHB
  - Traffic calming on Falmouth Street will be included that may help mitigate traffic "cutting thru" using roundabout.
  - Understands concern about bus pullouts. Metro preferred not to have pull out but will re-address with them.
  - Look forward to any additional traffic data that the Oakhurst consultant can provide. Did Oakhurst consultants have any recommendations?
  - City is working to fix signal at Bedford and Forest Ave – camera and detection issues.
- Aaron Witham, USM
  - Appreciated working relationship with Oakhurst, looks forward to ongoing discussion at scoping meeting.
  - Remain open to further discussion for inline stop, mainly adopted for safety.
  - Has observed near misses and vehicular incidents, and cars going around buses.
  - The inline stop is for convenience to keep efficient movement during peak hours. Remember a bus can be carrying up to 40+ people who are not on the road in a single occupancy vehicle (SOV).
  - Curious to know what the City's position is on the bus inline stop?
- Alec Porteous, USM
  - Acknowledged process transparency and working with Oakhurst.
- Brenda Nicolas
  - Issues with racing cars and safety concerns; need to slow down vehicles and calm traffic.
- Alec Porteous
  - Agreed and wants to work with neighbors and City on making the most efficient and safe travel corridor.
- Annie L
  - Grateful for the working relationship with neighbors and USM.
  - Witnessed many of the same safety concerns others have mentioned, including cars moving fast on Falmouth St.
  - Concerned about safety of pedestrians, need to get vehicles to slow down.

- How can the neighborhood participate in creating an overall, comprehensive, traffic calming plan?

- Alec Porteous
  - Agreed again with traffic and safety concerns and will continue to work with the City and the neighbors to find solutions.
- Jenn Connelly
  - Mentioned proposed raised crossings on Falmouth and on Bedford Streets as helpful for traffic calming.
- No further questions or comments.

4. Meeting Close

- Alec Porteous thanks attendees and adjourned the meeting at approximately 6:50 p.m.

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

Via Electronic Mail

December 15, 2021

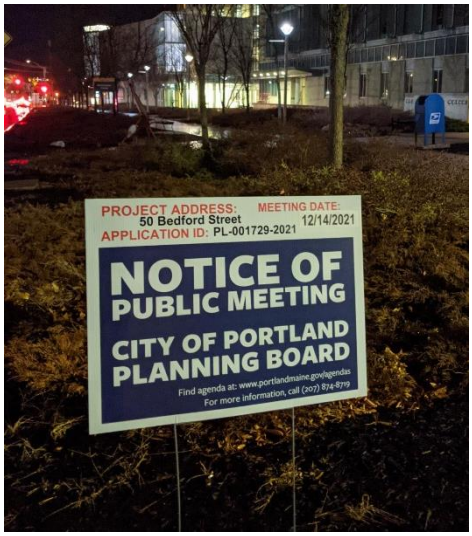
Jimmy Dealaman, Planner
Planning & Urban Development Department
City of Portland
389 Congress Street, 4th Floor
Portland, ME 04101

Re: 50 Bedford Street - Notice of Public Meeting Certification

Dear Jimmy:

I, Darrin Stairs, PE hereby certify that a Notice of Public Meeting sign was posted from 12/02/2021 to 12/14/2021 prior to the public workshop held on 12/14/2021 for the proposed project PL-001729-2021, located at 50 BEDFORD STREET.

Photo documentation of sign in situ:



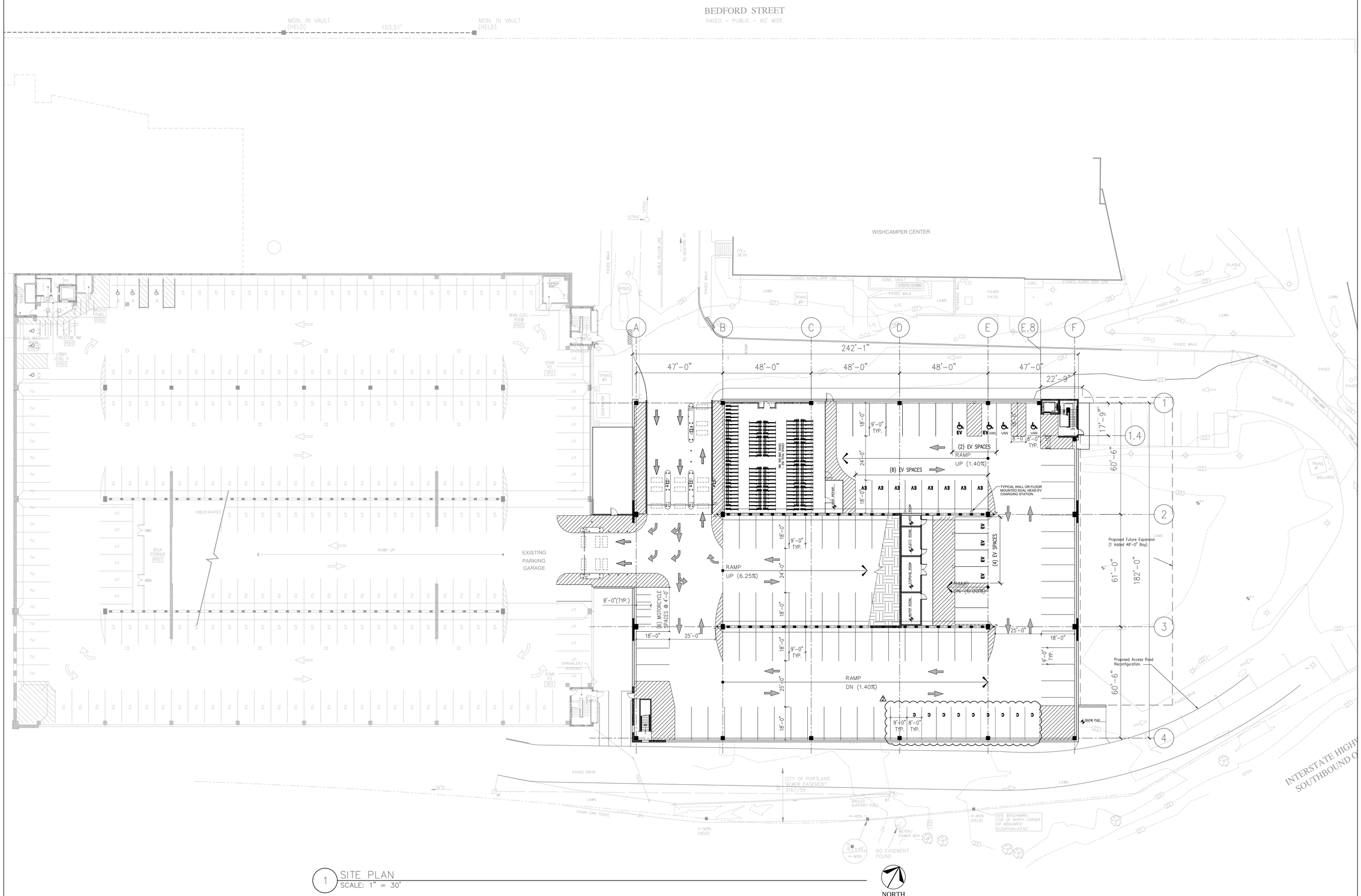


Sincerely,

WOODARD & CURRAN, INC.

Darrin Stairs, PE
Project Manager

PN: 233035.00



1 SITE PLAN
SCALE: 1" = 30'

NORTH

UNIVERSITY OF SOUTHERN MAINE

25 Bedford Street, Portland, ME 04104
207.712.5183 | USM.MAINE.EDU

PROJECT TEAM:

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& STRUCTURAL ENGINEER
DESMAN Design Management
18 Tremont Street #300
Boston, MA 02108

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SEAL / SIGNATURE

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2021

PROJECT:

USM - Structured Parking Garage

Address

50 Bedford Street,
Portland ME 04104

REVISIONS:

No.	Date	Description
1	9/1/21	Response to City Comments
2	10/25/21	Plng Brd W.S. #2 Updates

SUBMISSIONS:

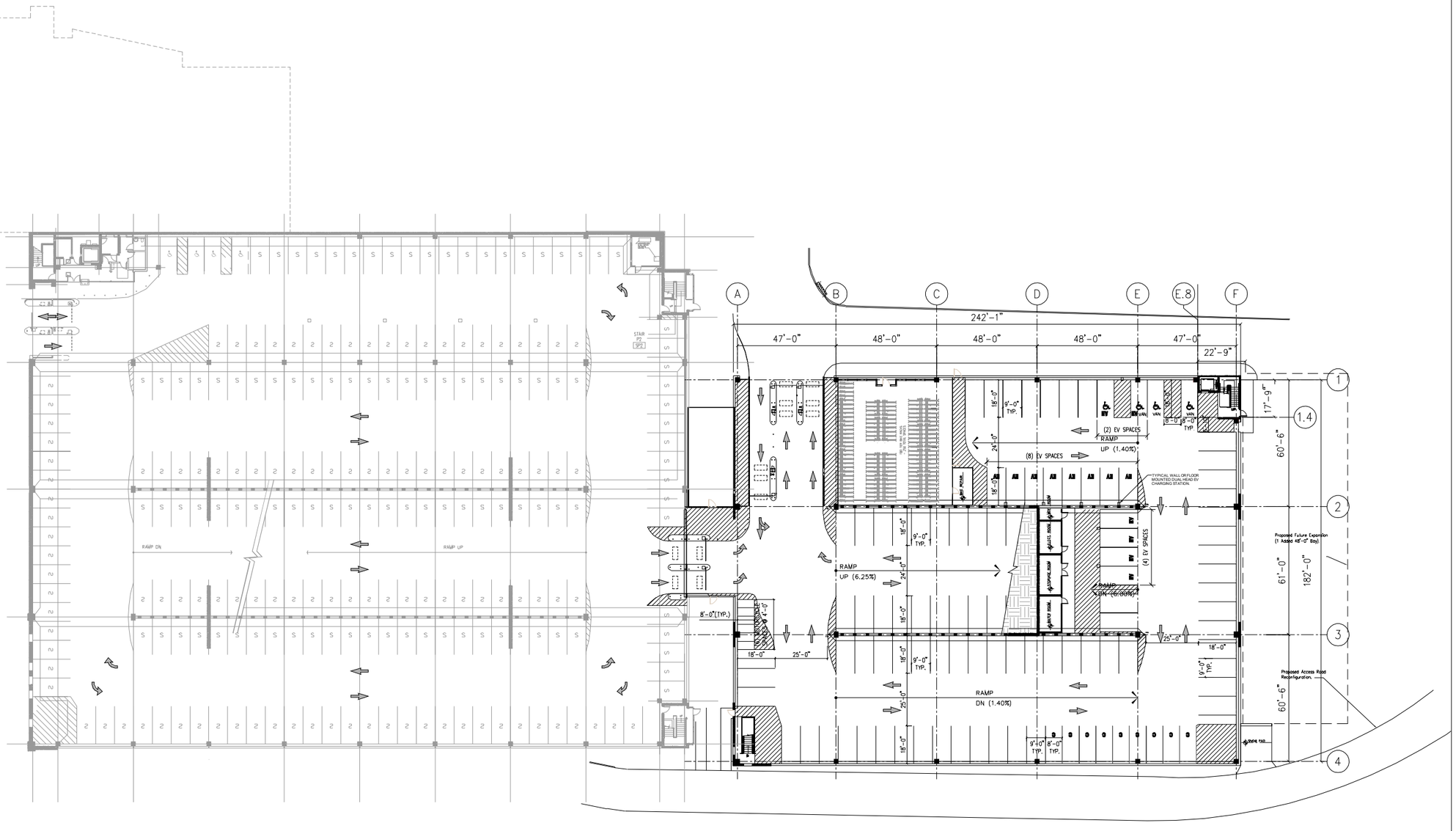
Date	Issued For:
08/09/21	Schematic Design

SCALE	**1" = 20'-0"**
DATE ISSUED	**08/31/2021**
PROJECT NO	**20-20145.00-1**
DRAWN BY	**C.M.**
CHECKED BY	**B.F.**

SHEET TITLE:

SITE PLAN

A-100



1 SITE PLAN
SCALE: 1" = 30'

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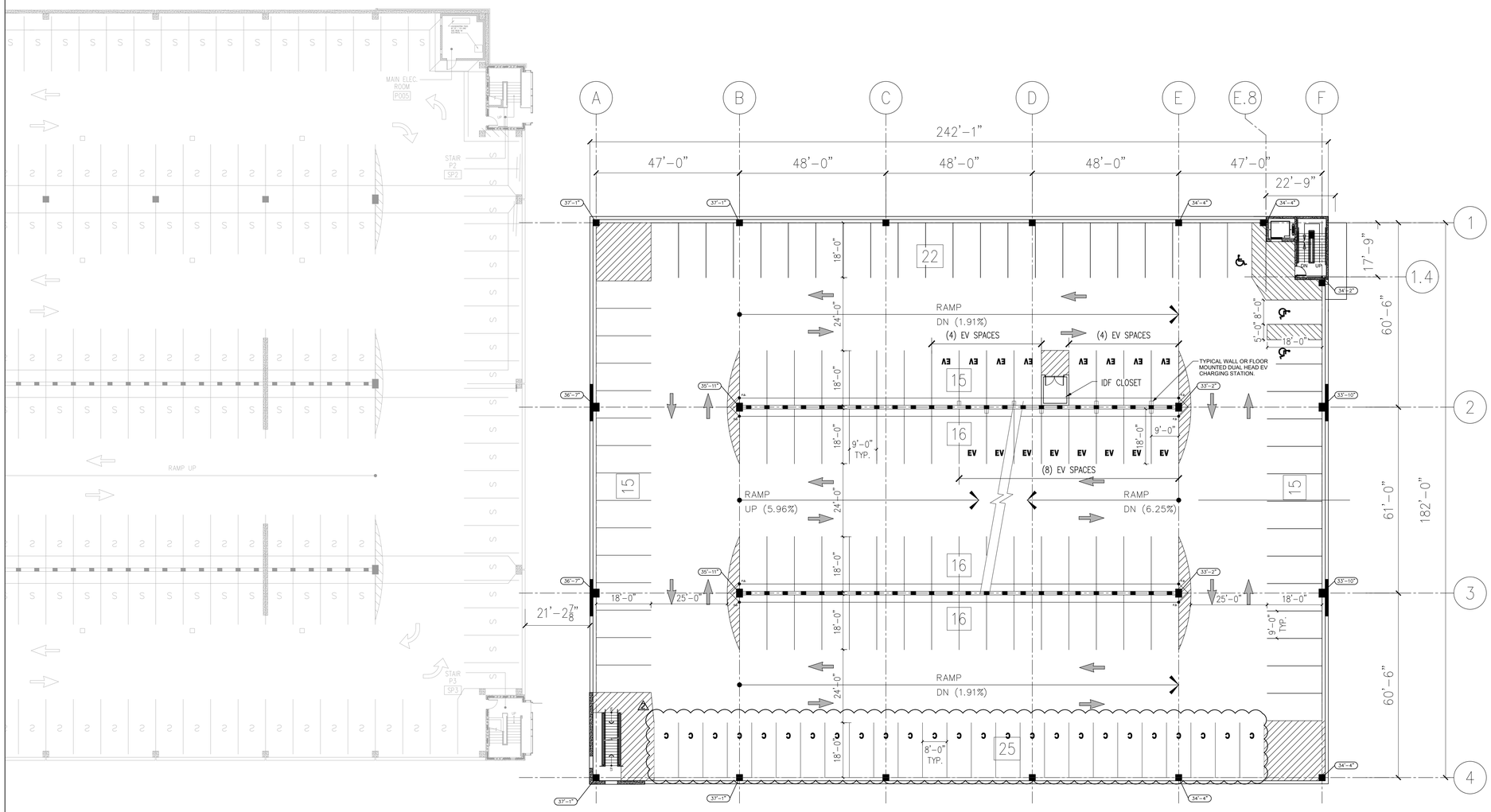
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08/09/21	Schematic Design

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DATE ISSUED	**11/04/2021**
PROJECT NO	**20-20145.00-1**
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SHEET TITLE:

SITE PLAN

A-100



1 FIRST LEVEL
SCALE: 1/16" = 1'-0"

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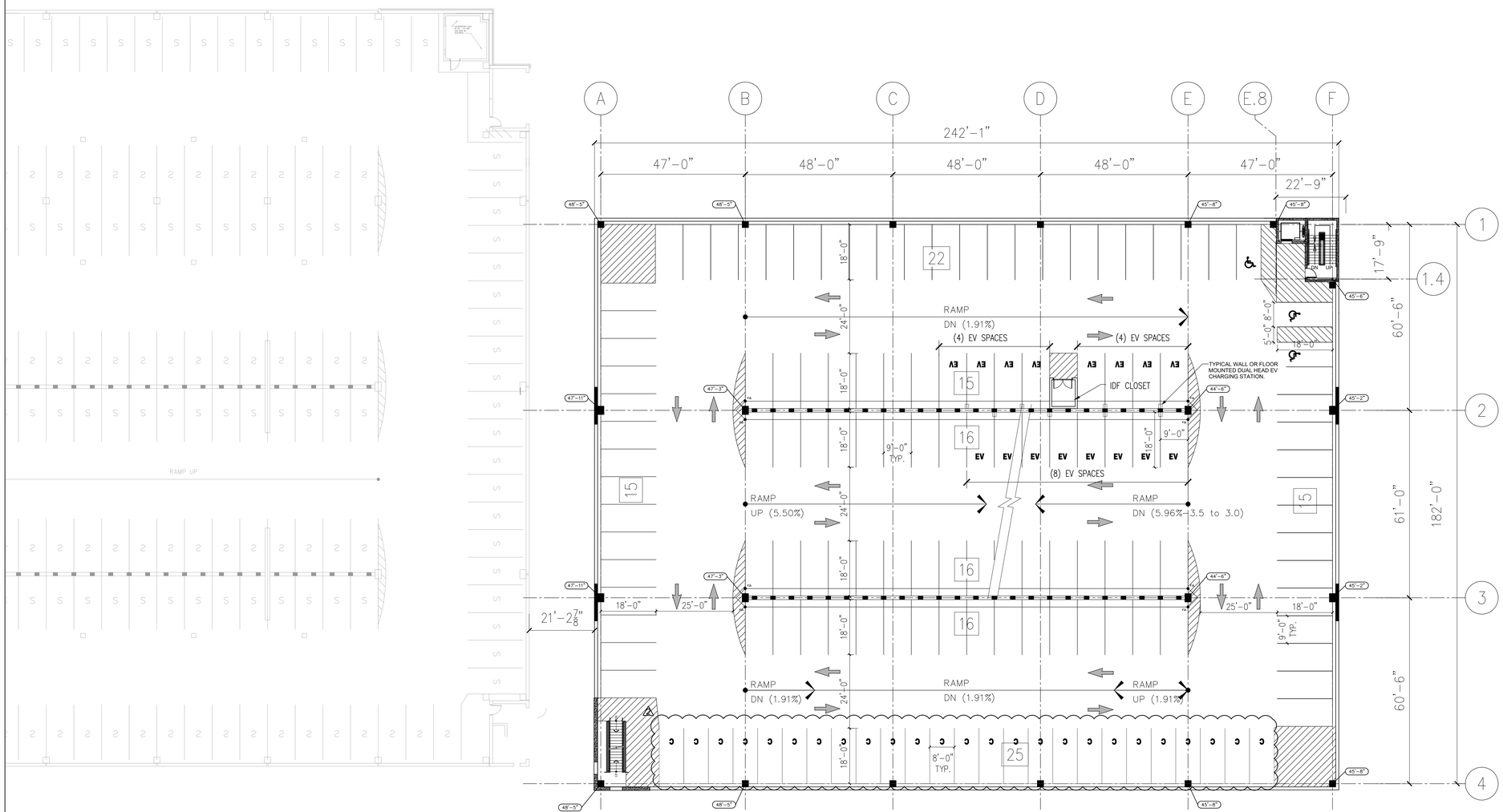
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08/09/21	Schematic Design

SCALE	**1/16" = 1'-0"**
DATE ISSUED	**08/31/2021**
PROJECT NO	**20-20145.00-1**
DRAWN BY	**C.M.**
CHECKED BY	**B.F.**

SHEET TITLE:

FIRST LEVEL STRIPING PLAN

A-102



1 SECOND LEVEL
SCALE: 1/16" = 1'–0"

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REVISIONS:

No.	Date	Description
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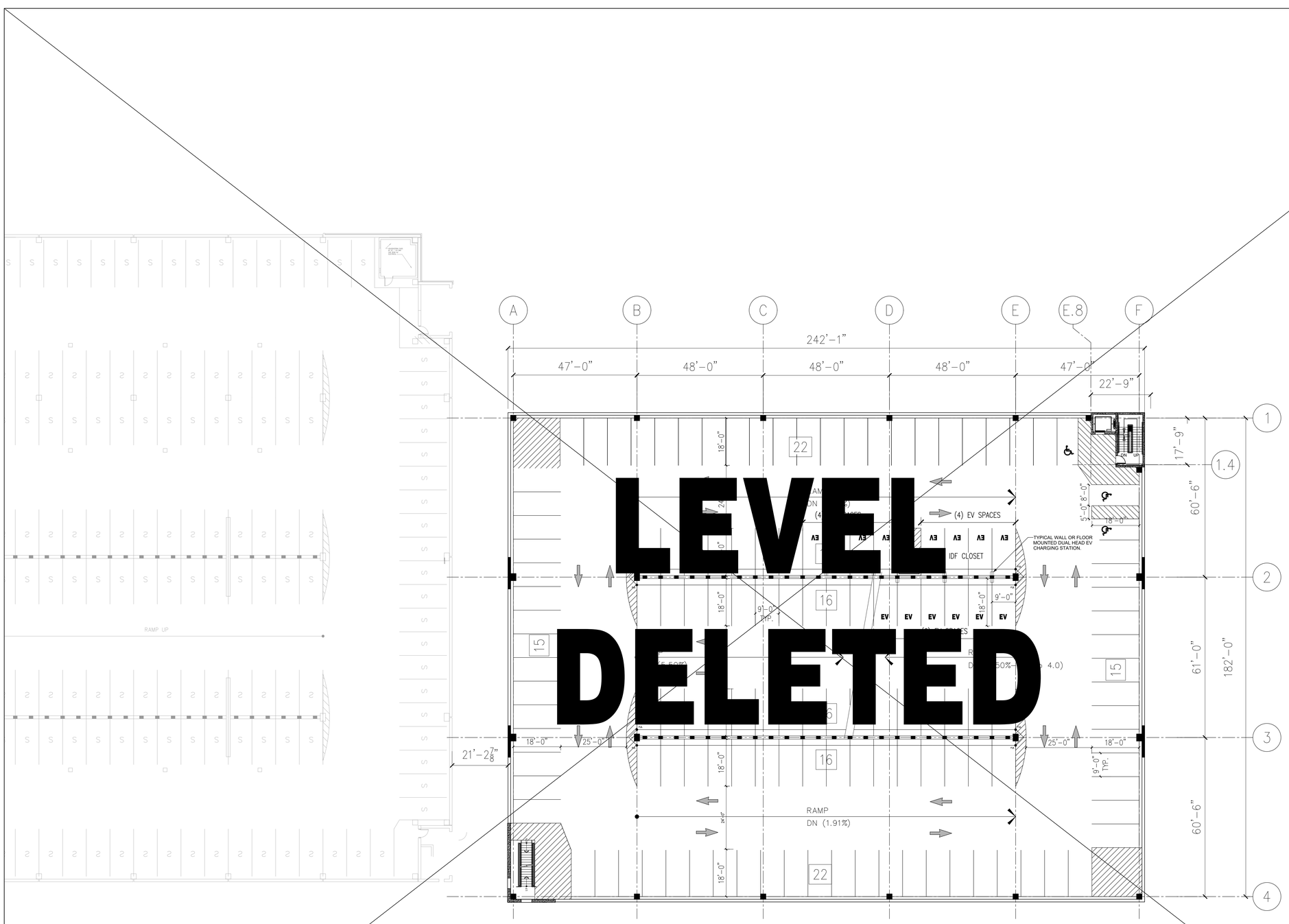
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08/09/21	Schematic Design

SCALE	**1/16" = 1'-0"**
DATE ISSUED	**08/31/2021**
PROJECT NO	**20-20145.00-1**
DRAWN BY	**C.M.**
CHECKED BY	**B.F.**

SHEET TITLE:

SECOND LEVEL STRIPING PLAN

A-103



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REVISIONS:

No.	Date	Description
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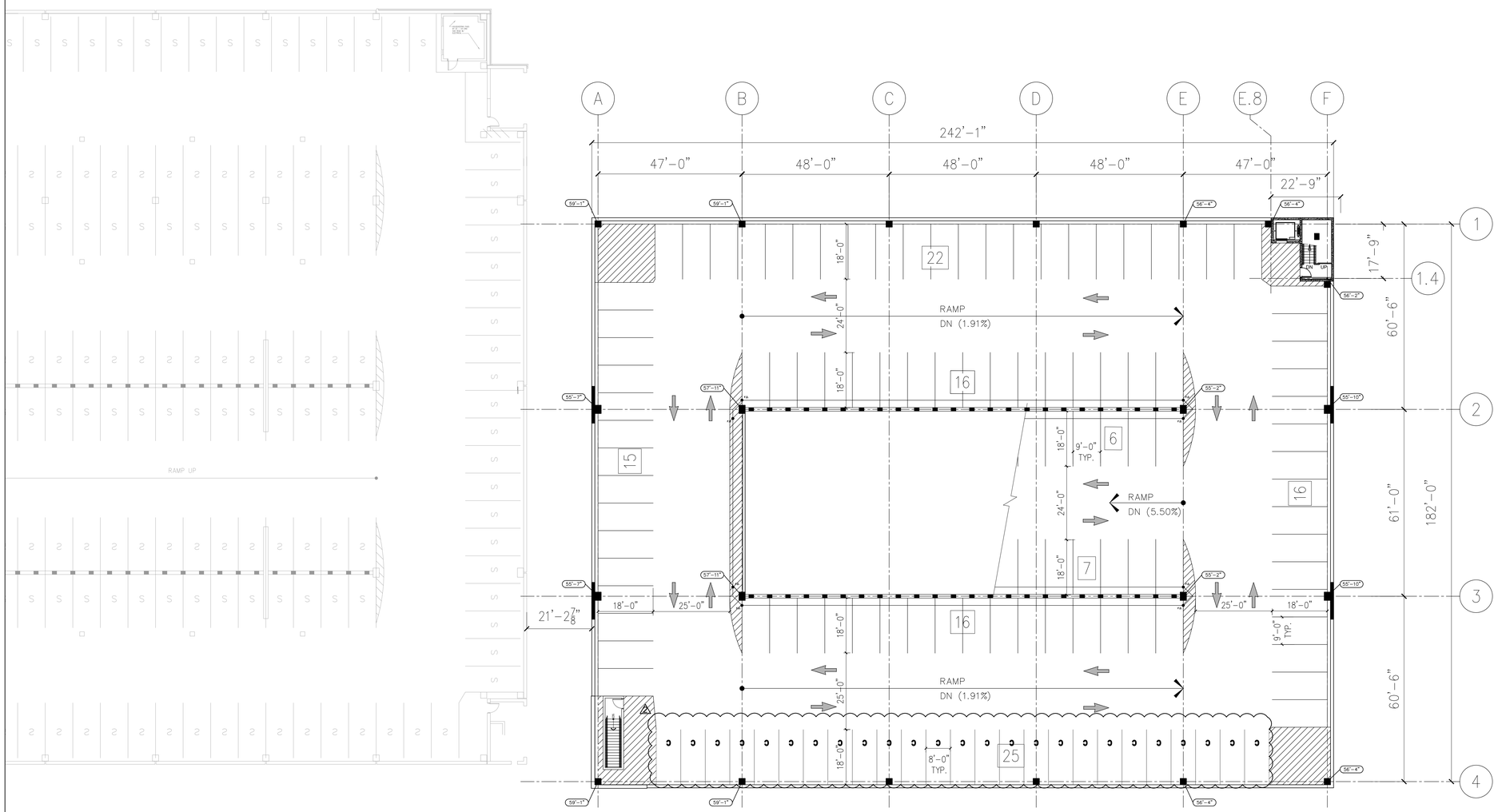
Date	Issued For:
08/09/21	Schematic Design

SCALE	**1/16" = 1'-0"**
DATE ISSUED	**08/31/2021**
PROJECT NO	**20-20145.00-1**
DRAWN BY	**C.M.**
CHECKED BY	**B.F.**

SHEET TITLE:

THIRD LEVEL STRIPING PLAN

A-104



1 ROOF LEVEL
SCALE: 1/16" = 1'-0"

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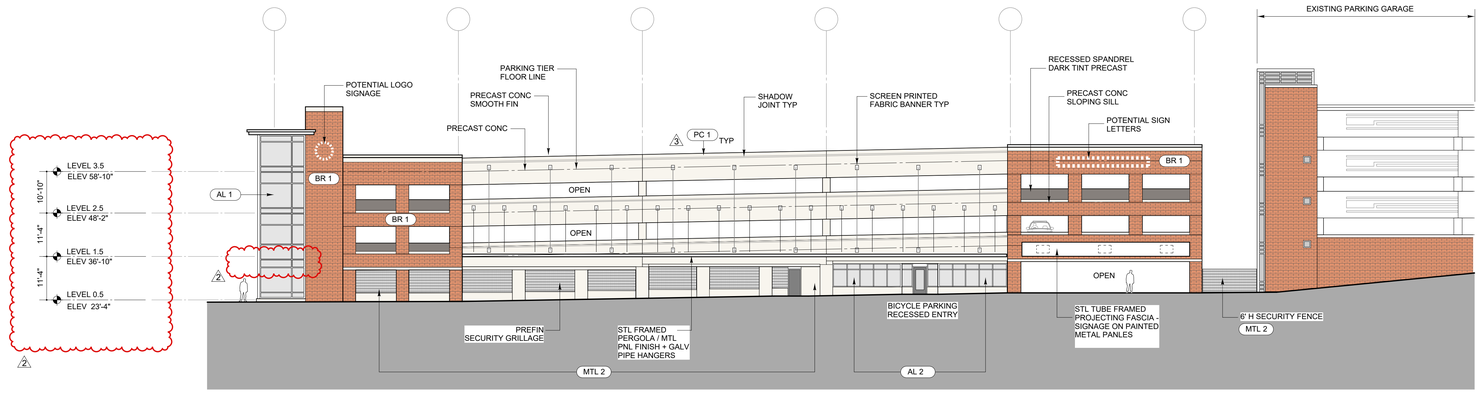
Date	Issued For:
08/09/21	Schematic Design

SCALE	**1/16" = 1'-0"**
DATE ISSUED	**08/31/2021**
PROJECT NO	**20-20145.00-1**
DRAWN BY	**C.M.**
CHECKED BY	**B.F.**

SHEET TITLE:

ROOF LEVEL STRIPING PLAN

A-105



NORTH ELEVATION

1/16" = 1' - 0"

1 ADDED:
- SECURITY FENCE BETWEEN EXISTING AND NEW GARAGE
- RECESSED ENTRY TO BIKE STORAGE
- GLAZED ALUM STOREFRONT AT BIKE STORAGE
- PIERS TO SUBDIVIDE BAYS AT GROUND LEVEL
- STEEL PERGOLA IN LIEU OF FULL CANOPY
- EXTENDED GLASS AT EAST STAIR TO GRADE LEVEL
- ALUM SUNSCREEN FEATURE AT EAST STAIR

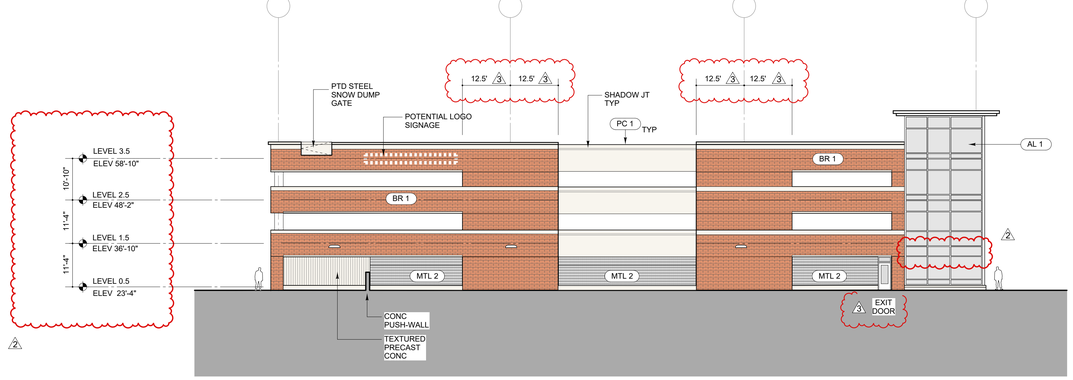
2 DELETED:
- ONE PARKING TIER
- ALUM SUNSCREEN FEATURE AT EAST STAIR

3 • MEDIUM SANDBLASTED FINISH DELETED

MATERIALS SCHEDULE

3 • MATERIALS LEGEND DELETED
• MORE MATERIALS INFORMATION ADDED
• BRICK SELECTION REVISED

KEY	MATERIAL	COLOR	NOTES
AL 1	ALUMINUM FRAMED CURTAINWALL	CLEAR ANODIZED	CLEAR GLASS (UNTINTED)
BR 1	THIN BRICK	 MIXED REDS	THIN BRICK INTEGRAL TO PRECAST UNITS METRO BRICK #350 MAIN STREET FLASHED
MTL 1	FENCING		BLACK VINLY COATED CHAIN-LINK
MTL 2	STEEL SECURITY BAR GRATING		1/8" x 1" BARS 2" x 5" OPENINGS PREFINISHED BLACK
PC 1	PRECAST STRUCTURAL CONCRETE	 BUFF / TAN COLOR	MIXED WITH WHITE PORTLAND CEMENT LIGHTLY SANDBLASTED SIMILAR TO EXISTING GARAGE NO EXPOSED AGGREGATE PRECAST CONCRETE INSTITUTE MIX #113



EAST ELEVATION

1/16" = 1' - 0"

1 • DELETED CANOPY
* ADDED ALUM SUNSHADE FEATURE

2 • DELETED ONE TIER AND ALUM SUNSHADE

3 • WIDEN SHEAR WALLS FROM 12' TO 25'
• STAIR EXIT MOVED FURTHER SOUTH
• MEDIUM SANDBLASTED FINISH DELETED

16 0 16 32

BAR SCALE

1" = 16'

CHECK GRAPHIC SCALE BEFORE USING

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PROJECT:

USM - Structured Parking Garage

Address
44 Bedford Street,
Portland ME 04104

REVISIONS:

No.	Date	Description
1	09/07/21	Response to City Comments
2	10/25/21	Plng Brd W.S. #2 Updates
3	11/22/21	Plng Brd W.S. #3 Updates

SUBMISSIONS:

Date	Issued For:
07/30/21	Site Plan Submittal

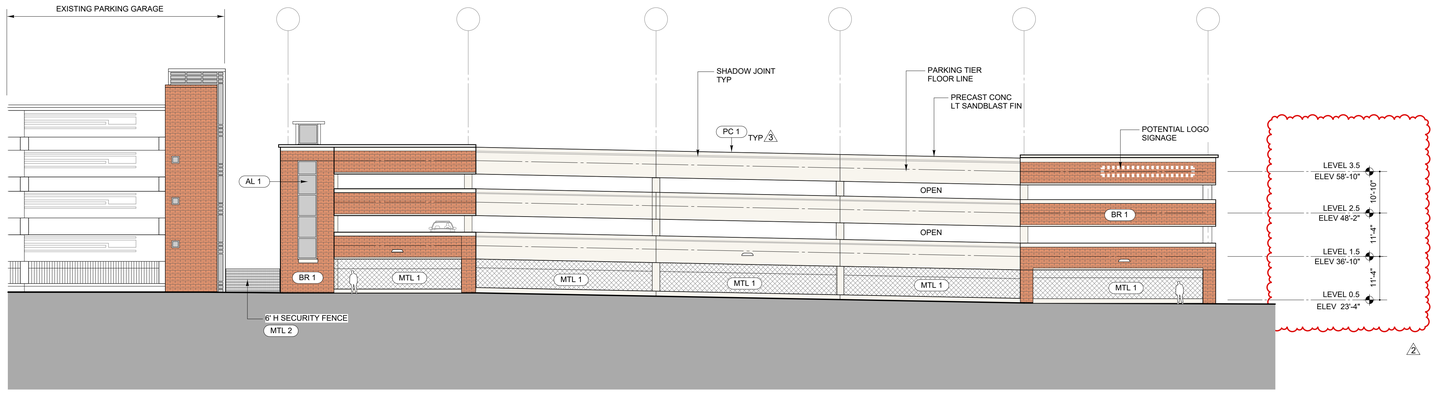
SCALE	1/16" = 1'-0"
DATE ISSUED	07/30/2021
PROJECT NO	20-20145.00-1
DRAWN BY	
CHECKED BY	

SHEET TITLE:

Building Elevations

A - 200

7/2/2021 3:16:33 PM



SOUTH ELEVATION

1/16" = 1' - 0"

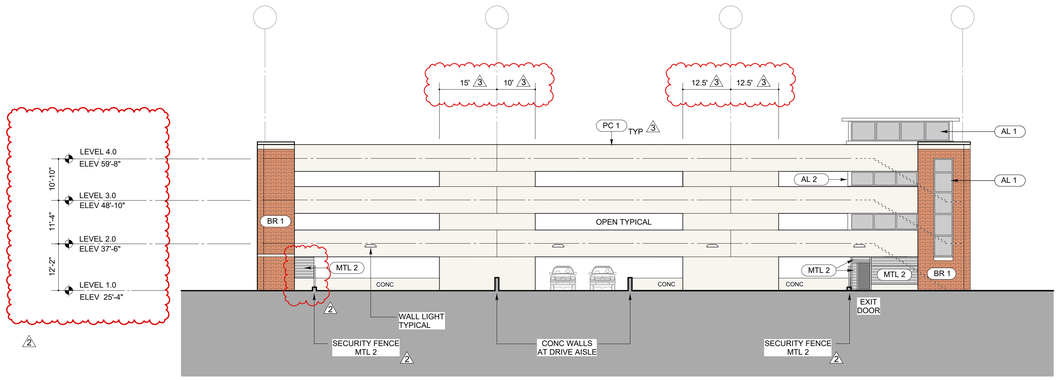
2 DELETED ONE PARKING TIER
VINYL COATED CHAIN LINK FOR OPENINGS INFILL

3 • MEDIUM SANDBLAST FINISH DELETED

MATERIALS SCHEDULE

3 • MATERIALS LEGEND DELETED
• MORE MATERIALS INFORMATION ADDED
• BRICK SELECTION REVISED

KEY	MATERIAL	COLOR	NOTES
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MTL 1	FENCING		BLACK VINLY COATED CHAIN-LINK
MTL 2	STEEL SECURITY BAR GRATING		1/8" x 1" BARS 2" x 5" OPENINGS PREFINISHED BLACK
PC 1	PRECAST STRUCTURAL CONCRETE	 BUFF / TAN COLOR	MIXED WITH WHITE PORTLAND CEMENT LIGHTLY SANDBLASTED SIMILAR TO EXISTING GARAGE NO EXPOSED AGGREGATE PRECAST CONCRETE INSTITUTE MIX #113



WEST ELEVATION

1/16" = 1' - 0"

1 • WALL LIGHTS CALLED OUT
• CONCRETE KNEEWALLS ADDED
• SOUTHWEST STAIR ENCLOSURE MODIFIED
• PIERS TO SUBDIVIDE BAYS AT GROUND LEVEL
• STEEL PERGOLA IN LIEU OF FULL CANOPY
• EXTENDED GLASS AT EAST STAIR TO GRADE LEVEL
• ALUM SUNSCREEN FEATURE AT EAST STAIR

2 • DELETED ONE PARKING TIER

3 • SHEAR WALLS WIDTH INCREASED FROM 12' TO 25'
• ADD SECURITY GRILLE AT NORTH SIDE
• CHANGE SECURITY FENCE FROM MTL-1 TO MTL-2
• MEDIUM SANDBLAST FINISH DELETED

16 0 16 32

BAR SCALE

1" = 16'

CHECK GRAPHIC SCALE BEFORE USING

UNIVERSITY OF SOUTHERN MAINE

25 Bedford Street, Portland, ME 04104
207.712.5183 | USM.MAINE.EDU

PROJECT TEAM:

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ARCHITECT
WINTON-SCOTT ARCHITECTS

5 MILK STREET
PORTLAND, ME 04101

CIVIL ENGINEER
WOODARD & CURRAN

41 HUTCHINS DRIVE
PORTLAND, ME 04102

LANDSCAPE ARCHITECT
MICHAEL BOUCHER
LANDSCAPE ARCHITECTURE

457 US ROUTE 1 SUITE 2
FREEPORT, ME 04032

MEP/FP ENGINEER
ALLIED ENGINEERING

160 VERANDA STREET
PORTLAND, ME 04103

GEOTECHNICAL ENGINEER
S.W. COLE

286 PORTLAND ROAD
GREY, ME 04039

TRAFFIC ENGINEER
VANASSE HANGEN BRUSTLIN INC

40 IDX DR 100 #200, SOUTH
BURLINGTON, VT 05403

COST ESTIMATOR
PREFERRED CONSTRUCTION MGMT

94 AUBURN ST,
PORTLAND, ME 04103

SEAL / SIGNATURE

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2021

PROJECT:

USM - Structured Parking Garage

Address
44 Bedford Street,
Portland ME 04104

REVISIONS:

No.	Date	Description
1	09/07/21	Response to City Comments
2	10/25/21	Plng Brd W.S. #2 Updates
3	11/22/21	Plng Brd W.S. #3 Updates

SUBMISSIONS:

Date	Issued For:
07/30/21	Site Plan Submittal

SCALE	1/16" = 1'-0"
DATE ISSUED	07/30/2021
PROJECT NO	20-20145.00-1
DRAWN BY	
CHECKED BY	

SHEET TITLE:

Building Elevations

A - 501

7/2/2021 3:16:33 PM



OVERVIEW

2 ONE TIER DELETED



BEDFORD STREET VIEW

2 ONE TIER DELETED



GARAGE ENTRANCE

1 DESIGN REVISIONS

2 ONE TIER DELETED

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PROJECT:

USM - Structured Parking Garage

Address
44 Bedford Street,
Portland ME 04104

REVISIONS:

No.	Date	Description
1	09/10/21	Response to City Comments
2	10/25/21	Plng Brd W.S. #2 Updates

SUBMISSIONS:

Date	Issued For:
07/30/21	Site Plan Submittal

SCALE
DATE ISSUED 07/30/2021
PROJECT NO 20-20145.00-1
DRAWN BY
CHECKED BY

SHEET TITLE:

Building Views

A - 202

7/2/2021 3:16:33 PM



STAIRWAY ENTRANCE

1 DESIGN REVISIONS
2 ONE TIER DELETED



BICYCLE ROOM ENTRANCE

1 DESIGN REVISIONS
2 ONE TIER DELETED

7/2/2021 3:16:33 PM

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2021

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REVISIONS:

No.	Date	Description
1	09/10/21	Response to City Comments
2	10/25/21	Plng Brd W.S. #2 Updates

SUBMISSIONS:

Date	Issued For:
07/30/21	Site Plan Submittal

SCALE	
DATE ISSUED	07/30/2021
PROJECT NO	20-20145.00-1
DRAWN BY	
CHECKED BY	

SHEET TITLE:

Building Views

A - 203

GENERAL NOTES:

1. EXISTING CONDITIONS SHOWN HEREON HAVE BEEN PROVIDED FROM A FIELD SURVEY PREPARED BY OWEN HASKELL, INC TITLED "EXISTING CONDITIONS SURVEY – USM PORTLAND – WISHCAMPER LOT – PORTLAND MAINE", DATED JANUARY 27, 2019 AND REVISED WITH ADDITIONAL SURVEY ON APRIL 30, 2021.
2. ELEVATIONS ARE BASED ON CITY OF PORTLAND DATUM, NGVD 29.
3. BEARING ARE BASED ON MAINE STATE PLANE COORDINATE SYSTEM, WEST ZONE, NAD 83 PER COORDINATE DATA PROVIDED BY THE CITY OF PORTLAND DEPARTMENT OF PUBLIC WORKS..
4. EXISTING UTILITIES SHOWN ON THESE PLANS WERE COMPILED FROM A FIELD SURVEY PREPARED BY OWEN HASKELL, INC. THESE PLANS DO NOT NECESSARILY DEPICT THE EXACT LOCATIONS OF ALL UTILITIES, WHICH MAY EXIST AT THIS TIME WITHIN THE SURVEY LIMITS. THERE MAY BE EXISTING LINES OTHER THAN THOSE INDICATED. THE LOCATIONS AND ELEVATIONS OF ALL EXISTING UTILITIES SHALL BE CONSIDERED APPROXIMATE AND MUST BE VERIFIED BY THE CONTRACTOR PRIOR TO ANY UTILITY CONNECTIONS OR CROSSINGS OF PROPOSED OR EXISTING UTILITIES. THE CONTRACTOR SHALL REPORT ANY DISCREPANCIES TO THE ENGINEER IN WRITING. THE CONTRACTOR SHALL CONTACT THE RESPECTIVE UTILITY COMPANIES RELATIVE TO THE LOCATIONS AND ELEVATIONS OF THESE LINES. NO SEPARATE OR ADDITIONAL COMPENSATION WILL BE ALLOWED TO THE CONTRACTOR DUE TO ANY VARIANCE BETWEEN THE DATA SHOWN ON THE PLANS AND ACTUAL FIELD CONDITIONS ENCOUNTERED. THE CONTRACTOR IS RESPONSIBLE FOR HIS/HER OWN DETERMINATION AS TO THE TYPE AND LOCATION OF THE EXISTING UTILITIES AS MAY BE NECESSARY TO AVOID DAMAGE AND TO FACILITATE THE PROPOSED CONNECTION(S).
5. CONTRACTOR SHALL BE RESPONSIBLE FOR ALL RELOCATIONS THAT CONFLICT WITH THE PROPOSED IMPROVEMENTS SHOWN ON THE SITE DRAWINGS, INCLUDING BUT NOT LIMITED TO ALL UTILITIES, STORM INFRASTRUCTURE, SIGNS, UTILITY POLES, FENCES, ETC. AS REQUIRED. ALL WORK SHALL BE IN ACCORDANCE WITH THE GOVERNING AUTHORITY'S SPECIFICATIONS AND SHALL BE APPROVED BY SUCH. ALL COSTS SHALL BE INCURRED BY THE CONTRACTOR.
6. THE CONTRACTOR SHALL CALL "DIG SAFE" (811) AT LEAST 72 HOURS PRIOR TO EXCAVATION IN ACCORDANCE WITH LOCAL, STATE AND FEDERAL SAFETY CODES.
7. LAND OUTSIDE THE PROPOSED LIMIT OF WORK SHALL NOT BE DISTURBED BY THE CONTRACTOR.
8. PRIOR TO CONSTRUCTION, THE ENGINEER AND CONTRACTOR WILL REVIEW THE PERMITTED LIMITS OF WORK.
9. THE CONTRACTOR SHALL BE RESPONSIBLE FOR ESTABLISHING AND MAINTAINING ALL CONTROL POINTS AND BENCH MARKS NECESSARY FOR THE WORK.
10. THE CONTRACTOR SHALL COMPLY WITH ALL APPLICABLE LOCAL, STATE AND FEDERAL SAFETY CODES, REGULATIONS, LEGAL REQUIREMENTS, PERMIT CONDITIONS, ETC.
11. THE CONTRACTOR SHALL TAKE ADEQUATE PRECAUTIONS TO PROTECT ALL WALKS, STREETS, PAVEMENTS, CURBING, TREES, PLANTINGS, LAWN, FENCING TO REMAIN ON OR OFF THE PREMISES, AND SHALL REPAIR AND REPLACE AT HIS/HER OWN EXPENSE, AS DIRECTED BY THE ENGINEER, ANY ITEMS DAMAGED AS A RESULT OF THE CONTRACTOR'S WORK.
12. THE CONTRACTOR SHALL PROVIDE ADEQUATE BRACING AND SHORING OF ALL EXCAVATIONS IN ACCORDANCE WITH THE REQUIREMENTS OF ALL GOVERNING CODES AND REGULATIONS.
13. WORK WITHIN PUBLIC RIGHT–OF–WAY SHALL COMPLY WITH APPLICABLE MUNICIPAL AND STATE REQUIREMENTS.
14. IF ANY EXISTING STRUCTURES TO REMAIN ARE DAMAGED DURING CONSTRUCTION IT SHALL BE THE CONTRACTOR'S RESPONSIBILITY TO REPAIR AND/OR REPLACE THE EXISTING STRUCTURE AS NECESSARY.
15. IF IMPORTED FILL MATERIAL IS REQUIRED, IT SHALL BE CERTIFIED IN WRITING BY A STATE LICENSED PROFESSIONAL ENGINEER AS NON–CONTAMINATED, CLEAN FILL SUITABLE FOR THE INTENDED USE. THE CONTRACTOR SHALL BE RESPONSIBLE FOR ALL TESTING OF ENVIRONMENTAL PARAMETERS AS OUTLINED IN THE PROJECT SPECIFICATIONS.
16. RESTORE ALL AREAS DISTURBED BY CONTRACTOR'S OPERATIONS TO ORIGINAL FINISH (GRAVEL, PAVEMENT, RIPRAP, GRASS, ETC.) UNLESS OTHERWISE NOTED ON PLANS. RESTORATION OF ALL AREAS DAMAGED BY CONTRACTOR SHALL BE INCIDENTAL TO THE PROJECT.
17. ALL CURB DAMAGED DURING CONSTRUCTION SHALL BE REPLACED IN KIND AND SHALL CONFORM TO SPECIFICATIONS. COST IS INCIDENTAL TO CONTRACT.
18. PROPERLY PROTECT AND DO NOT DISTURB PROPERTY IRONS, MONITORING WELLS, AND MONUMENTS. IF DISTURBED, THE PROPERTY MONUMENT WILL BE RESET AT THE CONTRACTOR'S EXPENSE BY A REGISTERED LAND SURVEYOR APPROVED BY THE ENGINEER.
19. ALL MATERIAL SHALL BE FURNISHED BY CONTRACTOR UNLESS OTHERWISE NOTED.
20. CONTRACTOR IS RESPONSIBLE FOR FIELD VERIFICATION OF ALL DIMENSIONS PRIOR TO START OF CONSTRUCTION.
21. CONTRACTOR IS RESPONSIBLE FOR OBTAINING ALL NECESSARY CONSTRUCTION PERMITS SO AS NOT TO DELAY CONSTRUCTION.
22. ALL SIGNAGE SHALL CONFORM WITH THE MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES (MUTCD).
23. THE CONTRACTOR SHALL BE RESPONSIBLE FOR COMPLYING WITH ALL CONDITIONS OF THE LOCAL/ STATE/ FEDERAL PERMITS.
24. THE ENTIRE SITE SHALL BE DEVELOPED AND/OR MAINTAINED AS DEPICTED ON THE SITE PLAN. APPROVAL OF THE PLANNING AUTHORITY OR PLANNING BOARD SHALL BE REQUIRED FOR ANY ALTERATION TO OR DEVIATION FROM THE APPROVED SITE PLAN, INCLUDING, WITHOUT LIMITATION: TOPOGRAPHY, DRAINAGE, LANDSCAPING, RETENTION OF WOODED OR LAWN AREAS, ACCESS, SIZE, LOCATION, AND SURFACING OF PARKING AREAS.
25. DO NOT PARK, IMPEDE ACCESS TO, OR STORE EQUIPMENT ON ADJACENT CITY OR PRIVATELY OWNED LOTS, UNLESS PERMISSION HAS BEEN GRANTED IN ADVANCE IN WRITING BY CITY AND/OR LAND OWNER
26. PRIOR TO CONSTRUCTION, A PRECONSTRUCTION MEETING SHALL BE HELD AT THE PROJECT SITE WITH THE CONTRACTOR, ENGINEER, CITY OF PORTLAND DEVELOPMENT REVIEW COORDINATOR, CITY OF PORTLAND DEPARTMENT OF PUBLIC WORKS REPRESENTATIVE, AND OWNER TO REVIEW THE CONSTRUCTION SCHEDULE AND CRITICAL ASPECTS OF THE SITE WORK. AT THAT TIME, THE SITE/BUILDING CONTRACTOR SHALL PROVIDE THREE (3) COPIES OF A DETAILED CONSTRUCTION SCHEDULE TO THE ATTENDING CITY REPRESENTATIVE. IT SHALL BE THE CONTRACTOR'S RESPONSIBILITY TO ARRANGE A MUTUALLY AGREEABLE TIME FOR THE PRECONSTRUCTION MEETING.
27. CONTRACTOR SHALL PROVIDE AND MAINTAIN EROSION AND SEDIMENTATION CONTROL MEASURES IN ACCORDANCE WITH THESE PLANS AND THE LATEST EDITION OF THE MAINE DEPARTMENT OF ENVIRONMENTAL PROTECTION'S BEST MANAGEMENT PRACTICES MANUAL. KEEP ALL STREETS FREE OF DUST, MUD, AND DEBRIS. STREETS AND WALKWAYS SHALL BE SWEPT REGULARLY, AND TEMPORARY CONSTRUCTION ENTRANCES SHALL BE UTILIZED DURING CONSTRUCTION.
28. CONTRACTOR IS REQUIRED TO PERFORM ALL WORK IN ACCORDANCE WITH REQUIREMENTS OUTLINED WITHIN THE MAINE CONSTRUCTION GENERAL PERMIT. CONTRACTOR SHALL FILE A NOTICE OF TERMINATION WITH PHOTOGRAPHS AND REQUIRED ATTACHMENTS TO THE MAINE DEPARTMENT OF ENVIRONMENTAL PROTECTION UPON COMPLETION OF THE PROJECT. A DRAFT OF THE NOTICE WILL BE PROVIDED TO THE OWNER AND THE OWNER'S REPRESENTATIVE FOR REVIEW PRIOR TO SUBMISSION. A COPY OF THE NOTICE CAN BE OBTAINED AT WWW.MAINE.GOV/DEP/LAND/STORMWATER/CONSTRUCTION.HTML
29. CONTRACTOR SHALL MAINTAIN EROSION CONTROL AND STORMWATER POLLUTION PREVENTION SYSTEMS IN COMPLIANCE WITH THE REQUIREMENTS OF THE MAINE CONSTRUCTION GENERAL PERMIT (MCGP). CONTRACTOR SHALL CONDUCT AND MAINTAIN RECORDS OF EROSION CONTROL INSPECTIONS PER THE NOTICE OF INTENT TO COMPLY WITH THE MAINE CONSTRUCTION GENERAL PERMIT. SUBMIT A COPY OF THE INSPECTION RECORDS TO THE OWNER AND ENGINEER.
30. A COMPLETE SET OF "RECORD" DRAWINGS THAT REFLECT ANY AND ALL MODIFICATIONS TO THE STORM SEWER SYSTEM AND ANY OTHER UTILITY INSTALLATIONS OR ALTERATIONS WITHIN THE PROJECT LIMITS SHALL BE SUBMITTED TO THE OWNER AND ENGINEER.
31. ACTIVITIES THAT HAVE THE POTENTIAL TO DISTURB SOIL SUCH AS UTILITY AND SUBSURFACE STRUCTURE INSTALLATION/RELOCATION WORK, GRADING, PAVING, AND LANDSCAPING SHALL BE CONDUCTED IN ACCORDANCE WITH THE SOIL MANAGEMENT PLAN. APPLICABLE SOIL MANAGEMENT PROCEDURES INCLUDE SITE CONTROLS AND CONSTRUCTION MEASURES TO REDUCE EXPOSURE TO SOIL DURING CONSTRUCTION, AS WELL AS TO FACILITATE THE PROPER HANDLING, STORAGE, CHARACTERIZATION, TRANSPORT, ONSITE REUSE, AND/OR OFFSITE REUSE, OR DISPOSAL, OF EXCESS SOIL THAT MAY BE GENERATED DURING CONSTRUCTION.
32. PRIOR TO CONSTRUCTION, THE CONTRACTOR SHALL PROVIDE A MAINTENANCE AND PROTECTION OF TRAFFIC (MPT) PLAN IN ACCORDANCE WITH ALL LOCAL, STATE AND FEDERAL REQUIREMENTS.

DEMOLITION NOTES:

1. PRIOR TO THE START OF DEMOLITION, THE CONTRACTOR SHALL OBTAIN ALL NECESSARY PERMITS AND/OR APPROVALS FROM THE CITY OF PORTLAND, AND ALL OTHER AUTHORITIES HAVING JURISDICTION.
2. CONSTRUCTION/DEMOLITION DEBRIS NOT APPROVED FOR REUSE ON–SITE, SHALL BE REMOVED AND DISPOSED OFF SITE IN ACCORDANCE WITH THE REQUIREMENTS OF ALL AUTHORITIES HAVING JURISDICTION. WASTE MANIFEST FORMS DOCUMENTING PROPER OFF–SITE DISPOSAL SHALL BE PROVIDED TO THE SITE/CIVIL ENGINEER AND THE CITY OF PORTLAND.
3. PRIOR TO THE START OF DEMOLITION, THE CONTRACTOR SHALL VERIFY THE LOCATION OF EXISTING UTILITIES TO BE DEMOLISHED OR TO REMAIN PROTECTED DURING CONSTRUCTION. IF ANY DISCREPANCIES ARE FOUND, THE CONTRACTOR SHALL NOTIFY THE OWNER AND ENGINEER IN WRITING OF THE CONFLICT.
4. THE CONTRACTOR SHALL PROTECT ALL EXISTING UTILITIES TO REMAIN. ANY TEMPORARY SHUT DOWNS REQUIRED TO FACILITATE THE PROPOSED CONSTRUCTION, WHICH MAY AFFECT USES ON ADJACENT PROPERTIES SHALL BE COORDINATED BY THE CONTRACTOR AND THE APPROPRIATE UTILITY.
5. CONTRACTOR SHALL REPAIR OR REPLACE ANY STRUCTURES OR UTILITIES DAMAGED DURING CONSTRUCTION. THE CONTRACTOR SHALL PROCEED WITH CAUTION WITHIN THE PROPOSED WORK AREA TO PREVENT ANY INTERRUPTION TO EXISTING UTILITY SERVICE.
6. CONTRACTOR SHALL COVER CONSTRUCTION DUMPSTERS AND ROLL–OFF CONTAINERS, AND STORE ALL CONSTRUCTION CHEMICALS INSIDE THE CONSTRUCTION TRAILER OR UNDER A COVERED AREA DURING PERIODS WHEN CONSTRUCTION CEASES.
7. SAWCUTS IN EXISTING PAVEMENT SHALL BE SMOOTH AND STRAIGHT.
8. EXISTING FACILITIES (I.E. SIGNS, POLES, CURB, ETC.) SHALL BE REMOVED AND PROTECTED DURING CONSTRUCTION. OWNER RETAINS RIGHT TO KEEP ANY AND ALL REMOVED FACILITIES. CONTRACTOR SHALL DISPOSE OF ANY REMOVED FACILITY AT THE REQUEST OF THE OWNER AT CONTRACTOR'S EXPENSE.

LAYOUT AND MATERIALS NOTES:

1. ALL DIMENSIONS AND RADII ARE TO THE FACE OF CURB UNLESS OTHERWISE NOTED.

GRADING AND DRAINAGE NOTES:

1. CASTINGS FOR EXISTING STRUCTURES TO REMAIN AND PROPOSED STRUCTURES SHALL BE SET TO THE PROPOSED ELEVATIONS SHOWN ON THE DRAWINGS.
2. THE FILLING OF SOIL OVER THE ROOTS OF TREES TO BE PRESERVED IS PROHIBITED.
3. CLEAN AND/OR FLUSH ALL MANHOLES AND SITE PIPING AFTER THE WORK HAS BEEN COMPLETED. NO SEPARATE PAYMENT WILL BE MADE FOR THIS WORK.
4. PROVIDE END CAPS ON ALL UNDERDRAIN PIPING EXCEPT WHERE DAYLIGHTED, UNLESS OTHERWISE NOTED.

UTILITIES NOTES:

1. ALL PROPOSED UTILITIES (WATER, ELECTRIC, SANITARY, STORM SEWER, ETC.) AND THEIR CONNECTIONS, DISCONNECTION AND RELOCATION OF EXISTING UTILITIES SHALL BE COMPLETED IN ACCORDANCE WITH THE REQUIREMENTS OF THE UTILITY COMPANY HAVING JURISDICTION. ANY COORDINATION WITH THE MUNICIPALITY AND/OR UTILITY COMPANY, PERMITS OR APPROVALS REQUIRED SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR.

CONSTRUCTION PHASING:

CONSTRUCTION SHALL BE PHASED SUCH THAT ALL DISTURBED AREAS SHALL FIRST BE PROTECTED WITH EROSION AND SEDIMENT CONTROLS AS INDICATED ON THE PLANS PRIOR TO THE START OF ANY GROUND DISTURBING ACTIVITIES. THE CONSTRUCTION PHASING DESCRIBED BELOW IS FOR GENERAL PURPOSES ONLY, AND WILL BE DETERMINED BY THE CONTRACTOR. THE CONTRACTOR IS SOLELY RESPONSIBLE FOR HIS/HER MEANS AND METHODS OF CONSTRUCTION. GENERAL CONSTRUCTION SEQUENCING IS AS FOLLOWS:

1. INSTALLATION OF EROSION AND SEDIMENT CONTROL PRACTICES AS INDICATED ON THE PLANS.
2. DEMOLITION AND REMOVAL OF EXISTING PAVEMENT, CURB, TREES, UTILITIES, ETC.
3. STRIP AND STOCKPILE TOPSOIL AT DESIGNATED STORAGE AREA.
4. BEGIN ROUGH GRADING AND EARTHWORK ACTIVITIES (EXCAVATION OPERATIONS).
5. INSTALL STORM SEWER SYSTEM (BEGINNING AT FURTHEST DOWNSTREAM STRUCTURE).
6. PLACE INLET PROTECTION ON PROPOSED CATCH BASINS AS SHOWN ON THE DRAWINGS.
7. INSTALL ELECTRICAL UTILITIES.
8. INSTALL BITUMINOUS CONCRETE PAVEMENT SUBBASE AND BITUMINOUS CONCRETE BINDER COURSES AS SPECIFIED ON PLANS.
9. FINISH GRADING, REDISTRIBUTE STOCKPILED TOPSOIL AND ESTABLISH VEGETATION ON ALL DISTURBED AND NEW PERVIOUS AREAS.
10. CLEAN BITUMINOUS CONCRETE PAVEMENT AND STORM SEWER OF ALL DEBRIS AND SEDIMENT.
11. COMPLETE SITE CONSTRUCTION.
12. INSTALLATION OF BITUMINOUS PAVEMENT CONCRETE TOP COURSE (THIS WEARING COURSE SHALL BE INSTALLED NEAR COMPLETION OF PROJECT).
13. ACHIEVE PERMANENT AND FINAL STABILIZATION OF AREAS DISTURBED DURING CONSTRUCTION.
14. REMOVE ALL TEMPORARY EROSION AND SEDIMENT CONTROL PRACTICES FROM THE SITE.

LEGEND

EXISTING		PROPOSED
122	CONTOUR (1' INTERVAL)	122
120	CONTOUR (INDEX)	120
S	SANITARY SEWER	S
FM	FORCE MAIN	
SD	STORM DRAIN	SD
UD	UNDERDRAIN	UD
W	WATER MAIN	
E	UNDERGROUND ELECTRIC	E
T	UNDERGROUND TELEPHONE	
G	GAS LINE	G
OE	OVERHEAD ELECTRIC	
P	PROPERTY LINE	
R/W	RIGHT OF WAY	
	EASEMENT	
X X	FENCE	
	VERTICAL CURB	
	SLOPED GRANITE CURB	
	TIPDOWN CURB	
	EDGE OF PAVEMENT	
	EDGE OF GRAVEL	
	GUARDRAIL	
	STORM DRAIN PIPE & CATCH BASIN	
	SEDIMENT BARRIER	
	LIMIT OF WORK	LW
	SANITARY SEWER MANHOLE	
	CLEAN OUT	CO
	DRAINAGE MANHOLE	DMH
	CATCH BASIN	
	SEWER MANHOLE	SMH
	GAS METER BOX	
	GAS VENT	
	GATE GATE	
	TRANSFORMER	
	UTILITY POLE	
	UTILITY PILE WITH GUY	
	LIGHTPOST	
	WATER GATE	
	CURB STOP	
	HYDRANT	
	PROPERTY MONUMENT	
	STREET AND MISCELLANEOUS SIGNS	
XXX.XX	SPOT ELEVATION	XXX.XX
	DECIDUOUS TREE	
	CONIFEROUS TREE	
	SHRUB	
	BITUMINOUS PAVEMENT	
	POROUS PAVEMENT	
	CONCRETE SIDEWALK	
	PAVER AREA, SEE LANDSCAPING PLANS	
	STONE AREA, SEE LANDSCAPING PLANS	

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SEAL / SIGNATURE

STATE OF MAINE · ASHLEY FLETCHER · No. 13750 · LICENSED PROFESSIONAL ENGINEER

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PROJECT:

USM - Structured Parking Garage

Address

50 Bedford Street,
Portland ME 04104

REVISIONS:

No.	Date	Description
	08/09/21	Schematic Design

SUBMISSIONS:

Date	Issued For:

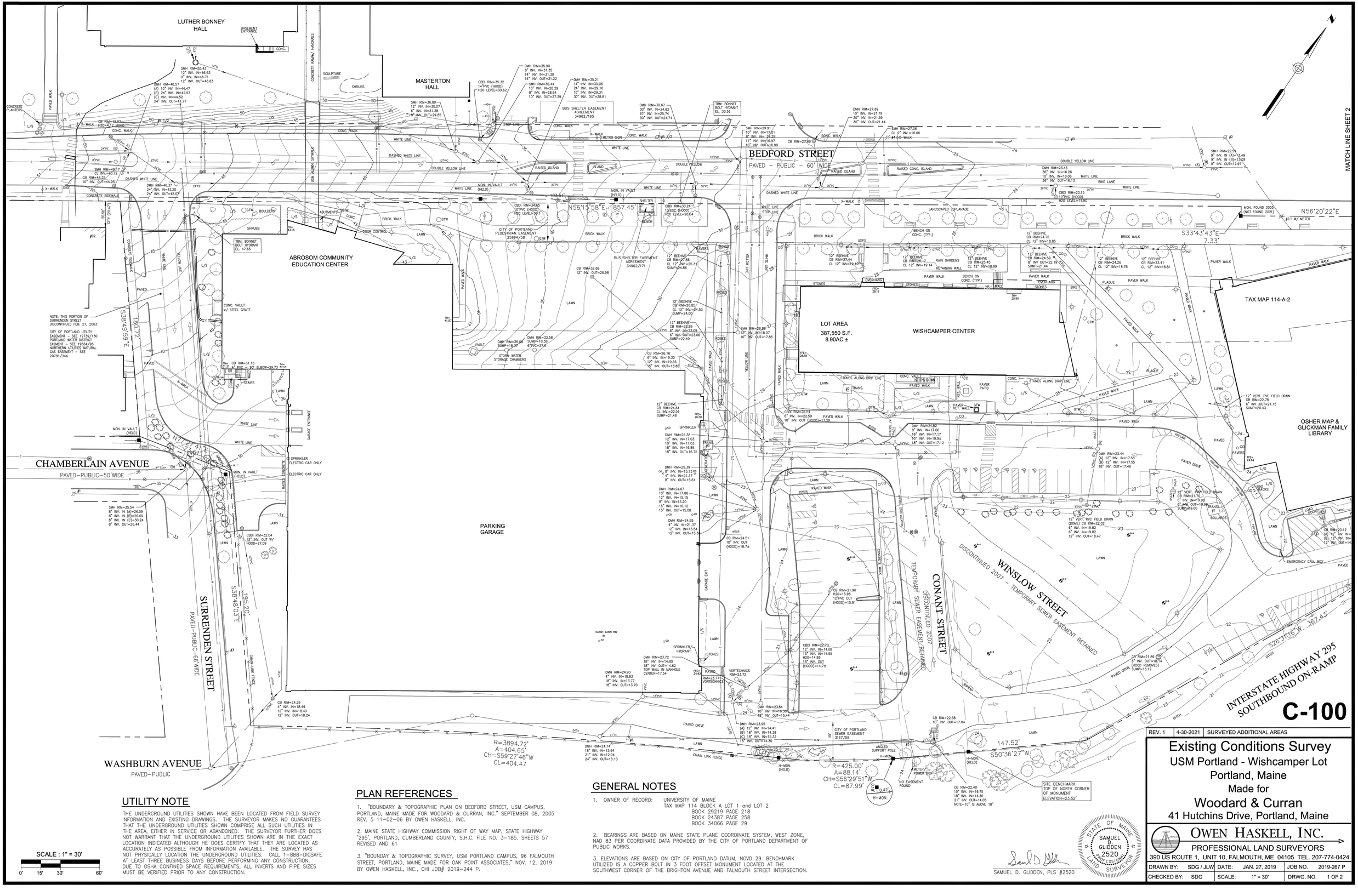
SCALE	**1"=20'**
DATE ISSUED	**8/9/2021**
PROJECT NO	**20-20145.00-1**
DRAWN BY	**B.C.M.**
CHECKED BY	**A.E.F.**

SHEET TITLE:

GENERAL NOTES & LEGEND

C-000

\\woodardcurran.net\shared\Projects\023535.00 USM - Falmouth Street Garage\wip\Drawings\General\023535.00 G001.dwg, Aug 06, 2021 - 1:08pm BMCDEVITT



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 SURVEY HAS NOT PHYSICALLY LOCATION 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.

SCALE : 1" = 30'

0' 15' 30' 60'

PLAN REFERENCES

1. "BOUNDARY & TOPOGRAPHIC PLAN ON BEDFORD STREET, USM CAMPUS, PORTLAND, MAINE MADE FOR WOODARD & CURRAN, INC." SEPTEMBER 08, 2005 REV. 5 11-02-06 BY OWEN HASKELL, INC.

2. MAINE STATE HIGHWAY COMMISSION RIGHT OF WAY MAP, STATE HIGHWAY '295', PORTLAND, CUMBERLAND COUNTY, S.H.C. FILE NO. 3-185. SHEETS 57 REVISED AND 61

3. "BOUNDAY & TOPOGRAPHIC SURVEY, USM PORTLAND CAMPUS, 96 FALMOUTH STREET, PORTLAND, MAINE MADE FOR OAK POINT ASSOCIATES," NOV. 12, 2019 BY OWEN HASKELL, INC., OHI JOB# 2019-244 P.

GENERAL NOTES

1. OWNER OF RECORD: UNIVERSITY OF MAINE
TAX MAP 114 BLOCK A LOT 1 and LOT 2
BOOK 29219 PAGE 218
BOOK 24387 PAGE 258
BOOK 34066 PAGE 29

2. BEARINGS ARE BASED ON MAINE STATE PLANE COORDINATE SYSTEM, WEST ZONE, NAD 83 PER COORDINATE DATA PROVIDED BY THE CITY OF PORTLAND DEPARTMENT OF PUBLIC WORKS.

3. ELEVATIONS ARE BASED ON CITY OF PORTLAND DATUM, NGVD 29. BENCHMARK UTILIZED IS A COPPER BOLT IN 3 FOOT OFFSET MONUMENT LOCATED AT THE SOUTHWEST CORNER OF THE BRIGHTON AVENUE AND FALMOUTH STREET INTERSECTION.

SAMUEL D. GLIDDEN, PLS #2520

STATE OF MAINE – SAMUEL GLIDDEN – 2520 – PROFESSIONAL LAND SURVEYOR

C-100

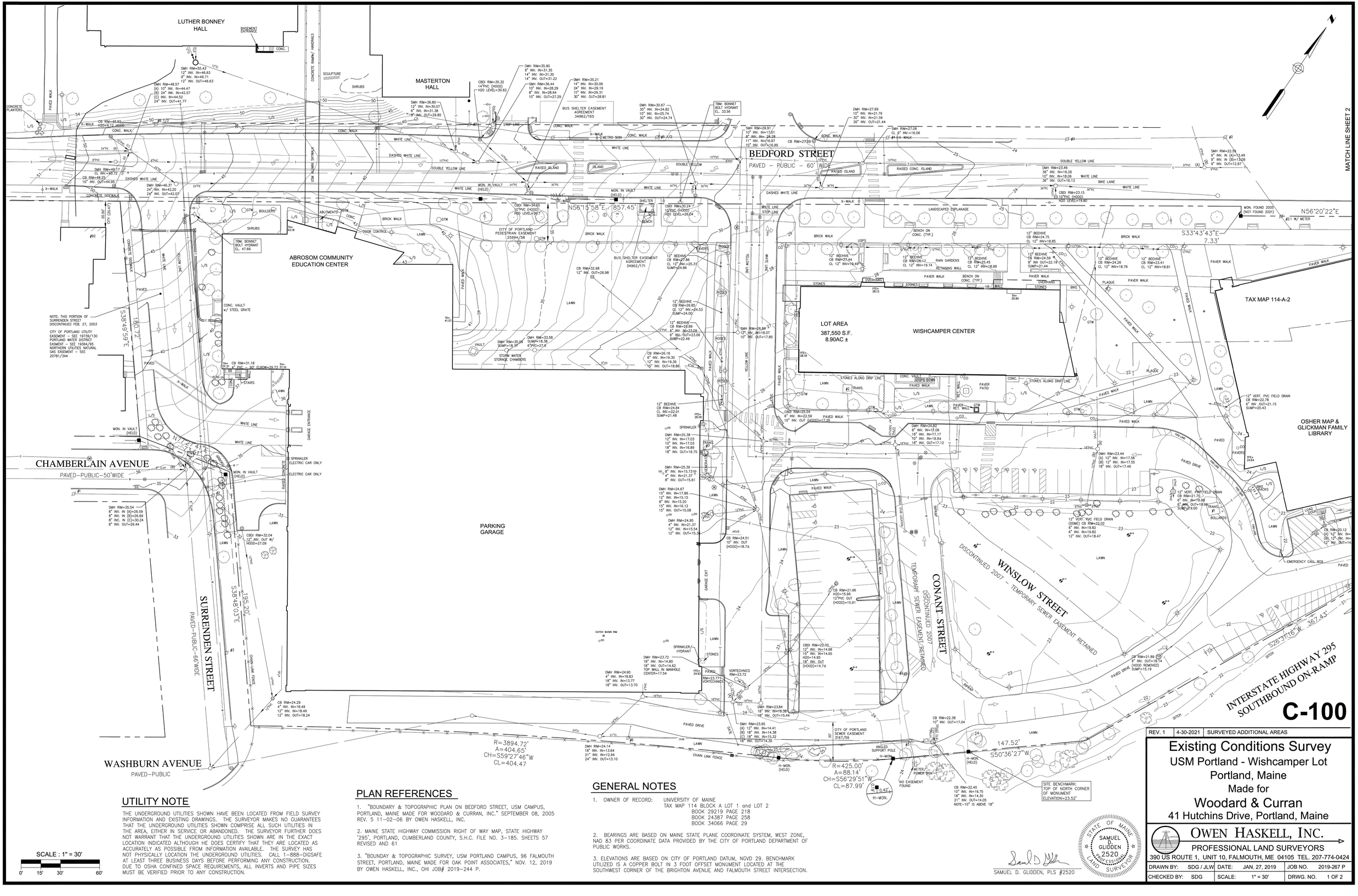
REV.	DATE	DESCRIPTION
1	4-30-2021	SURVEYED ADDITIONAL AREAS

Existing Conditions Survey

USM Portland - Wishcamper Lot
Portland, Maine
Made for
Woodard & Curran
41 Hutchins Drive, Portland, Maine

OWEN HASKELL, INC.
PROFESSIONAL LAND SURVEYORS
390 US ROUTE 1, UNIT 10, FALMOUTH, ME 04105 TEL. 207-774-0424

DRAWN BY:	SDG / JLW	DATE:	JAN. 27, 2019	JOB NO.	2019-267 P
CHECKED BY:	SDG	SCALE:	1" = 30'	DRWG. NO.	1 OF 2



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 SURVEY HAS NOT PHYSICALLY LOCATION 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.

SCALE : 1" = 30'

0' 15' 30' 60'

PLAN REFERENCES

1. "BOUNDARY & TOPOGRAPHIC PLAN ON BEDFORD STREET, USM CAMPUS, PORTLAND, MAINE MADE FOR WOODARD & CURRAN, INC." SEPTEMBER 08, 2005 REV. 5 11-02-06 BY OWEN HASKELL, INC.

2. MAINE STATE HIGHWAY COMMISSION RIGHT OF WAY MAP, STATE HIGHWAY '295', PORTLAND, CUMBERLAND COUNTY, S.H.C. FILE NO. 3-185. SHEETS 57 REVISED AND 61

3. "BOUNDAY & TOPOGRAPHIC SURVEY, USM PORTLAND CAMPUS, 96 FALMOUTH STREET, PORTLAND, MAINE MADE FOR OAK POINT ASSOCIATES," NOV. 12, 2019 BY OWEN HASKELL, INC., OHI JOB# 2019-244 P.

GENERAL NOTES

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TAX MAP 114 BLOCK A LOT 1 and LOT 2
BOOK 29219 PAGE 218
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SITE BENCHMARK:
TOP OF NORTH CORNER OF MONUMENT
ELEVATION=23.52'

SAMUEL D. GLIDDEN, PLS #2520

STATE OF MAINE – SAMUEL GLIDDEN – 2520 – PROFESSIONAL LAND SURVEYOR

C-100

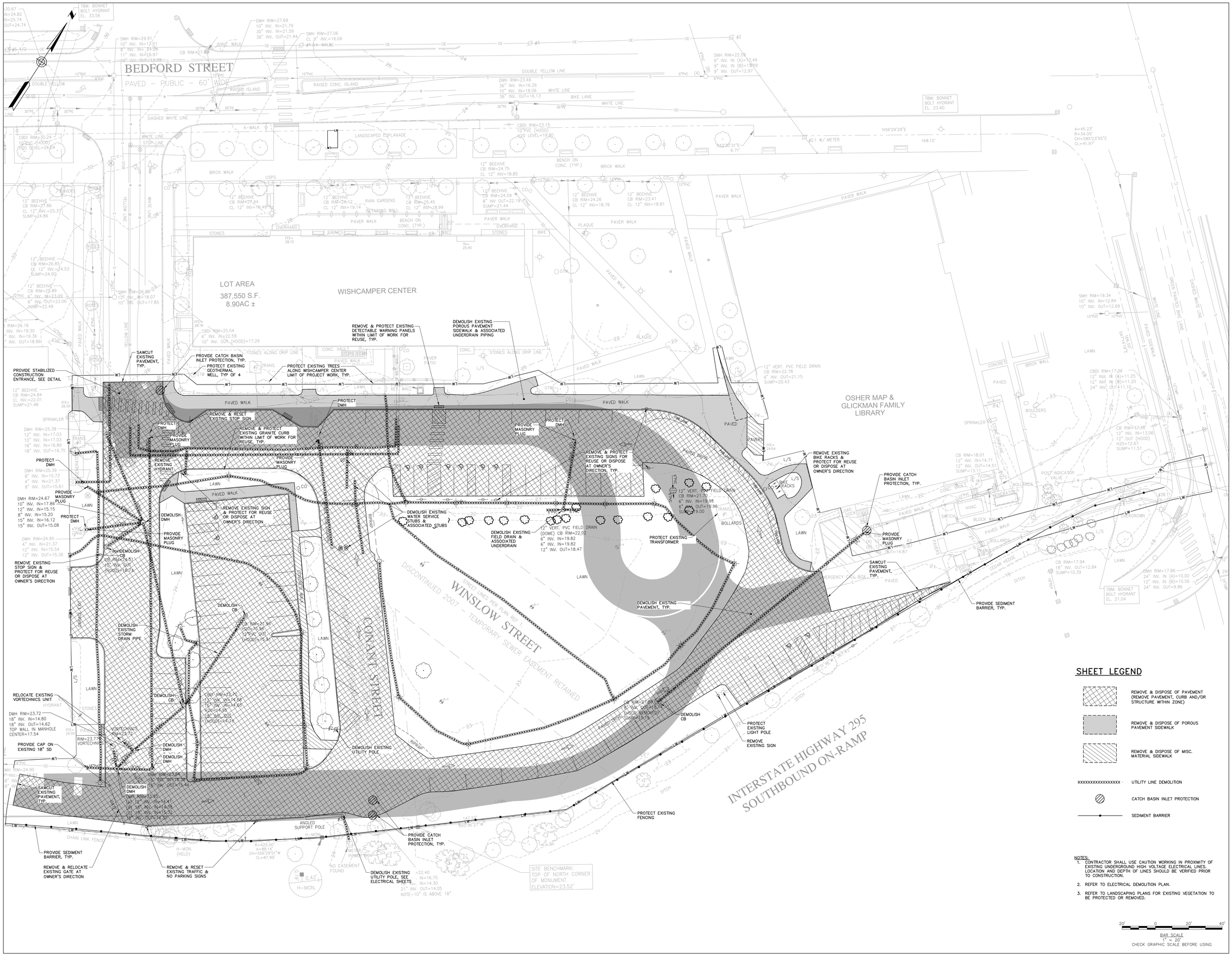
REV.	DATE	DESCRIPTION
1	4-30-2021	SURVEYED ADDITIONAL AREAS

Existing Conditions Survey

USM Portland - Wishcamper Lot
Portland, Maine
Made for
Woodard & Curran
41 Hutchins Drive, Portland, Maine

OWEN HASKELL, INC.
PROFESSIONAL LAND SURVEYORS
390 US ROUTE 1, UNIT 10, FALMOUTH, ME 04105 TEL. 207-774-0424

DRAWN BY:	SDG / JLW	DATE:	JAN. 27, 2019	JOB NO.	2019-267 P
CHECKED BY:	SDG	SCALE:	1" = 30'	DRWG. NO.	1 OF 2



\\woodardcurran.net\shared\Projects\023035.00 USM – Falmouth Street Garage\wip\Drawings\Civil\235035.00 C102x.dwg, Aug 06, 2021 – 1:10pm BMCDEVITT

UNIVERSITY OF SOUTHERN MAINE
25 Bedford Street, Portland, ME 04104
207.712.5183 | USM.MAINE.EDU

PROJECT TEAM:

CLIENT
UNIVERSITY OF SOUTHERN MAINE

PRIME CONSULTANT
& STRUCTURAL ENGINEER

DESMAN Design Management
18 Tremont Street #300
Boston, MA 02108

ARCHITECT
WINTON-SCOTT ARCHITECTS
5 MILK STREET
PORTLAND, ME 04101

CIVIL ENGINEER
WOODARD & CURRAN
41 HUTCHINS DRIVE
PORTLAND, ME 04102

LANDSCAPE ARCHITECT
MICHAEL BOUCHER LANDSCAPE ARCHITECTURE
457 US ROUTE 1 SUITE 2
FREEPORT, ME 04032

MEP/FP ENGINEER
ALLIED ENGINEERING
160 VERANDA STREET
PORTLAND, ME 04103

GEOTECHNICAL ENGINEER
S.W. COLE
286 PORTLAND ROAD
GREY, ME 04039

TRAFFIC ENGINEER
VANASSE HANGEN BRUSTLIN INC
40 IDX DR 100 #200, SOUTH
BURLINGTON, VT 05403

COST ESTIMATOR
PREFERRED CONSTRUCTION MGMT
94 AUBURN ST,
PORTLAND, ME 04103

SEAL / SIGNATURE

STATE OF MAINE
ASHLEY FLETCHER
No. 13750
LICENSED
PROFESSIONAL ENGINEER

© DESMAN, Inc. 2021

PROJECT:

USM - Structured Parking Garage

Address

50 Bedford Street,
Portland ME 04104

REVISIONS:

No.	Date	Description
	08/09/21	Schematic Design

SUBMISSIONS:

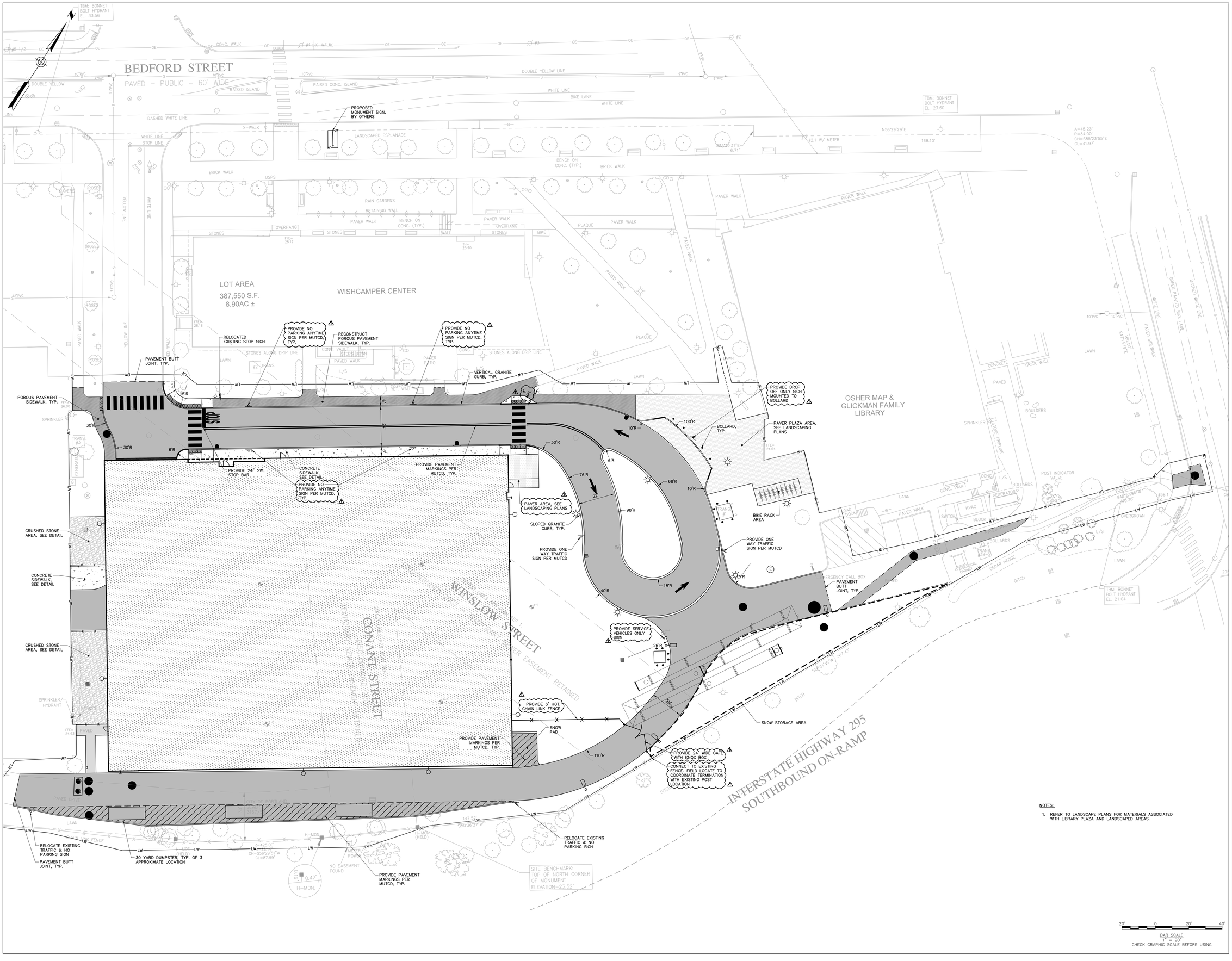
Date	Issued For:

SCALE	**1"=20'**
DATE ISSUED	**8/9/2021**
PROJECT NO	**20-20145.00-1**
DRAWN BY	**B.C.M.**
CHECKED BY	**A.E.F.**

SHEET TITLE:

DEMOLITION & EROSION & SEDIMENT CONTROL PLAN

C-102



NOTES:

1. REFER TO LANDSCAPE PLANS FOR MATERIALS ASSOCIATED WITH LIBRARY PLAZA AND LANDSCAPED AREAS.

BAR SCALE
1" = 20'
CHECK GRAPHIC SCALE BEFORE USING

\\wooddarcumran.net\shared\Projects\20233035.00 USM - Falmouth Street Garage\wip\Drawings\Civil\233035.00 C103X.dwg, Sep 13, 2021 - 3:07pm BMCDEVITT

UNIVERSITY OF SOUTHERN MAINE

25 Bedford Street, Portland, ME 04104
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40 IDX DR 100 #200, SOUTH
BURLINGTON, VT 05403

COST ESTIMATOR
PREFERRED CONSTRUCTION MGMT
94 AUBURN ST,
PORTLAND, ME 04103

SEAL / SIGNATURE

STATE OF MAINE
DARRIN B. STAIRS
No. 15118
LICENSED PROFESSIONAL ENGINEER

© DESMAN, Inc.
2021

PROJECT:

USM - Structured Parking Garage

Address

50 Bedford Street,
Portland ME 04104

REVISIONS:

No.	Date	Description
	08/09/21	Schematic Design
1	9/1/21	Response to City Comments

SUBMISSIONS:

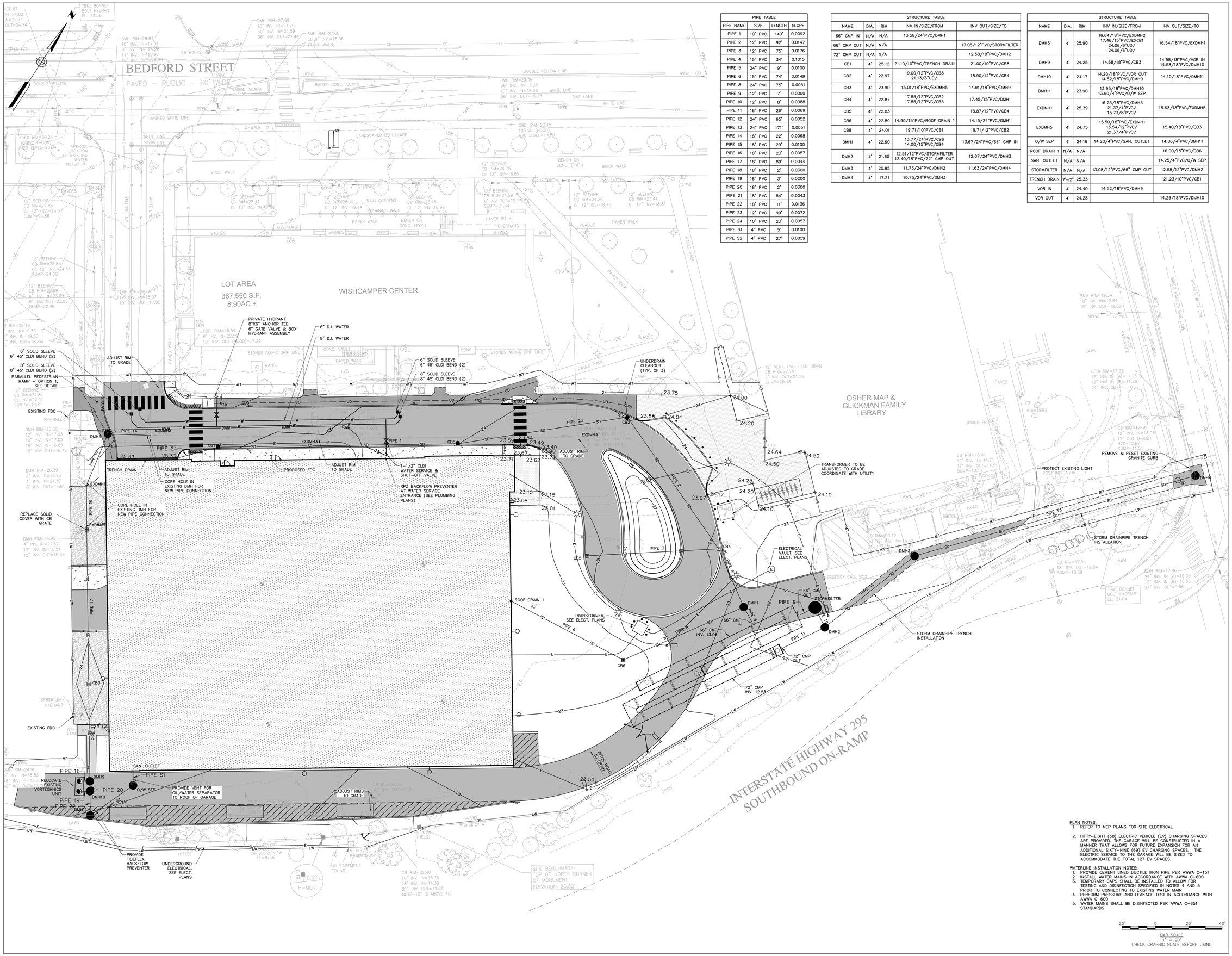
Date	Issued For:

SCALE	**1"=20'**
DATE ISSUED	**8/9/2021**
PROJECT NO	**20-20145.00-1**
DRAWN BY	**B.C.M.**
CHECKED BY	**D.B.S.**

SHEET TITLE:

SITE LAYOUT & MATERIALS PLAN

C-103



PIPE TABLE			
PIPE NAME	SIZE	LENGTH	SLOPE
PIPE 1	10" PVC	140'	0.0092
PIPE 2	12" PVC	92'	0.0147
PIPE 3	12" PVC	75'	0.0176
PIPE 4	15" PVC	34'	0.1015
PIPE 5	24" PVC	9'	0.0100
PIPE 6	15" PVC	74'	0.0149
PIPE 8	24" PVC	75'	0.0051
PIPE 9	12" PVC	7'	0.0000
PIPE 10	12" PVC	8'	0.0088
PIPE 11	18" PVC	26'	0.0069
PIPE 12	24" PVC	65'	0.0052
PIPE 13	24" PVC	171'	0.0051
PIPE 14	18" PVC	22'	0.0068
PIPE 15	18" PVC	29'	0.0100
PIPE 16	18" PVC	23'	0.0057
PIPE 17	18" PVC	89'	0.0044
PIPE 18	18" PVC	2'	0.0300
PIPE 19	18" PVC	3'	0.0200
PIPE 20	18" PVC	2'	0.0300
PIPE 21	18" PVC	54'	0.0043
PIPE 22	18" PVC	11'	0.0136
PIPE 23	12" PVC	99'	0.0072
PIPE 24	10" PVC	23'	0.0057
PIPE S1	4" PVC	5'	0.0100
PIPE S2	4" PVC	27'	0.0059

STRUCTURE TABLE				
NAME	DIA.	RIM	INV IN/SIZE/FROM	INV OUT/SIZE/TO
66" CMP IN	N/A	N/A	13.58/24"PVC/DMH1	
66" CMP OUT	N/A	N/A		13.08/12"PVC/STORMFILTER
72" CMP OUT	N/A	N/A		12.58/18"PVC/DMH2
CB1	4'	25.12	21.10/10"PVC/TRENCH DRAIN	21.00/10"PVC/CB8
CB2	4'	22.97	19.00/12"PVC/CB8 21.13/6"UD/	18.90/12"PVC/CB4
CB3	4'	23.90	15.01/18"PVC/EXDMH5	14.91/18"PVC/DMH9
CB4	4'	22.87	17.55/12"PVC/CB2 17.55/12"PVC/CB5	17.45/15"PVC/DMH1
CB5	4'	22.83		18.87/12"PVC/CB4
CB6	4'	22.59	14.90/15"PVC/ROOF DRAIN 1	14.15/24"PVC/DMH1
CB8	4'	24.01	19.71/10"PVC/CB1	19.71/12"PVC/CB2
DMH1	4'	22.60	13.77/24"PVC/CB6 14.00/15"PVC/CB4	13.67/24"PVC/66" CMP IN
DMH2	4'	21.65	12.51/12"PVC/STORMFILTER 12.40/18"PVC/72" CMP OUT	12.07/24"PVC/DMH3
DMH3	4'	20.85	11.73/24"PVC/DMH2	11.63/24"PVC/DMH4
DMH4	4'	17.21	10.75/24"PVC/DMH3	

STRUCTURE TABLE				
NAME	DIA.	RIM	INV IN/SIZE/FROM	INV OUT/SIZE/TO
DMH5	4'	25.90	16.64/18"PVC/EXDMH2 17.46/15"PVC/EXCB1 24.06/6"UD/ 24.06/6"UD/	16.54/18"PVC/EXDMH1
DMH9	4'	24.25	14.68/18"PVC/CB3	14.58/18"PVC/VOR IN 14.58/18"PVC/DMH10
DMH10	4'	24.17	14.20/18"PVC/VOR OUT 14.52/18"PVC/DMH9	14.10/18"PVC/DMH11
DMH11	4'	23.90	13.95/18"PVC/DMH10 13.90/4"PVC/O/W SEP	
EXDMH1	4'	25.39	16.25/18"PVC/DMH5 21.37/4"PVC/ 15.73/8"PVC/	15.63/18"PVC/EXDMH5
EXDMH5	4'	24.75	15.50/18"PVC/EXDMH1 15.54/12"PVC/ 21.37/4"PVC/	15.40/18"PVC/CB3
O/W SEP	4'	24.16	14.20/4"PVC/SAN. OUTLET	14.06/4"PVC/DMH11
ROOF DRAIN 1	N/A	N/A		16.00/15"PVC/CB6
SAN. OUTLET	N/A	N/A		14.25/4"PVC/O/W SEP
STORMFILTER	N/A	N/A	13.08/12"PVC/66" CMP OUT	12.58/12"PVC/DMH2
TRENCH DRAIN	7'–2"	25.33		21.23/10"PVC/CB1
VOR IN	4'	24.40	14.52/18"PVC/DMH9	
VOR OUT	4'	24.28		14.26/18"PVC/DMH10

PLAN NOTES:
1. REFER TO MEP PLANS FOR SITE ELECTRICAL.
2. FIFTY–EIGHT (58) ELECTRIC VEHICLE (EV) CHARGING SPACES ARE PROVIDED. THE GARAGE WILL BE CONSTRUCTED IN A MANNER THAT ALLOWS FOR FUTURE EXPANSION FOR AN ADDITIONAL SIXTY–NINE (69) EV CHARGING SPACES. THE ELECTRIC SERVICE TO THE GARAGE WILL BE SIZED TO ACCOMMODATE THE TOTAL 127 EV SPACES.

WATERLINE INSTALLATION NOTES:
1. PROVIDE CEMENT LINED DUCTILE IRON PIPE PER AWWA C–151
2. INSTALL WATER MAINS IN ACCORDANCE WITH AWWA C–600
3. TEMPORARY CAPS SHALL BE INSTALLED TO ALLOW FOR TESTING AND DISINFECTION SPECIFIED IN NOTES 4 AND 5 PRIOR TO CONNECTING TO EXISTING WATER MAIN
4. PERFORM PRESSURE AND LEAKAGE TEST IN ACCORDANCE WITH AWWA C–600
5. WATER MAINS SHALL BE DISINFECTED PER AWWA C–651 STANDARDS

UNIVERSITY OF SOUTHERN MAINE
25 Bedford Street, Portland, ME 04104
207.712.5183 | USM.MAINE.EDU

PROJECT TEAM:

CLIENT
UNIVERSITY OF SOUTHERN MAINE

PRIME CONSULTANT & STRUCTURAL ENGINEER
DESMAN Design Management
18 Tremont Street #300
Boston, MA 02108

ARCHITECT
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5 MILK STREET
PORTLAND, ME 04101

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PORTLAND, ME 04102

LANDSCAPE ARCHITECT
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457 US ROUTE 1 SUITE 2
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COST ESTIMATOR
PREFERRED CONSTRUCTION MGMT
94 AUBURN ST,
PORTLAND, ME 04103

SEAL / SIGNATURE

STATE OF MAINE
DARRIN B. STAIRS
No. 15118
LICENSED PROFESSIONAL ENGINEER

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PROJECT:

USM - Structured Parking Garage

Address

50 Bedford Street,
Portland ME 04104

REVISIONS:

No.	Date	Description

SUBMISSIONS:

Date	Issued For:
11/23/21	Foundations, Site, Landscape Pkg

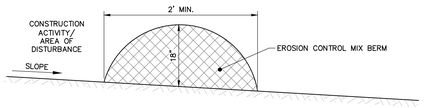
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DATE ISSUED	**11/23/2021**
PROJECT NO	**20-20145.00-1**
DRAWN BY	**B.C.M.**
CHECKED BY	**D.B.S.**

SHEET TITLE:

UTILITY & GRADING PLAN

C-104

\\wsodcdcurran.net\shared\Projects\20233035.00 USM – Falmouth Street Garage\wip\Drawings\Civil\233035.00 C10X.dwg, Nov 22, 2021 – 8:59am BMCDEVITT

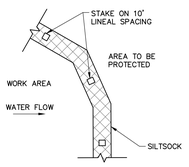


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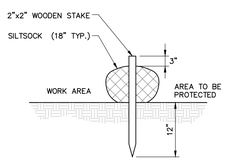
1. EROSION CONTROL MIX CAN BE MANUFACTURED ON OR OFF THE PROJECT SITE. IT MUST CONSIST PRIMARILY OF ORGANIC MATERIAL AND MAY INCLUDE: SHREDDED BARK, STUMP GRINDINGS, COMPOSTED BARK, OR ACCEPTABLE MANUFACTURED PRODUCTS. WOOD AND BARK CHIPS, GROUND CONSTRUCTION DEBRIS OR REPROCESSED WOOD PRODUCTS WILL NOT BE ACCEPTABLE AS THE ORGANIC COMPONENT OF THE MIX.
2. EROSION CONTROL MIX SHALL CONTAIN A WELL-GRADED MIXTURE OF PARTICLE SIZES AND MAY CONTAIN ROCKS LESS THAN 4" IN DIAMETER. EROSION CONTROL MIX MUST BE FREE OF REFUSE, PHYSICAL CONTAMINANTS, AND MATERIAL TOXIC TO PLANT GROWTH. THE MIX COMPOSITION SHALL MEET THE FOLLOWING STANDARDS:
   - THE ORGANIC MATTER CONTENT SHALL BE BETWEEN 80 AND 100%, DRY WEIGHT BASIS.
   - PARTICLE SIZE BY WEIGHT SHALL BE 100% PASSING A 6" SCREEN AND A MINIMUM OF 70%, MAXIMUM OF 85%, PASSING A 0.75" SCREEN.
   - THE ORGANIC PORTION NEEDS TO BE FIBROUS AND ELONGATED.
   - LARGE PORTIONS OF SILTS, CLAYS OR FINE SANDS ARE NOT ACCEPTABLE IN THE MIX.
   - SOLUBLE SALTS CONTENT SHALL BE < 4.0 MMHOS/CM.
   - THE PH SHOULD FALL BETWEEN 5.0 AND 8.0.

EROSION CONTROL MIX BERM (SEDIMENT BARRIER OPTION)

N.T.S.



PLAN VIEW



SECTION

NOTE:

1. WHEN STAKING IS NOT POSSIBLE, HEAVY CONCRETE BLOCKS SHALL BE USED BEHIND THE SEDIMENT BARRIER TO HELP STABILIZE DURING RAINFALL/RUNOFF EVENTS.

SILT SOCK (SEDIMENT BARRIER OPTION)

N.T.S.

NOTES:

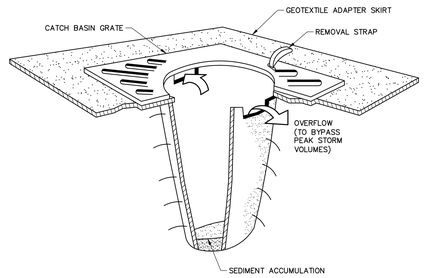
- INSTALL FABRIC ON UPHILL SIDE OF SUPPORT POSTS
- INSTALL SILT FENCE ACROSS SLOPES
- SILT FENCE SHALL NOT BE USED IN DRAINAGE WAYS

MAINTENANCE: INSPECT FOR TEARS IN THE FABRIC OR DAMAGE TO SUPPORTS. REPAIR AS NECESSARY. REMOVE ACCUMULATED SEDIMENT WHEN IT REACHES A DEPTH OF SIX-INCHES OR LESS.

REMOVAL: WHEN UPSLOPE AREAS ARE STABILIZED, THE STRUCTURE AND ANY ACCUMULATED SEDIMENT WILL BE REMOVED.

SILTATION FENCE (SEDIMENT BARRIER OPTION)

N.T.S.



NOTES:

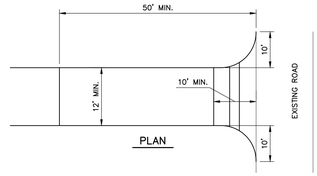
CATCH BASIN PROTECTION TO BE "SILTSACK" (BY ACF ENVIRONMENTAL) OR "STREAM GUARD" (BY FOSS ENVIRONMENTAL SERVICES).

INSERT TO BE EMPTIED IN AN APPROVED MANNER WHEN IT IS 1/2 FULL OF SEDIMENT.

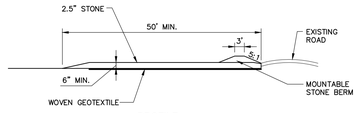
INSPECT INSERT AFTER ALL RAINFALL EVENTS, REPAIR AND MAINTAIN AS REQUIRED.

CATCH BASIN INLET PROTECTION DEVICE (SILTSACK OR EQUAL)

N.T.S.



PLAN



PROFILE

NOTES:

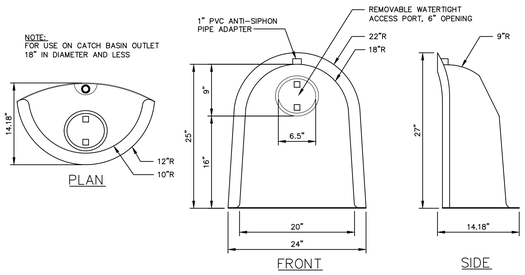
- CONSTRUCTION ENTRANCES MAY BE RELOCATED AS CONSTRUCTION PROGRESSES.
- WHEEL WASH PITS MAY ALSO BE USED, IF APPROVED.

MAINTENANCE: INSPECT FOR EFFECTIVE REMOVAL OF SOIL FROM VEHICLES PRIOR TO LEAVING THE SITE. SWEEP ANY SOIL FROM ADJACENT ROADWAYS.

AT LEAST ONE CONSTRUCTION ENTRANCE SHALL BE MAINTAINED UNTIL ALL AREAS OF THE SITE ARE STABILIZED.

STABILIZED CONSTRUCTION ENTRANCE

N.T.S.



PLAN FRONT SIDE

"THE SNOUT"

N.T.S.

EROSION AND SEDIMENT CONTROL NOTES

Temporary Controls

Contractor shall prepare and submit a soil erosion and water pollution control plan to engineer.

Measure	Dates For Use	Timing, Activity, and Location
Sediment Barrier	ALL	Before soil disturbance, install downhill of areas to be disturbed and around material stockpiles.
Up-slope Diversion	ALL	Before soil disturbance, install uphill of areas to be disturbed and material stockpiles.
Catch Basin Protection	ALL	Before soil or pavement disturbance, install ACF Environmental, Inc. High Flow Siltsack, Siltsaver Inlet Filter. or equal, installed per manufacturer's requirements.
Dust Control	ALL	During dry weather, apply water and calcium chloride to control dust.
Temporary Seeding	April 15 to Oct. 1	Soil stockpiles that are not covered and disturbed areas that will not be disturbed again within 14 days. If grass growth provides less than 95% soil coverage by Nov. 1, apply mulch and anchor with erosion control blanket.
Mulch	April 15 to Sept. 15	On all areas of exposed soil prior to rain events or every 7 days, apply 100-150 lbs (2.5 bales) per 1,000 sq ft. by mechanical blower.
Winter Mulch	Sept. 16 to Oct. 31	On all areas of exposed soil prior to precipitation or every 7 days, apply 150 to 170 lbs. mulch (4 bales) per 1,000 sq. ft. by mechanical blower, Erosion control blanket may be used as a substitute for winter mulch.
	Nov. 1 to April 14	On all areas of exposed soil, apply 150 to 170 lbs. mulch (4 bales) per 1,000 sq. ft. and anchor with netting at the end of each working day. Erosion control blanket may be used as a substitute for winter mulch.
Inspections	Until site is permanently stabilized	Inspect the erosion and sedimentation control measures daily, and maintain and repair as necessary.

Permanent Controls:

Measure	Dates For Use	Timing, Activity, and Location
Pavement – Base Course – Final Course	When no frost is in ground	Install only in areas shown on the plan, shortly after pavement base is brought to final grade. Install near completion of project.
Permanent Seeding	April 15 to Sept. 15	On final grade areas, within 7 days of grade preparation, prepare topsoil, followed by seed and mulch application.
Dormant Seeding	Sept. 16 to April 15	On final grade areas, with prepared topsoil. Apply seed at double the specified rate on bare soil, and follow with an application of winter mulch.
Ground Cover, Trees, Shrubs	April 15 to Nov. 1	Install with final landscaping.
Permanent Mulch	ALL	Install with final landscaping.

Inspections:

Regular inspections of all erosion and sedimentation controls shall be made at least weekly and prior to and following storm events. Minimum inspections shall be made as listed in the table below.

Inspected Item	Look For
Mulched Surfaces	Thin mulch or inadequate application. Wind movement.
Seeded Surfaces	Poor seed germination. Loss of mulch. Development of rivulets.
Sediment Barrier	Sediment build-up to one half the height of the barrier. Undermining of the barrier. Supporting stakes loose, toppled, or unmarked. Breaks in barrier.
Perimeter Diversion	Discharge is to stabilized area. Erosion or breaks in barrier. Supporting stakes loose, toppled or unmarked.
Catch Basin Protection	Sediment build-up and structure blockages. Slow flow/Ponding water. Breaks in fabric or voids in barrier.
Dewatering Filter	Breaks in fabric or supporting structure. Slow flow, indicating high sediment build-up.
Construction Entrance	Sedimentation of roadways. Off-site dust complaints.

EROSION AND SEDIMENT CONTROL NOTES

TEMPORARY EROSION CONTROL MEASURES MAY INCLUDE THE USE OF STABILIZED CONSTRUCTION ENTRANCES, HYDRAULIC MULCH, HAY AND STRAW MULCH, EROSION CONTROL BLANKET, TURF REINFORCED MATTING, RIPRAP AND TEMPORARY SEEDING. TEMPORARY SEDIMENT CONTROL MEASURES INCLUDE THE USE OF SILT FENCE, EROSION CONTROL MIX BERMS, CATCHBASIN SEDIMENT COLLECTION BAGS AND GEOTEXTILE FILTER BAGS. PERMANENT MEASURES INCLUDE PERMANENT VEGETATION OR PAVING.

GENERAL

A. THE PROJECT SHALL CONFORM WITH THE STANDARDS OF THE MAINE CONSTRUCTION GENERAL PERMIT.

B. ALL EROSION AND SEDIMENT CONTROL MEASURES SHALL BE CONSTRUCTED AND MAINTAINED IN ACCORDANCE WITH THE MAINE EROSION AND SEDIMENT CONTROL BMPS HANDBOOK PUBLISHED BY THE MAINE DEP UNLESS OTHERWISE NOTED IN THESE PLANS.

C. ANY ADDITIONAL EROSION AND SEDIMENT CONTROL MEASURES DEEMED NECESSARY BY THE OWNER'S REPRESENTATIVE, DEPARTMENT OF ENVIRONMENTAL PROTECTION, AND/OR MUNICIPAL OFFICIALS SHALL BE INSTALLED BY THE CONTRACTOR.

D. THE CONTRACTOR IS RESPONSIBLE FOR ALL FINES RESULTING FROM EROSION OR SEDIMENTATION FROM THE SITE TO SURROUNDING PROPERTIES, WATER BODIES, OR WETLANDS AS A RESULT OF THIS PROJECT.

E. THE CONTRACTOR SHALL MINIMIZE DISTURBANCE TO THE SITE WHENEVER POSSIBLE WHILE ALLOWING PROPER SITE DEVELOPMENT.

F. CONSTRUCTION STAGING SHALL BE CONDUCTED IN A WAY TO MINIMIZE THE POTENTIAL FOR STORMWATER RUN-ON TO DISTURBED AREAS.

G. THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE REPAIR/REPLACEMENT/MAINTENANCE OF ALL EROSION CONTROL MEASURES UNTIL ALL DISTURBED AREAS ARE STABILIZED TO THE SATISFACTION OF THE ABOVE PERSONNEL. DESCRIPTIONS OF PERMANENT STABILIZATION FOR VARIOUS COVER TYPES FOLLOWS:

   i. FOR SEEDED AREAS, PERMANENT STABILIZATION MEANS THAT 90% OF THE DISTURBED AREA IS COVERED WITH REASONABLY THICK UNIFORM STAND OF PERMANENT GRASS SPECIES, FREE FROM SIZABLE THIN OR BARE SPOTS.
   ii. FOR SODDED AREAS, PERMANENT STABILIZATION MEANS THAT COMPLETE BINDING OF THE SOD ROOTS INTO THE UNDERLYING SOIL WITH NO SLUMPING OF THE SOD OR DIE OFF.
   iii. FOR MULCHED AREAS, PERMANENT STABILIZATION MEANS TOTAL COVERAGE OF THE EXPOSED AREA WITH AN APPROVED MULCH MATERIAL.
   iv. FOR PAVED AREAS, PERMANENT STABILIZATION MEANS THE PLACEMENT OF THE ASPHALT BINDER COURSE.

H. IF THE AREA WILL REMAIN UNWORKED FOR MORE THAN ONE YEAR OR HAS BEEN BROUGHT TO FINAL GRADE, AND WILL NOT BE BUILT ON, THEN IMMEDIATELY PROVIDE PERMANENT STABILIZATION USING VEGETATION THROUGH PLANTING, SEEDING, SOD OR THROUGH THE USE OF PERMANENT MULCH OR RIPRAP. IF USING VEGETATION FOR STABILIZATION, SELECT THE PROPER VEGETATION FOR THE LIGHT, MOISTURE, AND SOIL CONDITIONS. AMEND AREAS OF DISTURBED, OVERLY-COMPACTED SUBSOIL WITH TOPSOIL OR COMPOST AND LIGHTLY TILL 2-3" OF SOIL AMENDMENTS INTO THE TOP 8" OF SOIL.

I. PERMANENT SEEDING SPECIFICATION: IT IS RECOMMENDED THAT PERMANENT SEEDING BE COMPLETED BETWEEN APRIL 1 AND AUGUST 15 OF EACH YEAR. LATE SEASON SEEDING MAY BE DONE BETWEEN AUGUST 15 AND SEPTEMBER 15. AREAS NOT SEEDED OR WHICH DO NOT OBTAIN A SATISFACTORY GROWTH BY OCTOBER 1 SHALL BE SEEDED WITH AROOSTOCK WINTER RYE OR MULCHED AT SPECIFIED RATES. SEE WINTER SEEDING AND MULCHING SPECIFICATIONS FOR STABILIZATION AFTER NOVEMBER 1.

   i. APPLY TOPSOIL TO A DEPTH OF 6 INCHES. IN COMPACTED AREAS TILL 2-3" OF COMPOST INTO UPPER 8" OF DISTURBED SOIL AND THEN APPLY 6 INCHES OF TOPSOIL.
   ii. APPLY LIME AND FERTILIZER ACCORDING TO SOIL TESTS. IN LIEU OF SOIL TESTS, APPLY GROUND LIMESTONE AT A RATE OF 33 LBS PER 1000 SQUARE FEET AND GRANULAR, COMMERCIAL-GRADE FERTILIZER 10-10-10 AT A RATE OF 18 LBS PER 1000 SQUARE FEET.
   iii. UNIFORMLY APPLY SEED MIXTURE AT THE RECOMMENDED SEEDING RATES AND DATES, APPLY HAY OR STRAW MULCH AT A RATE OF 2.5 BALES PER 1000 SQUARE FEET AND ANCHOR AS NECESSARY.

J. PROTECT ALL SEEDED AREAS WITH MULCH OR EROSION CONTROL BLANKET IN AREAS OF SHEET OR CONCENTRATED FLOWS. MULCH ALL AREAS SO THAT SOIL IS NOT VISIBLE THROUGH THE MULCH REGARDLESS OF THE APPLICATION RATE. SCHEDULE SEEDING OR SODDING TO AVOID FAILURE DUE TO SUMMER DROUGHT AND FALL FROST. NEWLY SEEDED AREAS SHOULD BE PROTECTED FROM VEHICLE TRAFFIC, PEDESTRIAN TRAFFIC AND CONCENTRATED RUNOFF UNTIL THE VEGETATION IS WELL ESTABLISHED. AREAS MUST BE REWORKED AND RESTABILIZED IF GERMINATION IS SPARSE OR SURFACE EROSION IS EVIDENT.

K. EROSION CONTROL BLANKET SHALL BE INSTALLED ON ALL PERMANENT SLOPES STEEPER THAN 3:1 OR AS OTHERWISE NOTED, EROSION CONTROL BLANKET SHALL BE NORTH AMERICAN GREEN S150BN OR APPROVED EQUAL. EROSION CONTROL BLANKET SHALL BE INSTALLED IN ACCORDANCE WITH THE MANUFACTURER'S RECOMMENDATIONS.

L. THE CONTRACTOR IS RESPONSIBLE FOR REMOVAL OF ALL TEMPORARY EROSION CONTROL MEASURE UPON STABILIZATION OF PROJECT AREA & COST SHALL BE INCIDENTAL TO CONTRACT.

WINTER CONDITIONS

A. WINTER CONSTRUCTION IS CONSTRUCTION ACTIVITY PERFORMED DURING THE PERIOD FROM NOVEMBER 1 THROUGH APRIL 1. IF AREAS WITHIN THE CONSTRUCTION AREA ARE NOT STABILIZED WITH TEMPORARY OR PERMANENT MEASURES OUTLINED ABOVE BY NOVEMBER 15 THEN THE SITE MUST BE PROTECTED WITH ADDITIONAL STABILIZATION MEASURES THAT ARE SPECIFIC TO WINTER CONDITIONS.

GOOD HOUSEKEEPING AND POLLUTION PREVENTION

A. SPILL PREVENTION CONTROLS MUST BE USED TO PREVENT POLLUTANTS FROM BEING DISCHARGED FROM MATERIALS ON SITE, INCLUDING STORAGE PRACTICES TO MINIMIZE EXPOSURE OF THE MATERIALS TO STORMWATER RUNOFF AND APPROPRIATE SPILL PREVENTION, CONTAINMENT AND RESPONSE PLANNING AND IMPLEMENTATION.

B. DURING CONSTRUCTION, PETROLEUM PRODUCTS AND OTHER HAZARDOUS MATERIALS WITH THE POTENTIAL TO CONTAMINATE GROUND OR SURFACE WATERS MAY NOT BE STORED OR HANDLED IN AREAS OF THE SITE DRAINING TO INFILTRATION AREAS. AN "INFILTRATION AREA" IS ANY ARE OF THE SITE THAT BY DESIGN, OR AS A RESULTS OF SOIL AND TOPOGRAPHY, ACCUMULATES RUNOFF THAT INFILTRATES IN THE SOIL. DIKES, BERMS, SUMPS AND OTHER FORMS OF TEMPORARY SECONDARY CONTAINMENT THAT PREVENT DISCHARGE TO GROUNDWATER MAY BE USED TO ISOLATE PORTIONS OF THE SITE FOR THE PURPOSES OF STORAGE AND HANDLING OF THESE MATERIALS.

C. LOCATE ALL MATERIAL STOCKPILES WITH CONSIDERATION FOR STORMWATER DRAINAGE PATTERNS AND INFRASTRUCTURE.

D. TAKE ALL REASONABLE MEASURES TO MINIMIZE DUST RESULTING FROM THE PROJECT. OIL MAY NOT BE USED FOR DUST CONTROL.

E. LOCATE ALL LITTER, CONSTRUCTION DEBRIS AND CONSTRUCTION CHEMICALS WITH CONSIDERATION FOR STORMWATER DRAINAGE PATTERNS AND INFRASTRUCTURE.

F. TRENCH OR FOUNDATION DE-WATERING MUST BE SPREAD THROUGH SUFFICIENT NATURAL BUFFERS THAT HAVE CAPACITY TO INFILTRATE THE PUMPED WATER OR SHOULD BE PUMPED TO DESIGNED CONSTRUCTION DEWATERING DEVICES AS DESCRIBED IN THE MAINE EROSION AND SEDIMENT CONTROL BMPS HANDBOOK.

G. SEDIMENTS AND SOIL MATERIALS SHOULD BE SWEPT FROM PAVED SURFACES AT THE END OF EACH WORKDAY OR PRIOR TO RAIN EVENTS, WHENEVER POSSIBLE.

INSPECTION AND MAINTENANCE

A. A PERSON WITH KNOWLEDGE OF EROSION AND STORMWATER CONTROLS, INCLUDING THE STANDARDS IN THE MAINE CONSTRUCTION GENERAL PERMIT, THE MAINE EROSION AND SEDIMENT CONTROL BMPS HANDBOOK OR ANY MUNICIPAL REQUIREMENTS MUST CONDUCT THE INSPECTION. THIS PERSON MUST BE IDENTIFIED IN THE INSPECTION LOG. IF ADDITIONAL BMPS OR MODIFICATIONS TO BMPS ARE NECESSARY, THE MODIFICATIONS MUST BE IMPLEMENTED WITH 7 CALENDAR DAYS OR PRIOR TO ANY PRECIPITATION EVENT. ALL MEASURES MUST BE MAINTAINED IN EFFECTIVE OPERATING CONDITION UNTIL AREAS ARE PERMANENTLY STABILIZED.

B. AN INSPECTION AND MAINTENANCE LOG MUST BE KEPT BY THE CONTRACTOR, SUMMARIZING THE SCOPE OF THE INSPECTION, DATE, AND MAJOR OBSERVATIONS RELATING TO THE OPERATION OF EROSION AND SEDIMENT CONTROL BMPS, MATERIAL STORAGE AREAS, AND VEHICLE ACCESS POINTS TO THE CONSTRUCTION AREA. THE INSPECTION LOG SHOULD BE DELIVERED TO THE PROPERTY OWNER OR RESPONSIBLE CONTRACTING ENTITY UPON COMPLETION OF THE PROJECT.

C. THE CONTRACTOR SHALL BE RESPONSIBLE FOR ALL INSPECTION AND MAINTENANCE DESCRIBED HEREIN.

D. EROSION AND SEDIMENT CONTROLS SHALL BE INSTALLED PRIOR TO INITIATING CONSTRUCTION ACTIVITIES, SHALL BE MAINTAINED THROUGHOUT CONSTRUCTION, AND REMOVED UPON ACHIEVING FINAL STABILIZATION.

E. WET WEATHER INSPECTIONS SHALL BE CONDUCTED AFTER ALL RAIN EVENTS EXCEEDING 0.5-INCHES IN 24-HOURS.

F. ALL INSPECTION AND MAINTENANCE DOCUMENTATION SHALL BE KEPT AS PROJECT RECORD FOR A MINIMUM OF THREE YEARS.

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PROJECT TEAM:

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PORTLAND, ME 04103

SEAL / SIGNATURE

STATE OF MAINE · ASHLEY FLETCHER No. 13750 · LICENSED PROFESSIONAL ENGINEER

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2021

PROJECT:

USM - Structured Parking Garage

Address

44 Bedford Street,
Portland ME 04104

REVISIONS:

No.	Date	Description

SUBMISSIONS:

Date	Issued For:
07/30/21	Site Plan Submittal

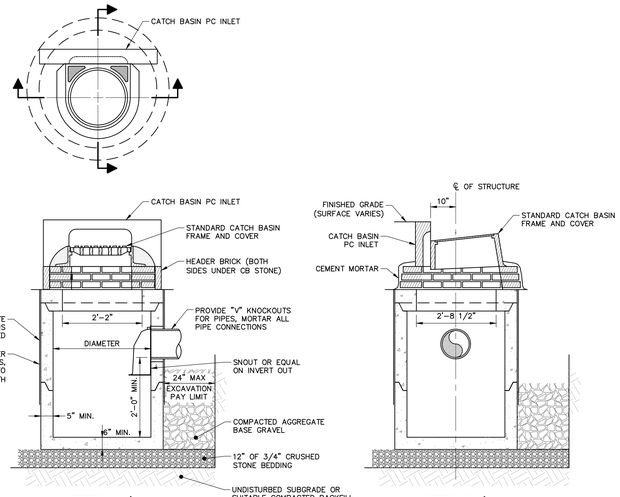
SCALE	**AS NOTED**
DATE ISSUED	**7/30/2021**
PROJECT NO	**20-20145.00-1**
DRAWN BY	**B.C.M.**
CHECKED BY	**A.E.F.**

SHEET TITLE:

CIVIL DETAILS - 1

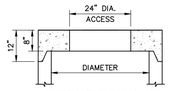
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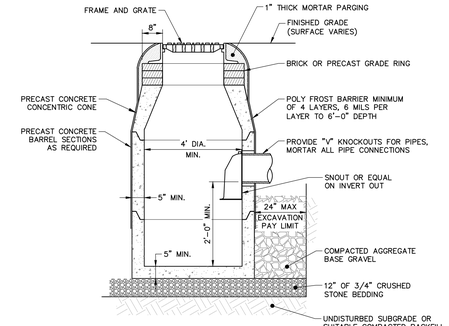


NOTES:
1. CONTRACTOR SHALL SUBMIT BUOYANCY CALCULATIONS FOR ALL STRUCTURES AND SHALL DESIGN AND PROVIDE ANTI-FLOATATION MEASURE AS NEEDED.
2. REFER TO GEOTECHNICAL REPORT FOR SUBGRADE PREPARATION REQUIREMENTS.

PRECAST CONCRETE CATCH BASIN WITH CURB INLET
N.T.S.



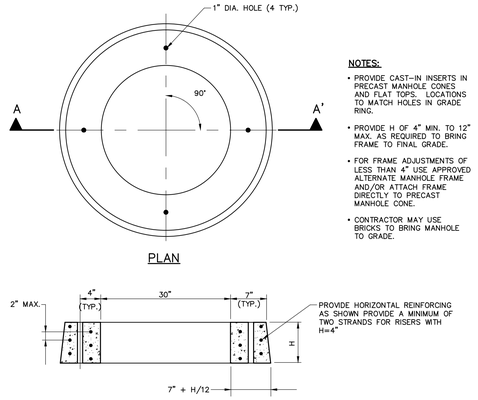
ALTERNATIVE TOP SLAB



NOTES:
1. PRECAST CONCRETE STRUCTURES AND CASTINGS SHALL BE SUITABLE FOR HS-20 LOADINGS.
2. PRECAST CONCRETE STRUCTURES SHALL BE MANUFACTURED IN ACCORDANCE WITH ASTM C-478.
3. ALTERNATE TOP SLAB MAY BE USED AS DICTATED BY DESIGN AND/OR FIELD CONDITIONS.
4. JOINT SEALANT BETWEEN PRECAST SECTIONS SHALL BE BUTYL RUBBER.
5. REFER TO GEOTECHNICAL REPORT FOR SUBGRADE PREPARATION REQUIREMENTS.

NOTE: CONTRACTOR SHALL SUBMIT BUOYANCY CALCULATIONS FOR ALL STRUCTURES AND SHALL DESIGN AND PROVIDE ANTI-FLOATATION MEASURE AS NEEDED.

PRECAST CONCRETE CATCH BASIN WITHOUT CURB INLET
N.T.S.

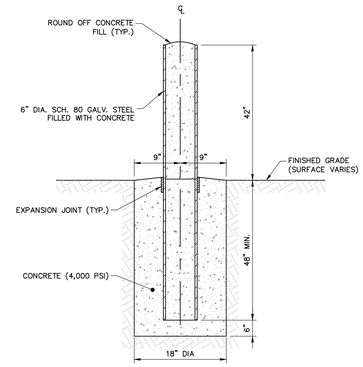


PLAN

SECTION A-A'

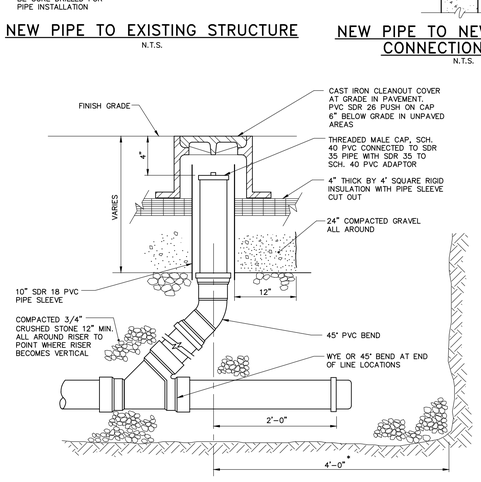
NOTES:
- PROVIDE CAST-IN INSERTS IN PRECAST MANHOLE CONES AND FLAT TOPS. LOCATIONS TO MATCH HOLES IN GRADE RING.
- PROVIDE H OF 4" MIN. TO 12" MAX. AS REQUIRED TO BRING FRAME TO FINAL GRADE.
- FOR FRAME ADJUSTMENTS OF LESS THAN 4" USE APPROVED ALTERNATE MANHOLE FRAME AND/OR ATTACH FRAME DIRECTLY TO PRECAST MANHOLE CONE.
- CONTRACTOR MAY USE BRICKS TO BRING MANHOLE TO GRADE.

PRECAST CONCRETE GRADE RING
N.T.S.

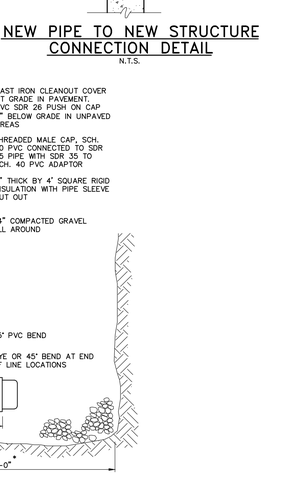


NOTE:
1. ALL BOLLARDS SHALL BE PAINTED. COLOR SELECTED BY OWNER.

6" DIA. SECURITY BOLLARD
N.T.S.

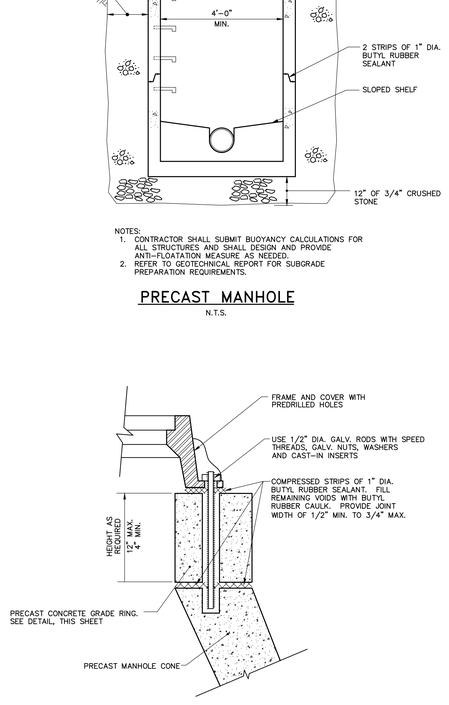


NEW PIPE TO EXISTING STRUCTURE
N.T.S.



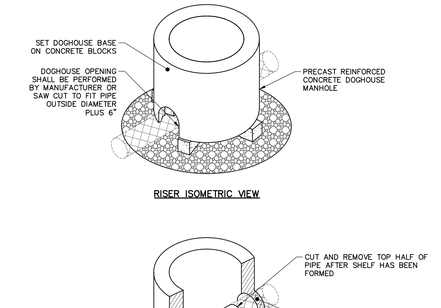
NEW PIPE TO NEW STRUCTURE CONNECTION DETAIL
N.T.S.

CLEANOUT
N.T.S.



NOTES:
1. CONTRACTOR SHALL SUBMIT BUOYANCY CALCULATIONS FOR ALL STRUCTURES AND SHALL DESIGN AND PROVIDE ANTI-FLOATATION MEASURE AS NEEDED.
2. REFER TO GEOTECHNICAL REPORT FOR SUBGRADE PREPARATION REQUIREMENTS.

PRECAST MANHOLE
N.T.S.

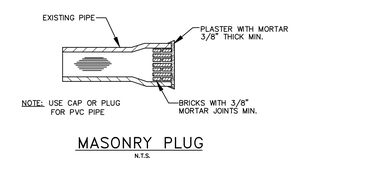


BASE ISOMETRIC VIEW

RISER ISOMETRIC VIEW

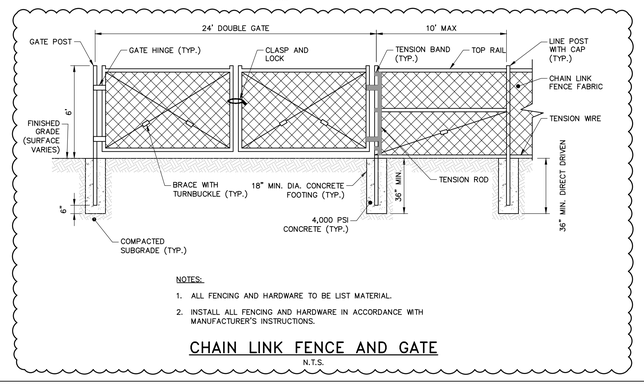
FOUNDATION SECTION VIEW

DOG HOUSE MANHOLE
N.T.S.



MASONRY PLUG
N.T.S.

MANHOLE FRAME FASTENING
N.T.S.



NOTES:
1. ALL FENCING AND HARDWARE TO BE LIST MATERIAL.
2. INSTALL ALL FENCING AND HARDWARE IN ACCORDANCE WITH MANUFACTURER'S INSTRUCTIONS.

CHAIN LINK FENCE AND GATE
N.T.S.

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PROJECT TEAM:

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BURLINGTON, VT 05403

COST ESTIMATOR
PREFERRED CONSTRUCTION MGMT
94 AUBURN ST.
PORTLAND, ME 04103

SEAL / SIGNATURE

STATE OF MAINE — DARRIN B. STAIRS No. 15118 — LICENSED PROFESSIONAL ENGINEER

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PROJECT:

USM - Structured Parking Garage

Address

50 Bedford Street, Portland ME 04104

REVISIONS:

No.	Date	Description
	08/09/21	Schematic Design
1	9/1/21	Response to City Comments

SUBMISSIONS:

Date	Issued For:

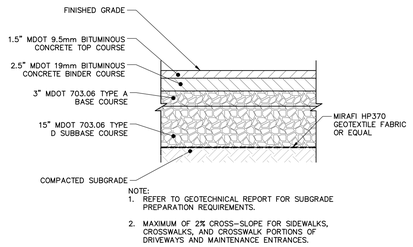
SCALE	**AS NOTED**
DATE ISSUED	**8/9/2021**
PROJECT NO	**20-20145.00-1**
DRAWN BY	**B.C.M.**
CHECKED BY	**D.B.S.**

SHEET TITLE:

CIVIL DETAILS - 2

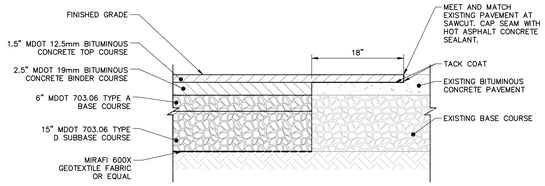
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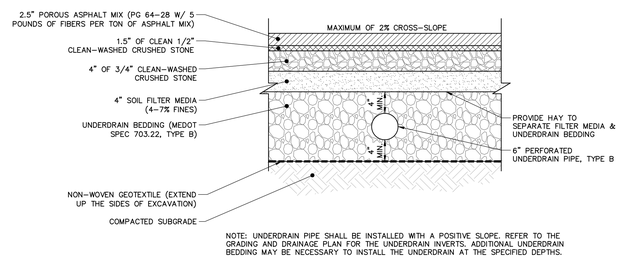


NOTE:
1. REFER TO GEOTECHNICAL REPORT FOR SUBGRADE PREPARATION REQUIREMENTS.
2. MAXIMUM OF 2% CROSS-SLOPE FOR SIDEWALKS, CROSSWALKS, AND CROSSWALK PORTIONS OF DRIVEWAYS AND MAINTENANCE ENTRANCES.

BITUMINOUS CONCRETE PAVEMENT SECTION
N.T.S.

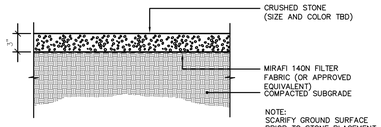


BITUMINOUS CONCRETE PAVEMENT BUTT JOINT
N.T.S.

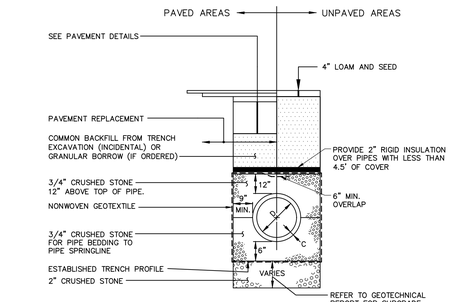


NOTE: UNDERDRAIN PIPE SHALL BE INSTALLED WITH A POSITIVE SLOPE. REFER TO THE GRADING AND DRAINAGE PLAN FOR THE UNDERDRAIN INVERTS. ADDITIONAL UNDERDRAIN BEDDING MAY BE NECESSARY TO INSTALL THE UNDERDRAIN AT THE SPECIFIED DEPTHS.

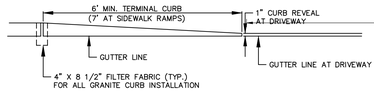
POROUS ASPHALT PAVEMENT
N.T.S.



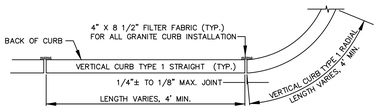
CRUSHED STONE AREA
N.T.S.



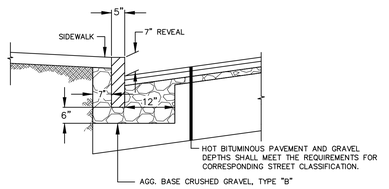
TYPICAL STORMDRAIN PIPE TRENCH INSTALLATION
N.T.S.



TERMINAL CURB PROFILE

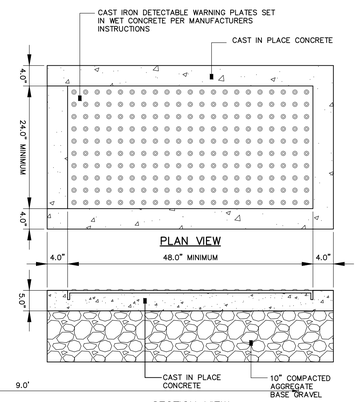


VERTICAL GRANITE CURB PLAN VIEW



VERTICAL GRANITE CURB CROSS SECTION

VERTICAL GRANITE CURB
N.T.S.

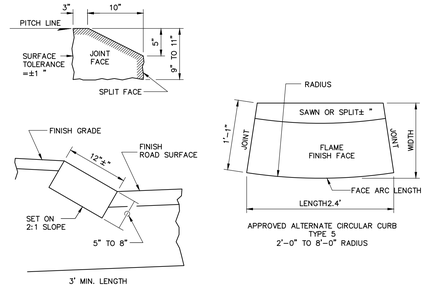


PLAN VIEW

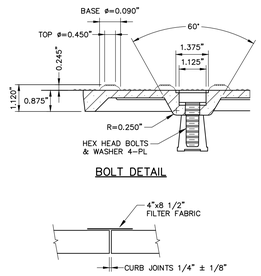
SECTION VIEW

SIDEWALK RAMP DETECTABLE WARNING
N.T.S.

NOTES:
1. ALL DETECTABLE WARNING PLATES SHALL BE UNCOATED CAST IRON. FOLLOW MANUFACTURER'S INSTRUCTIONS FOR INSTALLATION.
2. CAST IN PLACE CONCRETE SHALL MEET SPECIFICATIONS FOR MAINE D.O.T. CLASS A STRUCTURAL CONCRETE, MINIMUM COMPRESSIVE STRENGTH 4,000 PSI. THE EXPOSED CONCRETE BORDER SHALL RECEIVE A UNIFORM BROOM FINISH PERPENDICULAR TO THE FLOW OF PEDESTRIAN TRAFFIC.
3. TRUNCATED DOMES SHALL BE ALIGNED IN ROWS, PARALLEL AND PERPENDICULAR TO THE PREDOMINANT DIRECTION OF TRAVEL. TRUNCATED DOME BRICKS AND GRANITE PAVERS ARE NOT ALLOWED.
4. SIZE: THE DETECTABLE WARNING PLATES SHALL EXTEND 24 INCHES MINIMUM IN THE DIRECTION OF TRAVEL AND THE PLATE WIDTH AND CONCRETE SHALL EXTEND THE WIDTH OF THE CURB RAMP, LANDING, OR BLENDING TRANSITION TO THE STREET.
5. ORIENTATION: THE DETECTABLE WARNING PANEL SHALL BE LOCATED SO THAT THE EDGE NEAREST THE CURB LINE IS 6 INCHES MINIMUM AND 8 INCHES MAXIMUM FROM THE CURB LINE. THE PANEL SHALL BE ORIENTED TO THE DIRECTION OF TRAVEL AS IDENTIFIED BY THE POINT OF EGRESS.

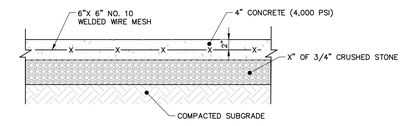


TYPICAL TYPE 5 SLOPED GRANITE CURB INSTALLATION
N.T.S.



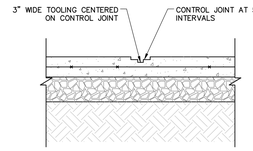
BOLT DETAIL

PLAN

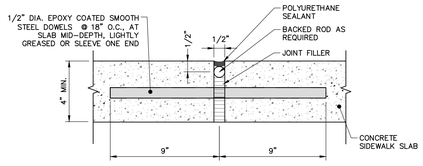


NOTES:
1. PROVIDE 1/2-INCH PREMOLDED BITUMINOUS EXPANSION JOINTS AT 20 FT. INTERVALS.
2. PROVIDE CONTROL JOINTS AT 5-FEET INTERVALS.
3. PROVIDE LIGHT BROOM FINISH WITH 3-INCH EDGE.

CAST-IN-PLACE CONCRETE SIDEWALK
NOT TO SCALE

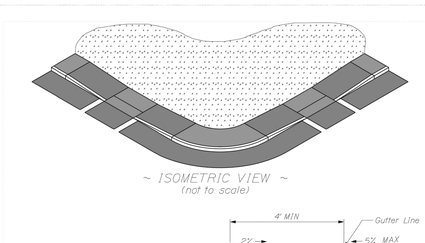


SIDEWALK CONTROL JOINT
NOT TO SCALE



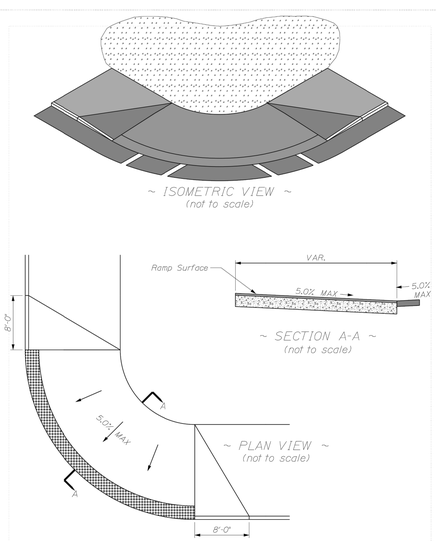
NOTES:
1. EXPANSION JOINTS SHALL BE 60' O.C.
2. DISCONTINUE REINFORCING AT EACH SIDE OF JOINT.
3. DOWELS SHALL BE CUT STRAIGHT AND DEBURRED.

CONCRETE SIDEWALK EXPANSION JOINT
NOT TO SCALE



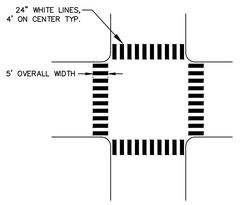
Note:
- This desirable design is the prefered option. Use other options only when required by design constraints.

PARALLEL PEDESTRIAN RAMP - OPTION I
801(14)

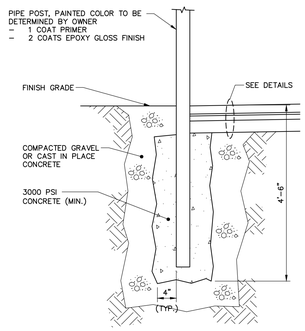


Note:
This option should only be used after all other options have been considered and deemed infeasible.

BLENDED TRANSITION
801(26)



CROSSWALK MARKINGS
N.T.S.



POST SPECIFICATION			
TYPE	HEIGHT ABOVE FIN. GRADE	POST DIAMATER	POST MATERIAL
STREET SIGNAGE	7'-0"	2 3/8" (I.D.)	GALV. STEEL

TYPICAL POST DETAIL
N.T.S.

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PORTLAND, ME 04101

CIVIL ENGINEER
WOODARD & CURRAN
41 HUTCHINS DRIVE
PORTLAND, ME 04102

LANDSCAPE ARCHITECT
MICHAEL BOUCHER LANDSCAPE ARCHITECTURE
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MEP/FP ENGINEER
ALLIED ENGINEERING
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GEOTECHNICAL ENGINEER
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GREY, ME 04039

TRAFFIC ENGINEER
VANASSE HANGEN BRUSTLIN INC
40 IDX DR 100 #200, SOUTH
BURLINGTON, VT 05403

COST ESTIMATOR
PREFERRED CONSTRUCTION MGMT
94 AUBURN ST,
PORTLAND, ME 04103

SEAL / SIGNATURE

STATE OF MAINE · ASHLEY FLETCHER No. 13750 · LICENSED PROFESSIONAL ENGINEER

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2021

PROJECT:

USM - Structured Parking Garage

Address

44 Bedford Street,
Portland ME 04104

REVISIONS:

No.	Date	Description

SUBMISSIONS:

Date	Issued For:
07/30/21	Site Plan Submittal

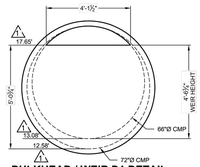
SCALE	**AS NOTED**
DATE ISSUED	**7/30/2021**
PROJECT NO	**20-20145.00-1**
DRAWN BY	**B.C.M.**
CHECKED BY	**A.E.F.**

SHEET TITLE:

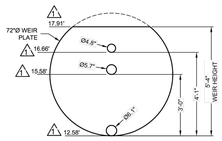
CIVIL DETAILS - 3

D-202

\\woodardcurran.net\shared\Projects\20233035.00 - falmouth street garage\wip\Drawings\Civil\233035.00 C20X.dwg, Jul 29, 2021 - 2:51pm BMCDEVITT



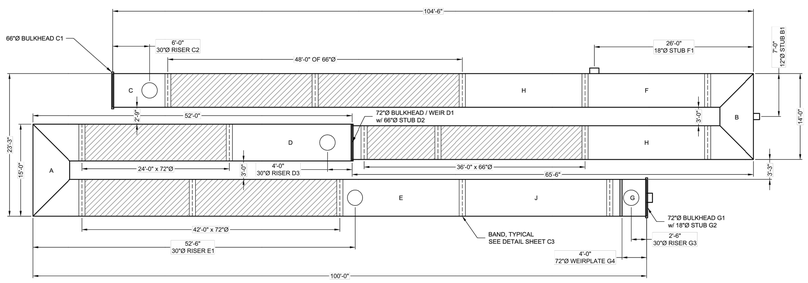
BULKHEAD / WEIR D1 DETAIL
NOT TO SCALE



WEIR PLATE G4 DETAIL
NOT TO SCALE

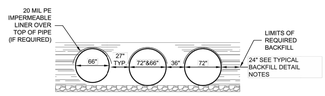
RISER INFORMATION		
PIECE	RIM ELEV.	SYSTEM INVERT
30"Ø RISER C2	20.38	13.08
30"Ø RISER D3	20.60	12.58
30"Ø RISER E1	20.39	12.58
30"Ø RISER G3	21.27	12.58

⚠ STUB INFORMATION		
PIECE	STUB INVERT	SYSTEM INVERT
12"Ø STUB B1	13.58	13.08
66"Ø STUB D2	13.08	12.58
18"Ø STUB F1	13.58	13.08
18"Ø STUB G2	12.58	12.58



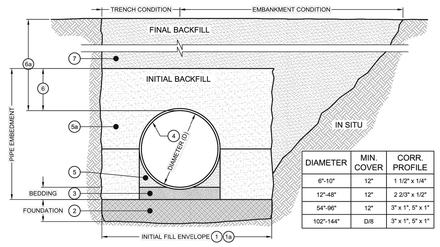
⚠ CMP STORAGE SYSTEM HAS BEEN PREVIOUSLY PROCURED, BUT WILL NEED TO BE MODIFIED AND SUPPLEMENTED WITH ADDITIONAL MATERIALS AS SHOWN.

ASSEMBLY ⚠
SCALE: 1" = 10'
PIPE STORAGE: 8492.5 CF
LOADING: H20
66" PIPE INV. = 13.08±
72" PIPE INV. = 12.58±



TYPICAL SECTION VIEW
NOT TO SCALE

NOTE: IF SALTING AGENTS FOR SNOW AND ICE REMOVAL ARE USED ON OR NEAR THE PROJECT, A GEOMEMBRANE BARRIER IS RECOMMENDED WITH THE SYSTEM. THE GEOMEMBRANE LINER IS INTENDED TO HELP PROTECT THE SYSTEM FROM THE POTENTIAL ADVERSE EFFECTS THAT MAY RESULT FROM A CHANGE IN THE SURROUNDING ENVIRONMENT OVER A PERIOD OF TIME. PLEASE REFER TO THE CORRUGATED METAL PIPE DETENTION DESIGN GUIDE FOR ADDITIONAL INFORMATION.



DIAMETER	MIN. COVER	CORR. PROFILE
6"-10"	12"	1 1/2" x 1/4"
12"-48"	12"	2 2/3" x 1/2"
54"-96"	12"	3" x 1", 5" x 1"
102"-144"	D/8	3" x 1", 5" x 1"

BACKFILL REQUIREMENTS FOLLOW THE GUIDELINES OF AASHTO LRFD BRIDGE DESIGN (SEC 12) AND CONSTRUCTION (SEC 26)

1 MINIMUM TRENCH WIDTH MUST ALLOW ROOM FOR PROPER COMPACTION OF HAUNCH MATERIALS UNDER THE PIPE.
THE MINIMUM TRENCH WIDTH (12.6.6.1):
PIPE ≤ 12": D + 16"
PIPE > 12": 1.5D + 12"

1a MINIMUM EMBANKMENT WIDTH (IN FEET) FOR INITIAL FILL ENVELOPE (12.6.6.2):
PIPE < 24": 3.0D
PIPE 24" - 144": D + 4'0"
PIPE > 144": D + 10'0"

2 THE FOUNDATION UNDER THE PIPE AND SIDE BACKFILL SHALL BE ADEQUATE TO SUPPORT THE LOADS ACTING UPON IT (26.5.2).

3 ENGINEER TO DETERMINE IF BEDDING IS REQUIRED. BEDDING MATERIAL SHALL BE A RELATIVELY LOOSE MATERIAL THAT IS ROUGHLY SHAPED TO FIT THE BOTTOM OF THE PIPE, AND A MINIMUM OF TWICE THE CORRUGATION DEPTH IN THICKNESS, WITH THE MAXIMUM PARTICLE SIZE OF ONE-HALF OF THE CORRUGATION DEPTH (26.3.6.1, 26.5.3).

4 CORRUGATED STEEL PIPE (CSP / HEL-COR).

5 HAUNCH ZONE MATERIAL SHALL BE HAND SHOVELED OR SHOVEL SLICED INTO PLACE TO ALLOW FOR PROPER COMPACTION (26.5.4).

5a INITIAL BACKFILL FOR PIPE EMBEDMENT TO MEET AASHTO A-1, A-2 OR A-3 CLASSIFICATION, OR APPROVED EQUAL, COMPACTED TO 90% STANDARD PROCTOR (T 99). MAXIMUM PARTICLE SIZE NOT TO EXCEED 3" (12.4.1.2). ALL LIFTS PLACED IN A CONTROLLED MANNER. IT IS RECOMMENDED THAT LIFTS NOT EXCEED AN 8" UNCOMPACTED LIFT HEIGHT TO PREVENT UNEVEN LOADING, AND THE LESSER OF 1/3 THE DIAMETER OR 24" AS THE MAXIMUM DIFFERENTIAL SIDE-TO-SIDE (26.5.4).

6 INITIAL BACKFILL ABOVE PIPE MAY INCLUDE ROAD BASE MATERIAL (AND RIGID PAVEMENT IF APPLICABLE). SEE TABLE ABOVE.

6a TOTAL HEIGHT OF COMPACTED COVER FOR CONVENTIONAL HIGHWAY LOADS IS MEASURED FROM TOP OF PIPE TO BOTTOM OF FLEXIBLE PAVEMENT OR TOP OF RIGID PAVEMENT (12.6.6.3).

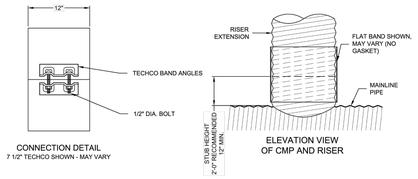
7 FINAL BACKFILL MATERIAL SELECTION AND COMPACTION REQUIREMENTS SHALL FOLLOW THE PROJECT PLANS AND SPECIFICATIONS PER THE ENGINEER OF RECORD (26.5.4.1).

NOTES:
- ENGINEER TO DETERMINE IF GEOTEXTILE SHOULD BE USED TO PREVENT SOIL MIGRATION INTO VARYING SOIL TYPES (PROJECT ENGINEER).
- FOR MULTIPLE BARREL INSTALLATIONS THE RECOMMENDED STANDARD SPACING BETWEEN PARALLEL PIPE RUNS SHALL BE PIPE DIA./2 BUT NO LESS THAN 12", OR 36" FOR PIPE DIAMETERS 72" AND LARGER.
- CONTACT YOUR CONTECH REPRESENTATIVE FOR NONSTANDARD SPACING (TABLE C12.6.7-1).

TYPICAL BACKFILL DETAIL
NOT TO SCALE

NOTE: CONTRACTOR SHALL SUBMIT BUOYANCY CALCULATIONS FOR ALL STRUCTURES AND SHALL DESIGN AND PROVIDE ANTI-FLOATATION MEASURE AS NEEDED.

CMP STORAGE SYSTEM DETAILS
N.T.S.



CONNECTION DETAIL
7 1/2" TECHCO SHOWN - MAY VARY

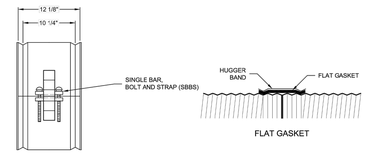
ELEVATION VIEW
OF CMP AND RISER

PLAIN END CMP RISER PIPE

GENERAL NOTES:

1. **DELIVERED BAND STYLE AND FASTENER TYPE MAY VARY BY FABRICATION PLANT.**
2. JOINT IS TO BE ASSEMBLED PER AASHTO BRIDGE CONSTRUCTION SPECIFICATION SEC 26.4.2.4.
3. BAND MATERIAL AND GAGE TO BE SAME AS RISER MATERIAL.
4. IF RISER HAS A HEIGHT OF COVER OF 10' OR MORE, USE A SLIP JOINT.
5. BANDS ARE NORMALLY FURNISHED AS FOLLOWS:
   - 12" THRU 48" 1-PIECE
   - 54" 2-PIECES
6. ALL RISER JOINT COMPONENTS WILL BE FIELD ASSEMBLED.
7. MANHOLE RISERS IN APPLICATIONS WHERE TRAFFIC LOADS ARE IMPOSED REQUIRE SPECIAL DESIGN CONSIDERATIONS.
8. DIMENSIONS SUBJECT TO MANUFACTURING TOLERANCES.

12" RISER BAND DETAIL
NOT TO SCALE



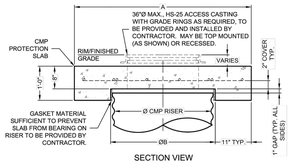
CONNECTION DETAIL
(SBBG)

2 2/3"x1/2" RE-ROLLED END HEL-COR PIPE

GENERAL NOTES:

1. JOINT IS TO BE ASSEMBLED PER AASHTO BRIDGE CONSTRUCTION SPECIFICATION SEC 26.4.2.4.
2. BAND MATERIALS AND/OR COATING CAN VARY BY LOCATION. CONTACT YOUR CONTECH REPRESENTATIVE FOR AVAILABILITY.
3. BANDS ARE SHAPED TO MATCH THE PIPE-ARCH WHEN APPLICABLE.
4. BANDS ARE NORMALLY FURNISHED AS FOLLOWS:
   - 12" THRU 48" 1-PIECE
   - 54" THRU 96" 2-PIECES
   - 102" THRU 144" 3-PIECES
5. BAND FASTENERS ARE ATTACHED WITH SPOT WELDS, RIVETS OR HAND WELDS.
6. ALL CMP IS REROLLED TO HAVE ANNULAR END CORRUGATIONS OF 2 2/3"x1/2"
7. DIMENSIONS ARE SUBJECT TO MANUFACTURING TOLERANCES.
8. ORDER SHALL DESIGNATE GASKET OPTION, IF REQUIRED (SEE DETAILS ABOVE).

H-12 HUGGER BAND DETAIL
NOT TO SCALE

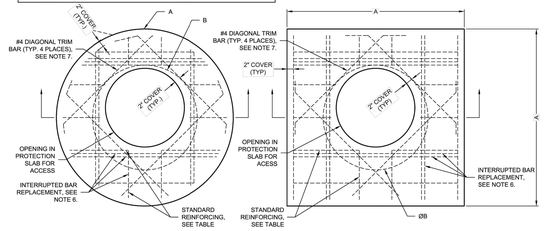


SECTION VIEW

REINFORCING TABLE				
Ø CMP RISER	A	B Ø	REINFORCING	**BEARING PRESSURE (PSF)
24"	4'Ø 4'x4'	28"	#5 @ 10" OCEW #5 @ 10" OCEW	2,540 1,900
30"	4'-6"Ø 4'-6" x 4'-6"	32"	#5 @ 10" OCEW #5 @ 9" OCEW	2,260 1,670
36"	5'Ø 5' x 5'	38"	#5 @ 9" OCEW #5 @ 8" OCEW	2,060 1,500
42"	5'-6"Ø 5'-6" x 5'-6"	44"	#5 @ 8" OCEW #5 @ 6" OCEW	1,490 1,370
48"	6'Ø 6' x 6'	50"	#5 @ 7" OCEW #5 @ 7" OCEW	1,210 1,270

** ASSUMED SOIL BEARING CAPACITY

ACCESS CASTING NOT SUPPLIED BY CONTECH



ROUND OPTION PLAN VIEW

SQUARE OPTION PLAN VIEW

NOTES:

1. DESIGN IN ACCORDANCE WITH AASHTO, 17th EDITION AND ACI 350.
2. DESIGN LOAD HS25.
3. EARTH COVER = 1' MAX.
4. CONCRETE STRENGTH = 4,000 psi
5. REINFORCING STEEL = ASTM A615, GRADE 60.
6. PROVIDE ADDITIONAL REINFORCING AROUND OPENINGS EQUAL TO THE BARS INTERRUPTED, HALF EACH SIDE. ADDITIONAL BARS TO BE IN THE SAME PLANE.
7. TRIM OPENING WITH DIAGONAL #4 BARS, EXTEND BARS A MINIMUM OF 12" BEYOND OPENING, BEND BARS AS REQUIRED TO MAINTAIN BAR COVER.
8. PROTECTION SLAB AND ALL MATERIALS TO BE PROVIDED AND INSTALLED BY CONTRACTOR.
9. DETAIL DESIGN BY DELTA ENGINEERS, ARCHITECTS AND LAND SURVEYORS, ENDWELL, NY.

MANHOLE CAP DETAIL
NOT TO SCALE

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WOODARD & CURRAN
41 HUTCHINS DRIVE
PORTLAND, ME 04102

LANDSCAPE ARCHITECT
MICHAEL BOUCHER LANDSCAPE ARCHITECTURE
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FREEPORT, ME 04032

MEP/FP ENGINEER
ALLIED ENGINEERING
160 VERANDA STREET
PORTLAND, ME 04103

GEOTECHNICAL ENGINEER
S.W. COLE
286 PORTLAND ROAD
GREY, ME 04039

TRAFFIC ENGINEER
VANASSE HANGEN BRUSTLIN INC
40 IDX DR 100 #200, SOUTH
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COST ESTIMATOR
PREFERRED CONSTRUCTION MGMT
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PORTLAND, ME 04103

SEAL / SIGNATURE

STATE OF MAINE · ASHLEY FLETCHER No. 13750 · LICENSED PROFESSIONAL ENGINEER

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2021

PROJECT:

USM - Structured Parking Garage

Address

44 Bedford Street,
Portland ME 04104

REVISIONS:

No.	Date	Description

SUBMISSIONS:

Date	Issued For:
07/30/21	Site Plan Submittal

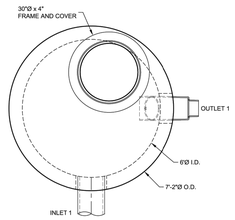
SCALE	**AS NOTED**
DATE ISSUED	**7/30/2021**
PROJECT NO	**20-20145.00-1**
DRAWN BY	**B.C.M.**
CHECKED BY	**A.E.F.**

SHEET TITLE:

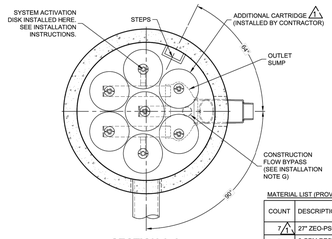
CIVIL DETAILS - 4

D-203

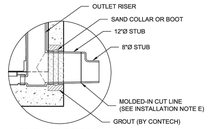
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PLAN VIEW
CARTRIDGES AND FLOW KIT NOT SHOWN

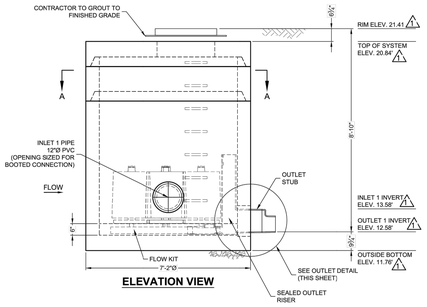


SECTION A-A



OUTLET DETAIL
(ILLUSTRATION ONLY)

• INLET PIPE CONNECTION SHALL HAVE A BOOTED CONNECTOR



ELEVATION VIEW

COUNT	DESCRIPTION	INSTALLED BY
7 ⚠1	27" ZEO-PSORB CARTRIDGE	CONTECH
7	2 GPM RESTRICTOR DISK (BLK)	CONTECH
0 ⚠1	3" PVC SLIP PLUG	CONTECH
1	42A FLOWKIT	CONTECH
1	SF ACTIVATION DISK	CONTECH
1	SEALED OUTLET RISER	CONTECH
7	STEPS, P10CTS, LANE LADDER, OR EQUIV.	CONTECH
1	GENERIC PIPE BOOT	CONTECH
1	SEALANT FOR JOINTS	CONTRACTOR
1	30"Ø x 4" FRAME & COVER, EJ8416004B4, OR EQUIV.	CONTRACTOR

PERFORMANCE SPECIFICATION
FILTER CARTRIDGES SHALL BE MEDIA-FILLED, PASSIVE, SIPHON ACTUATED, RADIAL FLOW, AND SELF CLEANING. RADIAL MEDIA DEPTH SHALL BE 7-INCHES. FILTER MEDIA CONTACT TIME SHALL BE AT LEAST 38 SECONDS.
SPECIFIC FLOW RATE SHALL BE 0 GPM/SF (MAXIMUM). SPECIFIC FLOW RATE IS THE MEASURE OF THE FLOW (GPM) DIVIDED BY THE MEDIA SURFACE CONTACT AREA (SF). MEDIA VOLUMETRIC FLOW RATE SHALL BE 6 GPM/CF OF MEDIA (MAXIMUM).

GENERAL NOTES
1. CONTECH TO PROVIDE ALL MATERIALS UNLESS NOTED OTHERWISE.
2. FOR FABRICATION DRAWINGS WITH DETAILED STRUCTURE DIMENSIONS AND WEIGHT, PLEASE CONTACT YOUR CONTECH ENGINEERED SOLUTIONS LLC REPRESENTATIVE. www.ContechES.com
3. STORMFILTER WATER QUALITY STRUCTURE SHALL BE IN ACCORDANCE WITH ALL DESIGN DATA AND INFORMATION CONTAINED IN THIS DRAWING. CONTRACTOR TO CONFIRM STRUCTURE MEETS REQUIREMENTS OF PROJECT.
4. STRUCTURE SHALL MEET AASHTO HS-20 LOAD RATING, ASSUMING EARTH COVER OF 0' - 5', AND GROUNDWATER ELEVATION AT, OR BELOW, THE OUTLET PIPE INVERT ELEVATION. CASTINGS SHALL MEET AASHTO M306 LOAD RATING AND BE CAST WITH THE CONTECH LOGO.
5. STORMFILTER STRUCTURE SHALL BE PRECAST CONCRETE CONFORMING TO ASTM C-478 AND AASHTO LOAD FACTOR DESIGN METHOD.

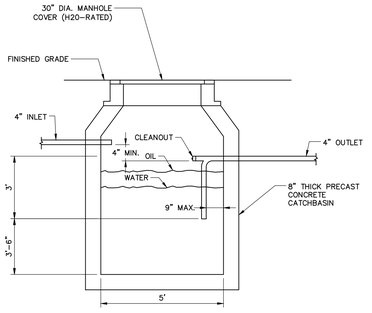
INSTALLATION NOTES
A. ANTI-FLOTATION PROVISIONS SHALL BE DESIGNED AND PROVIDED BY CONTRACTOR.
B. CONTRACTOR TO PROVIDE EQUIPMENT WITH SUFFICIENT LIFTING AND REACH CAPACITY TO LIFT AND SET THE STORMFILTER STRUCTURE.
C. CONTRACTOR TO INSTALL JOINT SEALANT BETWEEN ALL STRUCTURE SECTIONS AND ASSEMBLE STRUCTURE.
D. CONTRACTOR TO PROVIDE, INSTALL, AND GROUT INLET PIPE(S). ALL PIPE CENTERLINES TO MATCH PIPE OPENING CENTERLINES.
E. CONTRACTOR TO PROVIDE AND INSTALL CONNECTOR TO THE OUTLET RISER STUB. STORMFILTER EQUIPPED WITH A DUAL DIAMETER HDPE OUTLET STUB. IF OUTLET PIPE IS LARGER THAN 8 INCHES, CONTRACTOR TO REMOVE THE 8 INCH OUTLET STUB AT MOLDED IN CUT LINE. COUPLING BY FERNCO OR EQUAL AND PROVIDED BY CONTRACTOR.
F. CONTRACTOR TO TAKE APPROPRIATE MEASURES TO PROTECT CARTRIDGES FROM CONSTRUCTION-RELATED EROSION RUNOFF.
G. CONTRACTOR TO INSTALL SUPPLIED PLUG IN CONSTRUCTION FLOW BYPASS WHEN SYSTEM IS BROUGHT ON LINE (PRESSURE FIT ONLY, DO NOT GLUE).

STRUCTURE WEIGHT
APPROXIMATE HEAVIEST PICK = 18,000 LBS. OF 3 PIECES
BASE SECTION SHIPPED WITH CARTRIDGES INSTALLED
MAX FOOTPRINT = 07'-2"

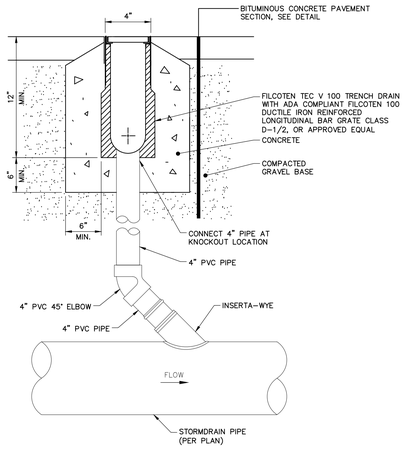
⚠1 STORMFILTER STRUCTURE HAS BEEN PREVIOUSLY PROCURED, BUT WILL NEED TO BE MODIFIED AND SUPPLEMENTED WITH ADDITIONAL CARTRIDGE AS SHOWN.

NOTE: CONTRACTOR SHALL SUBMIT BUOYANCY CALCULATIONS FOR ALL STRUCTURES AND SHALL DESIGN AND PROVIDE ANTI-FLOATATION MEASURE AS NEEDED.

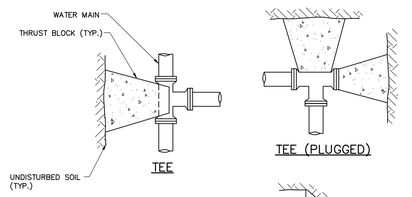
STORMFILTER DETAIL
N.T.S.



OIL WATER SEPARATOR
N.T.S.

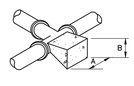


TRENCH DRAIN DETAIL
N.T.S.

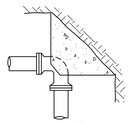


TEE

TEE (PLUGGED)



TEE



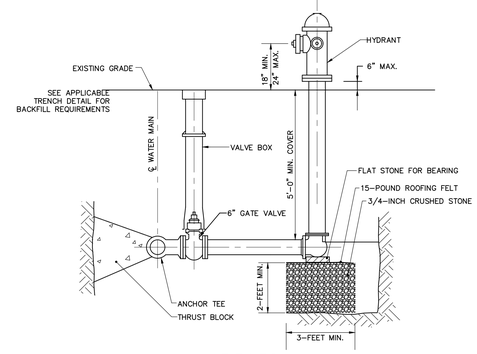
BEND

TABLE 1: 4" THRU 10" FITTINGS				
SOIL TYPE	TEES		BENDS	
	A	B	A	B
SOFT CLAY	48"	24"	48"	24"
SAND	24"	24"	24"	24"
GRAVEL	24"	18"	24"	18"

TABLE 2: 12" THRU 16" FITTINGS				
SOIL TYPE	TEES		BENDS	
	A	B	A	B
SOFT CLAY	60"	36"	72"	36"
SAND	36"	30"	48"	30"
GRAVEL	30"	24"	40"	24"

NOTES:
1. CONCRETE FOR ALL THRUST BLOCKS TO BE MINIMUM 3,000 PSI., 28 DAY STRENGTH, TYPE I CEMENT, 3/4" STONE.
2. WHERE POSSIBLE, CONSTRUCT THRUST BLOCKS AGAINST UNDISTURBED SOIL. WHERE NOT POSSIBLE, PLACE FILL BETWEEN THE THRUST BLOCK AND THE UNDISTURBED SOIL COMPACTED TO 95% STANDARD PROCTOR DENSITY.
3. WRAP FITTINGS WITH POLYETHYLENE PRIOR TO CONSTRUCTING THRUST BLOCKS. NO JOINTS SHALL BE COVERED WITH CONCRETE.
4. THRUST BLOCK DIMENSIONS ARE BASED ON A MAXIMUM WATER MAIN PRESSURE OF 150 PSI.

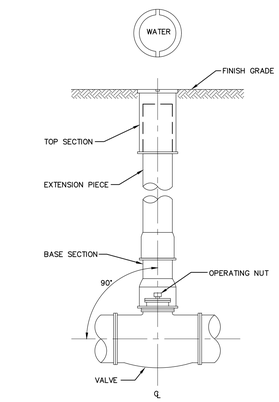
TYPICAL THRUST BLOCK DETAIL
N.T.S.



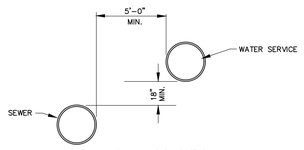
ELEVATION

HYDRANT DETAIL
N.T.S.

NOTES:
- ALL JOINTS FOR HYDRANT INSTALLATION SHALL BE APPROVED RETAINER GLANDS.
- HYDRANT LATERALS SHALL BE CONSTRUCTED FROM ONE CONTINUOUS PIPE LENGTH. HYDRANT LATERALS WITH BELL JOINTS AND COUPLINGS SHALL NOT BE ACCEPTED.
- CONTRACTOR SHALL CONSTRUCT A HYDRANT DRAINING SUMP TO EITHER SIDE OF THE HYDRANT. THE HYDRANT DRAINING SUMP SHALL BE 3-FEET WIDE BY 2-FEET IN DEPTH. THE SUMP SHALL CONSIST OF 3/4-INCH GRAVEL STONE WITH 15-POUND ROOFING FELT LAID OVER THE 3/4-INCH GRAVEL STONE.



VALVE WITH VALVE BOX, 18" AND SMALLER
N.T.S.



UNUSUAL CONDITION PARALLEL INSTALLATION

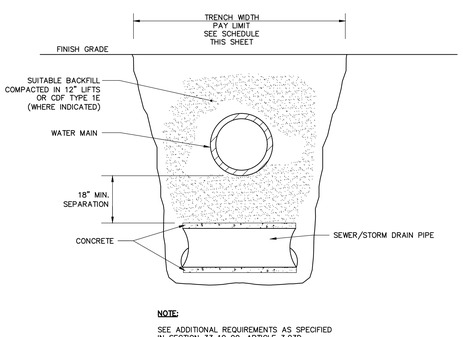
NOTES:

THE SEPARATION OF WATER MAINS AND SEWERS SHALL COMPLY WITH THE FOLLOWING GENERAL REQUIREMENTS.

A. PARALLEL INSTALLATION:
1. NORMAL CONDITIONS: THE INSIDE EDGE OF A WATER MAIN SHALL BE LAID AT LEAST 10 FEET HORIZONTALLY FROM THE INSIDE EDGE OF ANY SANITARY SEWER, STORM SEWER OR SEWER MANHOLE.
2. UNUSUAL CONDITIONS: WHEN LOCAL CONDITIONS PREVENT A HORIZONTAL SEPARATION OF 10 FEET, THE INSIDE EDGE OF A WATER MAIN MAY BE LAID A MINIMUM OF 5 FEET FROM THE INSIDE EDGE OF A SEWER PROVIDED THAT THE BOTTOM OF THE WATER MAIN IS AT LEAST 18 INCHES HIGHER THAN THE TOP OF THE SEWER (SEE DETAIL).

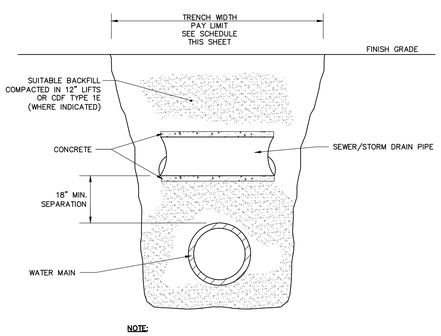
B. CROSSINGS:
1. NORMAL CONDITIONS: WHENEVER POSSIBLE, THE BOTTOM OF THE WATER MAIN SHALL BE AT LEAST 18 INCHES HIGHER THAN THE TOP OF THE SEWER.
2. UNUSUAL CONDITIONS: IF A WATER MAIN MUST CROSS UNDER A SEWER, THE TOP OF THE WATER MAIN SHALL BE AT LEAST 18 INCHES LOWER THAN THE BOTTOM OF THE SEWER, THE WATER MAIN PIPE SHALL BE CENTERED AT THE CROSSING SO THAT THE JOINTS ARE EQUIDISTANT AND AS FAR AS POSSIBLE FROM THE SEWER, AND ADEQUATE STRUCTURAL SUPPORT SHALL BE PROVIDED FOR THE SEWER TO PREVENT EXCESSIVE DEFLECTION OF THE SEWER AT THE CROSSING.

MINIMUM WATER AND SEWER PIPE SEPARATION DETAIL
NTS



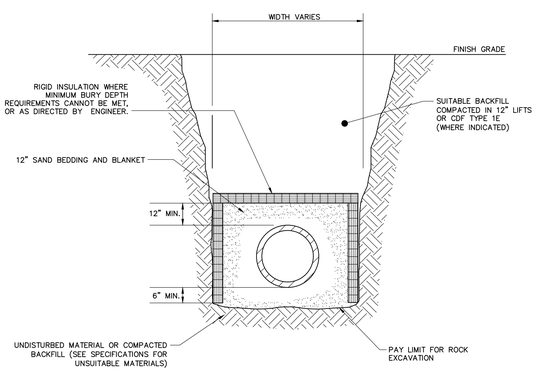
NOTE:
SEE ADDITIONAL REQUIREMENTS AS SPECIFIED IN SECTION 33 10 00, ARTICLE 3.030.

TYPICAL UTILITY CROSSING TRENCH DETAIL 1
N.T.S.

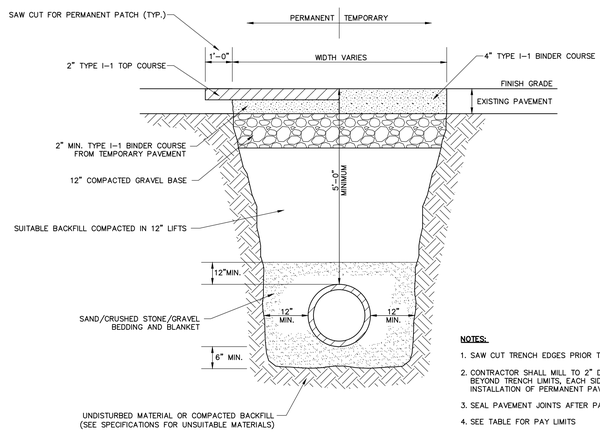


NOTE:
SEE ADDITIONAL REQUIREMENTS AS SPECIFIED IN SECTION 33 10 00, ARTICLE 3.030.

TYPICAL UTILITY CROSSING TRENCH DETAIL 2
N.T.S.



TYPICAL TRENCH DETAIL FOR PIPE INSULATION
N.T.S.



NOTES:
1. SAW CUT TRENCH EDGES PRIOR TO EXCAVATING.
2. CONTRACTOR SHALL MILL TO 2" DEPTH, 1'-0" BEYOND TRENCH LIMITS, EACH SIDE, PRIOR TO INSTALLATION OF PERMANENT PAVEMENT.
3. SEAL PAVEMENT JOINTS AFTER PAVING.
4. SEE TABLE FOR PAY LIMITS

TYPICAL WATER TRENCH DETAIL
N.T.S.

UNIVERSITY OF SOUTHERN MAINE
25 Bedford Street, Portland, ME 04104
207.712.5183 | USM.MAINE.EDU

PROJECT TEAM:

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TRAFFIC ENGINEER
VANASSE HANGEN BRUSTLIN INC
40 IDX DR 100 #200, SOUTH
BURLINGTON, VT 05403

COST ESTIMATOR
PREFERRED CONSTRUCTION MGMT
94 AUBURN ST,
PORTLAND, ME 04103

SEAL / SIGNATURE

STATE OF MAINE · ASHLEY FLETCHER No. 13750 · LICENSED PROFESSIONAL ENGINEER

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PROJECT:

USM - Structured Parking Garage

Address

44 Bedford Street,
Portland ME 04104

REVISIONS:

No.	Date	Description

SUBMISSIONS:

Date	Issued For:
07/30/21	Site Plan Submittal

SCALE	**AS NOTED**
DATE ISSUED	**7/30/2021**
PROJECT NO	**20-20145.00-1**
DRAWN BY	**B.C.M.**
CHECKED BY	**A.E.F.**

SHEET TITLE:

CIVIL DETAILS - 5

D-204

\\woodardcurran.net\shared\Projects\20233035.00 - falmouth street garage\wip\Drawings\Civil\233035.00 C20X.dwg, Jul 29, 2021 - 2:52pm BMCDEVITT

A	AMPERE
AC	ALTERNATING CURRENT
AFF	ABOVE FINISHED FLOOR
AFG	ABOVE FINISHED GRADE
AHU	AIR HANDLING UNIT
AIC	AMPERES INTERRUPTING CAPACITY
ATS	AUTOMATIC TRANSFER SWITCH
AWG	AMERICAN WIRE GAUGE
BAS	BUILDING AUTOMATION SYSTEM
BKBD	BACKBOARD
C	CONDUIT
CAT	CATALOG, CATEGORY
CATV	CABLE TV
CB	CIRCUIT BREAKER
CCTV	CLOSED CIRCUIT TELEVISION
CM	CIRCULAR MILS
COMM	COMMUNICATIONS
CU	MECH CONDENSING UNIT
CU	COPPER
CUH	CABINET UNIT HEATER
DC	DIRECT CURRENT
DDC	DIGITAL DIRECT CONTROL
DN	DOWN
DW	DISHWASHER
DWG	DRAWING
EF	EXHAUST FAN
ELEV	ELEVATOR
EMT	ELECTRICAL METALLIC TUBING
EP	EXPLOSION PROOF
ERU	ENERGY RECOVERY UNIT
EWC	ELECTRIC WATER COOLER
FACP	FIRE ALARM CONTROL PANEL
FB	FLOOR BOX
FLA	FULL LOAD AMPS
FWE	FURNISHED WITH EQUIPMENT
G, GND	GROUND
GFCI	GROUND FAULT CIRCUIT INTERRUPTER
GFP	GROUND FAULT PROTECTION
HID	HIGH INTENSITY DISCHARGE
HOA	HAND-OFF-AUTO SELECTOR SWITCH
HP	HORSEPOWER
HVAC	HEATING, VENTILATION AND COOLING UNIT
IDS	INTRUSION DETECTION SYSTEM
IG	ISOLATED GROUND
IMC	INTERMEDIATE METAL CONDUIT
IR	INFRARED
K	KILO
KCMIL	KILO CIRCULAR MILS
KW	KILOWATT
KVA	KILO VOLT-AMPS
LAN	LOCAL AREA NETWORK
LC	LIGHTING CONTACTOR
LF	LINEAR FEET
LC	LOADCENTER
LCP	LIGHTING CONTROL PANEL
LED	LIGHT EMITTING DIODE
LTG	LIGHTING
LTS	LIGHTS
MAX	MAXIMUM
MCB	MAIN CIRCUIT BREAKER
MECH	MECHANICAL
MH	MOUNTING HEIGHT
MC	MICROPHONE
MW	MICROWAVE
MLO	MAIN LUG ONLY
MT	MOUNT
MTS	MANUAL TRANSFER SWITCH
MCP	MOTOR CONTROL PANEL
MH	METAL HALIDE
MDP	MAIN DISTRIBUTION PANEL
MIN	MINIMUM
N	NEUTRAL
NC	NORMALLY CLOSED
NEC	NATIONAL ELECTRICAL CODE
NEMA	NATIONAL ELECTRICAL MANUFACTURERS ASSOCIATION
NFPA	NATIONAL FIRE PROTECTION ASSOCIATION
NIC	NOT IN CONTRACT
NF	NON-FUSED
NO	NORMALLY OPEN
NO., #	NUMBER
NTS	NOT TO SCALE
OC	ON CENTER
OCC	OCCUPANCY
OH	OVERHEAD
P	POLE
PA	PUBLIC ADDRESS
PB	PULLBOX
PH,	PHASE
PIR	PASSIVE INFRARED
PNL	PANELBOARD
P/O	PART OF
PV	PHOTOVOLTAIC
PVC	POLY-VINYL CHLORIDE
REC RECEPT	RECEPTACLE
REF	REFRIGERATOR
RF	RETURN FAN
RGS	RIGID GALVANIZED STEEL
RM	ROOM
RMC	RIGID METAL CONDUIT
RTU	ROOFTOP UNIT
REF	REFRIGERATOR
SF	SUPPLY FAN
ST	SHUNT TRIP
SPDT	SINGLE POLE, DOUBLE THROW
SQ	SQUARE
TEL	TELEPHONE
TVSS	TRANSIENT VOLTAGE SURGE SUPPRESSOR
TYP	TYPICAL
UF	UNDER FLOOR
UG	UNDERGROUND
UH	UNIT HEATER
UL	UNDERWRITER'S LABORATORY
UNO	UNLESS NOTED OTHERWISE
UPS	UNINTERRUPTIBLE POWER SUPPLY
V	VOLTS
VFD	VARIABLE FREQUENCY DRIVE
W	WATT
WP	WEATHERPROOF
WG	WIREGUARD
XFMR	TRANSFORMER
(E)	EXISTING ITEM TO REMAIN
(R)	REMOVE ITEM AND DISPOSE OF PROPERLY
(ER)	RELOCATED ITEM AT NEW LOCATION
(RL)	REMOVE AND RELOCATE

NOTE

SYMBOLS AND ABBREVIATIONS SHOWN ON THIS SHEET ARE FOR REFERENCE ONLY AND DO NOT NECESSARILY INDICATE THEIR INCORPORATION INTO THE DESIGN

A1 ABBREVIATIONS

FACP	FIRE ALARM CONTROL PANEL, MOUNT WITH TOP OF PANEL NOT MORE THAN 72"AFF
FAA	FIRE ALARM ANNUNCIATOR, MOUNT WITH TOP OF PANEL NOT MORE THAN 72"AFF, WIRED TO FACP
	SMOKE DETECTOR, WIRED TO FACP
E	SMOKE DETECTOR, "E" INDICATES CONNECTION FOR ELEVATOR RECALL, WIRED TO FACP
SS	SINGLE STATION SMOKE DETECTOR WITH AUDIBLE INDICATING APPLIANCE, WALL MOUNTED
SS AV	SINGLE STATION SMOKE DETECTOR WITH AUDIBLE/VISUAL INDICATING APPLIANCE, CEILING MOUNTED
SS CO SS	SINGLE/MULTI-STATION SMOKE/CARBON MONOXIDE DETECTOR WITH AUDIBLE/VISIBLE INDICATING APPLIANCE, CEILING MOUNTED
SS CO	SINGLE/MULTI-STATION SMOKE/CARBON MONOXIDE DETECTOR WITH AUDIBLE INDICATING APPLIANCE, WALL MOUNTED
	HEAT DETECTOR, WIRED TO FACP ~ COMBINATION 135° FIXED TEMPERATURE AND RATE-OF-RISE U.N.O.
E	HEAT DETECTOR, "E" INDICATES CONNECTION FOR ELEVATOR RECALL, WIRED TO FACP
	DUCT SMOKE DETECTOR, WIRED TO FACP
CO	GAS DETECTOR, WIRED TO FACP
	GAS VALVE, WIRED TO FACP
	FLAME DETECTOR, WIRED TO FACP
RTS RTS	REMOTE TEST/INDICATOR FOR DUCT SMOKES, MOUNT ON CEILING BENEATH UNIT, OR WALL MOUNT WHERE INDICATED ON PLANS
F	MANUAL PULL STATION, MOUNT 48" AFF
F	HORN/STROBE, WALL MOUNTED CANDELA AS NOTED ON PLANS, WIRED TO FACP
F	HORN/STROBE, CEILING MOUNTED, CANDELA AS NOTED ON PLANS, WIRED TO FACP
	STROBE ONLY INDICATING APPLIANCE, WALL MOUNTED, CANDELA AS NOTED ON PLANS, WIRED TO FACP
	STROBE ONLY INDICATING APPLIANCE, CEILING MOUNTED, CANDELA AS NOTED ON PLANS, WIRED TO FACP
R	STROBE ONLY INDICATING APPLIANCE, CEILING MOUNTED, CANDELA AS NOTED ON PLANS, 120V, CONNECT TO OPERATE UPON ACTIVATION OF ROOM SMOKE DETECTOR
R	STROBE ONLY INDICATING APPLIANCE, WALL MOUNTED, CANDELA AS NOTED ON PLANS, 120V, CONNECT TO OPERATE UPON ACTIVATION OF ROOM SMOKE DETECTOR
M	MINI HORN, WALL MOUNTED, WIRED TO FACP
M	MINI HORN, CEILING MOUNTED, WIRED TO FACP
F F	HORN/STROBE WITH PULL STATION DIRECTLY BELOW
	FIRE ALARM BEACON
	MAGNETIC DOOR HOLD OPEN DEVICE, WIRED TO FACP
T	TRANSFORMER
	SPRINKLER SYSTEM WATER FLOW SWITCH, PROVIDED UNDER DIVISION 23, WIRED TO FACP UNDER DIVISION 26
	SPRINKLER SYSTEM TAMPER SWITCH, PROVIDED UNDER DIVISION 23, WIRED TO FACP UNDER DIVISION 26
	SPRINKLER SYSTEM CHECK VALVE PRESSURE SWITCH, FURNISHED AND INSTALLED UNDER DIVISION 23, WIRED TO FACP UNDER DIVISION 26
	SPRINKLER SYSTEM PRE-ACTION VALVE, FURNISHED AND INSTALLED UNDER DIVISION 21, WIRED TO FACP UNDER DIVISION 26
K	KNOX BOX, MOUNT 60" AFF
SD	SMOKE DAMPER, WIRED TO FACP
FSD	FIRE AND SMOKE DAMPER, WIRED TO FACP
	HORN/STROBE, CANDELA AS NOTED ON PLANS, WIRED TO FACP
S	SPEAKER/STROBE, WALL MOUNTED, CANDELA AS NOTED ON PLANS, WIRED TO FACP
S	SPEAKER/STROBE, CEILING MOUNTED, CANDELA AS NOTED ON PLANS, WIRED TO FACP
M	MASTER BOX

A3 FIRE ALARM

SEC	SECURITY PANEL, MOUNT WITH TOP OF PANEL NOT MORE THAN 72"AFF
ANN	ANNUNCIATOR, MOUNT WITH TOP OF PANEL NOT MORE THAN 72"AFF
KP	KEYPAD, MOUNT 48"AFF
MSP	MOTION SENSOR, PASSIVE INFRARED (PIR), WALL MOUNTED 96"AFF
MSP	MOTION SENSOR, PASSIVE INFRARED (PIR), CEILING MOUNTED
MSM	MOTION SENSOR, MICROWAVE, WALL MOUNTED
MSM	MOTION SENSOR, MICROWAVE, CEILING MOUNTED
MS	MOTION SENSOR, DUAL TECHNOLOGY, PIR/MICROWAVE, WALL MOUNTED
MS	MOTION SENSOR, DUAL TECHNOLOGY, PIR/MICROWAVE, CEILING MOUNTED
T	TRANSFORMER
C	CAMERA
CA	CARD ACCESS, PROVIDE 3/4" CONDUIT FROM 48" AFF/AFG TO ABOVE CEILING
DC	DOOR CONTACT
DL	MAGNETIC DOOR LOCK
DR	DOOR RELEASE BUTTON
DS	DOOR SWITCH
C	CHIME
SS	STROBE
SH	HORN
B	BELL
D	JUNCTION BOX WITH 120V POWER FOR DOORS
REX	REQUEST-TO-EXIT MOTION SENSOR

A5 POWER DISTRIBUTION

	PANELBOARD ~ SURFACE MOUNTED
	PANELBOARD ~ FLUSH MOUNTED
	FUSED DISCONNECT SWITCH
	NON-FUSED DISCONNECT SWITCH
00	MOTOR STARTER ~ NUMBER INDICATES NEMA SIZE
00	COMBINATION MOTOR STARTER/FUSED DISCONNECT
	MOTOR OR FAN
M	METER AND CABINET
J	JUNCTION BOX ~ CEILING MOUNTED
J	JUNCTION BOX ~ WALL MOUNTED
J	JUNCTION BOX ~ FLUSH FLOOR MOUNTED
P J	JUNCTION BOX ~ PEDESTAL MOUNTED
T#	TRANSFORMER ~ NUMBER INDICATES DESIGNATION SEE TRANSFORMER SCHEDULE
VFD	VARIABLE FREQUENCY DRIVE
TVSS	TRANSIENT VOLTAGE SURGE SUPPRESSOR
E	EMERGENCY SHUTOFF SWITCH ~ WALL MOUNTED 48" TO CENTERLINE ~ PROVIDE TAMPER-PROOF COVER
S	SHUT-OFF SWITCH
	CONDUIT TURNING UP
	CONDUIT TURNING DOWN
	WIRING UNDERGROUND OR UNDERSLAB
	HOMERUN ~ (2)#12+(1)#12G UNO (EXCEPT LIGHTING CIRCUITS: (1)#12+(1)#10N+(1)#12G UNO)
	SINGLE-PHASE HOMERUN OR MULTIPLE HOMERUN UTILIZING THE SAME CONDUIT
	3-PHASE HOMERUN OR MULTIPLE HOMERUN UTILIZING THE SAME CONDUIT
	FLEXIBLE CONNECTION
	GROUNDING SYSTEM
P	POWER POLE
	PUSHBUTTON
C	DOORBELL CHIME
F	SYSTEMS FURNITURE WHIP, DUAL SERVICE, WALL MOUNTED
P	MOTORIZED DOOR OPERATOR AND PUSH PADDLE ~ DEVICES FURNISHED BY DIV 08, POWER WIRING, BOXES, AND CONDUIT BY DIV 26
CB	ENCLOSED CIRCUIT BREAKER
ATS	AUTOMATIC TRANSFER SWITCH
H	HAND DRYER, COORDINATE HEIGHT WITH ARCHITECTURAL PLANS
SF	SYSTEMS FURNITURE FEED

B5 SECURITY

PS	PAY STATION KIOSK ~ SEE INSTALLATION DETAIL D3 ON DRAWING E501.
EC	EMERGENCY CALL BOX LOCATION WITH BLUE LIGHT BEACON ~ SEE DETAIL B4 ON DRAWING E501.
EVSE	ELECTRIC VEHICLE SUPPLY EQUIPMENT (VEHICLE CHARGING STATION). DUAL SERVICE UNIT. SEE DETAIL C4 ON DRAWING E501.

B7 SPECIALTY EQUIPMENT

SINGLE RECEPTACLES

	20A, 125V, 2P, 3W, NEMA 5-20R
	20A, 125V, 2P, 3W, NEMA L5-20R (TWISTLOCK)
	30A DRYER RECEPTACLE ~ 125/250V, 3P, 4W, GROUNDING, NEMA 14-30R, (3)#10+(1)#10G TO 30A, 2P CIRCUIT BREAKER
	30A, 250V, 2P, 3W, NEMA 6-30R
	50A RANGE RECEPTACLE ~ 125/250V, 3P, 4W, GROUNDING, NEMA 14-50R, (3)#6+(1)#10 TO 50A, 2P CIRCUIT BREAKER
	20A, 250V, 2P, 3W, NEMA 6-20R

NOTE:

PROVIDE MATCHING CORD AND PLUG FOR SINGLE RECEPTACLES

FLOOR AND CEILING DEVICES

F	DUPLEX RECEPTACLE, 20A, 125V, 2P, 3W, NEMA 5-20R, MOUNT IN FLUSH FLOOR BOX
F	DOUBLE DUPLEX RECEPTACLE, 20A, 125V, 2P, 3W, NEMA 5-20R, MOUNT IN FLUSH FLOOR BOX
P	DUPLEX RECEPTACLE, PEDESTAL MOUNTED
P	SINGLE RECEPTACLE, PEDESTAL MOUNTED
C	DUPLEX RECEPTACLE, FLUSH MOUNTED IN CEILING
C	DOUBLE DUPLEX RECEPTACLE, FLUSH MOUNTED IN CEILING
C	DUPLEX GFCI RECEPTACLE, FLUSH MOUNTED IN CEILING
C	DOUBLE DUPLEX GFCI RECEPTACLE, FLUSH MOUNTED IN CEILING
	OVERHEAD RECEPTACLE DROP, DUPLEX
	OVERHEAD RECEPTACLE DROP, DOUBLE DUPLEX
	OVERHEAD RECEPTACLE DROP, GFCI
PT-1	4" POKE-THRU DEVICE, DUAL SERVICE FURNITURE FEED. BASIS OF DESIGN: WIREMOLD AFFATC
PT-2	6" POKE-THRU DEVICE, WITH (2) DUPLEX RECEPTACLES AND TEL/DATA AS INDICATED ON PLANS. BASIS OF DESIGN: LEGRAND 6AT SERIES.
F	MULTI-SERVICE FLUSH FLOOR BOX ~ WIREMOLD EFB45 SERIES OR APPROVED EQUAL. COVER SHALL BE FLUSH STYLE WITH FLOOR INSERT. COVER FINISH COLOR SHALL BE SELECTED BY ARCHITECT FROM MANUFACTURER'S STANDARD FINISHES.

RECEPTACLES

	DUPLEX RECEPTACLE ~ 20A, 125V, 2P, 3W, NEMA 5-20R
	DOUBLE DUPLEX RECEPTACLE
	DUPLEX RECEPTACLE, HATCH INDICATES AFCI PROTECTION AND TAMPERPROOF
T	TAMPERPROOF DUPLEX RECEPTACLE
	GFCI DUPLEX RECEPTACLE, MOUNT 44" AFF UNO
	GFCI DOUBLE DUPLEX RECEPTACLE, MOUNT 44" AFF UNO
EWC	GFCI RECEPTACLE FOR ELECTRIC WATER COOLER - COORDINATE LOCATION WITH DIVISION 22.
WP	GFCI RECEPTACLE WITH WEATHERPROOF COVER
WP	GFCI RECEPTACLE IN WP ENCLOSURE ON ROOF
	MULTI-OUTLET STRIP, PROVIDE OUTLETS 24" OC UNO, MOUNT 48" AFF UNO
	SURFACE RACEWAY WITH DIVIDER, MOUNT 44" AFF UNO. PROVIDE NEMA 5-20 RECEPTACLES AND TECHNOLOGY OUTLETS AS SHOWN ON PLAN

NOTES:

1. MOUNT RECEPTACLES WITH CENTERLINE 18" AFF UNO
2. MOUNT EXTERIOR RECEPTACLES WITH CENTERLINE 24" AFG UNO

A7 RECEPTACLES

LIGHTING SWITCHES

$a	LIGHT SWITCH, 20A,125/277V
$3	THREE-WAY LIGHT SWITCH
$4	FOUR-WAY LIGHT SWITCH
$2	TWO-POLE SWITCH
$K	KEY OPERATED SWITCH
$M	MOTOR RATED SWITCH
$P	SINGLE POLE SWITCH WITH RED PILOT LIGHT ~ RED LIGHT SHALL GLOW WHEN CIRCUIT IS ENERGIZED
$a $b	MULTI-GANGED SWITCHES, GANG UNDER ONE PLATE, LETTER INDICATES SWITCHING
$OS	OCCUPANCY SENSOR SWITCH, WALL MOUNTED
$OS2	2-BUTTON OCCUPANCY SENSOR SWITCH
$OS3	OCCUPANCY SENSOR SWITCH WIRED FOR 3-WAY OPERATION
$OSD	OCCUPANCY SENSOR SWITCH WITH DIMMING ~ COORDINATE DIMMING TECHNOLOGY WITH LOAD TO BE DIMMED
OS	OCCUPANCY SENSOR, CEILING MOUNTED
OS	OCCUPANCY SENSOR, WALL MOUNTED
$D	DIMMER SWITCH ~ COORDINATE DIMMING TECHNOLOGY WITH LOAD TO BE DIMMED
$F $L	HANDICAP SWITCHES FOR HOOD LIGHT AND FAN
$T	TIMER SWITCH
$LV	LOW VOLTAGE LIGHT SWITCH, MOMENTARY CONTACT
LTC	LIGHTING TIME CLOCK
LC	LIGHTING CONTACTOR
LCP	LIGHTING CONTROL PANEL
PC	OUTDOOR PHOTOELECTRIC SWITCH
DS	DAYLIGHT HARVESTING SENSOR

NOTES:

1. MOUNT LIGHT SWITCHES WITH CENTERLINE 48" AFF, UNO
2. LOWER CASE LETTER AT SWITCH INDICATES SWITCHING

EMERGENCY LIGHTING

	WHERE NOTED ON PLANS FIXTURE CONNECTED TO CENTRAL INVERTER. CONTROL AS INDICATED ON PLANS.
EM	"EM" INDICATES EMERGENCY WHERE SYMBOL HATCHING IS UNCLEAR
BP#	EMER BATTERY UNIT WITH NO HEADS, MT 7'-6"AFF BP# INDICATES BATTERY UNIT DESIGNATION, CONNECT TO UNSWITCHED PORTION OF AREA LIGHTING BRANCH CIRCUIT, U.N.O.
BP#	EMER BATTERY UNIT WITH INTEGRAL HEADS, MT 7'-6"AFF BP# INDICATES BATTERY UNIT DESIGNATION, CONNECT TO UNSWITCHED PORTION OF AREA LIGHTING BRANCH CIRCUIT, U.N.O.
BP#	SINGLE REMOTE EMERGENCY LIGHT HEAD, MOUNT 7'-6"AFF BP# INDICATES BATTERY UNIT CONNECTED TO
BP#	DOUBLE REMOTE EMERGENCY LIGHT HEAD, MOUNT 7'-6"AFF BP# INDICATES BATTERY UNIT CONNECTED TO
BP#	DOUBLE REMOTE EMERGENCY LIGHT HEAD, CEILING MOUNTED BP# INDICATES BATTERY UNIT CONNECTED TO
	EXIT SIGN, CEILING MOUNTED, SHADING INDICATES FACE(S) ARROWHEAD INDICATES CHEVRON(S) REQUIRED, CONNECT TO UNSWITCHED PORTION OF AREA LIGHTING BRANCH CIRCUIT, U.N.O.
	EXIT SIGN, WALL MOUNTED, SHADING INDICATES FACE(S) MOUNT AT 7'-6"AFF OR OVER DOOR, CONNECT TO UNSWITCHED PORTION OF AREA LIGHTING BRANCH CIRCUIT, U.N.O.
INV	CENTRAL LIGHTING INVERTER

REFER TO LUMINAIRE SCHEDULE FOR FIXTURE LEGEND

TYPICAL FOR ALL FIXTURE TYPES:

R1 a — INDICATES LUMINAIRE TYPE ON SCHEDULE
LOWER CASE LETTER INDICATES SWITCHING
— INDICATES CIRCUIT NUMBER

A9 LUMINAIRES

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PROJECT:

USM - Structured Parking Garage

Address

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REVISIONS:

No.	Date	Description

SUBMISSIONS:

Date	Issued For:
07/30/21	Site Plan Submittal

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DATE ISSUED	**07/30/2021**
PROJECT NO	**20-20145.00-1**
DRAWN BY	**GMC**
CHECKED BY	**BTG**

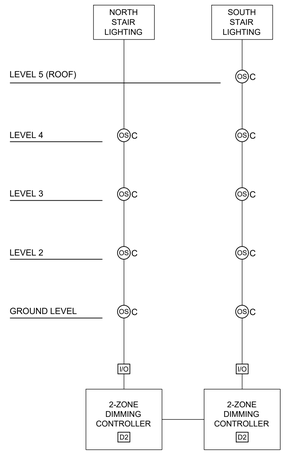
SHEET TITLE:

ELECTRICAL LEGEND AND ABBREVIATIONS

E-000

LIGHTING CONTROL DIAGRAM LEGEND & NOTES:

- D2 — 2-ZONE DIMMER CONTROLLER (WATTSTOPPER #LMRC-212)
- I/O — INPUT/OUTPUT INTERFACE MODULE (WATTSTOPPER #LMIO)
- QTD — EMERGENCY LIGHTING CONTROL UNIT (WATTSTOPPER #ELCU-200). PROVIDE (1) UNIT FOR EACH EMERGENCY CIRCUIT
- OSC — COLD TEMPERATURE WEATHERPROOF PASSIVE INFRARED OCCUPANCY SENSOR WITH MIDDLE AREA COVERAGE (WATTSTOPPER #FS-L3W)

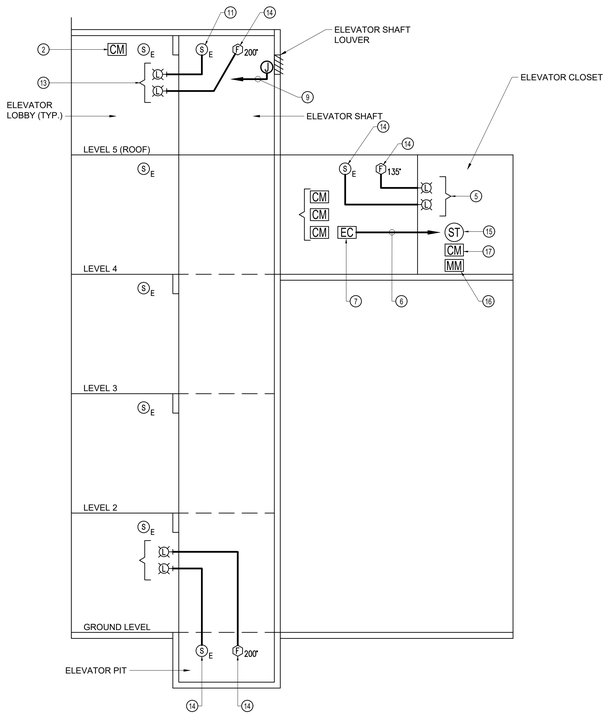


A2 — STAIR LIGHTING CONTROL DETAIL

DO NOT SCALE

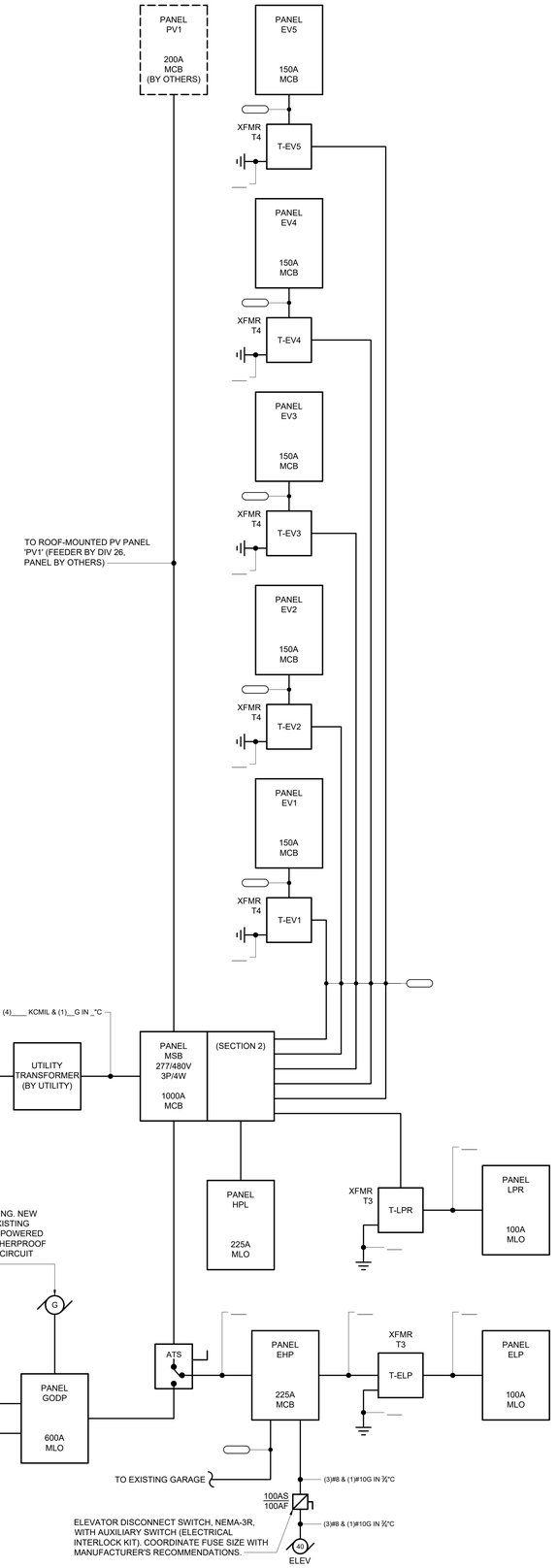
NOTES:

1. ELEVATOR MACHINE ROOM; REFER TO FLOOR PLANS FOR EXACT FLOOR LOCATION AND ADJACENCY (EG TOP FLOOR, PENTHOUSE, FIRST FLOOR, BASEMENT)
2. FIRE ALARM CONTROL MODULE, RELAY AND WIRING PROVIDED FOR SENDING FIRE ALARM SYSTEM CONTROL SIGNAL TO OPEN ELEVATOR SHAFT LOUVER DURING A FIRE EVENT; REFER TO MECHANICAL PLANS FOR EXACT LOCATION AND CONTROL CIRCUIT INTEGRATION POINT. THE CONTROL MODULE SHALL BE LOCATED ABOVE CLOSEST ACCESSIBLE CEILING TO THE LOUVER CONTROL CIRCUIT INTEGRATION POINT. THE CONTROL WIRING FROM THE CONTROL MODULE TO THE LOUVER OPERATOR SHALL BE PERFORMED BY THE CONTRACTOR RESPONSIBLE FOR DIVISION 23 SCOPE. THE CONTROL MODULE SHALL BE PROGRAMMED TO RECEIVE A SIGNAL UPON ACTIVATION OF ANY FIRE ALARM DETECTION DEVICE WITHIN THE RESPECTIVE BUILDING.
3. SMOKE DETECTOR LOCATED WITHIN 21 FEET OF THE CENTERLINE OF EACH ELEVATOR DOOR (FOR LOBBY CEILINGS 15'-0" AFF OR LESS); REFER TO FLOOR PLAN FOR PROPOSED LOCATION AND QUANTITY OF DETECTORS IN RESPECTIVE ELEVATOR LOBBY.
4. "E" ON DETECTORS DENOTES THAT THE RESPECTIVE FIRE ALARM SYSTEM DETECTOR (UPON ACTIVATION) SHALL BE PROGRAMMED TO INITIATE THE REQUIRED ELEVATOR RECALL SEQUENCE.
5. REMOTE INDICATOR LIGHT(S) LOCATED OUTSIDE AND ABOVE THE RESPECTIVE ELEVATOR MACHINE ROOM DOOR. THE INDICATOR LIGHT SHALL BE ACTIVATED WHEN THE ASSOCIATED DETECTOR WITHIN THE ELEVATOR MACHINE ROOM ENTERS AN ALARM CONDITION.
6. POWER FEEDER TO ELEVATOR CONTROLLER (REFER TO POWER PLANS FOR SOURCE AND FEEDER SIZE)
7. ELEVATOR CONTROLLER; FURNISHED AND INSTALLED BY THE CONTRACTOR RESPONSIBLE FOR DIVISION 14 SCOPE.
8. PROVIDE THREE FIRE ALARM CONTROL MODULES, RELAYS AND WIRING FOR SENDING FIRE ALARM SYSTEM CONTROL SIGNAL TO THE ELEVATOR CONTROLLER; ONE TO ACTIVATE THE ELEVATOR RECALL SEQUENCE (PRIMARY LEVEL), THE SECOND TO ACTIVATE THE ELEVATOR RECALL SEQUENCE (ALTERNATE LEVEL), AND THE THIRD TO ACTIVATE THE ELEVATOR CAB WARNING SEQUENCE (FIREMAN'S HAT) . THE CONTROL WIRING FROM EACH MODULE TO THE ELEVATOR CONTROLLER SHALL BE PERFORMED BY THE CONTRACTOR RESPONSIBLE FOR DIVISION 14 SCOPE.
9. POWER BRANCH CIRCUIT TO ELEVATOR SHAFT LOUVER OPERATOR (REFER TO PLAN FOR SOURCE AND BRANCH CIRCUIT SIZE).
10. REFER TO POWER PLANS FOR REQUIRED ELEVATOR EQUIPMENT POWER AND MAINTENANCE POWER PROVISIONS.
11. SMOKE DETECTOR LOCATED AT THE TOP OF THE ELEVATOR SHAFT (EXACT LOCATION PER NFPA 72 STANDARDS).
12. SMOKE DETECTOR LOCATED AT THE ELEVATOR PIT (EXACT LOCATION PER NFPA 72 STANDARDS).
13. REMOTE INDICATOR LIGHT(S) LOCATED OUTSIDE AND ABOVE THE RESPECTIVE FLOOR ELEVATOR CAB DOOR. THE INDICATOR LIGHT SHALL BE ACTIVATED WHEN THE ASSOCIATED DETECTOR ENTERS AN ALARM CONDITION.
14. WHEN SPRINKLER HEADS ARE PRESENT IN THE ELEVATOR SHAFT, ELEVATOR PIT OR ELEVATOR MACHINE ROOM, LOCATE THE FIRE ALARM SYSTEM DETECTOR(S) WITHIN (2) FEET OF THE RESPECTIVE SPRINKLER HEAD.
15. SHUNT TRIP MODULE PROVIDED WITH THE RESPECTIVE ELEVATOR FEEDER CIRCUIT BREAKER FOR SHUTTING DOWN ELEVATOR POWER.
16. FIRE ALARM MONITOR MODULE, RELAY AND WIRING PROVIDED FOR RECEIVING FIRE ALARM SYSTEM MONITOR SIGNAL FROM THE ELEVATOR FEEDER SHUNT TRIP MODULE FOR VERIFYING THE SHUNT TRIP CONTROL POWER CIRCUIT IS FUNCTIONING PROPERLY. THE MONITOR MODULE SHALL BE PROGRAMMED TO SEND A SIGNAL (SUPERVISORY) IF THE CONTROL POWER CIRCUIT IS DE-ENERGIZED.
17. FIRE ALARM CONTROL MODULE, RELAY AND WIRING PROVIDED FOR SENDING FIRE ALARM SYSTEM CONTROL SIGNAL TO INITIATE THE ELEVATOR POWER SHUNT TRIP SEQUENCE. THE CONTROL MODULE SHALL BE PROGRAMMED TO RECEIVE A SIGNAL UPON ACTIVATION OF ANY HEAT DETECTOR LOCATED WITHIN THE ELEVATOR SHAFT, ELEVATOR PIT OR ELEVATOR MACHINE ROOM.
18. FIXED TEMPERATURE (135 DEGREE F) HEAT DETECTOR LOCATED IN THE ELEVATOR MACHINE ROOM.
19. FIXED TEMPERATURE (135 DEGREE F) HEAT DETECTOR LOCATED AT THE ELEVATOR PIT.
20. FIXED TEMPERATURE (190 DEGREE F) HEAT DETECTOR LOCATED AT THE TOP OF THE ELEVATOR SHAFT.
21. ALL HEAT DETECTORS WITHIN ELEVATOR SHAFT/PIT/MACHINE ROOM SHALL BE PROVIDED WITH TEMPERATURE AND RTI RATINGS THAT ARE LOWER THAN THE ASSOCIATED SPRINKLER HEAD.



A1 — FIRE ALARM CONTROL DIAGRAM FOR ELEVATOR WITH SHAFT/ MACHINE ROOM PROTECTION SPRINKLERS

DO NOT SCALE



A3 — POWER RISER DIAGRAM

DO NOT SCALE

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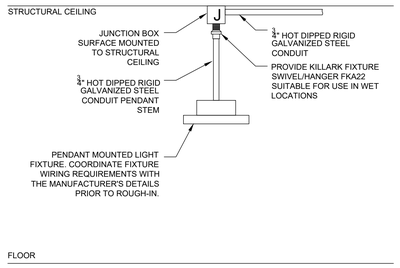
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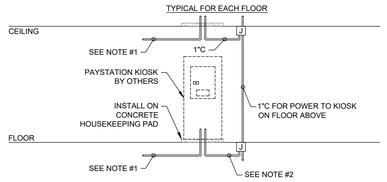
ELECTRICAL DETAILS

E-500

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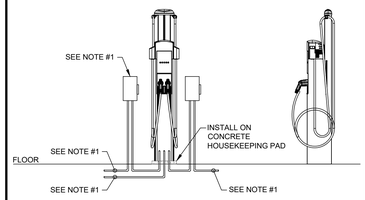
D2	CEILING MOUNTED GARAGE FIXTURE DETAIL
DO NOT SCALE	



NOTES:

1. PROVIDE (1) 1"C EMPTY CONDUIT WITH NYLON PULLSTRING BACK TO THE MAIN ELECTRICAL ROOM FOR EACH PAYSTATION KIOSK. TELECOMMUNICATIONS CABLING BY OTHERS. STUB CONDUIT UP TO 6" ABOVE FINISHED FLOOR AND CAP FOR FUTURE.
2. PROVIDE (1) 1"C EMPTY CONDUIT WITH NYLON PULLSTRING AND JUNCTION BOX AT EACH LEVEL FOR FUTURE POWER BRANCH CIRCUIT WIRING. STUB CONDUIT UP TO 6" ABOVE FINISHED FLOOR AND CAP FOR FUTURE. AT THE LOWER LEVEL, CONDUIT SHALL BE ROUTED BACK TO THE MAIN ELECTRICAL ROOM AND TERMINATED IN PANELBOARD 'RP2G'. CONDUITS SHALL BE MARKED FOR FUTURE PAYSTATION KIOSK.

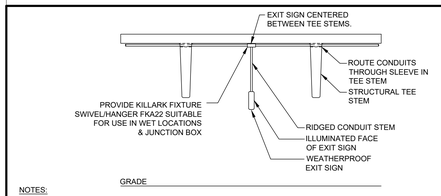
D3	PAYSTATION KIOSK DETAIL
DO NOT SCALE	



NOTES:

1. ELECTRICAL VEHICLE CHARGING SYSTEM SHALL BE INSTALLED IN ACCORDANCE WITH NEC 625. THE ELECTRICAL CONTRACTOR SHALL MEET ALL INSTALLATION REQUIREMENTS WHETHER INCORPORATED INTO THE MANUFACTURED ELECTRIC VEHICLE SUPPLY EQUIPMENT (EVSE) OR PROVIDED SEPARATELY.
2. PROVIDE DISCONNECT IN A READILY ACCESSIBLE LOCATION FOR ELECTRIC VEHICLE CHARGING STATIONS 480/277V ONLY. DISCONNECT SHALL BE LOCKABLE OPEN TYPE IN ACCORDANCE WITH NEC 110.25. WHERE 208/120V (EVSE) IS UTILIZED, DISCONNECTING MEANS IS NOT REQUIRED.
3. PROVIDE (2) 1" HOT-DIPPED GALVANIZED RIGID STEEL POWER CONDUITS STUBBED UP 12"AFF AND TERMINATED IN WEATHERPROOF CAST JUNCTION BOX WITHIN THE (EVSE). PROVIDE LFMC WHIP CONNECTION TO EQUIPMENT TERMINATION POINT.
4. PROVIDE (1) 1" HOT-DIPPED GALVANIZED RIGID STEEL TELECOMMUNICATIONS CONDUITS STUBBED UP 12" AFF FOR COMMUNICATION CABLING FOR RFID OR CREDIT CARD EQUIPMENT. ROUTE CONDUIT TO TELECOMMUNICATIONS BACKBOARD/SERVER EQUIPMENT.

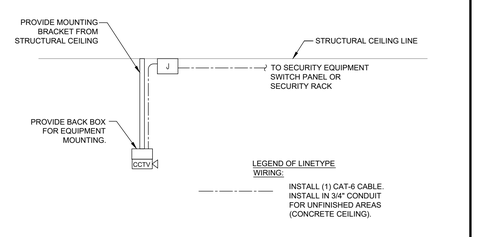
C4	ELECTRIC VEHICLE CHARGING SYSTEM
DO NOT SCALE	



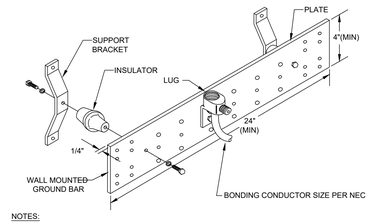
NOTES:

1. EXIT SIGNS SHALL BE INSTALLED SUCH THAT THE FACE OF THE EXIT SIGN IN THE PRIMARY DIRECTION OF EGRESS (SHORTEST PATH TO EGRESS DOOR) IS FACING OUT AND AWAY FROM THE STRUCTURAL TEE STEM.
2. EXIT SIGN SHALL BE INSTALLED SUCH THAT THE BOTTOM OF THE EXIT SIGN IS A MINIMUM OF 7'-2" ABOVE FINISHED FLOOR WHERE LOCATED IN THE GARAGE DRIVE LANE OR PARKING STALL.
3. WHERE EXIT SIGNS ARE PROTECTED FROM VEHICULAR DAMAGE VIA BOLLARDS, PARKING STOPPERS, STRUCTURAL MEMBERS, ETC. THE SIGNAGE SHALL BE PENDANT MOUNTED TO TOP OF EXIT SIGN FLUSH WITH THE BOTTOM OF THE TEE STEM (I.E. ELEVATOR LOBBY, STAIR LOBBY, ETC.)

C1	EXIT SIGN GARAGE AREA MOUNTING DETAIL
DO NOT SCALE	



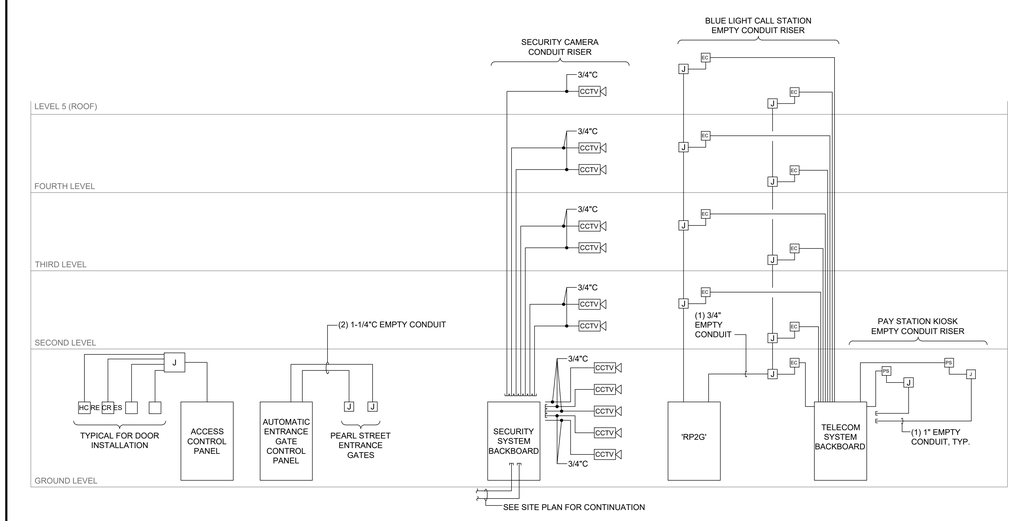
C2	CAMERA MOUNTING DETAIL
DO NOT SCALE	



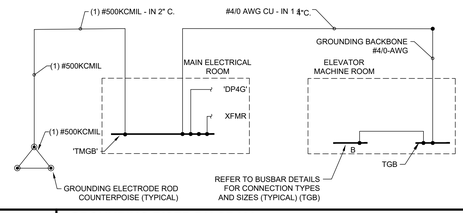
NOTES:

1. MINIMUM 2" STAND-OFF FROM WALL TO BACK SIDE OF PLATE

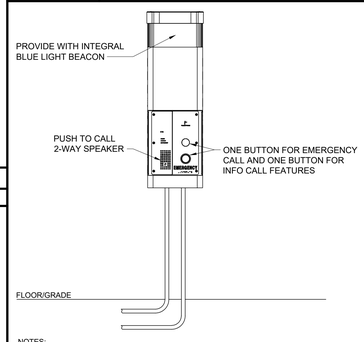
C3	GROUND BAR DETAIL
DO NOT SCALE	



A1	CONDUIT RISER DIAGRAM
DO NOT SCALE	



B3	GROUNDING RISER DIAGRAM
DO NOT SCALE	



NOTES:

1. COORDINATE INSTALLATION DETAILS WITH MANUFACTURER'S INSTRUCTIONS.
2. PROVIDE (1) 3/4"C EMPTY CONDUIT WITH NYLON PULLSTRING BACK TO THE MAIN ELECTRICAL ROOM FOR EACH EMERGENCY PHONE STATION. TELECOMMUNICATIONS CABLING BY OTHERS.

B4	CALLSTATION WITH BLUE LIGHT
DO NOT SCALE	

7/2/2021 3:16:33 PM

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PROJECT TEAM:

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GREY, ME 04039

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VANASSE HANGEN BRUSTLIN INC
40 IDX DR 100 #200, SOUTH
BURLINGTON, VT 05403

COST ESTIMATOR
PREFERRED CONSTRUCTION MGMT
94 AUBURN ST,
PORTLAND, ME 04103

SEAL / SIGNATURE

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2021

PROJECT:

USM - Structured Parking Garage

Address

44 Bedford Street,
Portland ME 04104

REVISIONS:

No.	Date	Description

SUBMISSIONS:

Date	Issued For:
07/30/21	Site Plan Submittal

SCALE	**AS NOTED**
DATE ISSUED	**07/30/2021**
PROJECT NO	**20-20145.00-1**
DRAWN BY	**GMC**
CHECKED BY	**BTG**

SHEET TITLE:

ELECTRICAL DETAILS

E-501

LUMINAIRE SCHEDULE

TYPE	DESCRIPTION	MFR	CATALOG SERIES NUMBER SEE NOTE 1	MOUNTING, U.N.O.	VOLTS	LAMP				KEY NOTES
						QTY PER FIXTURE	WATTS	LUMENS	TYPE	
G	LED PARKING GARAGE LIGHT	LITHONIA	VCPG-LED-V4-P4-40K-70CRI-___-MVOLT-PM	PENDANT	UNV	1	56	____	LED ARRAY ~ 4000K	
B	LED STRIP LIGHT	LITHONIA	FEM-L48-4000LM-LPPFL-WD-MVOLT-GZ10-40K-80CRI	SURFACE	UNV	1	30	4,257	LED ARRAY ~ 4000K	
GP	GARAGE ROOF LED LIGHT AND POLE	LITHONIA	LIGHT: RSX1-LED-P3-40K-R5-MVOLT-SPA POLE: SSS-14-4C-DM19AS	SURFACE	UNV	1	109	14,397	LED ARRAY ~ 4000K	
EXIT	EXIT SIGN, AC ONLY	LITHONIA	LV-S-W-*-R	SEE PLAN	UNV	1		PER CODE	LED ARRAY	3,6
P1	SITE LIGHT AND POLE, "ICE CREAM CONE" SHAPE	SEE NOTE 8		14' POLE	277	1	24	3,330	LED ARRAY ~ 4000K	8,9
P2	SITE LIGHT AND POLE, "SHOEBOX" SHAPE	SEE NOTE 8		14' POLE	277	1	18	2,160	LED ARRAY ~ 4000K	8,10
SW1	WALL MOUNTED EXTERIOR LIGHT	LITHONIA	KAXW-LED-P1-40K-R4-MVOLT	KEYNOTE 5	UNV	1	29	3,643	LED ARRAY ~ 4000K	5
SR1	RECESSED CANOPY LIGHT	LITHONIA	LDN4SQ-40-07-LS4-AR-LSS-MVOLT	RECESSED CANOPY	UNV	1	8.6	620	LED ARRAY ~ 4000K	

	NOTES
1	**NOTE THAT THESE NUMBERS ARE NOT COMPLETE CATALOG NUMBERS. PROVIDE ALL REQUIREMENTS ON SCHEDULE, NOTES, SPECS, AND DRAWINGS COMBINED.**
2	**CATALOG SERIES NUMBERS ARE USED TO ESTABLISH A LEVEL OF QUALITY AND NOT INTENDED TO LIMIT COMPETITION. SERIES NUMBERS ARE NOT COMPLETE CATALOG NUMBERS. COMPLY WITH ADDITIONAL REQUIREMENTS IN SPECIFICATIONS AND DRAWINGS.**
3	PROVIDE WALL,CEILING, OR PENDANT MOUNTING AS INDICATED ON PLANS. PROVIDE NUMBER OF FACES AND ARROWS AS INDICATED.
4	VERIFY CEILING STRUCTURE AND MOUNTING HEIGHT PRIOR TO ORDERING ANY LIGHT FIXTURES.
5	COORDINATE MOUNTING HEIGHT WITH STRUCTURAL AND ARCHITECTURAL DRAWINGS.
6	PROVIDE COLD WEATHER OPTION.
7	CONFIRM EXACT FIXTURE CONFIGURATION AND OPTIONS WITH MUNICIPALITY PRIOR TO ORDERING FIXTURE.
8	FIXTURE AND POLE SHALL BE PROVIDED BY OWNER FROM EXISTING OWNER'S STOCK.
9	PROVIDE SCREW-IN LED RETROFIT LAMP. BASIS OF DESIGN IS MFG. BY LIGHT EFFICIENT DESIGN, PART NO. LED-8029E345-A.
10	PROVIDE SCREW-IN LED RETROFIT LAMP. BASIS OF DESIGN IS MFG. BY LIGHT EFFICIENT DESIGN, PART NO. LED-8039E40-A.

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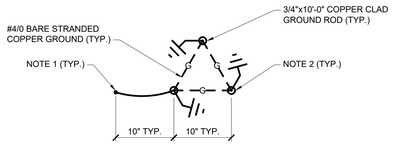
ELECTRICAL SCHEDULES

E-600

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—OH—	OVERHEAD WIRING, TYPE AS INDICATED
— — — —	UNDERGROUND OR UNDERSLAB WIRING, TYPE AS INDICATED
	UTILITY POLE
	FUSED DISCONNECT SWITCH
	NON-FUSED DISCONNECT SWITCH
	MOTOR
	GROUNDING SYSTEM
(J)	JUNCTION BOX, WALL MOUNTED
J	JUNCTION BOX, IN-GROUND
(M)	ELECTRICAL MANHOLE, COORDINATE LOCATION WITH OTHER UNDERGROUND UTILITIES
(T)	COMMUNICATIONS MANHOLE, COORDINATE LOCATION WITH OTHER UNDERGROUND UTILITIES
T / P S / F	PADMOUNT TRANSFORMER ~ F= FRONT
PB	4'X6' PULL BOX WITH 32" COVER PLATE IN ACCORDANCE WITH UTILITY STANDARDS
P	PEDESTAL LOCATION, PEDESTAL BY SERVICE PROVIDER, STUB UP (2) 2" CONDUITS WITH CONNECTORS AND BUSHINGS FROM HANDHOLE
H	HANDHOLE, MINIMUM 18"x36"x24", SIZE PER NEC FOR NUMBER OF CONDUITS INSTALLED
M	METER & CT CABINET, PEDESTAL MOUNTED
	SINGLE POLE MOUNTED LIGHT
	DOUBLE POLE MOUNTED LIGHT
	WALL MOUNTED LIGHT FIXTURE
	SINGLE POLE HOMERUN: (2)#12+(1)#12G UNO, CONNECT TO PANEL INDICATED
	SINGLE-PHASE HOMERUN OR MULTIPLE HOMERUN UTILIZING THE SAME CONDUIT, CONNECT TO PANEL INDICATED
	3-PHASE HOMERUN OR MULTIPLE HOMERUN UTILIZING THE SAME CONDUIT, CONNECT TO PANEL INDICATED
A1 / ES-000	DETAIL CALL-OUT
A1 / ES-000	SECTION/ELEVATION CALL-OUT

A1 ELECTRICAL SITE LEGEND

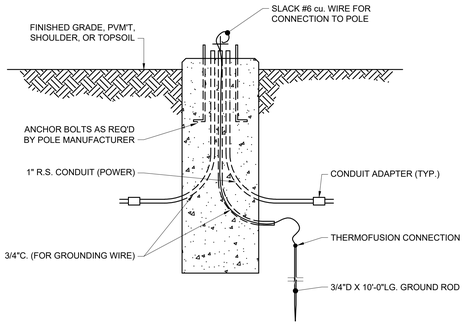


NOTES:

1. RUN #4/0 BARE STRANDED CU GROUND CABLE DOWN IN 1" PVC CONCEALED UNDER ROOF, CEILING AND WALLS. TYPICAL FOR ALL DOWNERS OUT TO GROUNDING COUNTERPOISE.
2. COPPER CLAD STEEL GROUND RODS 3/4"x10'-0", TOP OF RODS BURIED 2'-0" BELOW TOP OF FINISHED GRADE.

B1 GROUNDING ROD DETAILS

DO NOT SCALE

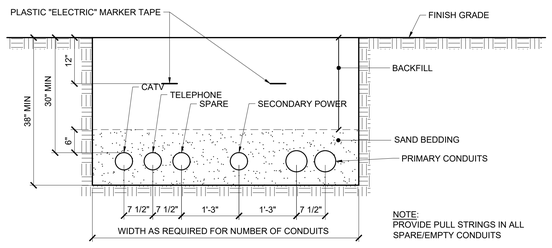


NOTES:

1. LIGHT POLE FOUNDATION SHALL BE PROVIDED BY DIVISION 2. ELECTRICAL SUBCONTRACTOR SHALL FURNISH CONDUITS, AND ANCHOR BOLTS TO CIVIL CONTRACTOR FOR CASTING INTO POLE BASE. THIS DETAIL REFERS TO SITE PARKING LOT AND ROAD LIGHTING FIXTURES ONLY. SEE CIVIL DRAWINGS FOR CONSTRUCTION INFORMATION.
2. ELECTRICAL CONTRACTOR SHALL INSTALL GROUND ROD AND PULL GROUNDING WIRE.

B2 SITE LIGHTING POLE BASE DETAIL

DO NOT SCALE

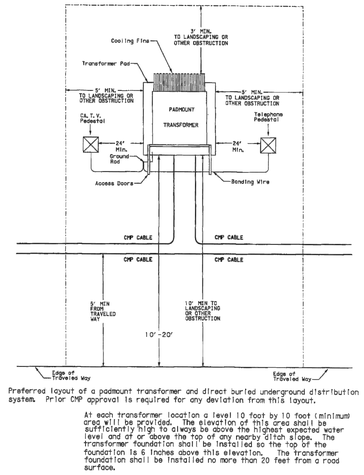


NOTE:
PROVIDE PULL STRINGS IN ALL SPARE/EMPTY CONDUITS

DETAIL INDICATES TYPICAL SPACING BETWEEN CONDUITS OF VARIOUS SYSTEMS, REFER TO SITE PLAN FOR SIZES AND NUMBER OF CONDUITS

B3 TYPICAL SEPARATION OF UTILITIES

DO NOT SCALE



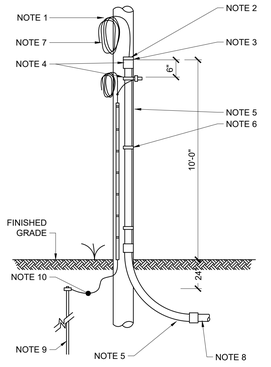
Preferred layout of a padmount transformer and direct buried underground distribution system. Prior CMP approval is required for any deviation from this layout.

At each transformer location a level 10 foot by 10 foot (minimum) area will be provided. The elevation of this area shall be sufficiently high to always be above the highest expected water level and at or above the top of any nearby ditch slope. The transformer foundation shall be installed so the top of the foundation is 6 inches above this elevation. The transformer foundation shall be installed no more than 20 feet from a road surface.

B5 TRANSFORMER CLEARANCE DETAILS

NOTES:

1. PRIMARY CABLES TO BE INSTALLED BY UTILITY COMPANY.
2. CONDUIT SEAL BY CONTRACTOR.
3. INSULATING BUSHING.
4. GALVANIZED STEEL CONDUIT AND BEND SHALL BE GROUNDED BY BONDING TO APPROVED GROUND CLAMP 6" FROM TOP OF THE CONDUIT. A CONDUCTOR OF SUFFICIENT LENGTH SHALL BE PROVIDED TO EXTEND TO UTILITY COMPANY SECONDARY NEUTRAL.
5. PROVIDE 2-4" GALVANIZED STEEL CONDUITS. 2 TOTAL 10 FEET CONDUITS SHALL RISE ON THE SIDE OF THE POLE AWAY FROM THE ROAD, AND SPARE CONDUITS SHALL BE CAPPED 6" ABOVE GRADE.
6. PIPE STRAPS, INSTALL AT NOT MORE THAN 30" INTERVALS.
7. CONTRACTOR TO SEAL CABLE ENDS TO PREVENT ENTRANCE OF MOISTURE.
8. ADAPTER COUPLING STEEL TO PVC.
9. GROUND ROD - 3/4"D.x10'-0" LONG. INSTALL MINIMUM 3 FEET FROM THE POLE.
10. PROVIDE #4cu. GROUND WIRE.



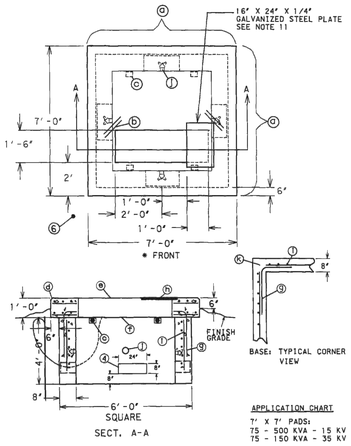
B4 RISER POLE CONDUIT DETAIL

DO NOT SCALE

NOTES:

1. ● FRONT denotes the side on which the access doors are located. The concrete base shall be set on a suitable gravel base and located so the FRONT is accessible by truck and suitably protected from plow and traffic damage.
2. Before installing or requiring any active drainage structure (e.g., drain pipe) into the foundation or pad, the contractor, CMP Line Supervisor, or CMP Distribution Engineer must contact Central Maine Power Company's Environmental Services Department at 623-3521 ext. 3479 to request a site inspection.
3. Finish grade shall be graded in such manner to allow surface water to flow away from the pad.
4. Provide 8" x 24" cable holes (band outs) 8' up the wall from the base. Locate one cable hole per wall, more if necessary. Line up cable holes with trench.
5. Conduits entering concrete stuctures shall be set back from the inside wall 1 to 2 inches and the space within the knockout surrounding the conduits completely filled with mortar to prevent soil from entering structure. Inside the structure the mortar shall be finished and beveled from the conduit ends to the inside wall face to cover and smooth the edges of the knockouts.
6. A 3/4"X 8' galvanized ground rod is to be installed six inches in front of the left FRONT corner of the foundation. The top of the ground is to be 6 inches below final grade.
7. A ground wire shall be installed from the ground rod through the cable hole at the bottom of the pad. 10 Feet of ground wire shall be provided so that it can be installed through the two grounding lugs and connected to the neutral spade.
8. Concrete compressive strength shall be 4000 PSI @ 28 days. For cast-in-place early high strength may be used with a minimum of seven day cure time.
9. Reinforcing steel to have: FY = 60 KSI.
10. For precast units: The precast supplier shall provide lifting lugs in the slab (foundation) and base; the precast supplier shall assemble the slab to the base prior to shipping to the site to ensure that the slab and base fit properly (with no rocking of the slab evident).
11. A 16" x 24" x 1/4" galvanized steel plate to cover a portion of the cable hole when the transformer does not completely cover it. Cut the steel plate to fit, if necessary.

a. 7-#5 Rebar evenly spaced each way top to bottom.
b. 2-#4 Corner diagonal rebar 2'-0" long top and bottom.
c. 4"x 4"x 1/2" angle 6' long with 2-3/4" diameter expansion anchors typical - 4 places (two place precast only).
d. Chamfer typical
e. 2" Concrete cover over top rebar.
f. 3" Concrete cover over bottom rebar.
g. #5 L-Bar @ 12" (cast-in-place only)
h. 16"x 24"x1/4" galvanized steel plate. MID*6000621790
i. #5 Rebar on 12" centers.
j. Pulling eye insert, for use with 3/4" national course thread eye-bolt, (Richmond LCB-1 or equivalent). Located opposite each cable hole and 2' (two feet) from the bottom.
k. All rebar ends to be covered by 1' of concrete, minimum.



APPLICATION CHART

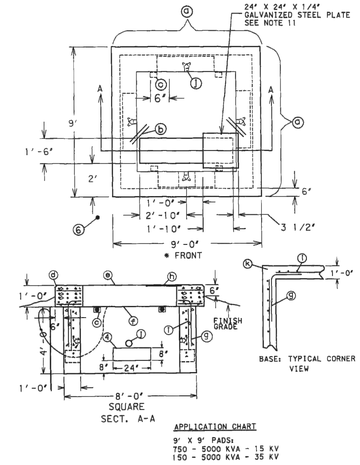
7' X 7' PADS:
75 - 500 KVA - 15 KV
75 - 150 KVA - 35 KV

B6 SMALL TRANSFORMER PAD DETAILS

NOTES:

1. ● FRONT denotes the side on which the access doors are located. The concrete base shall be set on a suitable gravel base and located so the FRONT is accessible by truck and suitably protected from plow and traffic damage.
2. Before installing or requiring any active drainage structure (e.g., drain pipe) into the foundation or pad, the contractor, CMP Line Supervisor, or CMP Distribution Engineer must contact Central Maine Power Company's Environmental Services Department at 623-3521 ext. 3479 to request a site inspection.
3. Finish grade shall be graded in such manner to allow surface water to flow away from the pad.
4. Provide 8" X 24" cable holes (band outs) 8' up the wall from the base. Locate one cable hole per wall, more if necessary. Line up cable holes with trench.
5. Conduits entering concrete stuctures shall be set back from the inside wall 1 to 2 inches and the space within the knockout surrounding the conduits completely filled with mortar to prevent soil from entering structure. Inside the structure the mortar shall be finished and beveled from the conduit ends to the inside wall face to cover and smooth the edges of the knockouts.
6. A 3/4" x 8' galvanized ground rod is to be installed six inches in front of the left FRONT corner of the foundation. The top of the ground is to be 6 inches below final grade.
7. A ground wire shall be installed from the ground rod through the cable hole at the bottom of the pad. 20 Feet of ground wire shall be provided so that it can be installed through the two grounding lugs and connected to the neutral spade.
8. Concrete compressive strength shall be 4000 PSI @ 28 days. For cast-in-place early high strength may be used with a minimum of seven day cure time.
9. Reinforcing steel to have: FY = 60 KSI.
10. For precast units: The precast supplier shall provide lifting lugs in the slab (foundation) and base; the precast supplier shall assemble the slab to the base prior to shipping to the site to ensure that the slab and base fit properly (with no rocking of the slab evident).
11. Use a 24" x 24" x 1/4" galvanized steel plate to cover a portion of the cable hole when the transformer does not completely cover it. Cut the steel plate to fit, if necessary.

a. 9-#5 Rebar evenly spaced each way top to bottom.
b. 2-#4 Corner diagonal rebar 2'-0" long top and bottom.
c. 4" x 4" x 1/2" angle 6' long with 2-3/4" diameter expansion anchors typical - 4 placed (two place precast only).
d. Chamfer typical
e. 2" Concrete cover over top rebar.
f. 3" Concrete cover over bottom rebar.
g. #5 L-Bar @ 12" (cast-in-place only)
h. 24" x 24" x 1/4" galvanized steel plate. MID*6000621795
i. #5 Rebar on 12" centers.
j. Pulling eye insert, for use with 3/4" national course thread eye-bolt, (Richmond LCB-1 or equivalent). Located opposite each cable hole and 2' (two feet) from the bottom.
k. All rebar ends to be covered by 1' of concrete, minimum.



APPLICATION CHART

9' X 9' PADS:
750 - 5000 KVA - 15 KV
150 - 5000 KVA - 35 KV

B6 LARGE TRANSFORMER PAD DETAILS

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2021

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USM - Structured Parking Garage

Address

50 Bedford Street,
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REVISIONS:

No.	Date	Description

SUBMISSIONS:

Date	Issued For:
11/23/21	Foundations, Site, Landscape Pkg

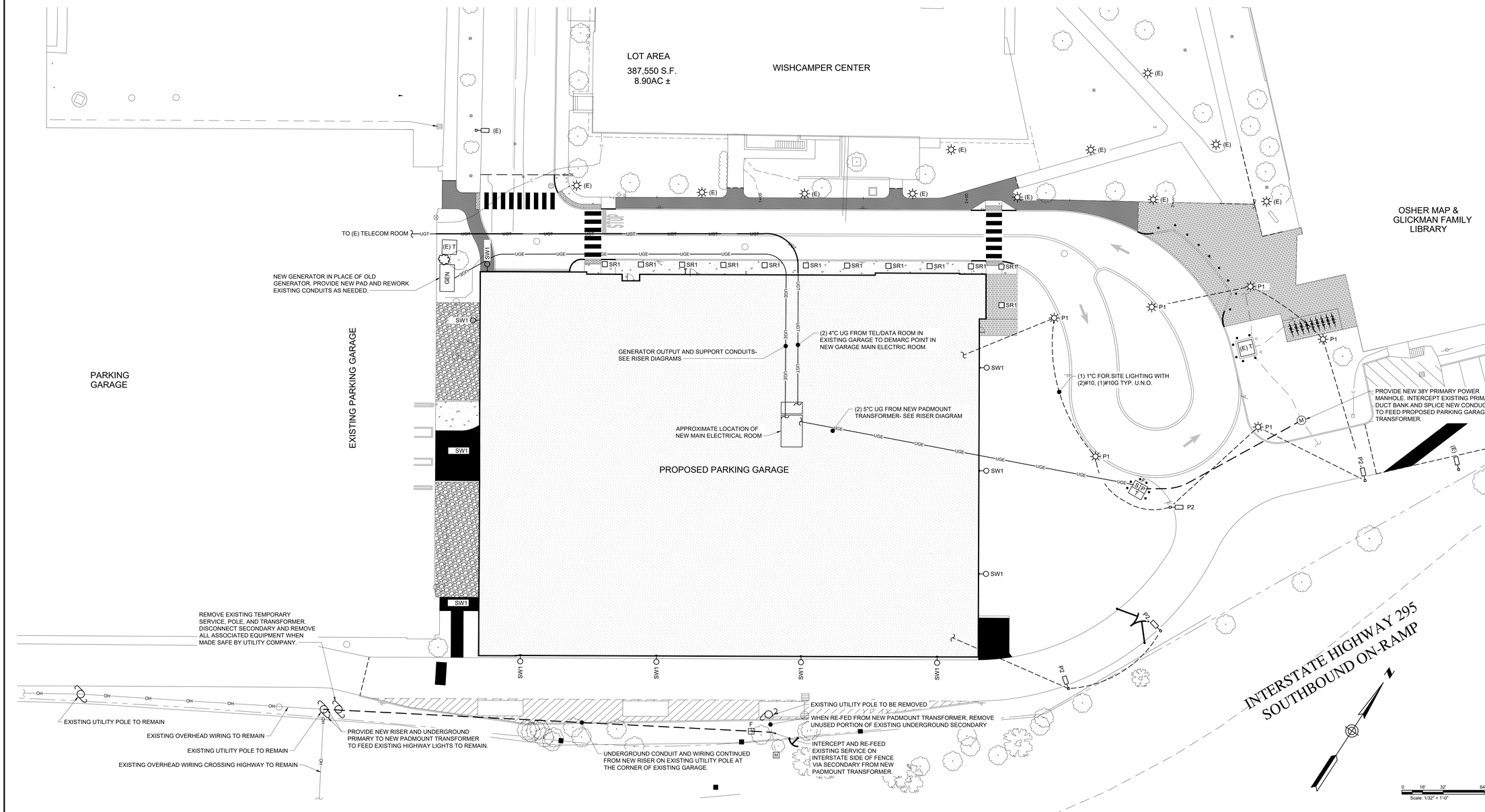
SCALE	**AS NOTED**
DATE ISSUED	**11/23/2021**
PROJECT NO	**20-20145.00-1**
DRAWN BY	**GMC**
CHECKED BY	**BTG**

SHEET TITLE:

ELECTRICAL SITE LEGEND, DETAILS, AND NOTES

ES-000

7/2/2021 3:16:33 PM



A1	ELECTRICAL SITE PLAN
SCALE: 1"=20'-0"	

7/2/2021 3:16:33 PM

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DATE ISSUED	**11/23/2021**
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CHECKED BY	**BTG**

SHEET TITLE:

ELECTRICAL SITE PLAN AND NOTES

ES-100

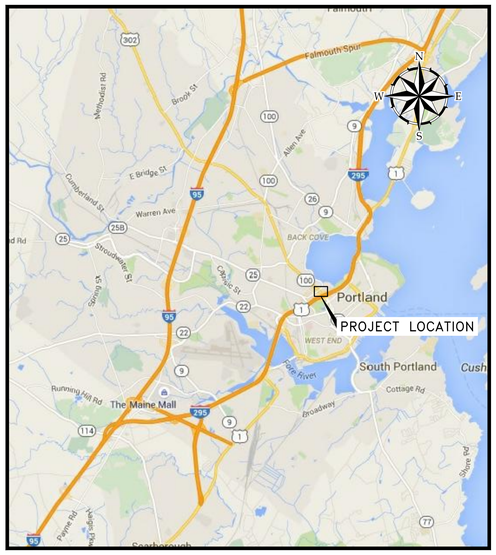
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PORTLAND, MAINE

USM STRUCTURED PARKING GARAGE

PROJECT NO.
0233035.00

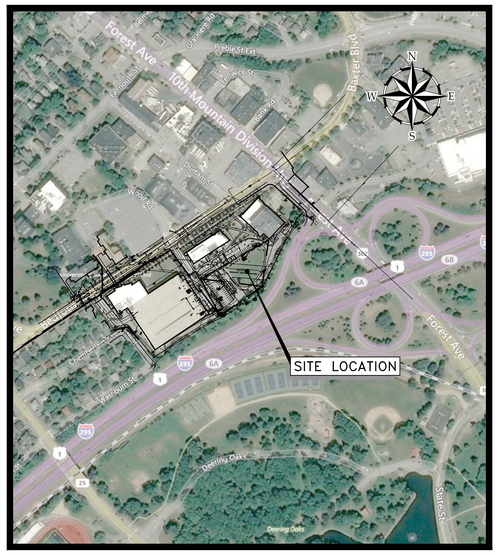
7/30/2021

SHEET INDEX		
Sheet Number	Sheet Title	Sheet Description
COVER	G-000	
1	G-001	GENERAL NOTES & LEGEND
2	EC-001	EXISTING CONDITIONS SURVEY -1
3	EC-002	EXISTING CONDISITONS SURVEY - 2
4	C-001	DEMOLITION & EROSION & SEDIMENT CONTROL PLAN
5	C-100	SITE LAYOUT & MATERIALS PLAN
6	C-101	UTILITY & GRADING PLAN
7	D-200	CIVIL DETAILS - 1
8	D-201	CIVIL DETAILS - 2
9	D-202	CIVIL DETAILS - 3
10	D-203	CIVIL DETAILS - 4
11	D-204	CIVIL DETAILS - 5



PROJECT LOCATION MAP

1 0 1 2
scale mile



SOURCE: BING MAPS

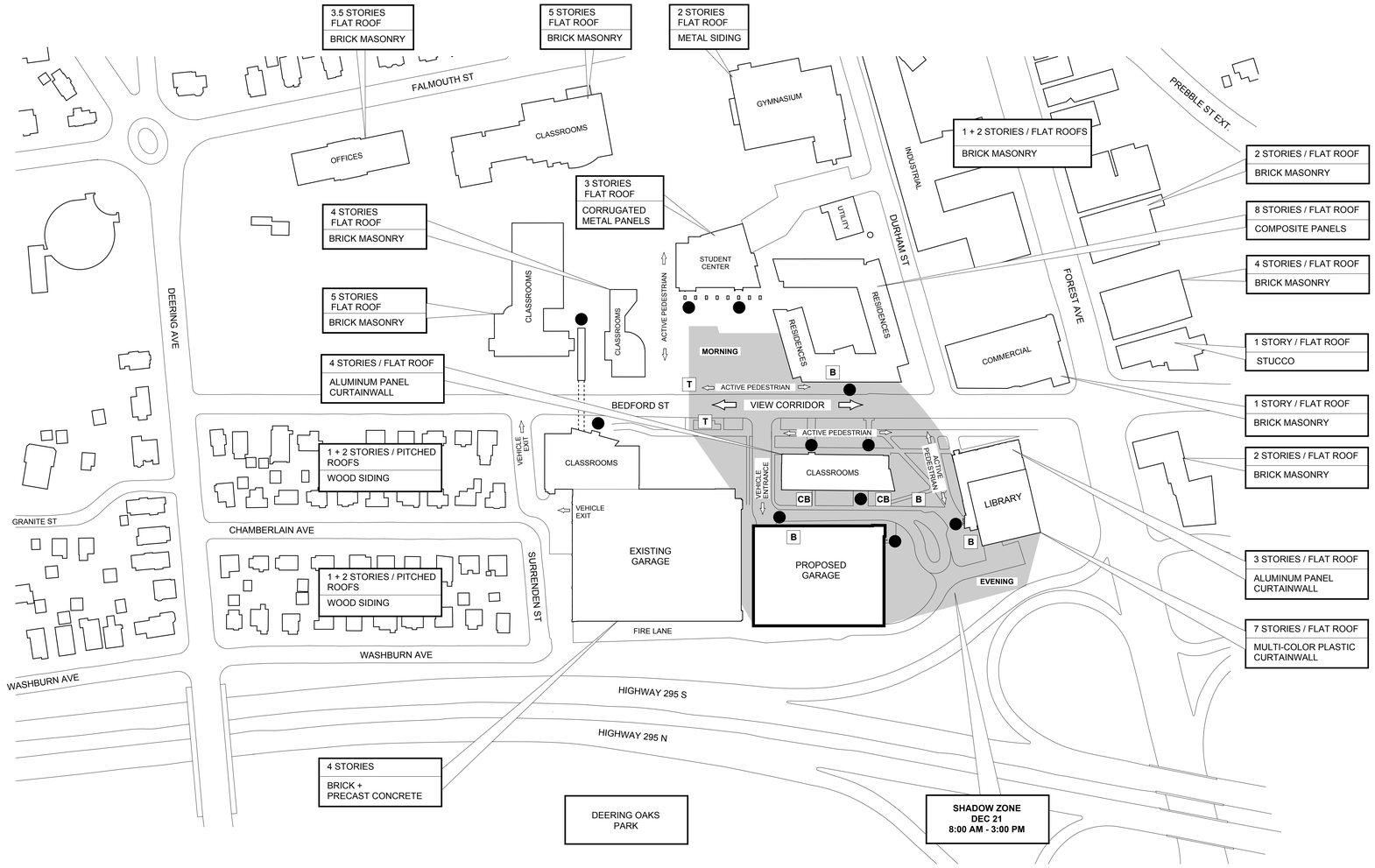
SITE LOCATION MAP

600 0 300 600
scale feet

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

COMMITMENT & INTEGRITY DRIVE RESULTS

\\woodardcurran.net\shared\Projects\0233035.00 usm - falmouth street garage\wip\Drawings\General\0233035.00 G000.dwg, Jul 29, 2021 - 2:58pm BMCDEVITT



G: 25.0 T: 74.0 H: 49	G: 23.0 T: 72.0 H: 49
G: 25.0 T: 74.0 H: 49	G: 23.0 T: 72.0 H: 49

PROPOSED GARAGE HEIGHT DIAGRAM

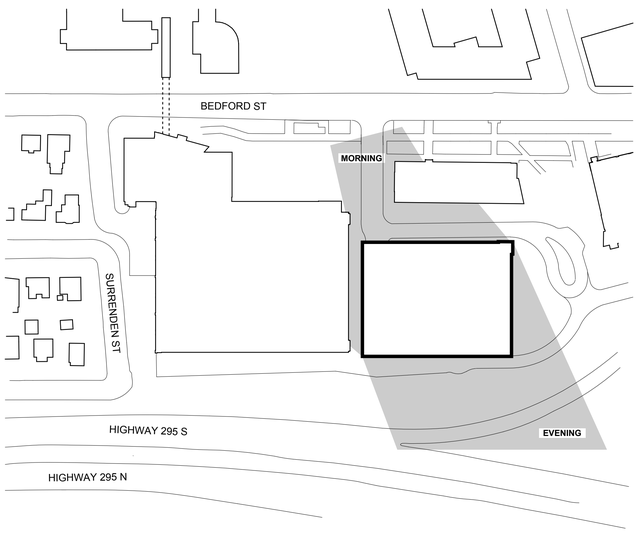
G - ELEVATION OF GRADE AT CORNER
T - ELEVATION OF TOP OF ROOF LEVEL SPANDREL BEAM
H - HEIGHT OF BUILDING AT CORNER

AVERAGE HEIGHT = 49'

USM OVERLAY ZONE ALLOWS 85'

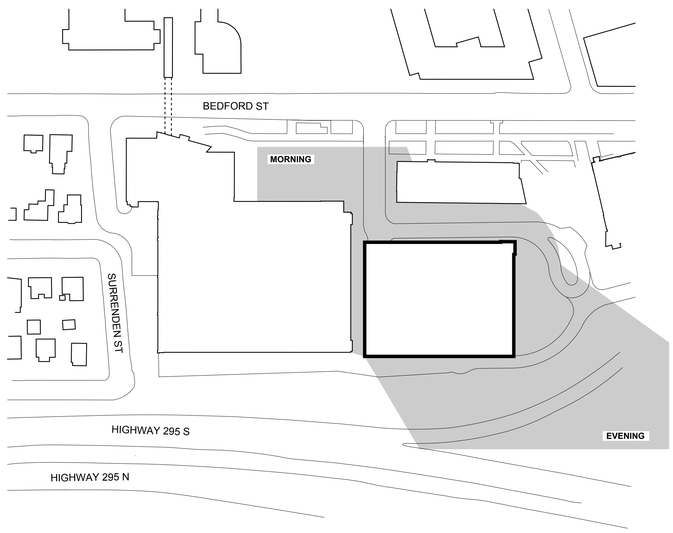
LEGEND

- AREA SUBJECT TO SHADOW CAST BY PROPOSED GARAGE ON WINTER SOLSTICE BETWEEN 1 HOUR AFTER SUNRISE TO 1 HOUR BEFORE SUNSET
- MAJOR PEDESTRIAN ARRIVAL POINTS
- B — BICYCLE RACK OR STORAGE ROOM
- CB — FUTURE CITIBIKE STATION
- T — BUS STOP



SHADOWS CAST MARCH + SEPTEMBER 21ST

6:46 AM TO 4:50 PM



SHADOWS CAST JUNE 21ST

5:05 AM TO 6:20 PM

NORTH

100 0 100 200

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

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COST ESTIMATOR
PREFERRED CONSTRUCTION MGMT
94 AUBURN ST,
PORTLAND, ME 04103

SEAL / SIGNATURE

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2021

PROJECT:

USM - Structured Parking Garage

Address
44 Bedford Street,
Portland ME 04104

REVISIONS:

No.	Date	Description

SUBMISSIONS:

Date	Issued For:
07/30/21	Site Plan Submittal

SCALE	1" = 100'
DATE ISSUED	07/30/2021
PROJECT NO	20-20145.00-1
DRAWN BY	
CHECKED BY	

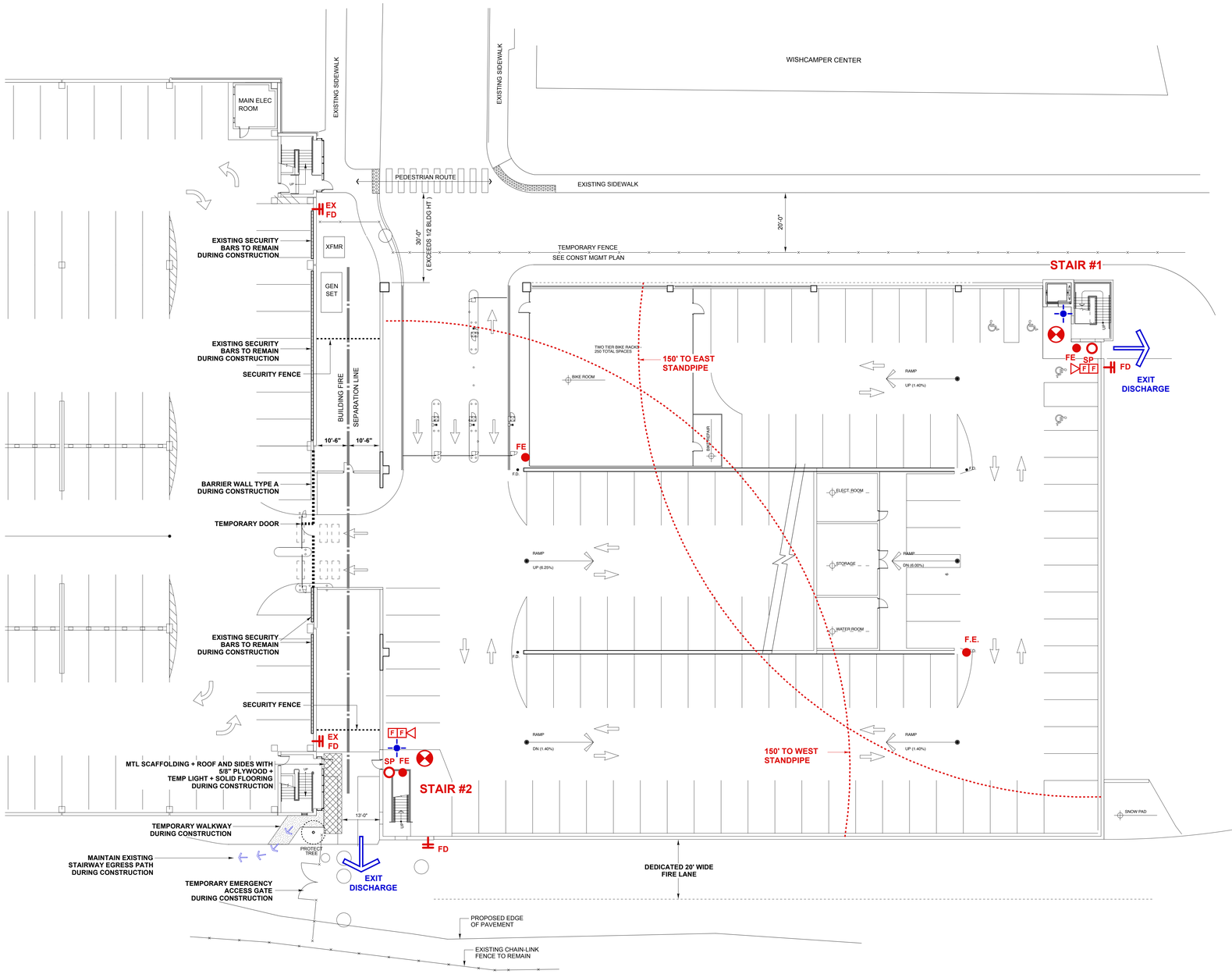
SHEET TITLE:

Context +

Shadow Plans

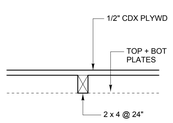
G - 100

7/2/2021 3:16:33 PM



GROUND LEVEL LAYOUT PLAN

1" = 16' - 0"



BARRIER WALL TYPE A

INFILL OPENING IN EXISTING PRECAST CONC WALL

TEMPORARY BARRIER WALL TYPES

1" = 1' - 0"

Legend

- EXIT
- SP — DRY STANDPIPE
- EX FD — EXISTING STANDPIPE HOSE CONNECTION
- FD — STANDPIPE HOSE CONNECTION
- FE — FIRE EXTINGUISHER
- SECURITY CALL BOX
- F F — FIRE ALARM PULL STATION + ANNUNCIATOR

NORTH

16 0 16 32

BAR SCALE

1" = 16'

CHECK GRAPHIC SCALE BEFORE USING

BUILDING CODE SUMMARY

University of Southern Maine Parking Garage
Building Address: Portland, ME

APPLICABLE CODES (Per MUBEC: Maine Uniform Building and Energy Code)

Building	IBC 2015 (International Building Code)
	IEBC 201 (International Existing Building Code)
Electrical	National Electrical Code 2009
Fire Protection	NFPA Life Safety Code 2015 and NFPA 1 Uniform Fire Code
Mechanical	International Mechanical Code 2015
Plumbing	Maine State Internal Plumbing Code (UPC 2015)
Energy	IECC 2015 (International Energy Conservation Code)
Accessibility	ADA 2010 (Americans With Disabilities Act)

PROJECT DESCRIPTION:
New Construction - Parking Garage

Open or Closed	**Open**
Proposed Construction Type :	Type II B / NFPA II (000)
Gross Area Per Tier:	45,050 +/- Per Tier
Height :	Grade + 4 Tiers / 49'-9" (Top of Roof Spandrel Beams)
Use Group IBC :	Open Parking Garage Section 406
Use Group NFPA :	Open Parking Garage Chapter 42.8
High Rise Requirements	Not Applicable
Automatic Suppression System	No
Dry Standpipe System	Yes
Multiple Occupancies	No

BUILDING CODE REQUIREMENTS (IBC 2015)

Height and Area Summary (Table 406.5.4)

Allowable Height :	8 Tiers
Allowable Area	50,000 SF/Tier

REQUIRED FIRE RESISTANCE RATINGS

ELEMENT (IBC Table 601/NFPA 101 Table A8.2.1.2)	RATING (In Hours)
Primary Structural Frame	**0**
Bearing Walls:	
Exterior	**0**
Interior	**0**
Non-Bearing Walls & Partitions	
Exterior	**0**
Interior	**0**
Floor Construction & Secondary Members	**0 (1 Hour Provided)**
Roof Construction & Secondary Members	**0 (1 Hour Provided)**

SPECIFIC ROOM RATINGS	RATING (In Hours)
Stairs and Floor Openings	**0**
Parking Open Ramps	**0**
Offices + Break Room	**0**
Electrical	**0**
Elevator Shaftway	**2**

EXTERIOR WALL PROTECTION

Wall Fire Resistance Rating (Table 602)	**0** (No rating for 10' or greater per Note c.)
Openings Rating (Table 705.8)	**0** (No rating for 10' or greater per Note g.)

OCCUPANCY LOADS

NFPA Per Chapter 42.8.1.7 :	None
IBC Per Table 1004.1.2 :	1 Per 200 GSF / 226 Per Tier
Egress Width Required : Stairs @ 0.3" Per Person	68"
Egress Width Provided :	96" / (2) 48" Wide Stairs
Stair Exit Door Width Required: 0.2" Per Person	46"
Stair Exit Door Width Provided:	32" Clear Door @ Each Stair

NOTES

1. THE CONSTRUCTION MANAGER SHALL PROVIDE A CONSTRUCTION PHASING PLAN OUTLINING WORK ZONES AND PROTECTION AND SEPARATION FEATURES.
2. CONSTRUCTION MANAGER SHALL OBTAIN APPROVAL OF PROTECTION AND SEPARATION PROVISIONS PRIOR TO EACH PHASE FROM THE CITY CODES ENFORCEMENT OFFICE.

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PORTLAND, ME 04103

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PROJECT:

USM - Structured Parking Garage

Address
44 Bedford Street,
Portland ME 04104

REVISIONS:

No.	Date	Description

SUBMISSIONS:

Date	Issued For:
07/30/21	Site Plan Submittal

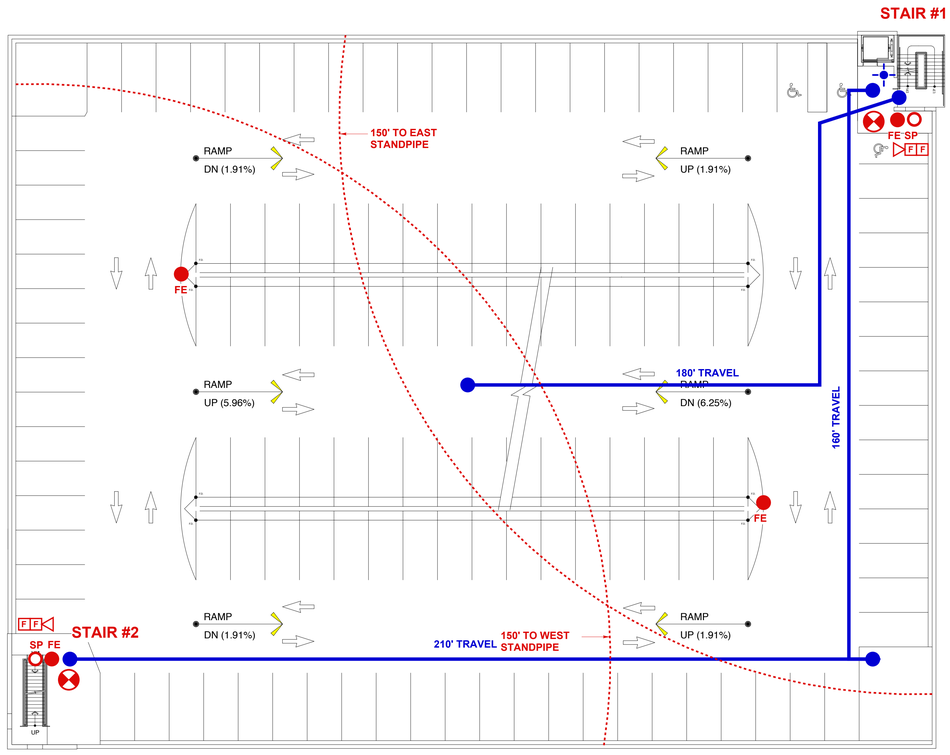
SCALE	1/16" = 1'-0"
DATE ISSUED	07/30/2021
PROJECT NO	20-20145.00-1
DRAWN BY	
CHECKED BY	

SHEET TITLE:

Ground Level Code Information Plan

G - 101

7/2/2021 3:16:33 PM



TYPICAL FLOOR LAYOUT PLAN

1" = 16' - 0"

Legend

- EXIT
- SP — DRY STANDPIPE
- EX FD — EXISTING STANDPIPE HOSE CONNECTION
- FD — STANDPIPE HOSE CONNECTION
- FE — FIRE EXTINGUISHER
- SECURITY CALL BOX
- F F — FIRE ALARM PULL STATION + ANNUNCIATOR

NORTH

16 0 16 32

BAR SCALE

1" = 16'

CHECK GRAPHIC SCALE BEFORE USING

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07/30/21	Site Plan Submittal

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DATE ISSUED	07/30/2021
PROJECT NO	20-20145.00-1
DRAWN BY	
CHECKED BY	

SHEET TITLE:

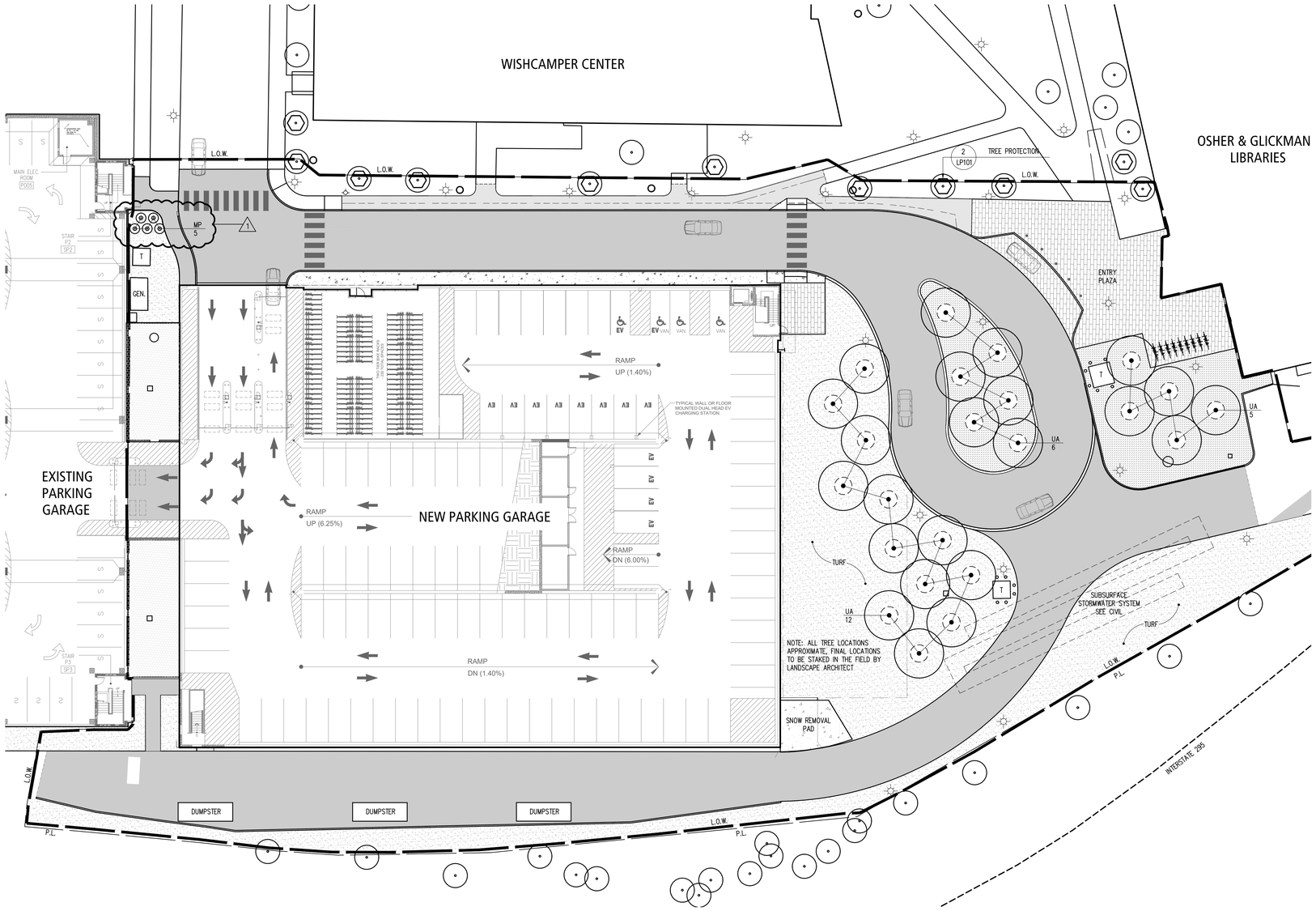
Upper Levels Code Information Plan

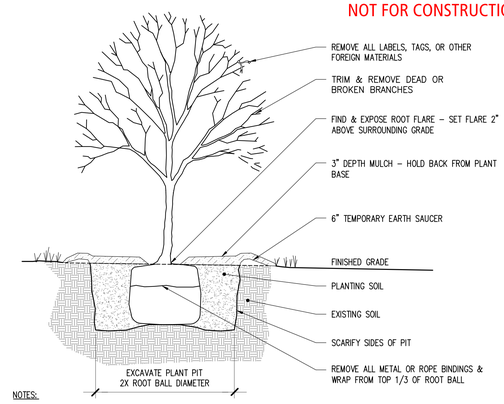
Levels 1 / 2 / 3 + ROOF

G - 102

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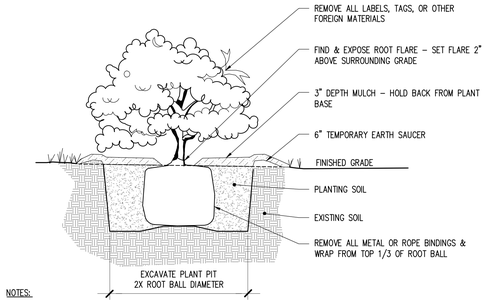
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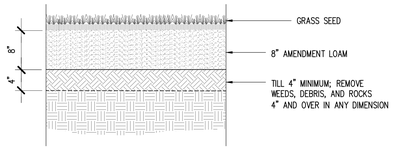
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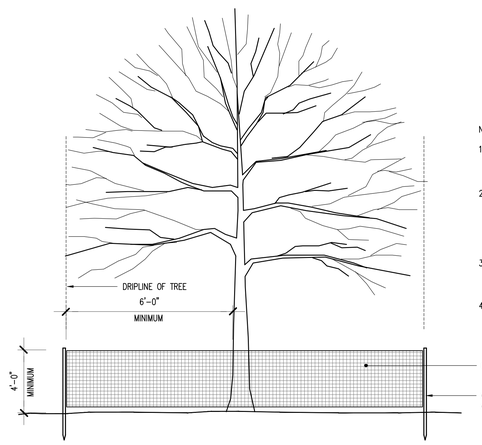
1. TREE TO BE SET PLUMB.
2. SECURE TREE AS MAY BE REQUIRED ACCORDING TO TREE SIZE, LOCATION, & WIND/WEATHER CONDITIONS.
3. IF USING ROOTBALL STABILIZATION, FOLLOW MANUFACTURER'S RECOMMENDATIONS.



NOTES:

1. SHRUB TO BE SET PLUMB.
2. SECURE SHRUB AS MAY BE REQUIRED ACCORDING TO SIZE, LOCATION, & WIND/WEATHER CONDITIONS.
3. IF USING ROOTBALL STABILIZATION, FOLLOW MANUFACTURER'S RECOMMENDATIONS.





NOTES:

1. TREE PROTECTION FENCING SHALL BE INSTALLED PRIOR TO ANY CONSTRUCTION ACTIVITY.
2. INSTALL FENCING TO LIMIT OF DRIPLINE ON TREE OR A MINIMUM OF 6' FROM TRUNK WHEN NECESSARY, WITH PRIOR PERMISSON OF LANDSCAPE ARCHITECT.
3. DO NOT STORE CONSTRUCTION EQUIPMENT, MATERIALS, TOOLS, ETC. WITHIN PROTECTIVE FENCING.
4. MAINTAIN FENCING IN A NEAT AND ORDERLY FASHION THROUGHOUT CONSTRUCTION PERIOD.

PLANT LIST

KEY	QTY	AREA	BOTANICAL NAME	COMMON NAME	SIZE	ROOT	COMMENT
TREES							
UA	23		ULMUS AMERICANA 'PRINCETON'	PRINCETON ELM	4" CAL.	B&B	REC. TREE LIST
SHRUBS							
MP	5	1	MYRICA PENNSYLVANICA	BAYBERRY	#3	POT	
GROUNDCOVER							
	GC	4,760 SF	--	NATIVE GROUNDCOVER	--	--	
	TURF	17,990 SF	--	TURF GRASS	--	SEED	COMPLIANT WITH CITY OF PORTAND PESTICIDE ORDINANCE

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PROJECT:

USM - Structured Parking Garage

Address

50 Bedford Street,
Portland ME 04104

NORTH

REVISIONS:

No.	Date	Description

SUBMISSIONS:

Date	Issued For:
08/09/21	Schematic Design
09/01/21	Revision 1

SCALE **AS NOTED**
DATE ISSUED **08/09/2021**
PROJECT NO **20-20145.00-1**
DRAWN BY **G.G.**
CHECKED BY **-**

SHEET TITLE:

Planting and Landscape Plan

L-100



University of Southern Maine Parking Garage

Overview From North

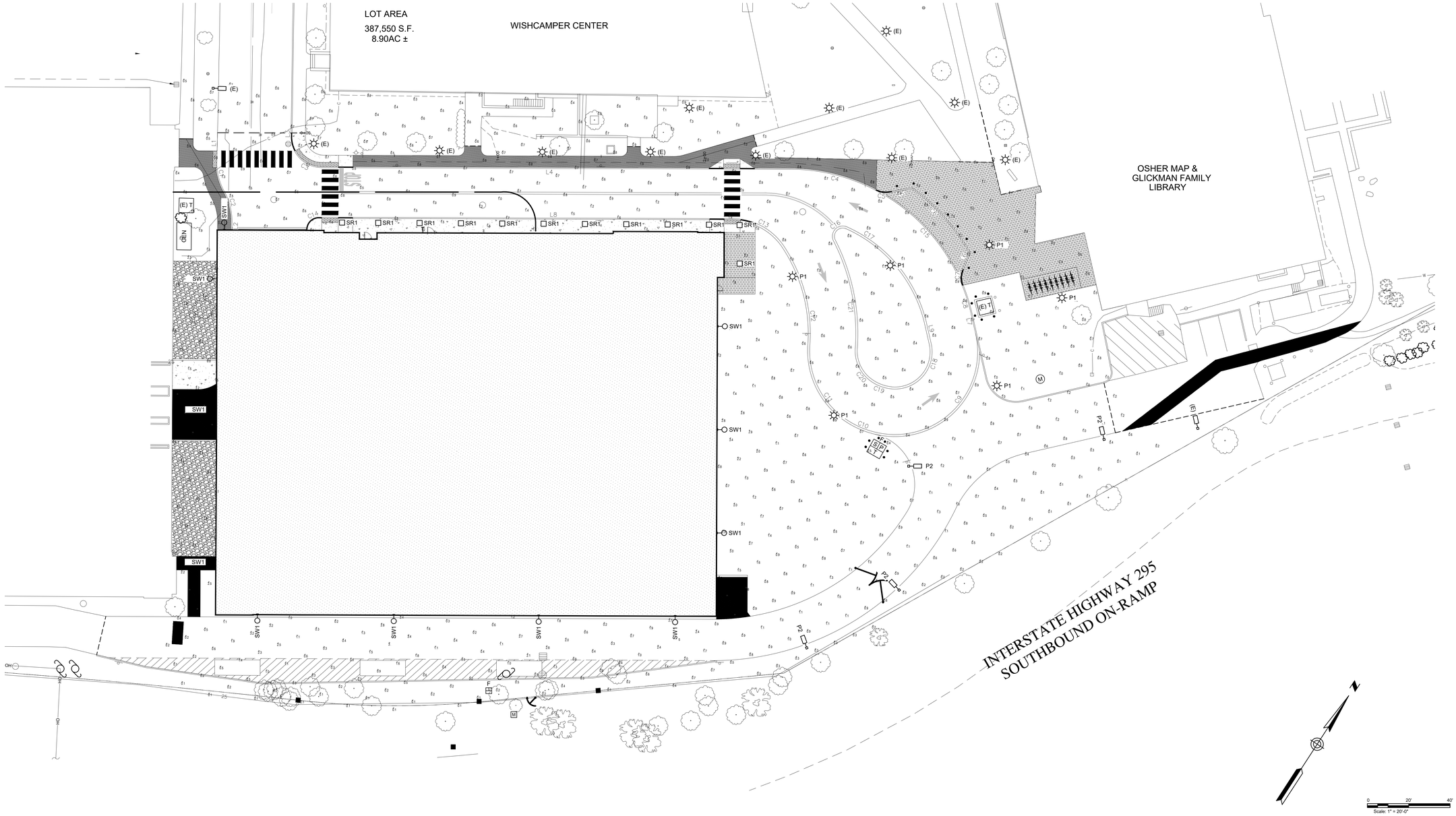
LUMINAIRE SCHEDULE ~ SITE

TYPE	DESCRIPTION	MFR	CATALOG SERIES NUMBER SEE NOTE 1	MOUNTING, U.N.O.	VOLTS	LAMP				KEY NOTES
						QTY PER FIXTURE	WATTS	LUMENS	TYPE	
P1	SITE LIGHT AND POLE, "ICE CREAM CONE" SHAPE	SEE NOTE 8		14' POLE	277	1	24	3,330	LED ARRAY ~ 4000K	8,9
P2	SITE LIGHT AND POLE, "SHOEBOX" SHAPE	SEE NOTE 8		14' POLE	277	1	18	2,160	LED ARRAY ~ 4000K	8,10
SW1	WALL MOUNTED EXTERIOR LIGHT	LITHONIA	KAXW-LED-P1-40K-R4-MVOLT	KEYNOTE 5	UNV	1	29	3,643	LED ARRAY ~ 4000K	5
SR1	RECESSED CANOPY LIGHT	LITHONIA	LDN4SQ-40-07-LS4-AR-LSS-MVOLT	RECESSED CANOPY	UNV	1	8.6	620	LED ARRAY ~ 4000K	

	NOTES
1	**NOTE THAT THESE NUMBERS ARE NOT COMPLETE CATALOG NUMBERS. PROVIDE ALL REQUIREMENTS ON SCHEDULE, NOTES, SPECS, AND DRAWINGS COMBINED.**
2	**CATALOG SERIES NUMBERS ARE USED TO ESTABLISH A LEVEL OF QUALITY AND NOT INTENDED TO LIMIT COMPETITION. SERIES NUMBERS ARE NOT COMPLETE CATALOG NUMBERS. COMPLY WITH ADDITIONAL REQUIREMENTS IN SPECIFICATIONS AND DRAWINGS.**
3	PROVIDE WALL,CEILING, OR PENDANT MOUNTING AS INDICATED ON PLANS. PROVIDE NUMBER OF FACES AND ARROWS AS INDICATED.
4	VERIFY CEILING STRUCTURE AND MOUNTING HEIGHT PRIOR TO ORDERING ANY LIGHT FIXTURES.
5	COORDINATE MOUNTING HEIGHT WITH STRUCTURAL AND ARCHITECTURAL DRAWINGS.
6	PROVIDE COLD WEATHER OPTION.
7	CONFIRM EXACT FIXTURE CONFIGURATION AND OPTIONS WITH MUNICIPALITY PRIOR TO ORDERING FIXTURE.
8	FIXTURE AND POLE SHALL BE PROVIDED BY OWNER FROM EXISTING OWNER'S STOCK.
9	PROVIDE SCREW-IN LED RETROFIT LAMP. BASIS OF DESIGN IS MFG. BY LIGHT EFFICIENT DESIGN, PART NO. LED-8029E345-A.
10	PROVIDE SCREW-IN LED RETROFIT LAMP. BASIS OF DESIGN IS MFG. BY LIGHT EFFICIENT DESIGN, PART NO. LED-8039E40-A.

Calculation Summary

Label	CalcType	Units	Avg	Max	Min	Avg/Min	Max/Min
DRIVES	Illuminance	Fc	0.99	3.5	0.2	5.15	17.50
WALKWAY- GLICKMAN	Illuminance	Fc	1.00	1.3	0.5	2.00	2.60
WALKWAY- NEW GARAGE	Illuminance	Fc	1.42	1.7	1.2	1.18	1.42



A1	PHOTOMETRIC SITE PLAN
SCALE: 1"=20'-0"	

7/2/2021 3:16:33 PM

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PORTLAND, ME 04103

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PROJECT:

USM - Structured Parking Garage

Address

50 Bedford Street,
Portland ME 04104

REVISIONS:

No.	Date	Description

SUBMISSIONS:

Date	Issued For:
11/23/21	Foundations, Site, Landscape Pkg

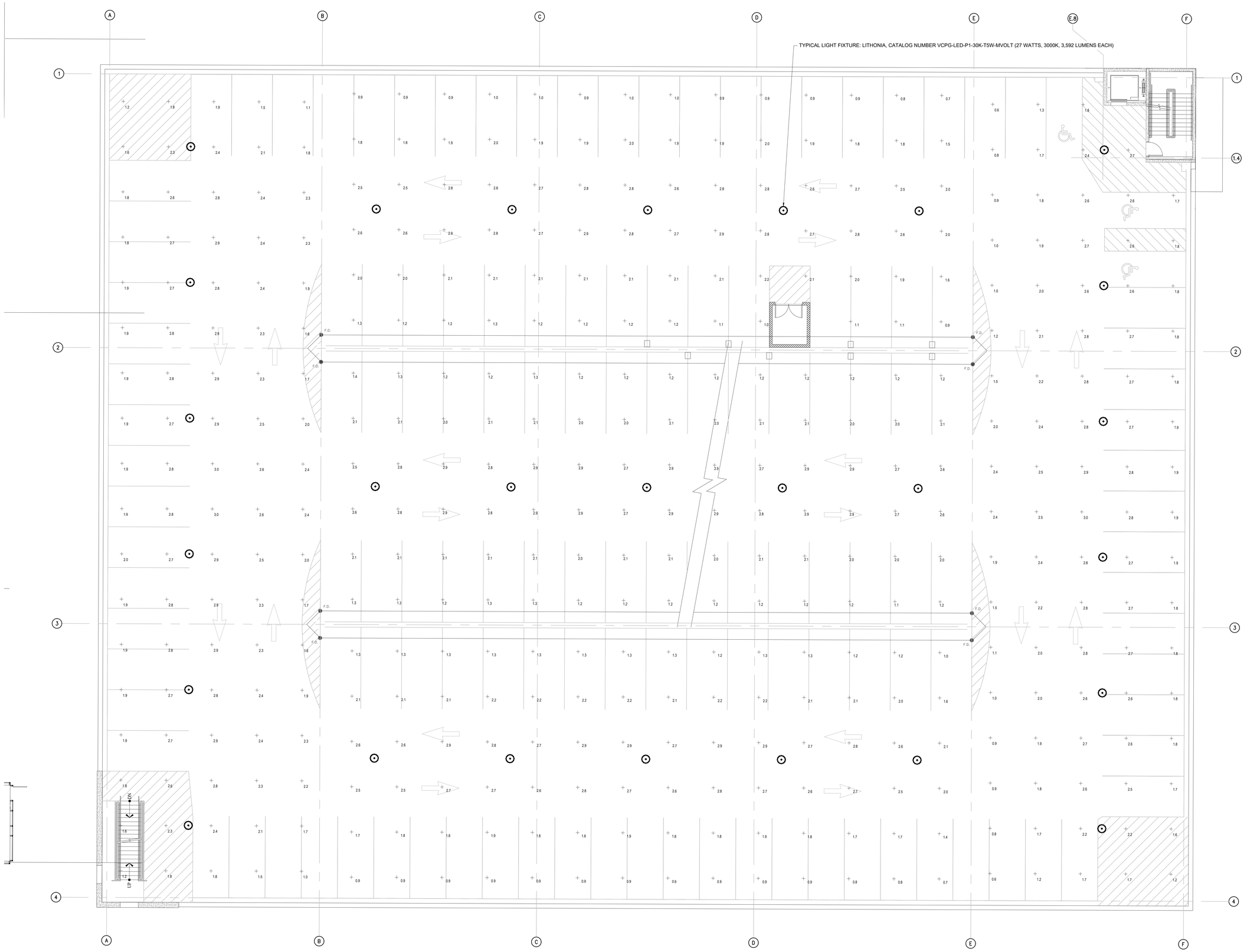
SCALE	**AS NOTED**
DATE ISSUED	**11/23/2021**
PROJECT NO	**20-20145.00-1**
DRAWN BY	**GMC**
CHECKED BY	**BTG**

SHEET TITLE:

SITE PHOTOMETRIC PLAN AND SCHEDULES

SL-100

Calculation Summary							
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PARKING DECK OVERALL	Illuminance	Fc	2.02	3.0	0.6	3.37	5.00



A1 TYPICAL INTERIOR PARKING DECK PHOTOMETRIC PLAN

SCALE: 1/8"=1'-0"

7/2/2021 3:16:33 PM

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25 Bedford Street, Portland, ME 04104
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PROJECT TEAM:

CLIENT
UNIVERSITY OF SOUTHERN MAINE

PRIME CONSULTANT
& STRUCTURAL ENGINEER
DESMAN Design Management
18 Tremont Street #300
Boston, MA 02108

ARCHITECT
WINTON-SCOTT ARCHITECTS
5 MILK STREET
PORTLAND, ME 04101

CIVIL ENGINEER
WOODARD & CURRAN
41 HUTCHINS DRIVE
PORTLAND, ME 04102

LANDSCAPE ARCHITECT
MICHAEL BOUCHER LANDSCAPE ARCHITECTURE
457 US ROUTE 1 SUITE 2
FREEPORT, ME 04032

MEP/FP ENGINEER
ALLIED ENGINEERING
160 VERANDA STREET
PORTLAND, ME 04103

GEOTECHNICAL ENGINEER
S.W. COLE
286 PORTLAND ROAD
GREY, ME 04039

TRAFFIC ENGINEER
VANASSE HANGEN BRUSTLIN INC
40 IDX DR 100 #200, SOUTH
BURLINGTON, VT 05403

COST ESTIMATOR
PREFERRED CONSTRUCTION MGMT
94 AUBURN ST,
PORTLAND, ME 04103

SEAL / SIGNATURE

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2021

PROJECT:

USM - Structured Parking Garage

Address

50 Bedford Street,
Portland ME 04104

REVISIONS:

No.	Date	Description

SUBMISSIONS:

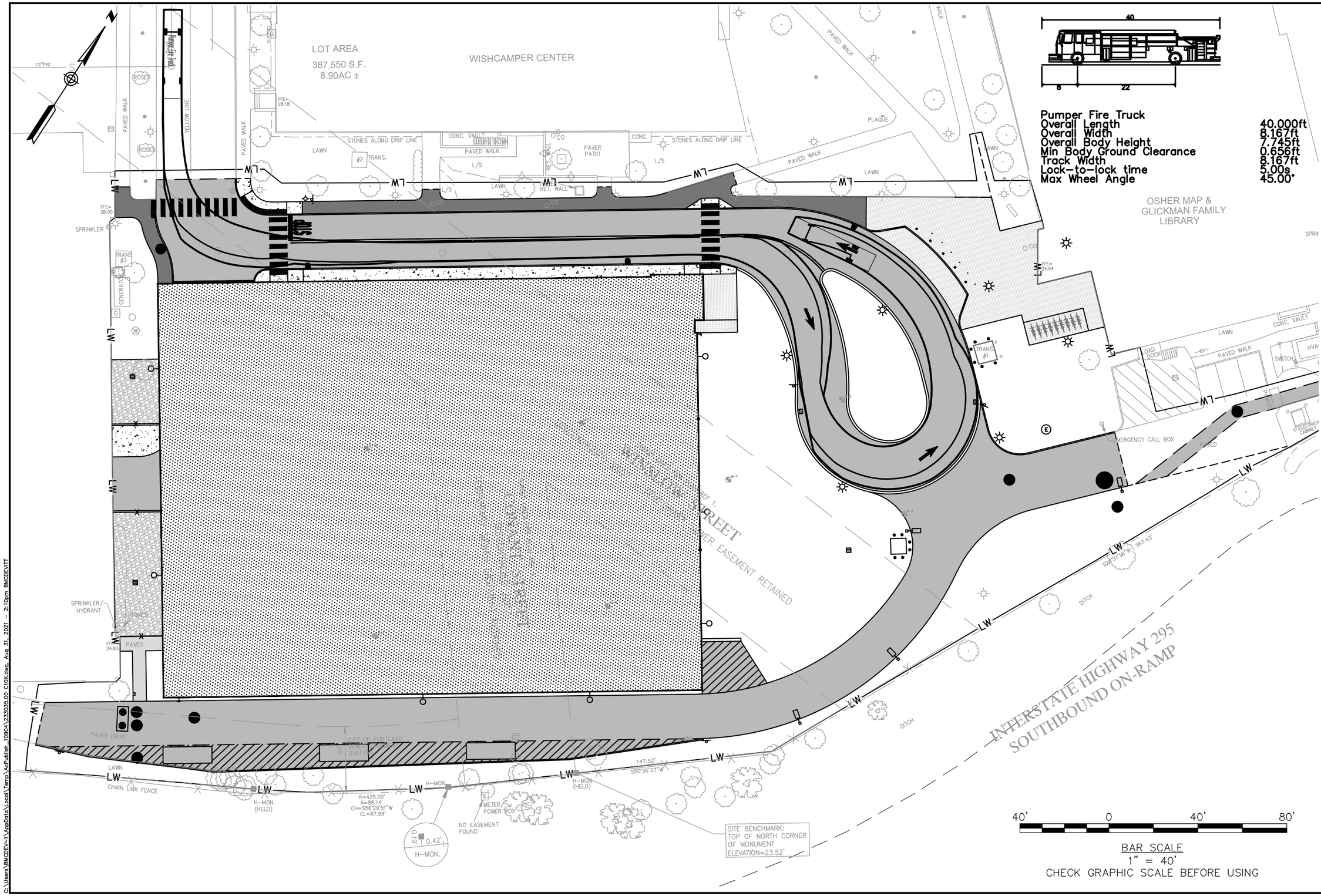
Date	Issued For:
11/23/21	Foundations, Site, Landscape Pkg

SCALE	**AS NOTED**
DATE ISSUED	**11/23/2021**
PROJECT NO	**20-20145.00-1**
DRAWN BY	**GMC**
CHECKED BY	**BTG**

SHEET TITLE:

TYPICAL INTERIOR PARKING DECK PHOTOMETRIC PLAN

SL-101



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

COMMITMENT & INTEGRITY DRIVE RESULTS

WOODARD & CURRAN

VEHICLE MOVEMENT FIGURE – 1

DESIGNED BY:	ANL	CHECKED BY:	DBS
DRAWN BY:	BCM	233035.00 C10X.dwg	

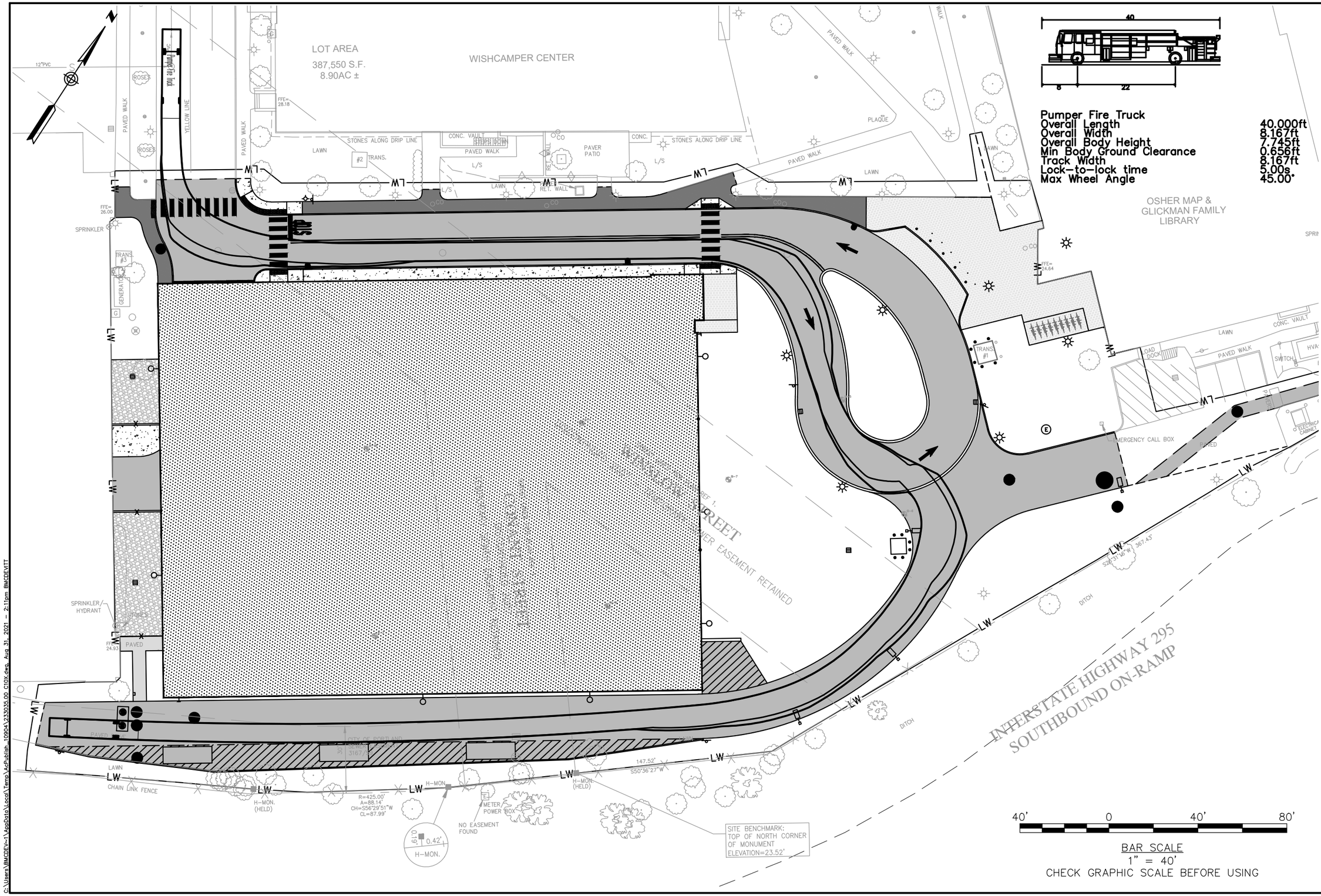
UNIVERSITY OF SOUTHERN MAINE
PORTLAND, MAINE

USM – STRUCTURED PARKING GARAGE
50 BEDFORD ST. PORTLAND, ME 04104

JOB NO: 233035.00
DATE: SEPTEMBER 2021
SCALE: 1"=40'

VEH. 1

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41 Hutchins Drive
Portland, Maine 04102
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COMMITMENT & INTEGRITY DRIVE RESULTS
WOODARD &CURRAN

VEHICLE MOVEMENT

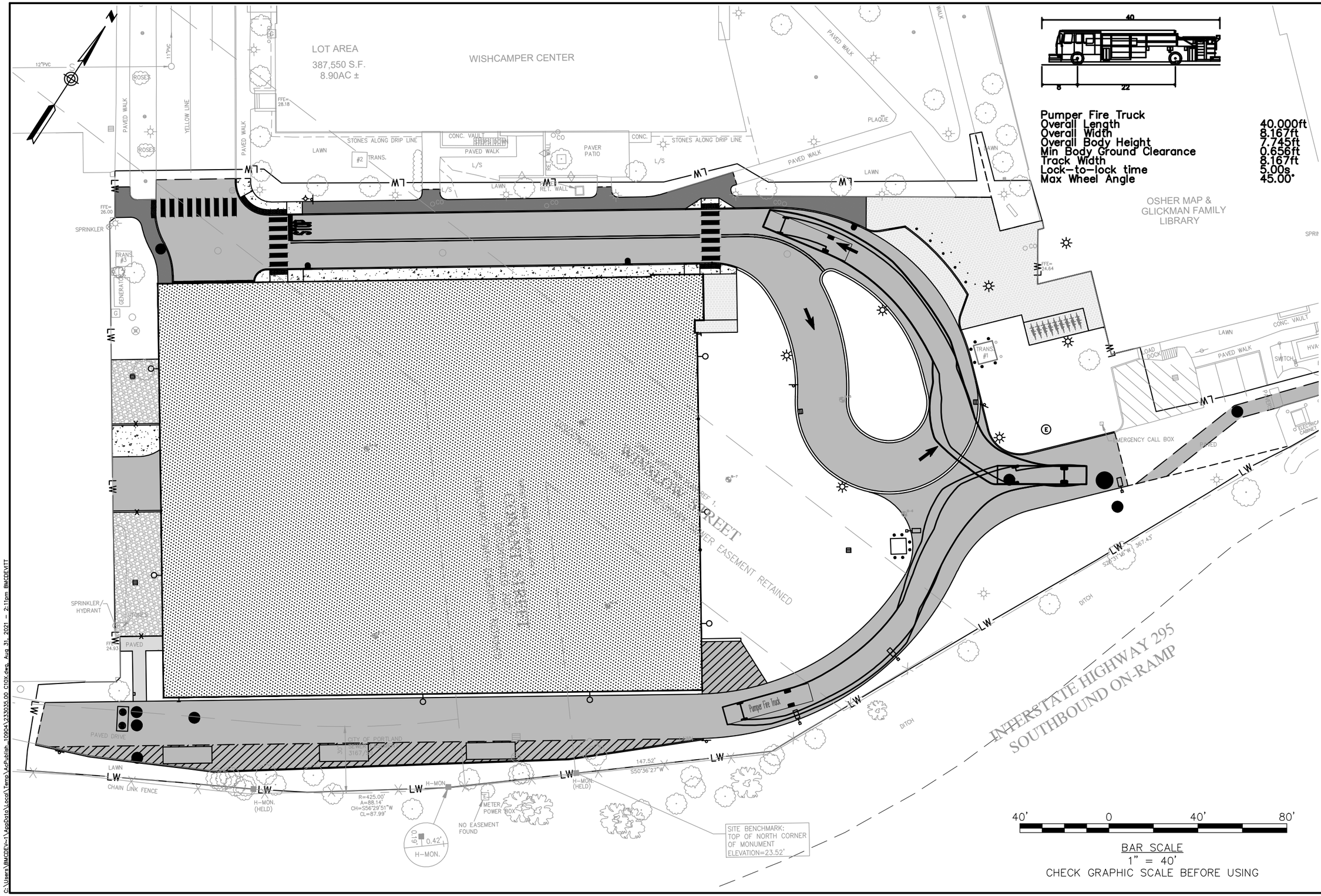
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UNIVERSITY OF SOUTHERN MAINE
PORTLAND, MAINE

USM – STRUCTURED PARKING GARAGE
50 BEDFORD ST. PORTLAND, ME 04104

JOB NO: 233035.00
DATE: SEPTEMBER 2021
SCALE: 1"=40'

VEH. 2



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

COMMITMENT & INTEGRITY DRIVE RESULTS

WOODARD & CURRAN

VEHICLE MOVEMENT FIGURE – 3

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DRAWN BY:	BCM
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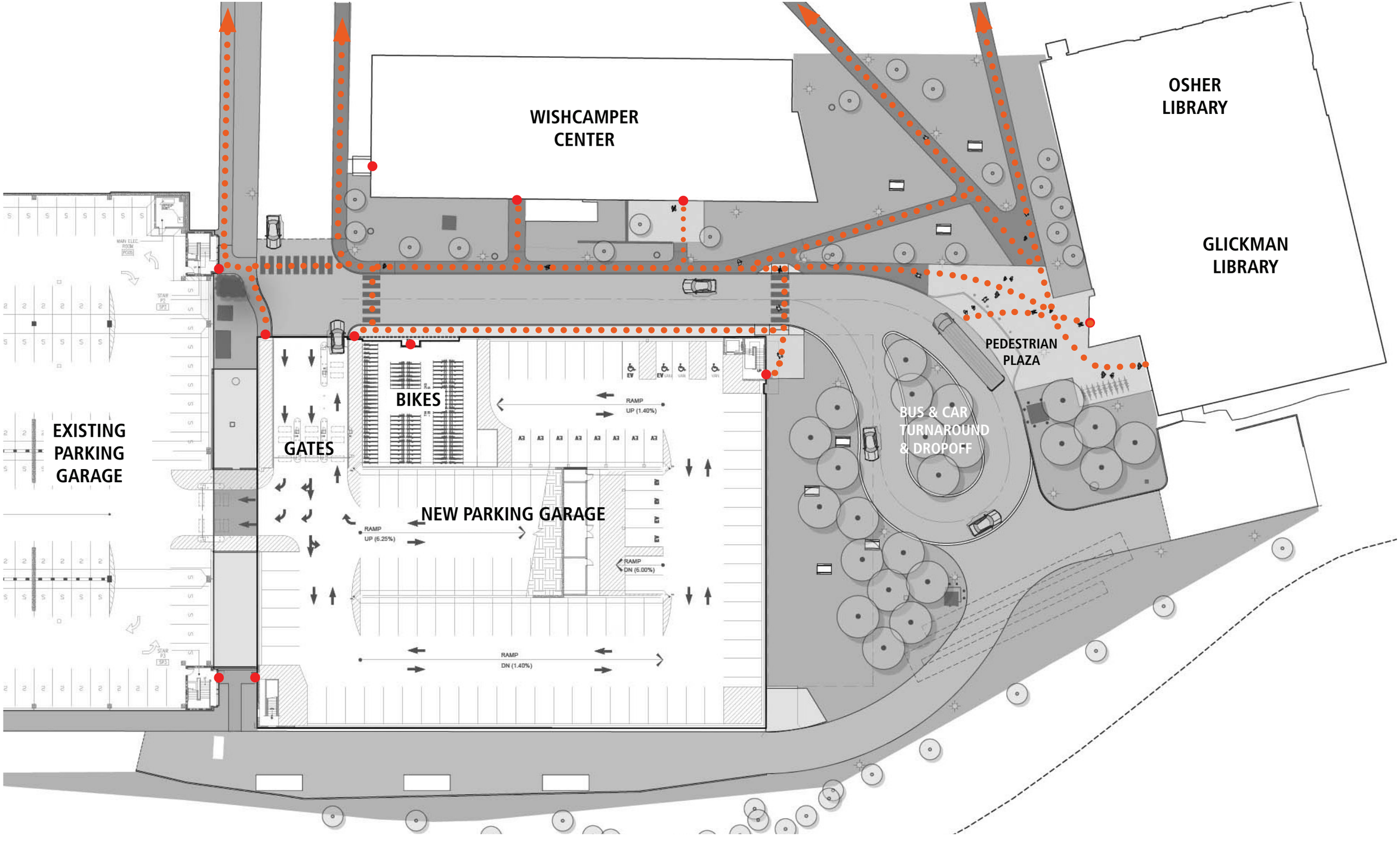
UNIVERSITY OF SOUTHERN MAINE
PORTLAND, MAINE

USM – STRUCTURED PARKING GARAGE
50 BEDFORD ST. PORTLAND, ME 04104

JOB NO:	233035.00
DATE:	SEPTEMBER 2021
SCALE:	1"=40'

VEH. 3

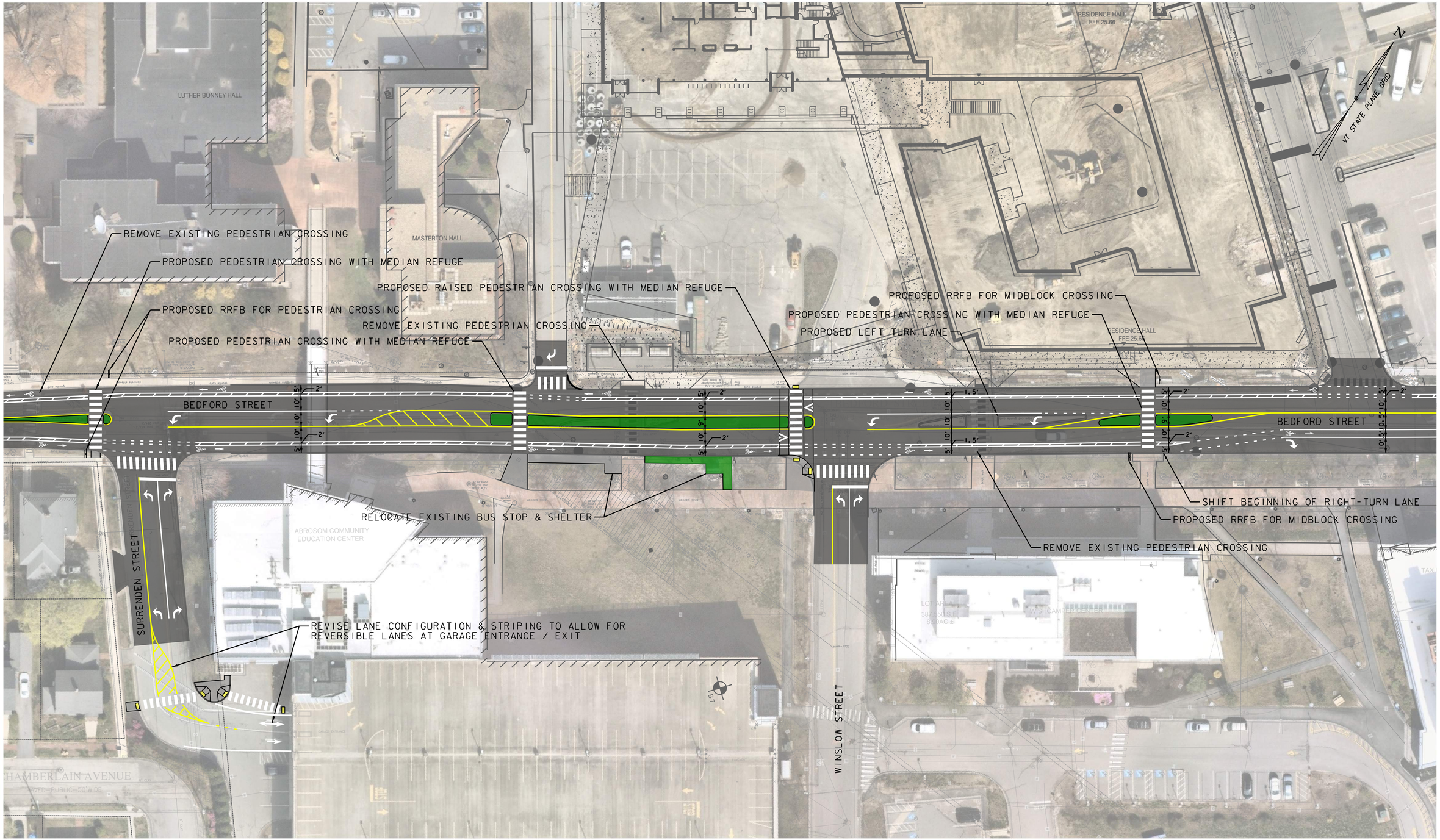
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USM PARKING GARAGE: **WISHCAMPER SITE**
Portland, Maine

PEDESTRIAN ROUTES

1 SEPTEMBER 2021
mbla | inc



SCALE 1" = 30'-0"
30 0 30

PROJECT NAME:	USM INTERSECTION IMPROVEMENTS
PROJECT NUMBER:	52718.01

FILE NAME: bdr_concepts.dgn	PLOT DATE: 12/01/21
PROJECT LEADER: J.A. CONLEY	DRAWN BY: D.A. GINGRAS
DESIGNED BY: D.A. GINGRAS	CHECKED BY: J.A. CONLEY
BEDFORD STREET CONCEPT	SHEET 1 OF 1

PLANNING BOARD REPORT
PORTLAND, MAINE

30-32 Atlantic Street
Major Site Plan
PL-001667-2021
Kestrel, LLC.

Submitted to:	Portland Planning Board	**Prepared By:**	Austen Torres Davis
Public Hearing Date:	December 14, 2021	**Date:**	December 10, 2021

I. INTRODUCTION

Kestrel, LLC has submitted a Major Site Plan application to facilitate the construction of a three-story, four-unit residential building at 30-32 Atlantic St, within the Munjoy Hill neighborhood.

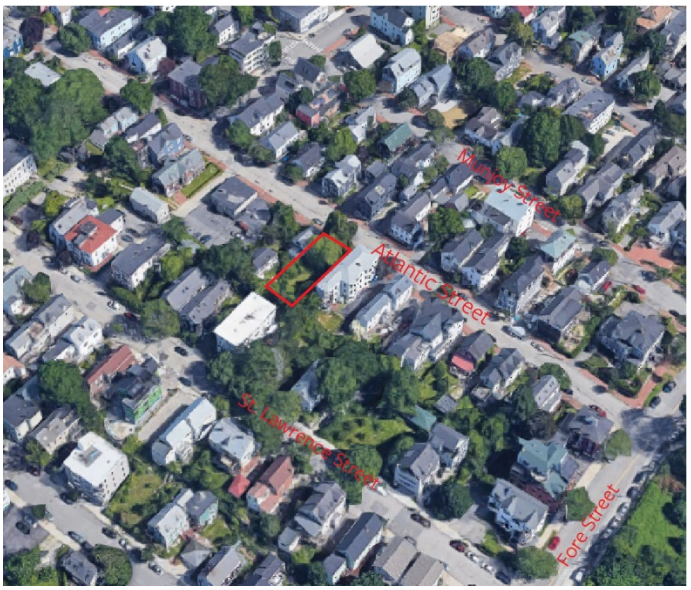


Figure 1. Development Site in Context

The new residential building would be located on a residential street that contains an eclectic mix of historic single-and-multifamily homes. The building is proposed to have 8,736 square feet of floor area, along with three parking spaces.

Units on the first and second floor will have two bedrooms each, while the third floor unit will have three bedrooms. Rear-facing outdoor terraces are proposed for the second and third floors. A bay projects outward from the façade and rises slightly above the predominant roofline, shielding mechanical and HVAC equipment. A private rooftop deck is proposed for the third-floor unit.

The application is being referred to the Planning Board for compliance with the City of Portland's Land Use Code Site Plan Standards, Section 14.1.

In anticipation of this Planning Board Public Hearing, the Planning and Urban Development Department mailed 223 notices to residences within 500 feet of the subject property. A legal advertisement ran in the December 3, 2021 and December 4, 2021 editions of the *Portland Press Herald.*

Applicant: Kent Parson, Kestrel LLC
Applicant Team: Lauren Reiter, Reiter Architecture & Design; Sam Lebel, Acorn Engineering; Kent Parson, Kestrel LLC, John Schwanda, Owen Haskell Inc.

PROJECT ACTIONS

Applicant's Proposal	Applicable Standards
Major Site Plan	Article V - Site Plan (Sec 14-521)
Waivers	**Citation**
Land Use Code Section 14.6.2.B.4&5 Landscape Preservation Applicant requesting to remove one tree 10 inches DBH or greater within the setback and contribute to the City's Tree Fund.	Where the planting of trees on the site is not feasible, the applicant shall contribute an amount proportionate to the cost of the required replacement trees to the City of Portland Tree Fund.

II. PROJECT DATA

SUBJECT	*DATA*
Total area of the site	5,235 square feet
Area of new lot to be created	5,235 square feet
Total Disturbed Area	5,235 square feet
Existing Zoning	R-6 Residential; Munjoy Hill Neighborhood Conservation Overlay District; Munjoy Hill Historic District
Existing Use	Vacant Land
Proposed Use	Multifamily Apartment Units
Impervious Surface Area --Existing --Proposed --Net Change	 1,097 square feet 4,178 square feet +3,081 square feet
Building Footprint --Existing --Proposed --Net Change	 0 square feet 2,632 square feet +2,632 square feet
Building Floor Area --Existing --Proposed -Net Change	 0 square feet 8,736 square feet (1,047 average square feet per dwelling unit) +8,736 square feet
Number of Units	4
Vehicle Parking Spaces	3
Bicycle Parking Spaces	2

III. BACKGROUND AND EXISTING CONDITIONS

Site Conditions

The subject property at 30-32 Atlantic Street is two adjoining vacant lots under common ownership, one of 2,598 square feet and one of 2,597 square feet, on which historically two structures were located. The block on which the proposed development would sit is the south-easternmost section of Atlantic Street, between Wilson and Gilbert streets on the northwest and the intersection where Fore Street becomes Eastern Promenade on the southeast.



Figure 2. 30-32 Atlantic Street, Existing Conditions

The block sits within both the *Munjoy Hill Neighborhood Conservation Overlay District* and the *Munjoy Hill Historic District*. The block, its landscaping and housing stock, are exemplary of the character and land use of the Munjoy Hill neighborhood, with a mixture of historic single family and triple-deckers mixed throughout.

The site is on the south side of the street, sitting between a one-and-a-half story Greek-Revival single family home and a three story Queen Anne style triple-decker apartment building. Both adjacent structures, as well as many others in the area, are contributing structures to the Munjoy Hill Historic District.

One large Linden tree is within the sidewalk adjacent to the site, while three additional trees sit on the property itself. Another tree straddles the property line of 28 and 30-32 Atlantic Street. The Linden tree is in the public right-of-way, and as such is considered a *city tree*. The site contains a two stem River Birch tree, considered a *Heritage* Tree, as its two 12 inch stems total 24 inches DBH. The applicant also plans to coordinate with an adjacent property owner at 28 Atlantic Street on the maintenance or replacement of a tree near the shared lot-line. The applicant plans to replace the street tree, and pay into the city's tree fund in lieu of replacing the trees on site. A separate permit for the removal of the *Heritage Tree* is being sought by the applicant.



Figure 3. Development Site in Context

IV. PROPOSED DEVELOPMENT

The proposed major site plan for 30-32 Atlantic Street would facilitate the development of a three-story building totaling approximately 8,736 square feet with four residential units intended to be apartments for rent. The proposed building would rise to a total height of approximately 34 feet. The roof is proposed to have a private deck and screened HVAC equipment. Three parking spaces, including one ADA designated space would be provided at the eastern edge of the lot towards the rear of the building. Parking would be accessed via a 10.31-foot curb cut off Atlantic Street.

Associated site improvements proposed in connection with the new building include a rebuilt brick sidewalk with granite curbs, a replaced street tree, and a rain garden proposed in the rear yard to alleviate stormwater runoff. Additionally, a utility pole adjacent to the current driveway will be relocated.

The building, landscaping, and parking area sit on a lot totaling 5,235 square feet in size. Approximately 4,169 square feet of impervious area is proposed in connection with this project.



Figure 4. Site Perspective from North

V. RIGHT, TITLE AND INTEREST AND FINANCIAL/TECHNICAL CAPACITY

The owner of the property is Kestrel LLC., a Connecticut-based limited liability company. The applicant has submitted a Statement of Financial Capacity letter from their financial institution, TD Ameritrade, as demonstration of their financial capacity (Attachment H). A Statement of Technical Capacity has been provided by the applicant's representative, Architect Lauren J. Reiter of Cornerstone Building & Restoration, along with a summary of key members of the applicant team for the project. (Attachment I).

VI. ZONING ANALYSIS

A. DIMENSIONAL AND USE REQUIREMENTS

30-32 Atlantic Street (parcels 016-F003 and 016-F025), is located in the R-6 Residential zone and the Munjoy Hill Neighborhood Conservation Overlay District (MHNCOD). In addition to the standards that are applicable to properties in the R-6 zone, all properties within the MHNCOD shall meet the standards of Section 8.7 of the Land Use Code. As per Table 6-A in the *City of Portland Land Use Code* the proposed use of multifamily dwelling is permitted in the R-6 zone

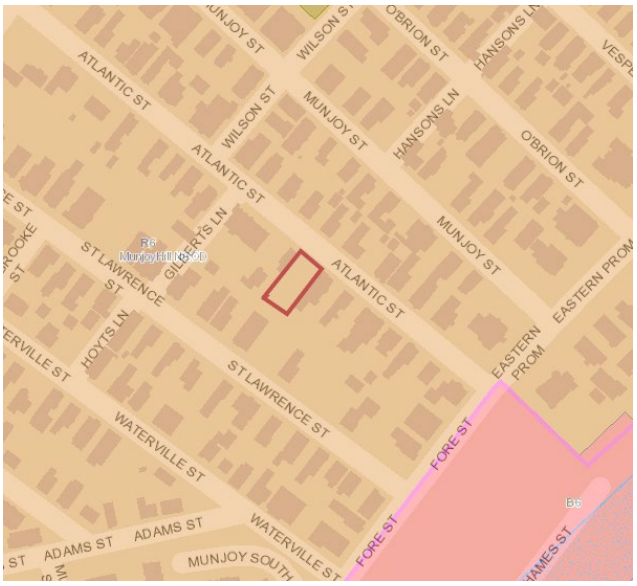


Figure 5. 30-32 Atlantic in R-6 Zone Context

The R-6 and MHNCOD dimensional standards are described in Table 7-A and Table 8-E of the Land Use Code, respectively. Unlike the underlying R-6 zoning district, which allows buildings up to 45 feet in height, sites in the MHNCOD are permitted maximum heights up to 35 feet as of right, or 45 feet for buildings with three or more units on lots over 2,000 square feet that include at least one workforce housing unit. Rooftop appurtenances other than chimneys shall not exceed permitted heights, except HVAC equipment is permitted for up to five feet above maximum heights. Rear setbacks have a 10 foot minimum and side setbacks have a five foot minimum.

As per Article 19, Table 19-A, the minimum off-street parking requirement is calculated as one space per dwelling unit. However, within the R-6 zone, no off-street parking is required for the first three dwelling units as described in Table 19-B. Additionally, no off-street parking is required for sites within ¼ mile of fixed route transit service. Therefore, the applicant is not required to provide any parking on the site.

The following table is provided to show the dimensional requirements of the R-6 zone and MHNCOD which are met by this proposal:

Standard	*R-6 Zoning Requirement*	*Munjoy Hill Neighborhood Conservation District Requirements*	*Proposed*
Minimum Lot Area	2,000 square feet		5,235 square feet
Minimum Lot Area Per Dwelling Unit	725 square feet		1,047 square feet
Minimum Street Frontage	20 feet		51 feet
Minimum Front Setback	5 feet	5 feet or the minimum depth of immediately abutting street-facing yard, whichever is less.	5.25 feet
Minimum Rear Setback	10 feet	Buildings up to 35 feet in height: 10 feet	10.57 feet
Minimum Side Setback (>2.5 stories)	5 feet	Buildings up to 35 feet in height: As per underlying zoning.	5.50 feet
Maximum Lot Coverage	60%		57%
Minimum Lot Width	20 feet		51 feet
Maximum Structure Height	45 feet	35 feet 45 feet for buildings w/ 3 or more units on lots over 2,000 SF that include at least one workforce housing unit.	34.21 feet
Minimum Landscaped Open Area	20%		20%
Minimum Off-Street Parking	1		3 spaces
Minimum Off-Street Bicycle Storage	2 Spaces		2 Spaces

VII. DEVELOPMENT REVIEW

A. SITE PLAN REQUIREMENTS

The applicant has submitted a recording plat for review by the City Surveyor and Corporation Counsel. As is customary, the final plat will need to be revised to reflect any waivers and conditions of approval that relate to the site plan. Any waivers granted must be recorded at the Registry of Deeds within two years of a Planning Board decision.

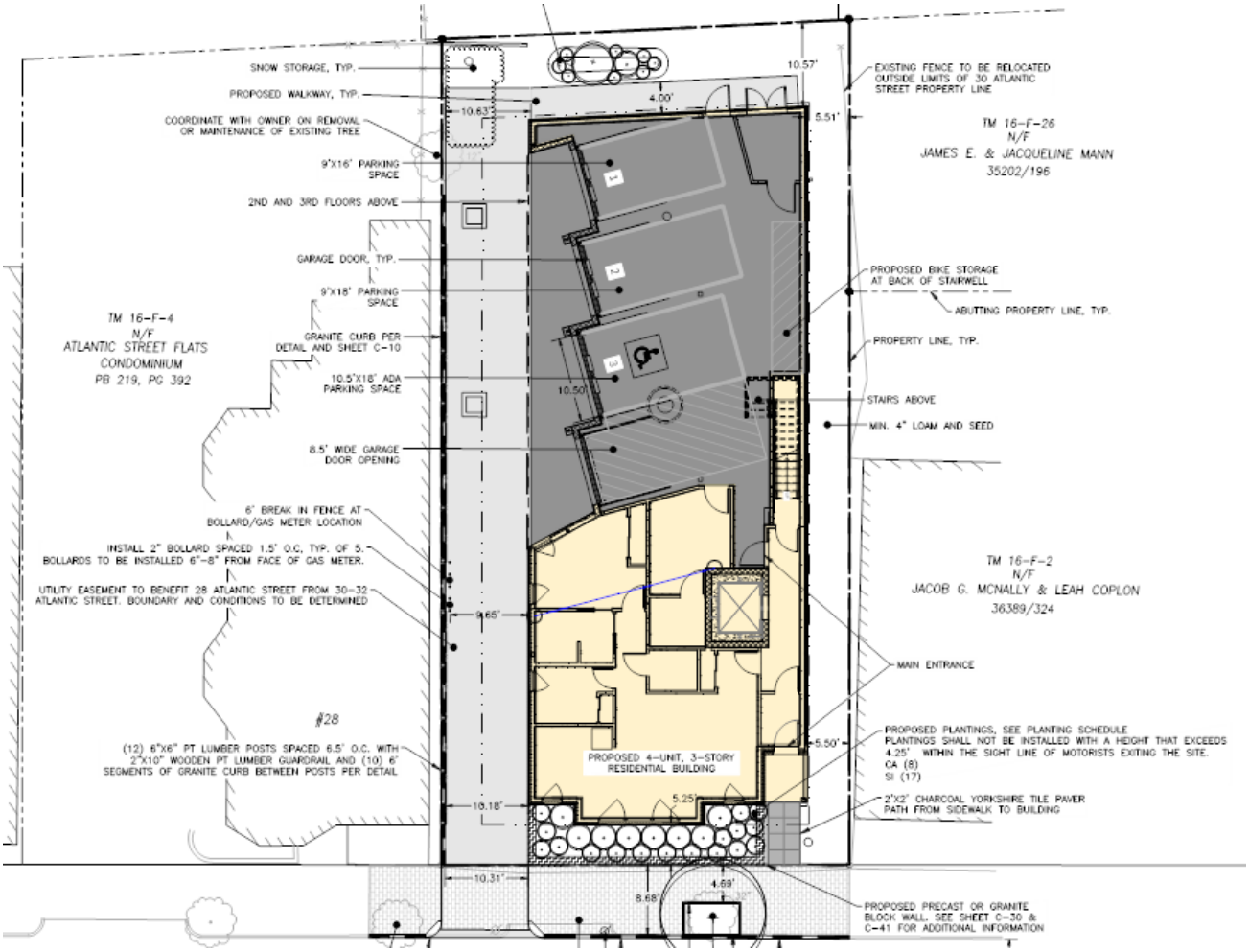


Figure 6. Recording Plat of 30-32 Atlantic Street

B. SITE PLAN REVIEW STANDARDS (Section 14.6)

The proposed development has been reviewed by staff for conformance with the relevant review standards of Portland's site plan ordinance and other applicable regulations. Staff comments are listed below.

1. Transportation Standards

1. Impact on Surrounding Street Systems

The proposed project is located on Atlantic Street, which is a local road and the applicant is proposing to provide three parking spaces for a four unit residential building. The site is accessible to public transit and it is not anticipated to adversely affect surrounding street systems.

2. Access and Circulation

The applicant proposes to relocate the driveway closer to the eastern edge of the property. New sidewalk and curbs would be built, as well as a new curb cut for the driveway and walkway to the front entrance. The applicant originally requested a waiver to *Technical Manual Section 1.7 Driveway Design* to allow for a reduced driveway width of 9.65 feet. Following the first Planning Board workshop, the applicant has revised their design and is now proposing a driveway width at the property line of 10.31 feet, which meets the required driveway width standard for residential developments with nine parking spaces or less.

The applicant has noted that a lumber guardrail will be installed along the eastern property boundary which will separate 30-32 Atlantic Street from the abutting property, 28 Atlantic Street. Guardrail posts will be placed six feet apart and embedded four feet in the ground. All lumber will be pressure treated for added strength and durability against the elements. In addition the applicant plans to install two bollards in front of the adjacent properties gas meter. City's Consultant Traffic and DPW noted that these protective measures be crash-rated.

The applicant has submitted a turning template demonstrating vehicle maneuverability utilizing an SUV. City Consulting Traffic Engineer has suggested plantings that do not affect visibility be utilized within the front yard.

3. Public Transit Access

All residential developments consisting of 20 or more dwelling units shall provide a transit shelter adjacent to or within the public right-of-way along its frontage. The proposed project provides four units, therefore this standard is not applicable.

4. Parking: Vehicle and Bicycle

This development proposes three vehicle parking spaces, yielding a parking ratio of .75 spaces per unit, with no changes to on-street parking. All vehicle parking is located on the ground floor tucked under the building. No parking is required due to the site's location within a ¼ mile radius of fixed route transit service. The applicant proposes to include two bicycle parking spaces.

2. Environmental Quality Standards

1. Preservation of Significant Natural Features

Having been originally developed in the late 1800s and having undergone subsequent demolition, the vacant site currently consists of denatured land devoid of significant natural features.

2. Landscaping and Landscape Preservation

The applicant requests a waiver for the removal of one tree on site with 10 inch DBH or greater, and to contribute an amount proportionate to the cost of replacement to the City of Portland Tree Fund. Additionally, a permit was filed with the Parks Department for the removal of an on-site Heritage Tree. Tree fund contributions as part of the heritage tree removal are calculated as part of the Heritage Tree Removal permit handled by the City of Portland Parks Department,

An existing large Linden tree is located within the sidewalk right-of-way in front of 30-32 Atlantic Street. Being within the public right-of-way, the tree is not considered a Heritage Tree, and is therefore not subject to the City's Heritage Tree Ordinance, which applies to trees located on private property. The Linden tree is owned and managed by the City of Portland, and is proposed to be removed by the applicant due to its poor health and location that would hinder development and preservation of the tree itself.

Planning Staff and the City Arborist concur with the determination that this tree should be removed, and it has been agreed upon that the replacement tree with be a Honeylocust.

All multi-family residential developments are required to provide one tree per unit. The applicant is proposing four units and is therefore required to plant four street trees or contribute to The City's Tree Fund. The calculation for the in-lieu fee for street trees is as follows: 4 required trees, zero provided = 4 x $400 = $1,600 fee-in-lieu. In addition, the applicant is required to pay an in-lieu fee of $400 for the removal of one tree on site greater than 10 inch DBH. The total in-lieu fee for the project = 5 trees x $400 = $2,000.

3. Water Quality, Storm Water Management and Erosion Control

The Applicant has provided a detailed Stormwater Management Report (Attachment K), as well as an Erosion and Sedimentation Control Report to meet the Basic Standards.

3. Public Infrastructure and Community Safety Standards

1. Consistency with City Master Plans

This development is consistent with the goals and policies outlined in *Portland's Plan 2030.* The new housing development aligns with the City's vision statements and goals by increasing the overall housing supply in a contextual manner in a walkable, transit accessible location, which has the ability to enable people who work in Portland to have the option to live in Portland. Relevant vision statements and goals are provided below:



Figure 7. Vision Statement from Portland's Plan 2030

Goals:

- Housing: Increase, preserve, and modify the overall supply of housing city-wide to meet the needs, preferences and financial capabilities of all Portland residents.
- Housing: 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.

- Housing: Pursue policies to enable people who work in Portland to have the option to live in Portland.
- Environment: Adopt sustainable land use and transportation policies that support connectivity, walkable neighborhoods, and multi-modal transportation.
- Historic: Ensure appropriate balance of continuity and change as Portland grows and evolves.

2. Public Safety and Fire Prevention (CPTED and Fire)

The Crime Prevention through Environmental Design (CPTED) standards in the site plan ordinance addresses 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 site's landscaping reinforce ownership while its windows and relation to neighboring buildings promote natural surveillance. The lighting is sufficient to promote visibility and security.

This project was reviewed by A Fire Plans Examiner who has raised potential concerns that the proposed hood hatch to access the roof deck may not meet the Building Code and Life Safety Code requirements as proposed.

3. Availability and Adequate Capacity of Public Utilities

The Applicant has received a Wastewater Capacity Authorization letter from the Department of Public Works. The applicant has also received an Ability to Serve Determination from the Portland Water District. Central Maine Power, Unitil, and Spectrum have also sent letters expressing sufficient capacity to serve this site.



Figure 8. View from the South East

4. Site Design Standards

1. Massing, Ventilation and Wind Impact

The new building proposed is not anticipated to impact any adjacent structures as it relates to bulk or diminution of available light and air to abutting properties. The building does not differ substantially from adjacent structures regarding massing and the proposed development conforms to the zoning dimensional standards. Negative impacts are not anticipated.

2. Shadows

As an infill development that conforms to dimensional standards and setbacks, negative impacts regarding shadows are not anticipated.

3. Snow and Ice Loading

The applicant is proposing on-site snow storage; and has included a snow removal plan that will be utilized in larger snow storm events (*see attachment Plan 5: General Site Note #7 on Sheet C-10*).

4. View Corridors

Not applicable.

5. Historic Resources

The site is within the recently established Munjoy Hill Historic District and is subject to Historic Preservation Board Review. The Historic Preservation Board held an initial workshop on October 6, 2021, and a subsequent hearing on November 17, 2021. On November 17, 2021, the City of Portland's Historic Preservation Board voted 7-0 to approve this development with the condition that, *in order to increase the prominence of the front entry, final details are to be submitted to staff for review and approval (see Figure 4).*

6. Exterior Lighting

Applicants have submitted an exterior site lighting plan and cut sheets that show compliance with the City of Portland Technical Manual lighting standards – Section 12.

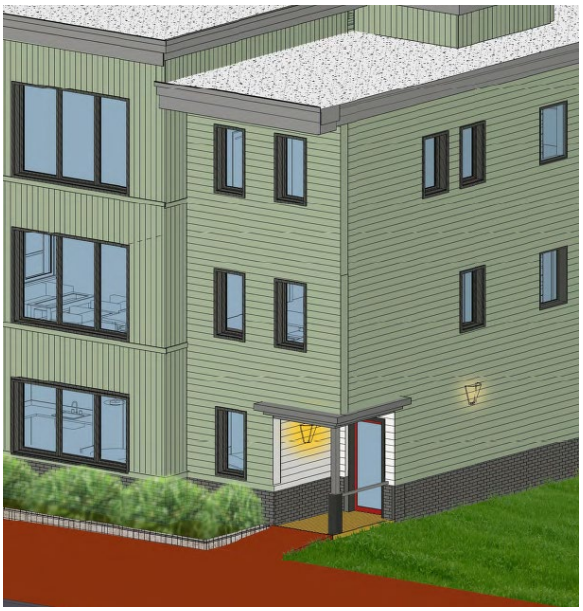


Figure 9. Lighting at Front Entrance

7. Noise and Vibration

All heating, ventilation and air conditioning equipment (HVAC), air handling units (AHU), emergency generators, and similar equipment will be required to meet state and federal emissions requirements. Proposed mechanical equipment will be located on the roof, shielded from view by setting back substantially from the building's edge and screened by lattice fence and parapet.

8. Signage and Wayfinding

No signage or wayfinding is proposed in this development.

9. Zoning Related Design Standards

As this development is located in a historic district, City of Portland Historic Preservation standards supersede R-6 design standards. A design review was conducted by Historic Preservation staff, and a meeting was held before the Historic Preservation Board. This process led to revisions that are incorporated into the current application materials. On November 17, 2021, the City of Portland's Historic Preservation Board voted 7-0 to approve this development

Pursuant to Munjoy Hill Neighborhood Conservation Overlay District Section 8.7.4, Design Review, the following design standards shall apply in the Munjoy Hill Neighborhood Conservation District:

- *All buildings shall use simple, traditional roof forms as illustrated in Figure 8-F, except that flat roofs are permitted in buildings of three or more units. This requirement may also be modified through Subsection 8.7.4(B) below. Dormers and cross gables are allowed but where readily visible from the public right-of-way shall be clearly subsidiary to the primary roof form.*

- Staff Comment: The proposed project is a four unit apartment building. Flat roofs are permitted in buildings of three or more units. This standard is adequately addressed.

- *The first floor shall contain active living space, such as a living room or bedroom, with windows for at least 50% of the width of the front façade in total.*

- Staff Comment: The proposed building's first floor contains active living space for greater than 50% of the building façade, this standard is considered adequately met.

IX. NEIGHBORHOOD MEETING AND PUBLIC COMMENT

Notices were sent to 223 property residences within 500 feet of the site on September 24, 2021. A remote Neighborhood Meeting was held on October 5, 2021 with five members in attendance. Concerns raised include impacts to the street tree, the species and caliper of the proposed replacement tree, and how the recently established Munjoy Hill historic District informs the building's design.

At the time of writing this memo, the Planning Department has received three public comments (PC 1-3).

X STAFF RECOMMENDATION

The proposed project meets the applicable standards of Portland's Land Use Code. Subject to the proposed motions and conditions of approval listed below, the Planning and Urban Development Department staff recommends that the Planning Board approve application #PL-001667-2021 to construct a new three story, four unit building at 30-32 Atlantic Street.

XI. PROPOSED MOTIONS

A. WAIVERS

On the basis of the application, plans, reports and other information submitted by the applicant; findings and recommendations contained in the Planning Board report for the public hearing on December 14, 2021 for application #PL-001667-2021 relevant to Portland's site plan standards and other regulations; and testimony presented at the Planning Board hearing:

1. The Planning Board **[finds/does not find],** based upon the submitted materials, that extraordinary conditions exist or undue hardship may result from strict compliance with Land Use Code Section 14.6.2.B.4 & 5, Landscape Preservation, which requires all development subject to zoning setbacks to preserve a minimum of 30% of existing trees 10 inches DBH or greater within the required setback area. The Planning Board **[waives/does not waive]** Land Use Code Section 14.6.2.B.4 & 5 to allow the substitution of landscaping in other areas of the site.

B. SITE PLAN REVIEW

On the basis of the application, plans, reports and other information submitted by the applicant; findings and recommendations contained in the Planning Board Report for the public hearing on December 14, 2021, for application #PL-001667-2021, relevant to the site plan regulations; and the testimony presented at the Planning Board hearing, the Planning Board [**finds/does not find**] that the plan is in conformance with the site plan standards of the Land Use Code, subject to the following condition/s of approval:

PRIOR TO APPLYING FOR A BUILDING PERMIT

1. The applicant shall submit all new easement agreements for review and approval by the Planning Authority and Corporation Counsel.

PRIOR TO ISSUANCE OF A BUILDING PERMIT

2. The applicant shall contribute to the tree fund in the amount of $400 per tree for five trees (four street trees and in-lieu-fee for one replacement tree) for a total of $2,000.

PLANNING BOARD REPORT ATTACHMENTS

1. HP Certificate of Appropriateness for New Construction

APPLICANT'S SUBMITTAL

A. Cover Letter
AA. Turning Template Exhibit
AB. Inspection and Maintenance Plan
B. Major Site Plan Checklist
C. Right, Title, and Interest
D. Zoning Assessment
E. Summary of Written Easements
F. Code Analysis
G. Waiver Requests
H. Financial Capacity
I. Technical Capability
J. Conformity with Land Use Ordinance
K. Stormwater Management Report
L. Erosion and Sedimentation Control Report
M. Public Safety and Fire Prevention
N. Wastewater Capacity
O. Exterior Lighting
P. Architectural Design Narrative
Q. Utility Cover
R. Construction Management Report
S. Solid Waste Disposal
T. Parking Analysis
U. Neighborhood Documentation
V. Neighborhood Meeting Certification
W. Neighborhood Meeting Invitation Letter
X. Neighborhood Meeting Sign-In Sheet
Y. Neighborhood Meeting Minutes
Z. Response Letter to Preliminary Staff Comments

PLANS

Plan 1 – Cover Sheet
Plan 2 – General Notes
Plan 3 –Survey
Plan 4 – Construction Management Plan
Plan 5 – Site and Landscape Plan
Plan 6 – Utility Plan
Plan 7 – Grading Plan
Plan 8 – Site Details - 1
Plan 9 – Site Details - 2
Plan 10 – Landscape Details
Plan 11 – Utility Details - 1
Plan 12 – Utility Details - 2
Plan 13 – Drainage Details
Plan 14 – Focal Point Rail Garden Details

Plan 15 – Erosion and Sediment Control Details
Plan 16 – Foundation and First Floor Plan
Plan 17 – Second and Third Floor Plan
Plan 18 – Roof Plan
Plan 19 – Elevations
Plan 20 – Perspective
Plan 21 – Subdivision Plat
Plan 22 – Cover Sheet
Plan 23 – Comparative Elevations
Plan 24 – Photometric Plan

PUBLIC COMMENT

PC1 – Carle Henry
PC2 – Ananda Moor Jankowski
PC3 – Kathy

CITY OF PORTLAND, MAINE

HISTORIC PRESERVATION BOARD

Penny Pollard, Chair
Robert O'Brien, Vice Chair
Hilary Bassett
Joy Naifeh
Julia Tate
John Turk
Rob Whitten

November 23, 2021

Kent Parson, Kestrel, LLC
118 Rowley Drive
Stonington, CT 06378

Re: Certificate of Appropriateness for New Construction – 32 Atlantic Street - HPBR-001790-2021

Dear Mr. Parson,

On November 17, 2021, the City of Portland's Historic Preservation Board voted 7-0 to approve your application, submitted on your behalf by architect Lauren Reiter, for a Certificate of Appropriateness for construction of a new residential building at 32 Atlantic Street. Approval was made on the basis of plans and specifications submitted by Lauren Reiter for the November 17, 2021 public hearing, and is made with the following condition:

- After further study and discussion with staff regarding increasing the prominence of the front entry, the final details are to be submitted to staff for review and approval.

Several Board members also recommended consideration of articulating with layers the cornice on the north and south sides to match the east (front) cornice, but this is not required as a condition of approval.

Construction to be carried out as shown on the plans and specifications submitted for the November 17, 2021 consent review and/or as described above. Any exterior design revisions are to be submitted to HP staff for review. Changes to the approved plans and specifications and any additional work that may be undertaken must be reviewed and approved by this office prior to construction, alteration, or demolition. If, during the course of completing the approved work, conditions are encountered which prevent completing the approved work, or which require additional or alternative work, you must apply for and receive a Certificate of Appropriateness or Non-Applicability PRIOR to undertaking additional or alternative work.

This Certificate is granted upon condition that the work authorized herein is commenced within twelve (12) months after the date is issuance. If the work authorized by this Certificate is not commenced within twelve (12) months after the date of issuance or if such work is suspended

In significant part for a period of one year after the time the work is commenced, such Certificate shall expire and be of no further effect; provided that, for cause, one or more extensions of time for periods not exceeding ninety (90) days each may be allowed in writing by the Department.

Sincerely,

Robert Wiener

Robert Wiener, Historic Preservation Compliance Coordinator

Cc: Lauren Reiter, Reiter Architecture and Design
Deb Andrews, Historic Preservation Program Manager

Lauren J. Reiter Architect / Cornerstone Building & Restoration
RA, LEED™ Accredited Professional

SECTION A: COVER LETTER

May 15, 2021

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

Subject: Major Site Plan & Subdivision Application
30-32 Atlantic Street Redevelopment

To Whom It May Concern:

On behalf of Kestrel, LLC, we are pleased to submit the accompanying package of submission materials related to the proposed project at 30-32 Atlantic Street. The project proposes to construct a 3-story, 4-unit residential building on an infill lot which is currently an open, unpaved lot. (Historic photos show that a 2.5 story building was once located on the site, but it is unknown when that building was demolished.)

The project site is located within the City's R-6 Zoning District as well as the Munjoy Hill Conservation Overlay District (MCHOD). And now – as of very recent City Council action – the project is also located in a Historic district. This application package is intended to meet the City's Submission Requirements as outlined in the Major Site Plan & Subdivision Application procedures, as well as to meet the other contextual goals set forth by the MHCOD.

The R-6 Infill Development Design Principles & Standards have shaped this building's design, and as such, the current design takes its inspiration from the classic triple-decker, with a dominant vertical bay on the street elevation, flat roof, brick base below the wood siding, vertically-proportioned windows, a human-scaled entrance porch, and a street facade that is 80+% living space on the ground floor (100% at upper floors), allowing for the front façade to interact with life on the street.

The project responds to a most important City Master Plan goal: providing additional housing stock to Portland, and also presents a building which is "friendly" to its context in both design and scale. Stormwater management through a rain garden, integrated planters along the street façade and a new brick sidewalk and street tree will all provide additional enhancement to this neighborhood.

If you have any questions regarding these materials or the completeness of the application materials, please let us know as soon as possible. Thank you for your review.

Sincerely,



Lauren J. Reiter
Registered Architect, Maine Lic. ARC#3302

6 South Street, Portland, ME 04101 tel. 917.502.2225 email. laurenjreiter@yahoo.com www.reiterarchitecturedesign.com

The following documents and drawings will be uploaded onto the City's electronic submission site per the procedure outlined in the application:

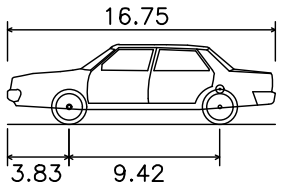
- ➢ Section A: Cover Letter
- ➢ Section B: Level III Final Site Plan Application & Checklist
- ➢ Section C: Right, Title, Interest
- ➢ Section D: Zoning Assessment
- ➢ Section E: Summary of Written Easements
- ➢ Section F: Code Analysis
- ➢ Section G: Waivers
- ➢ Section H: Financial Capacity
- ➢ Section I: Technical Capacity
- ➢ Section J: Conformity with Land Use Ordinance
- ➢ Section K: Stormwater Management Report
- ➢ Section L: Erosion & Sedimentation Control Report
- ➢ Section M: Fire Department Letter / Public Safety and Fire Prevention
- ➢ Section N: Wastewater Capacity Letter
- ➢ Section O: Exterior Lighting
- ➢ Section P: Architectural Design Narrative
- ➢ Section Q: Utility Cover
- ➢ Section R: Construction Management Plan
- ➢ Section S: Solid Waste Disposal
- ➢ Section T: Parking Analysis
- ➢ Section U. Photographic Documentation of Neighborhood

Drawings:

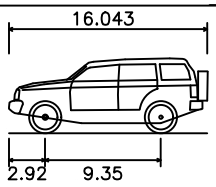
- ➢ Civil Site Plan Set, Dated 5/15/21
- ➢ Architectural Plan Set, Dated 5/15/21

Att. AA

3909/283



Architectural	
Overall Length	16.750ft
Overall Width	6.300ft
Overall Body Height	5.003ft
Min Body Ground Clearance	0.939ft
Track Width	6.300ft
Lock–to–lock time	5.00s
Curb to Curb Turning Radius	20.000ft



Toyota Landcruiser Amazon	
Overall Length	16.043ft
Overall Width	6.365ft
Overall Body Height	6.069ft
Min Body Ground Clearance	0.840ft
Track Width	6.365ft
Lock–to–lock time	4.00s
Curb to Curb Turning Radius	19.357ft

TM

JAMES E. &

35

TM

JACOB G. MCN

3

CONCEPT

THIS PLAN SHALL NOT BE MODIFIED WITHOUT WRITTEN PERMISSION FROM ACORN ENGINEERING, INC. ANY ALTERATIONS, AUTHORIZED OR OTHERWISE, SHALL BE AT THE USER'S SOLE RISK AND WITHOUT LIABILITY TO ACORN ENGINEERING, INC.	FILE: 1109.5_CIVIL DATE: 11/30/21 JN: 1109.5 SCALE: AS NOTED DESIGN BY: SJL DRAWN BY: ZMS CHECKED BY: WHS	ACORN ENGINEERING, INC ACORN ENGINEERING, INC. P.O. BOX 3372 PORTLAND, MAINE 04104 (207) 775–2655	DRAWING NAME: TURNING TEMPLATE EXHIBIT PROJECT NAME: 30–32 ATLANTIC ST. REDEVELOPMENT CLIENT: KESTREL, LLC 72 PINE ST, PORTLAND, MAINE

ISSUED FOR	BY DATE
COMMENT RESPONSE	WHS 12/3/21
	REV. DATE

DRAWING NO.

EX

STORMWATER DRAINAGE SYSTEM

MAINTENANCE AGREEMENT

IN CONSIDERATION OF the site plan and subdivision approval granted by the Planning Board of the City of Portland to the proposed redevelopment located at 30-32 Atlantic Street, Portland, Maine and shown on the Subdivision Plat recorded in the Cumberland County Registry of Deeds in Plan Book _____, Page _____ (the "Plan") and associated Grading & Drainage Plan, dated 10/22/2021 prepared by Acorn Engineering, Inc. of P.O Box 3372, Portland, ME 04104 (hereinafter, the "Premises") and pursuant to a condition thereof, Kestrel, LLC, a Maine Limited liability company with a principal place of business in Portland, Maine, and having a mailing address of 72 Pine Street, Portland, Maine 04102, the owner of the Premises, does hereby agree, for itself, its successors and assigns (the "Owner"), as follows:

Maintenance Agreement

Owner, its successors and assigns, will, at its own cost and expense and at all times in perpetuity, maintain in good repair and in proper working order the field inlets, focal point, catch basin, storm drain pipes, and underdrain pipes (hereinafter collectively referred to as the "stormwater system") as shown on the Grading & Drainage Plan attached hereto as **Exhibit B** and in strict compliance with the approved Stormwater Inspection & Maintenance Plan and Stormwater Maintenance and Inspection Log, dated January 2021, copies attached as **Exhibit A and C** respectively and the annual inspection and reporting requirements of Chapter 32 of the Portland City Code.

Owner further agrees, at its own cost, to keep a Stormwater Maintenance and Inspection Log in the forms attached as **Exhibit C**. Such log shall be made available for inspection by the City of Portland upon reasonable notice and request.

This agreement is for the benefit of the City of Portland and all persons in lawful possession of the Premises and abutters thereto. The City of Portland and said persons in lawful possession may enforce this Agreement by an action at law or in equity in any court of competent jurisdiction; further, that after giving the Owner written notice and a stated time to perform, the said City of Portland, by its authorized agents or representatives, may, but is not obligated to, enter upon said Premises to maintain, repair, or replace said stormwater system, including but not limited to the focal point, field inlet, catch basins, storm drain pipes, underdrain pipes, and other drainage structures thereon in the event of any failure or neglect thereof, the cost and expense thereof to be reimbursed in full to the said City of Portland by the Owner upon written demand. Any funds owed to the City under this paragraph shall be secured by a lien on the property.

This Agreement shall not confer upon the City of Portland or any other person the right to utilize said stormwater system for public use or for the development of any other property. Except as may be required to comply with the terms of this Agreement, Owner shall bear no financial responsibility by virtue of this Agreement for enlarging the capacity of said system.

This Agreement shall also not be construed to allow any change or deviation from the requirements of the subdivision and/or site plan most recently and formally approved by the Planning Board of the City of Portland.

This agreement shall bind the undersigned only so long as it retains any interest in said Premises, and shall run with the land and be binding upon the Owner's successors and assigns as their interests may from time to time appear.

The Owner shall record a copy of this Agreement in the Cumberland County Registry of Deeds within thirty (30) days of final execution of this Agreement. The Owner further agrees to provide a copy of this Agreement to any successor or assign and to forward to the City an Addendum signed by any successor or assign in which the successor or assign states that the successor or assign has read the Agreement, agrees to all its terms and conditions and the successor or assign will obtain and forward to the City's Department of Public Works and Department of Planning and Urban Development a similar Addendum from any other successor or assign.

For the purpose of this agreement and release "Owner" is any person or entity who is a successor or assign and has a legal interest in part, or all, of the real estate and any building. The real estate shown by chart, block and lot number in the records on file in the City Assessor's office shall constitute "the property" that may be entered by the City and liened if the City is not paid all of its costs and charges following the mailing of a written demand for payment to the owner pursuant to the process and with the same force and effect as that established by 36 M.R.S.A. §§ 942 and 943 for real estate tax liens.

Any written notices or demands required by the agreement shall be complete on the date the notice is attached to one or more doors providing entry to any buildings or residential units and mailed by certified mail, return receipt requested or ordinary mail or both to the owner of record as shown on the tax rolls on file in the City Assessor's Office.

If the property has more than one owner on the tax rolls, service shall be complete by mailing it to only the first listed owner. The failure to receive any written notice required by this agreement shall not prevent the City from entering the property and performing maintenance or repairs on the stormwater system, or any component thereof, or liening it or create a cause of action against the City.

[SIGNATURES ON FOLLOWING PAGE]

Dated at Portland, Maine this _____ day of _____, 2021.

Kestrel, LLC

A Maine Limited liability company

_____
Kent Parson, its Owner

STATE OF MAINE
CUMBERLAND, ss.

Date: _____

Personally appeared the above-named Kent, Owner of Kestrel, LLC, and acknowledged the foregoing instrument to be his/her free act and deed in his/her said capacity.

Before me,

_____
Notary Public/Attorney at Law

Print name: _____

Exhibit A: Stormwater Inspection & Maintenance Plan

Exhibit B: Grading & Drainage Plan

Exhibit C: Stormwater Maintenance and Inspection Log

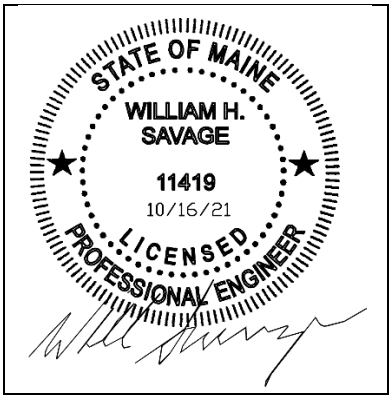
POST CONSTRUCTION - STORMWATER INSPECTION & MAINTENANCE PLAN

Prepared For:

Kestrel LLC.
30 Atlantic Street
Portland, Maine 04101

Prepared By:

Acorn Engineering, Inc.
PO Box 3372
Portland, Maine 04104



October 2021

ACORN ENGINEERING, INC.

RESPONSIBLE PARTY

The owner, Kestrel LLC. and or their successor shall be responsible for contracting with a qualified stormwater professional to implement the Inspection and Maintenance Plan. The qualified stormwater professional shall maintain a stormwater log (report) summarizing inspections, maintenance, and corrective action taken. The Qualified Stormwater Professional shall annually submit the Stormwater Log to the Department of Public Works prior to June 15th.

The following is an example of a qualified stormwater professional that the homeowner's association may contract through.

Organization: Will Savage, PE
Acorn Engineering, Inc
Portland, Maine

Phone: (207) 775-2655

Qualifications:

- Maine Professional Engineering License #11419
- Maine DEP - Certified in Maintenance & Inspection of Stormwater BMP's Cert #14
- Certified Erosion, Sediment and Storm Water Inspector (CESSWI) Cert #0293
- Certified Professional in Erosion and Sediment Control (CPESC) Cert. #4620

The inspection and maintenance criteria is based upon the Maine DEP - Stormwater Management for Maine, Volume III: BMPs Technical Design Manual. Refer to the Grading and Drainage Plan for the location of the BMPs.

PURPOSE

This Inspection and Maintenance Plan has been individually tailored to this parcel's stormwater infrastructure, site characteristics, and their respective opportunities and limitations related to reducing the pollutant load on the receiving watershed. The maintenance of a parcel's impervious surfaces and stormwater infrastructure is critical to extending the long-term performance and effectiveness of Best Management Practices (BMPs). The Inspection and Maintenance Plan represents the parcel's minimum activities to meet the permit requirements. The parcel shall still be subject to any applicable Civil Site Plans, Permit Applications, Erosion and Sedimentation Control Plans Reports, Stormwater Management Plans, Inspection and Maintenance Manuals, and all Municipal, State, and Federal rules.

OPERATION AND MAINTENANCE ACTIVITY

Focal Point & Bioretention Cell

The maintenance for the FocalPoints shall be in accordance with the attached "FocalPoint Operations & Maintenance" document. Additionally, the downstream catch basins and drainage manholes shall be inspected to confirm the structures are operation properly.

- Dig out silt (if any) and mulch and remove trash and foreign items.
- 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") add media (not topsoil or other) to recharge to the distance specified.
- Mulch should be replaced with aged, double shredded hardwood mulch with fines removed.
- The plant should be replaced if dead or dying. If the plant is alive, prune as necessary to encourage growth in the correct directions.
- Overflow rim should be checked after each plowing season to ensure the device is intact and in and full functional. The grate should remain clear of debris at all times.
- Any signs of rill erosion should be corrected and potentially stabilized with river stone if necessary.

The area around the unit should be cleaned. All debris should be disposed of correctly.

Sweeping:

Annual sweeping of the driveways and parking areas following the snow melt for accumulated winter sand, if necessary. Appropriately dispose of all collected material.

Storm Drains:

The storm drain shall be annually inspected for the presence of accumulated sediment or debris. Any sediment shall be removed as required.

- The equipment shall meet the following minimum specifications; power jet and water source for washing down the storm drain, vacuum attachment for catch basin cleaning, and a liquid handling method to dewater the material.
- Inspect and legally dispose of accumulated sediment and debris within the storm drains between basins. Liquids must be decanted on-site and returned to the catch basin.

Catch Basins:

Catch basins shall be inspected to confirm that the structure is operating properly.

- Inspect the presence of accumulated sediment or debris any sediment shall be removed. The equipment shall meet the following minimum specifications; power jet and water source for washing down the storm drain, vacuum attachment for catch basin cleaning, and a liquid handling method to dewater the material.

- Sediment shall be removed when accumulation is within 6 inches of the outfall pipe invert. Legally dispose of accumulated sediment and debris from the bottom of the basin, inlet grates, and inflow channels to the basin.
- If the basin outlet is designed with a hood to trap floatable materials (e.g. Snout), check to ensure watertight seal is working.
- Appropriately dispose of all collected material.

Landscaped and Vegetated Areas:

Inspect all landscaped and or vegetated slopes and embankments on an annual basis. Vegetated areas with bare areas or sparse growth (<90% coverage) shall be revegetated. Mulch shall be applied to landscaped areas, as necessary. Dead or decaying landscaping (ground cover, shrubs, trees etc.) shall be replanted in accordance with the contract documents.

INSPECTION AND MAINTENANCE TABLE

Inspection and Maintenance Frequency	Spring or Yearly	Summer	Fall	As Necessary
Sweeping	X			X
Catch Basins		X		X
Storm Drains		X		X
Field Inlets	X	X		X
Landscaped/Vegetated Areas	X			X
Focal Point	X			X

In the above chart, it is assumed the certified stormwater professional will inspect each item in the spring. Inspections outside of the spring visits can likely be conducted by the property manager.

Attachments:

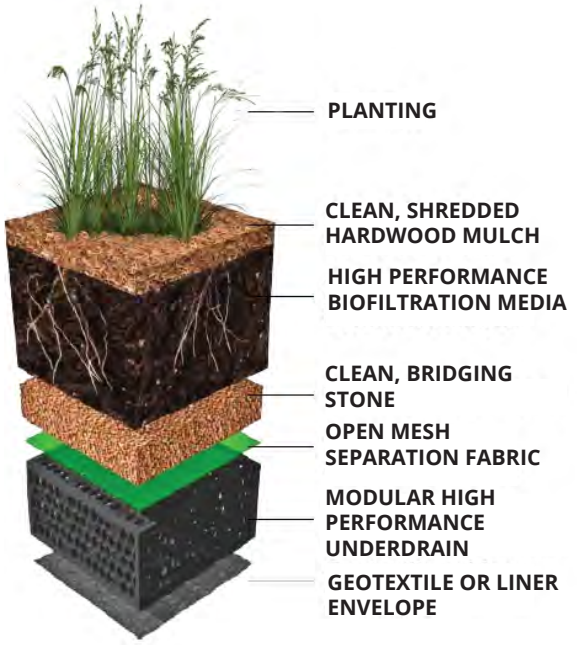
- Focal Point Biofiltration System Brochure
- R-Tank Stormwater Detention System Brochure

FOCALPOINT
BIOFILTRATION SYSTEM

STORMWATER MANAGEMENT

HIGH PERFORMANCE MODULAR BIOFILTRATION SYSTEM FOR FILTRATION OF STORMWATER

FocalPoint is an ultra-efficient, modular biofiltration system that treats and drains large volumes of stormwater runoff in a small footprint to meet post-construction stormwater treatment requirements. The biofiltration system utilizes the physical, chemical and biological mechanisms of a soil, plant and microbe complex to remove pollutants typically found in urban stormwater runoff. The system can be installed along the edge of a roadway behind curb lines, in landscaped stormwater basins and can be incorporated into an urban green infrastructure streetscapes. Infiltration flow rates for the system's standard media exceed 100" per hour. It is a complete, integrated system with a demanding specification that ensures functionality, performance and maintainability.









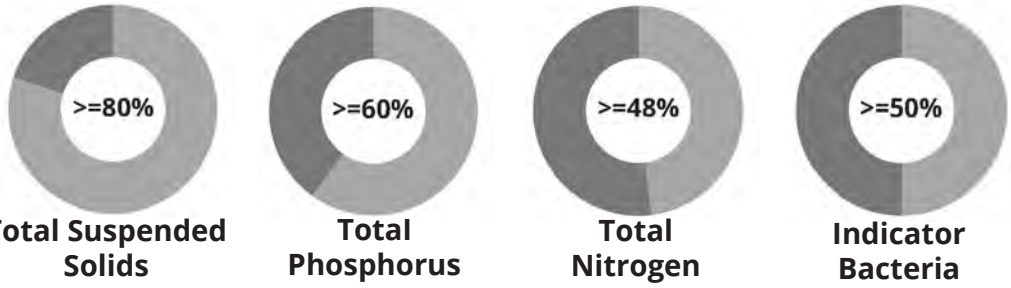
ADVANTAGES:

- Gain usable square footage
- Reduce material requirements and cost
- Improve property aesthetic and value
- 100"+ per hour infiltration rate
- Treat the same amount of water in <10% of the area required for traditional bioretention
- ACF provides 1st year of maintenance on system

For more information about Stormwater Management, contact Inside Sales at 800.448.3636
email at info@acfenv.com

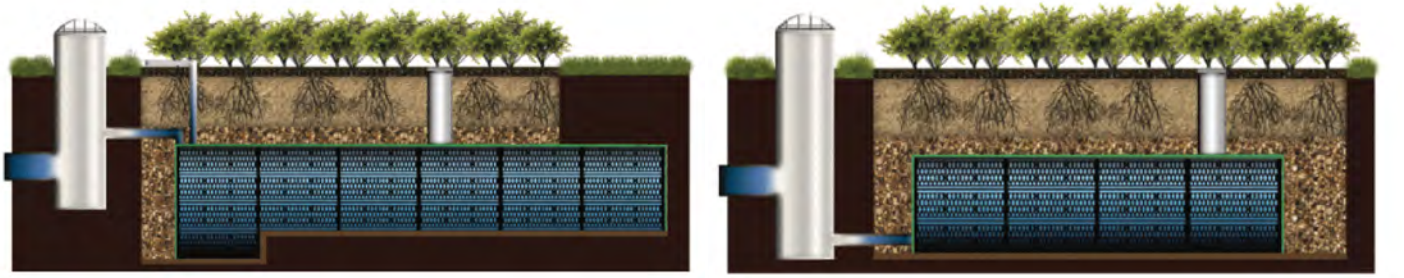
POLLUTANT REMOVAL

FocalPoint achieves pollutant removal rates consistent with traditional bioretention, and the option of increased removal characteristics for specific pollutant targets. The system is 3rd party field tested under TAPE (Technology Assessment Protocol – Ecology), independently field tested by the North Carolina State University, and has numerous agencies' approvals that meet state water quality standards for post construction BMPs.

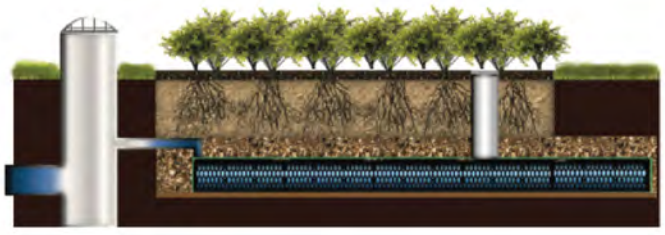


MODULAR UNDERDRAIN

FocalPoint's modular open cell underdrain system, unlike traditional underdrains, not only supports the flow rate of the media, but can be expanded beyond the footprint of the media bed to provide unlimited underground detention, infiltration and/or storage for water reuse. This can help meet channel protection, infiltration and flood control requirements.



R-Tank underdrain can be extended beyond FocalPoint footprint as shown above



ACF ENVIRONMENTAL
LET'S GET IT DONE

800.448.3636
acfenvironmental.com

ACCESSORY PRODUCTS



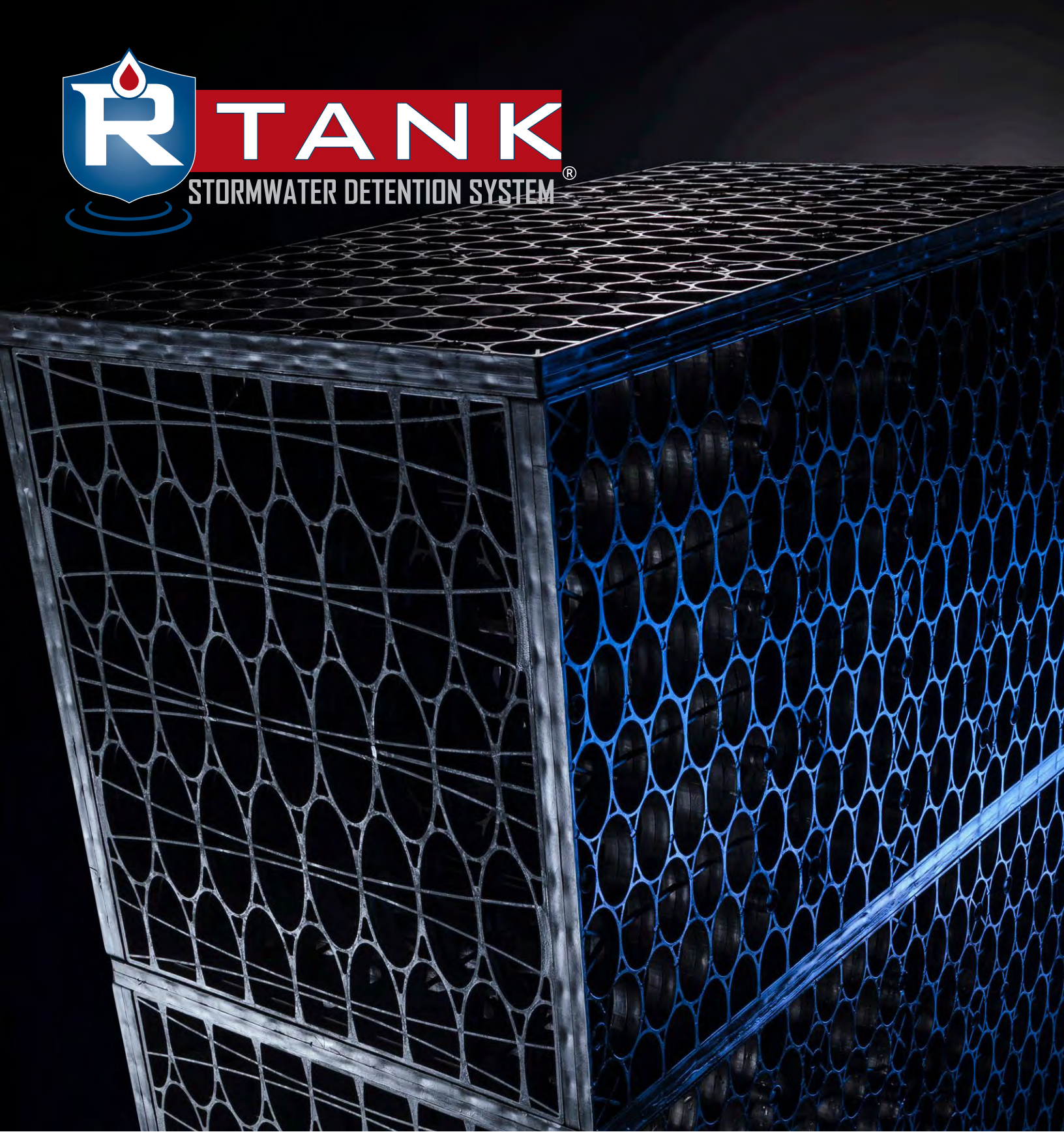
Beehive Overflow Filter Riser
for collection of gross solids during major storm events



Rain Guardian Turret
for curbline pretreatment and energy dissipation

RTANK®

STORMWATER DETENTION SYSTEM



LD HD SD UD XD

LET'S GET IT DONE®

ACF ENVIRONMENTAL



STORMWATER MANAGEMENT

IS YOUR STORMWATER SYSTEM TAKING UP TOO MUCH SPACE?

Reduce the size with the R-Tank System, an efficient and versatile underground stormwater storage system. This system will reduce your underground stormwater storage system footprint to resolve a utility conflict or free up space for a future expansion.

It will also provide additional options for vehicular loading and cover depths, and deliver greater installation versatility.

DOES YOUR PROJECT REQUIRE A UNIQUE SOLUTION DUE TO DEPTH OR TRAFFIC LOADS?

With five different module configurations, R-Tank provides system height options from 2" to over 7' deep. It also delivers support for HS-20 and HS-25 traffic, with cover depths from 6" to over 16'.

With an unlimited array of system footprints and configurations, R-Tank solves tough stormwater problems by adapting to the needs of your site - whether your're designing a project at the beach with minimal depth over a water table or a deep system in the hills.

R TANK®

R-TANK®

BENEFITS

HIGH CAPACITY
- 95% void internal area

STRENGTH
- Easily supports traffic loading from parking lots and roads
- Module options for HS-20 and HS-25 rating with cover depths from 6 inches to 16 feet

DESIGN & CONSTRUCTION VERSATILITY
- Modules can be combined into various shapes efficiently and effectively use space
- Varied height from 2 inches to 7 feet

INCREASED INFILTRATION AND EXILFILTRATION
- Outer shell is 90% open
- Increases groundwater recharge, reducing post-construction discharge volumes

EASY TO TRANSPORT
- Can be supplied unassembled for reduced delivery costs

LIGHTWEIGHT AND QUICK TO INSTALL
- Installed by hand; no cranes required
- Reduces site access delays

RECYCLED CONTENT
- Manufactured with recycled polypropylene



R-TANK LD

- Light Duty module (30 psi)
- Ideal for applications in green space
- Not rated for vehicular traffic
- 12” Minimum cover, 36” maximum cover
- Four internal plates

R-TANK HD

- Heavy Duty module (33.4 psi)
- Standard module for HS-20 traffic applications
- 20” Minimum cover,
- 84” Maximum cover
- Five internal plates



R-TANK SD

- Super Duty module (42.9 psi)
- Higher safety factors for shallow traffic applications and deeper cover
- 18” Minimum cover,
- 120” Maximum cover
- Five internal plates



R-TANK UD

- Ultra Duty module (134.2 psi)
- Traffic loads with 12” of cover
- Available from 14” – 66” tall
- Ideal for high water table sites



R-TANK XD

- Extreme Duty module (240.2 psi)
- Traffic loads with 6” cover
- 16.5’ maximum cover
- Available from 2” - 10’ tall
- 90% void



DESIGN CONSIDERATIONS

Many factors will influence the design of the R-Tank® system. While this list is not intended to be all-inclusive, the following design considerations are worth highlighting:

1. PRE-TREATMENT

Removing pollutants from runoff before they enter an underground detention system is the smart way to design & build a system. Trash Guard Plus® (see page 6) is a great tool for this. Be sure the system you select will remove, heavy sediments, gross pollutants (trash) and biodegradable debris.

2. BACKFILL MATERIALS

Backfill materials should be stone (<1.5" in diameter) or soil (GW, GP SW or SP per the Unified Soil Classification System). Material must be free from lumps, debris and sharp objects that could cut the geotextile. See the R-Tank® narrative specification section 2.03 for additional information.

3. RUNOFF REDUCTION

Most designs incorporate an outlet to drain the system at a controlled rate and/or an overflow to prevent flooding in extreme events. Any infiltration that can be achieved on the site should also be taken advantage of. Consider raising the invert of your outlet or creating a sump to capture and infiltrate the water quality volume whenever possible.

4. WATER TABLE

While installing R-Tank® below the water table is manageable, a stable base must be created to account for the system's ability to drain water out or limit its ability to enter the system. If a liner is used to prevent ground water from entering, measures must be taken to prevent the system from floating.

5. CONSTRUCTION LOADS

Construction loads are often the heaviest loads the system will experience. Care must be taken during backfilling and compaction (see specification section 3.05), and post-installation construction traffic should be routed around the system (Install Guide step 12).

6. LATERAL LOADS

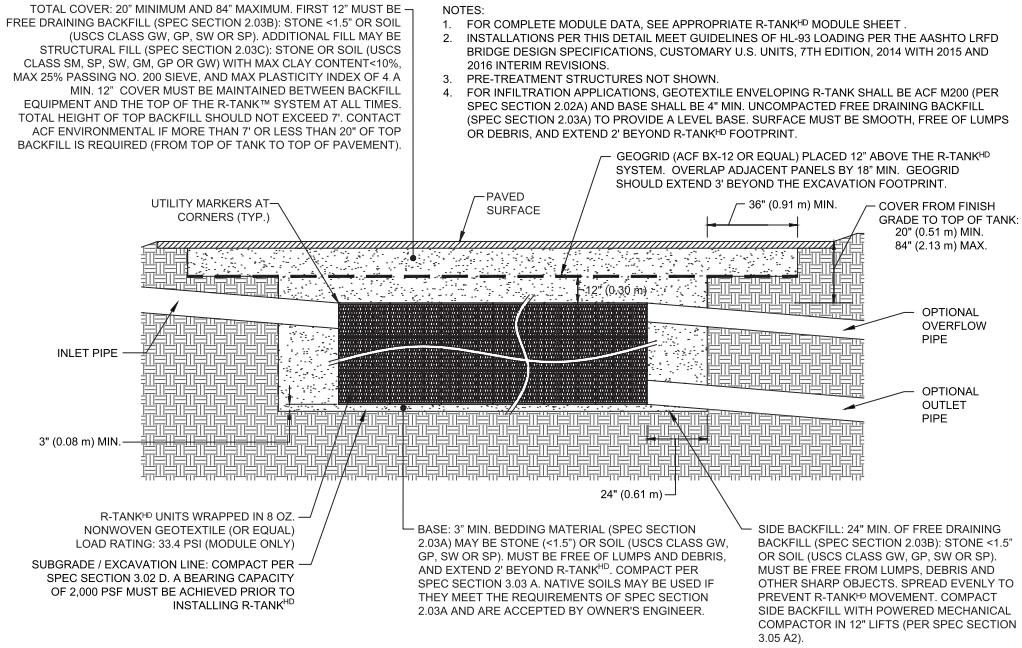
As systems get deeper, the loads acting on the sides of the tank increase. While vertical loads often control the design, lateral loads should also be considered.

7. R-TANK MODULES

Selecting the right module for your application is critical. See page 3 and the specs on the back of this brochure, for details. Our team is also here to help!

8. LOAD MODELING

A safety factor of >1.75 is required when designing an R-Tank System using the AASHTO LRFD Bridge Design Specifications. It is also necessary to run your own loading model with specific site requirements. Example models can be found in our Tech Note on loading capabilities, and minimum cover requirements can be found in the specs on the back of this brochure.



LOW IMPACT DESIGN & GREEN INFRASTRUCTURE

As much of the nation's Gray Infrastructure continues to decay, new concepts for rebuilding it are emerging through Green Infrastructure (GI) and Low Impact Development (LID). This type of reconstruction moves beyond traditional systems that do one thing well, to systems that accomplish multiple objectives simultaneously.

ACF Environmental has several technologies that dovetail with the goals of LID and GI and can play a significant role in the redevelopment process.

R-TANK®

SPACE EFFICIENT SUBSURFACE STORAGE

Pipe and stone are used in traditional systems to move and store runoff. R-Tank accomplishes the same purpose with several additional benefits.

- Stores and moves runoff
- Moves water slowly, increasing time of concentration
- Open system encourages infiltration
- Fully accessible for maintenance
- Stores 138% more water than stone
- Maximizes storage potential of GI practices
- Easily handles traffic loads
- Ships flat to reduce site disturbance

PERMEABLE PAVEMENTS

RUNOFF REDUCTION TECHNIQUES

Traditional pavements move vehicles efficiently, but are easily damaged by stormwater. ACF Environmental specializes in permeable pavements that handle traffic loads, while providing surface infiltration rates 10x higher than traditional pervious pavements, helping reduce the expense of long-term maintenance.

- Handles all vehicular loads
- Drains ten times faster than competing pervious pavements
- Reduces long-term maintenance costs
- Encourages infiltration
- Pair with R-Tank® to maximize water storage and transport

FOCALPOINT

VEGETATED/ BIOLOGICAL TREATMENT SYSTEM

Traditional landscaping adds aesthetic value to projects, but has more potential. Many developers turn to bioretention, but are forced to surrender massive land areas and dedicate significant future funds to maintenance. FocalPoint reduces the space requirements and maintenance costs of bioretention by up to 90% while providing similar pollutant removal.

- Adds aesthetic value to properties
- Cleans runoff to improve water quality
- Reduces space requirements and maintenance costs of traditional bioretention systems
- Encourages infiltration to reduce volume of water discharged
- Pairs with R-Tank® to maximize water storage and transport



R-Tank maximizes the storage capabilities of bioretention and permeable pavement systems.

MAINTENANCE

DESIGNING AN R-TANK SYSTEM WITH LONGEVITY & MAINTENANCE IN MIND IS A THREE-STEP PROCESS:

1. PREVENT

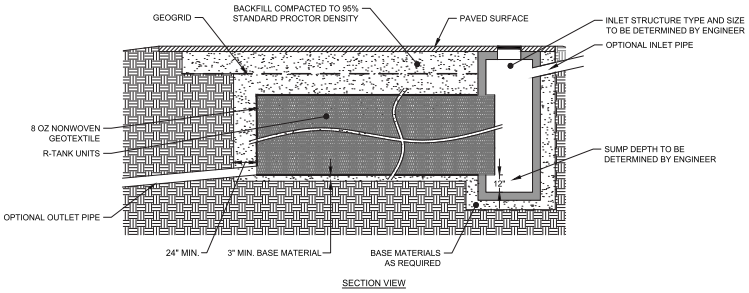
Keep debris and sediment out of the system by pre-treating runoff with the Trash Guard Plus® unit (see below). For a more centralized approach, you could consider having the R-Tank units penetrate the connecting structure, which allows the use of the R-Tank® as its own trash screen. This works best with a structure that includes a sump (see Inlet Connection drawing below).

2. ISOLATE

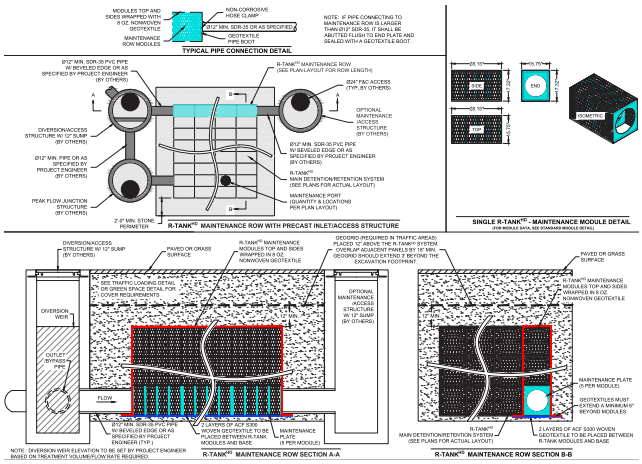
Trap solid pollutants inside the maintenance row (see Maintenance Row drawing below) where they can be easily removed, using the Maintenance Modules (available in LD, HD, and UD only). These modules are wrapped in geotextile to retain solids and are fully accessible by conventional jet-vac systems to remove captured pollutants.

3. PROTECT

Ensure a long system life by including maintenance ports to remove any pollutants that evade the pre-treatment system and maintenance row. Maintenance ports should be specified within 10’ of inlet and outlet connections, and roughly 50’ on center (see detail on page 7).



INLET CONNECTION



MAINTENANCE ROW

MAINTENANCE PREVENTION

TRASH GUARD PLUS ®

Trash Guard Plus® is a patented stormwater pretreatment device that captures debris, sediment and floatables. Easy to install and maintain, it is a fraction of the cost of other pretreatment devices.

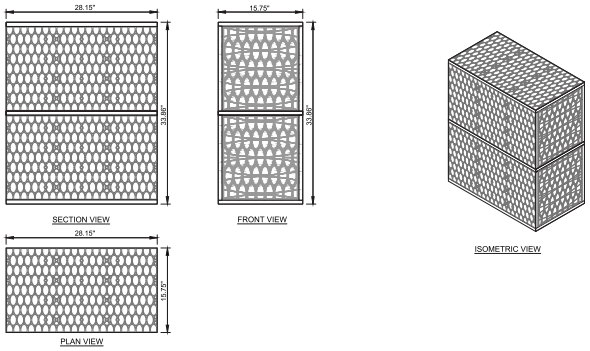
BENEFITS

- Simple retrofit to existing catch basins
- Installs without heavy equipment
- Quick and easy assembly
- Adjusts to irregular catch basin bottoms and/or walls
- Eliminates stormwater trash at public parks, beaches, and waterways
- Removes harmful nutrients and regulated metals



TYPICAL DESIGN

MODULE DRAWING - DOUBLE



MODULE DATA

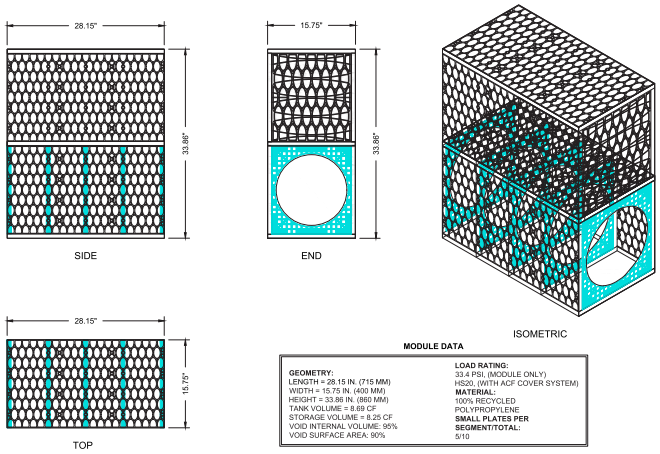
GEOMETRY: LENGTH = 28.15 IN. (715 MM)
WIDTH = 15.75 IN. (400 MM)
HEIGHT = 33.86 IN. (860 MM)
TANK VOLUME = 8.69 CF
STORAGE VOLUME = 8.25 CF
VOID INTERNAL VOLUME: 95%
VOID SURFACE AREA: 90%

LOAD RATING: 33.4 PSI, (MODULE ONLY)
HS25, (WITH ACF COVER SYSTEM)

MATERIAL: 100% RECYCLED POLYPROPYLENE

SMALL PLATES PER SEGMENT/TOTAL: 5/10

MAINTENANCE MODULE - DOUBLE

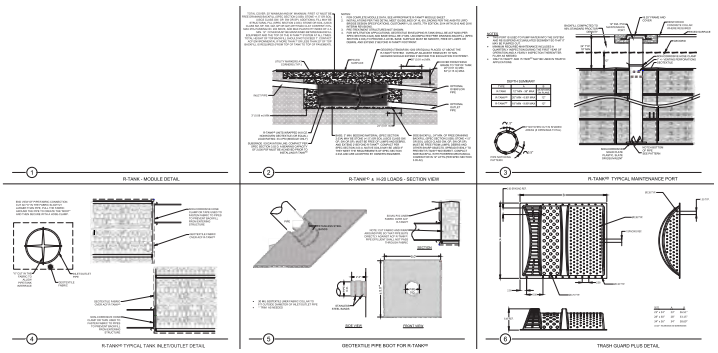


MODULE DATA

GEOMETRY:
LENGTH = 28.15 IN. (715 MM)
WIDTH = 15.75 IN. (400 MM)
HEIGHT = 33.86 IN. (860 MM)
TANK VOLUME = 8.69 CF
STORAGE VOLUME = 8.25 CF
VOID INTERNAL VOLUME: 95%
VOID SURFACE AREA: 90%

LOAD RATING:
33.4 PSI, (MODULE ONLY)
HS20, (WITH ACF COVER SYSTEM)
MATERIAL:
100% RECYCLED POLYPROPYLENE
SMALL PLATES PER SEGMENT/TOTAL:
5/10

COMPOSITE DETAILS

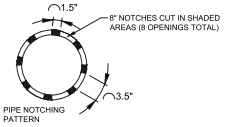


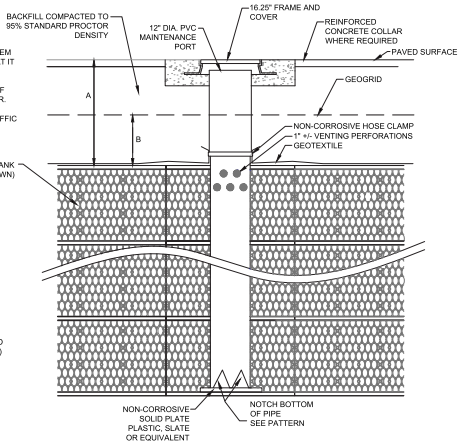
MAINTENANCE PORT

NOTES
- THIS PORT IS USED TO PUMP WATER INTO THE SYSTEM AND RE-SUSPEND ACCUMULATED SEDIMENT SO THAT IT MAY BE PUMPED OUT.
- MINIMUM REQUIRED MAINTENANCE INCLUDES A QUARTERLY INSPECTION DURING THE FIRST YEAR OF OPERATION AND A YEARLY INSPECTION THEREAFTER. FLUSH AS NEEDED.
- ONLY R-TANK® AND R-TANK® MAY BE USED IN TRAFFIC APPLICATIONS.

DEPTH SUMMARY

TYPE	A	B
R-TANK	12" MIN - 36" MAX	AS SHOWN ON PLANS
R-TANK®	20" MIN - 6.99' MAX	12"
R-TANK®	18" MIN - 9.99' MAX	12"





SELECTING THE RIGHT R-TANK MODULE

Cover Depth (inches)*	LD	HD	SD	UD	XD
Min. 6"	Green Space - No Traffic	Green Space - No Traffic	Green Space - No Traffic	Green Space - No Traffic	HS-20
12"	Green Space - No Traffic	Green Space - No Traffic	Green Space - No Traffic	HS-20**	HS-20
14"	Green Space - No Traffic	Green Space - No Traffic	Green Space - No Traffic	HS-20	HS-20
18"	Green Space - No Traffic	Green Space - No Traffic	HS-20	HS-20	HS-20
20"	Green Space - No Traffic	HS-20	HS-20	HS-20	HS-20
24"	Green Space - No Traffic	HS-20	HS-20	HS-20	HS-20
36"	Green Space - No Traffic	HS-20	HS-20	HS-20	HS-20
48"		HS-20	HS-20	HS-20	HS-20
60"		HS-20	HS-20	HS-20	HS-20
72"		HS-20	HS-20		HS-20
84"			HS-20		HS-20
120"			HS-20		HS-20
160"					HS-20
Max. 200"					HS-20

HS-20 designation based on AASHTO LRFD Bridge Design Spec for single lane traffic. HS-25 loading is available. Call ACF for details.
*Cover depth is measured from top of module to finished grade or top of pavement
**The UD module requires STONE backfill (not soil) on sides at this depth

R-TANK SPECIFICATIONS

LD HD

DIMENSIONS & CAPACITY

Module (Segments)	Width (inch)	Length (inch)	Height (in/ft)	Volume (cf)	Capacity (cf)	Weight* (lbs)
Mini	15.75	28.15	9.45”/0.79’	2.42	2.30	10.1/10.9
Single(1)	15.75	28.15	17.32”/1.44’	4.44	4.22	15.7/17.3
Single + Mini(1.5)	15.75	28.15	25.98”/2.17’	6.67	6.33	23.6/25.9
Double (2)	15.75	28.15	33.86”/2.82’	8.69	8.25	29.1/32.3
Double + Mini(2.5)	15.75	28.15	42.52”/3.54’	10.91	10.36	37.0/41.0
Triple (3)	15.75	28.15	50.39”/4.20’	12.93	12.28	42.5/47.4
Triple + Mini(3.5)	15.75	28.15	59.06”/4.92’	15.15	14.39	50.4/56.0
Quad(4)	15.75	28.15	66.93”/5.58’	17.17	16.31	55.9/62.4
Quad + Mini(4.5)	15.75	28.15	75.59”/6.30’	19.39	18.42	63.8/71.0
Pent(5)	15.75	28.15	83.46”/6.96’	21.41	20.34	69.3/77.4

*Weights shown are for LD/HD modules.

SD

DIMENSIONS & CAPACITY

Module (Segments)	Width (inch)	Length (inch)	Height (in/ft)	Volume (cf)	Capacity (cf)	Weight (lbs)
Single (1)	15.75	28.15	9.45”/0.79’	2.42	2.30	10.95
Double (2)	15.75	28.15	18.12”/1.51’	4.64	4.41	19.58
Triple (3)	15.75	28.15	26.79”/2.23’	6.86	6.52	28.21
Quad (4)	15.75	28.15	35.46”/2.96’	9.08	8.63	36.84
Pent (5)	15.75	28.15	44.13”/3.68’	11.30	10.74	45.47
Hex (6)	15.75	28.15	52.80”/4.40’	13.52	12.84	54.10
Septa (7)	15.75	28.15	61.47”/5.12’	15.74	14.95	62.73
Octo (8)	15.75	28.15	70.14”/5.85’	17.96	17.06	71.36
Nono (9)	15.75	28.15	78.81”/6.57’	20.18	19.17	79.99
Decka (10)	15.75	28.15	87.48”/7.29’	22.40	21.28	88.62

UD

DIMENSIONS & CAPACITY

Module (Segments)	Width (inch)	Length (inch)	Height (in/ft)	Volume (cf)	Capacity (cf)	Weight (lbs)
Single (1)	23.62	23.62	14.17”/1.18’	4.57	4.35	21.2
Double (2)	23.62	23.62	27.17”/2.26’	8.77	8.33	39.0
Triple (3)	23.62	23.62	40.16”/3.35’	12.97	12.32	56.8
Quad (4)	23.62	23.62	53.15”/4.43’	17.16	16.30	74.6
Pent (5)	23.62	23.62	66.14”/5.5’	21.35	20.29	92.4

XD

DIMENSIONS & CAPACITY

Module (Segments)	Width (inch)	Length (inch)	Height (inch)	Volume (cf)	Capacity (cf)	Weight (lbs)
Single (1)	19.68	23.62	1.97	0.53	0.48	4
Double (2)	19.68	23.62	3.94	1.06	0.95	8
Triple (3)	19.68	23.62	5.91	1.59	1.43	12
Quad (4)	19.68	23.62	7.87	2.12	1.91	16
Pent (5)	19.68	23.62	9.84	2.65	2.38	20

Note: XD modules may be stacked up to 10’ tall (60 layers).

SPECIFICATIONS

Item	Description	LD	HD	SD	UD	XD
Void Area	Volume available for water storage	95%	95%	95%	95%	90%
Surface Area Void	% of exterior available for infiltration	90%	90%	90%	90%	90%
Compressive Strength	ASTM D 2412/ ASTM F 2318	30.0 psi	33.4 psi	42.9 psi	134.2 psi	240.2 psi
Unit Weight	Weight of plastic per cubic foot of tank	3.29 lbs/cf	3.62 lbs/cf	3.96 lbs/cf	4.33 lbs/cf	7.55 lbs/cf
Rib Thickness	Thickness of load-bearing members	0.18”	0.18”	0.18”	-	-
Service Temperature	Safe temperature range for use	-14 - 167º F	-14 - 167º F	-14 - 167º F	-14 - 167º F	-14 - 167º F
Recycled Content	Use of recycled polypropylene	100%	100%	100%	100%	100%
Minimum Cover	Cover required for HS-20 loading	Not traffic rated	20”	18”	12” - 14”	6”
	Cover required for HS-25 loading	Not traffic rated	24”	18”	15” - 17”	6”
Maximum Cover	Maximum allowable cover depth	36”	6.99’	9.99’	5.0’	16.7’

GENERAL NOTES:

1. ALL WORK WITHIN THE CITY STREET RIGHT OF WAY SHALL MEET CITY OF PORTLAND TECHNICAL MANUAL STANDARDS.
2. DESIGN OF TEMPORARY SOIL RESTRAINT MEASURES SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR IF NECESSARY FOR CONSTRUCTION.
3. CONTRACTOR SHALL ENSURE THAT UNDERDRAINS ARE CONSTRUCTED WITH POSITIVE OUTLET TO PROPOSED CONNECTIONS.
4. CATCH BASIN INLET PROTECTION TO BE INSTALLED WITHIN ANY STRUCTURES DOWNGRADIENT OF ACTIVE CONSTRUCTION.
5. SEDIMENTATION BARRIERS ARE TO BE INSTALLED DOWNGRADIENT OF ALL ACTIVE CONSTRUCTION WORK PER DETAIL. BARRIERS TO NOT EXTEND PAST PROPERTY LINES; BARRIERS SHOWN OFFSET FROM PROPERTY LINES ON PLANS FOR VISUAL PURPOSES ONLY.

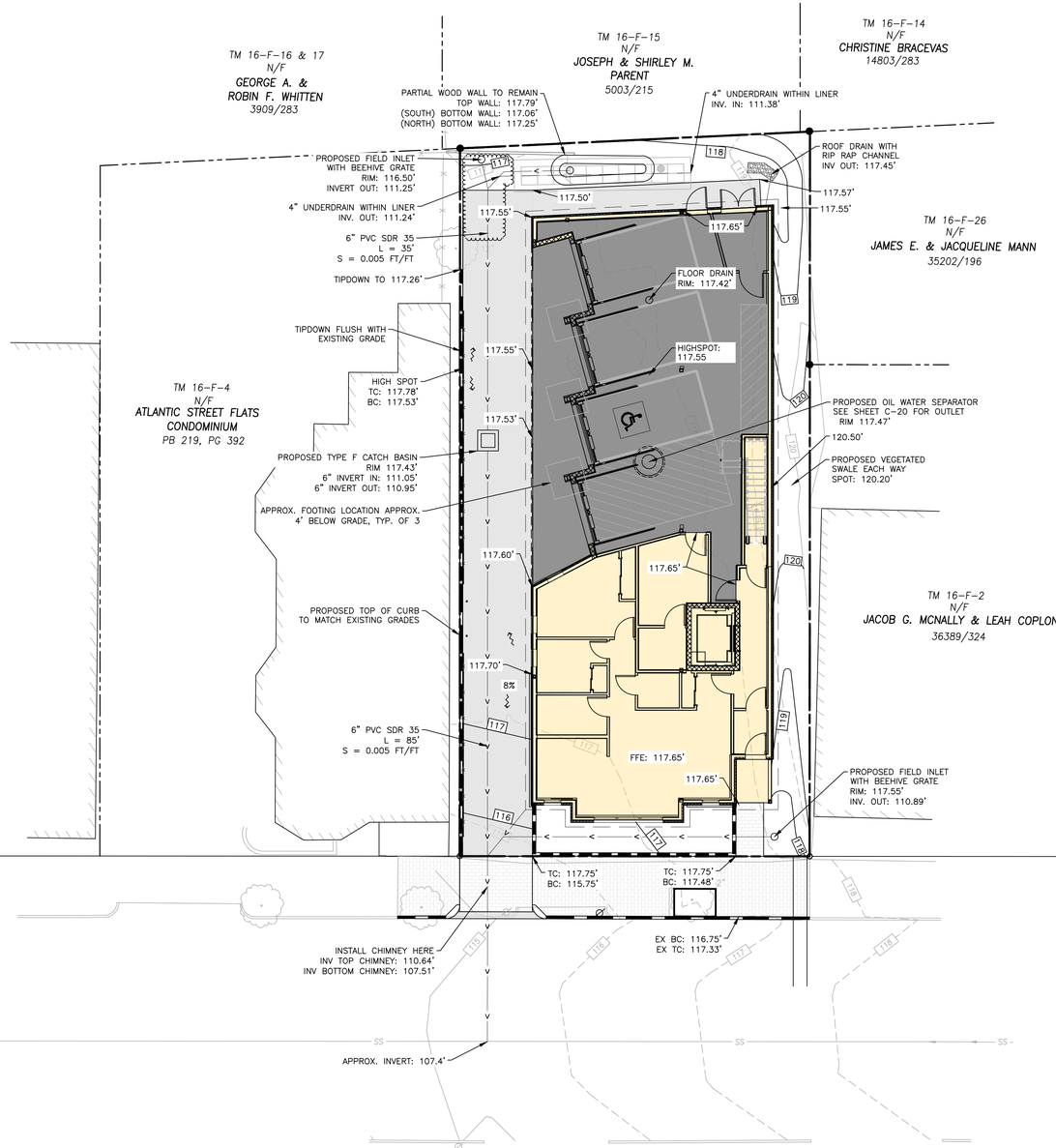
BUILDING ELEVATIONS

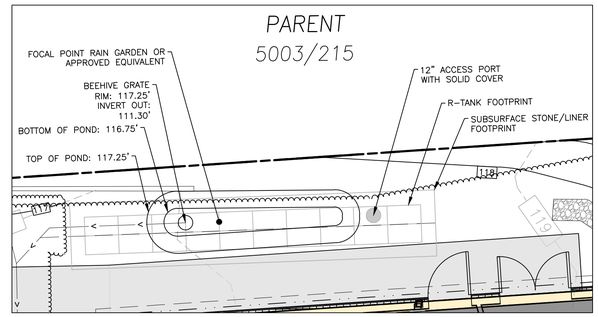
NORTH: 117.87'
EAST: 116.30'
SOUTH: 117.55'
WEST: 117.65'

AVERAGE: 117.34'

STAGE STORAGE TABLE

ELEV	AREA (sq. ft.)	DEPTH (ft)	AVG END INC. VOL. (cu. ft.)	AVG END TOTAL VOL. (cu. ft.)	CONIC INC. VOL. (cu. ft.)	CONIC TOTAL VOL. (cu. ft.)
116.75	19.81	N/A	N/A	0.00	N/A	0.00
117.25	56.61	0.50	19.10	19.10	18.32	18.32





FOCAL POINT INSET
1" = 5'

10 0 10 20
SCALE: 1" = 10'

PERMIT LEVEL
NOT ISSUED FOR CONSTRUCTION

ISSUED FOR	BY	DATE
SCHEMATIC DESIGN/ISSUE FOR BUDGET ESTIMATE	SJL	1/8/21
MAJOR SITE PLAN	SJL	2/22/22
COMMENT RESPONSE	SJL	10/22/21

DRAWING NAME: GRADING & DRAINAGE PLAN

PROJECT NAME/ADDRESS: 30-32 ATLANTIC STREET DEVELOPMENT

CLIENT/OWNER OF RECORD: KESTREL LLC.
72 PINE STREET SUITE #16, PORTLAND, MAINE 04102

ACORN ENGINEERING, INC.
ENGINEERING

THIS PLAN SHALL NOT BE MODIFIED WITHOUT PERMISSION FROM ACORN ENGINEERING, INC. ANY MODIFICATIONS MADE TO THIS PLAN WITHOUT THE WRITTEN PERMISSION OF ACORN ENGINEERING, INC. SHALL BE AT THE USER'S SOLE RISK AND WITHOUT LIABILITY TO ACORN ENGINEERING, INC.

ACORN ENGINEERING, INC.
PO BOX 3477 PORTLAND, MAINE 04101
(207) 775-2655

FILE: 1109.5_CIVIL
JN: 1109.5
SCALE: AS NOTED
DESIGNED BY: SJL
DRAWN BY: ZMS
CHECKED BY: SJL/WHS

STATE OF MAINE
SAMUEL J. LEBEL
No. 16505
REGISTERED PROFESSIONAL ENGINEER
10/15/21

DRAWING NO.
C-30

MaineDOT - Stormwater Control BMP Inspection Log

FILTRATION BMP:			
Location: 30 Atlantic Street, Portland, ME 04101		Latitude:	43.664667
		Longitude:	-70.244474
Description of Located Point: Located to the rear of the site, southwest of the building		Inspector:	
		Date of Inspection:	
		Weather Conditions:	
DOT Region:			
MATS Asset Number:	WIN:	Design Drawings:	

Maintenance Items	Inspect In Spring	Inspect In Fall	Inspect As Necessary		Maintenance Requested (Date)	Maintenance Completed (Date)	Summary of Maintenance Required
Focal Point Rain Garden							
Soil filter retains the design volume for a drain down time greater than 24-hours and less than 48-hours	☑	☑	☐	☐ Yes ☐ No ☐ N/A			
Permeability is between 0.13 and 0.25 in/hr for a bio-retention cell and between 0.38 and 0.75 in/hr for an underdrained ditch	☐	☑	☐	☐ Yes ☐ No ☐ N/A			
Underdrained ditch (if any) has permanent check dams in good, working condition	☐	☑	☐	☐ Yes ☐ No ☐ N/A			
Filter area is properly mulched, showing no bare spots.	☐	☐	☑	☐ Yes ☐ No ☐ N/A			
Site is free of unwanted vegetative growth. In rain garden, mulch layer is at least 3" thick	☐	☐	☑	☐ Yes ☐ No ☐ N/A			
Sediment and plant debris are not within 6" of the top of the embankment	☐	☐	☑	☐ Yes ☐ No ☐ N/A			
Overflow rim is intact and functional	☐	☑	☐	☐ Yes ☐ No ☐ N/A			
If applicable, plantings are in good condition and do not show signs of rot or decay	☐	☑	☐	☐ Yes ☐ No ☐ N/A			
General							
Access to facility is adequate	☐	☑	☐	☐ Yes ☐ No			

MaineDOT - Stormwater Control BMP Inspection Log

Maintenance Items	Inspect In Spring	Inspect In Fall	Inspect As Necessary		Maintenance Requested (Date)	Maintenance Completed (Date)	Summary of Maintenance Required
				☐ N/A			
Photographs of most recent site inspection are included	☐	☑	☐				Photographs are attached.
Additional Comments:							

Stormwater Control BMP Inspection Log

CATCH BASINS:							
Location: 30 Atlantic Street, Portland, ME 04101					Latitude:		43.664667
					Longitude:		-70.244474
Description of Located Point: Located within the drive aisle, southeast of the building					Inspector:		
					Date of Inspection:		
					Weather Conditions:		
Days since last precipitation:							
Quantity of last precipitation:					Design Drawings:		

Maintenance Items	Inspect In Spring	Inspect In Fall	Inspect As Necessary		Maintenance Requested (Date)	Maintenance Completed (Date)	Summary of Maintenance Required
Catch Basins							
Catch basin is working properly and is free of debris and sediment	☑	☑	☑	☐ Yes ☐ No ☐ N/A			
Basin outlet hood (if any) is working properly.	☑	☐	☑	☐ Yes ☐ No ☐ N/A			
Inter-basin storm drain is functioning properly and free of sediment and debris.	☑	☐	☑	☐ Yes ☐ No ☐ N/A			
Catch basin sediment further than 6" from invert out. If closer	☑	☐	☑	☐ Yes ☐ No ☐ N/A			
No sign of illicit discharge is present	☑	☐	☑	☐ Yes ☐ No ☐ N/A			
General							
Access to facility is adequate	☑	☐	☐	☐ Yes ☐ No ☐ N/A			
Photographs of most recent site inspection are included	☑	☐	☐				Photographs are attached.
Additional Comments:							

STORMWATER MAINTENANCE AND INSPECTION LOG

STORMWATER PIPE:							
Location: 30 Atlantic Street, Portland, ME 04101					Latitude: 43.664667 Longitude: -70.244474		
Description of Located Point:					Inspector: Date of Inspection: Weather Conditions:		
Days since last precipitation:					MEDEP Permit #:		
Quantity of last precipitation (in):					Design Drawings:		

Maintenance Items	Inspect In Spring	Inspect In Fall	Inspect As Necessary		Maintenance Requested (Date)	Maintenance Completed (Date)	Summary of Maintenance Required
Inlets, Outlets, & Storm Drains							
Pipe is free of obstruction, accumulated sediment and debris	☐	☐	☑	☐ Yes ☐ No ☐ N/A			
Pipe inlet and outlet is free of obstruction, accumulated sediment and debris	☑	☑	☐	☐ Yes ☐ No ☐ N/A			
Pipe, inlet and outlet is free of collapses and structural damage	☑	☑	☐	☐ Yes ☐ No ☐ N/A			
Outlet and inlet are properly conveying stormwater and no erosion is visible	☑	☑	☐	☐ Yes ☐ No ☐ N/A			
General							
Access to facility is adequate	☑	☑	☐	☐ Yes ☐ No ☐ N/A			
Photographs of most recent site inspection are included	☑	☑	☐				Photographs are attached.
Additional Comments:							

ACORN ENGINEERING, INC.

Austen Torres Davis – City Planner
Planning Division, City of Portland
389 Congress Street
Portland, ME 04101

December 3, 2021

Subject: Comment Response II
30-32 Atlantic Street, Portland, ME

On behalf of Kestrel LLC, we are pleased to respond to the second round of comments received from the City on November 16th, 2021.

City Planning Staff:

Comment - *We still need a capacity or ability-to-serve letter for water (I see one for waste but maybe I am missing one for other utilities).*

Response – The ability to serve letter from Portland Water District has been included as part of this submission. See Section Q. Utilities for additional information.

Comment - *Your lighting/photometric plan should be a standalone plan so we can eventually stamp it along with your drawings.*

Response – The Photometric Plan has been submitted as a standalone plan. See Drawing 26. Photometric Plan for additional information.

Comment - *You'll need to revise your waiver form because as of now it says, "We are requesting to maintain the existing width of 10.08'" but I see on the plans the narrowest point in the driveway is 9.43'.*

Response – The waivers section has been updated accordingly. The proposed building has been reduced in width by 6" and relocated slightly to the north. The Historic Preservation Board requested a brick veneer wall along the northerly foundation wall that has a width of 4". This results in a 2"-3" increase in the driveway width. At the narrowest point where gas bollards will be placed, we are proposing a clear width of 9.65'. The majority of the driveway will exceed 10' in Please see Section G. Waivers for the updated request. Overall, we are comfortable with the proposed circulation and have limited vehicle sizes accordingly, which is customary in tight urban conditions such as this project.

Comment - *Your construction management plan will need to eventually be updated with contractor information etc.*

Response – Understood – that will be added once known.

Comment - *Utility connections are mentioned in the notes of the subdivision plat but don't physically appear on the plan.*

Response – The utility note has been removed from the survey notes on the Subdivision Plat. See the Subdivision Plat for additional information.

Comment - *A tree-removal permit will be needed for the heritage tree, in addition to the submitted waiver for removal of other trees on site*

Response – A Heritage Tree Removal Application will be submitted in the near future. Given the one year approval window associated with this application, the timing of the application will be coordinated with the anticipated construction start. Please advise if this permit sequence is acceptable.

Zoning Administrator – Ann Machado:

Comment - *Regarding the height of the building, the elevation plan (A301) says the average grade is 117.34 feet. How was this determined? Building C-30 does not show the exact grade at the four corners. There is a line showing the 35 feet above the average grade, but I did not see the average grade line shown on the elevation.*

Response – The Building Elevation table calls out exact grades at the North, East, South, and West building corners. Elevation callouts have been added to each building corner to help facilitate review. Please refer to the Grading Plan and architectural elevation drawings for additional information, including the indication of average grade on the elevation drawings.

Comment - *Section 6.8.11.D does not allow open exterior stairways above the ground floor. The stairs from the third floor deck to the roof top deck are not allowed under this section.*

Response – The exterior stairway access to the roof has been removed and an internal stairway with a mechanized hatch door has been added to the third-floor unit. See the third-floor plan for additional information.

Consultant Traffic Engineer Tom Errico:

Comment - *The applicant has provided a turning template from the handicap parking space. The turning template was based upon a large SUV, but it may make sense to use a van, given that it is a van accessible space (or document the template used is similar to a van). Given that the space next to the handicap space is to be used for parking, a vehicle turning template shall be provided. I would note that the provided template indicates movements are very tight and this would point to the importance of winter maintenance and maintaining the full driveway width.*

Response – We have modified the building design such that the ADA accessible parking space has been increased to a 10.5'x18' parking stall with a 10.5' garage door opening. This increased garage door size now accommodates the architectural vehicle which generally matches the dimensions of a van such as the Dodge Caravan. Please see Section AA. Turning Template Exhibit for additional information.

Comment - *The applicant has noted that the area will be used for parking unless a handicap person is a tenant. The applicant should note how parking spaces are allocated to residents (how parking will be managed).*

Response – The details of parking will be addressed within the rental agreement or within the condo docs, depending on ownership structure which is typical of recently approved and built projects. Tenants of the building will have the option to purchase or rent a space separately from the dwelling unit itself. Should the first garage bay (currently shown as striping) be used as parking in the absence of an ADA user, it will be subject to change if a future tenant with accessibility needs it. Lastly, the parking spaces will be limited with a permissible vehicle size as stated on the Permissible Vehicle Summary located on the Site Plan.

Comment - *The applicant should include a note on the landscape plan that plantings shall not be installed with a height that exceeds 4.25 feet within the sight line of motorists exiting the site.*

Response – This note has been added to the Site Plan.

City Engineer – Keith Gray:

Comment - *Applicant should provide a detail for the proposed granite planter. In addition, DPW has concerns with the planter's proposed two foot elevation at the corner adjacent to the driveway, and specifies that this will need to be set in concrete.*

Response – The granite planter design has been clarified to allow for either granite blocks (as opposed to curb) or a precast block retaining wall. Please refer to sheet C-30 & C-41 for additional information.

Comment - *DPW also request that the applicant include slope arrows on the grading plan within the ROW.*

Response – Slope arrows have been added within the ROW to the Grading Plan. See Sheet C-30 for additional information.

Jeff Tarling, City Arborist:

Comment - *The overhead utility lines preclude a columnar tree. The top would be 'topped' once it gets tall enough. 'Accolade' Cherry or honey locust could work.*

Response – The project proposes to replace the existing street tree with a Honey Locust.

Comment - *In addition, all multi-family residential developments are required to provide one tree per unit. The applicant is proposing four units and is required to plant four street trees or contribute to the street tree fund.*

Response – The applicant anticipates contributing to the tree fund as part of this project.

Comment - *The site contains a two stem River Birch, technically, the two 12" stems equals 24" DBH making it a 'Heritage tree'. Other include a 6" Kousa Dogwood & 2 10" Callery Pear.*
Please let us know if you have any additional questions or comments.

Response – Thank you for the clarification. An application for heritage tree removal will be forthcoming to facilitate the housing project.

Lauren Swett, Consulting Stormwater Engineer:

Comment – *A Focal Point system is proposed for stormwater treatment. Per the Maine DEP requirements for this proprietary system, the Applicant should submit confirmation from the manufacturer that the system has been designed per their system specifications. The Applicant also notes that 80% of the developed area has been treated, but it is not clear from the project area how this is met. Calculation for this statement should be provided.*

Response – The proposed focal point system is nearly identical to several previously approved designs in the City. Once the projects moves towards construction, the manufacturer will create a submittal package with a detailed review of the design. In the meantime, we have shared the current plans with the manufacturer and will forward their response. The Stormwater Management Report has been updated to include the developed area treatment calculation. Please refer to Table 2 of the Section K. Stormwater Report for additional information.

Comment – *An existing wooden wall is to partially remain at the rear of the site. The Applicant should ensure that the wall can remain in place without being compromised for the installation of the below-grade components of the adjacent stormwater management system.*

Response – We have adjusted the footprint of the BMP excavation as well as the termination of the wood wall to avoid conflict. It's anticipated that the system can be built without disturbing the wood landscape wall. Should the timbers be disturbed, or found to be in poor condition in the field during construction, the opportunity exists to remove more of the timbers than currently called for and transition to the property line by grading without affecting the overall grading and drainage design.

Comment – *The Applicant is required to provide confirmation of utility ability to serve, and that remains pending.*

Response – The ability to serve letters have been included as part of this submission. See Section Q. Utilities for additional information.

Please let us know if you have any additional questions or comments.

Sincerely,

Samuel J Lebel, P.E.
Project Manager
Acorn Engineering, Inc.

Zachary M Stevens, E.I
Design Engineer
Acorn Engineering, Inc.

CITY OF PORTLAND
Planning & Urban Development Department

MAJOR SITE PLAN
GENERAL DOCUMENT AND DRAWINGS CHECKLIST
Please submit each document as a separate PDF file.
Please confirm by electronically checking the boxes in the left-hand column.

** PLEASE FILL OUT AND UPLOAD THE ZONING ASSESSMENT TABLE AND WAIVER TABLE SEPARATELY AS NOTED BELOW **

At the time of application submission, please contact the Department of Public Works regarding E-911 addressing for your project.

GENERAL APPLICATION DOCUMENTS		
Yes	NA	**Project Description** • Cover letter with detailed project description
Yes	NA	**Completed Checklist** (this document)
Yes	NA	**Evidence of Right, Title, and Interest** • Deeds, leases, or purchase and sales agreements
Yes	NA	**Evidence of State or Federal Approvals** • Permits or letters of non-jurisdiction, if applicable
Yes	NA	**Zoning Assessment** (see Zoning Assessment Table) Summary of compliance with use and dimensional standards of the land use code
Yes	NA	**Site Plan Standards Assessment** (see Section 14.6 of the land use code) • Summary of project compliance with site plan standards of the land use code
Yes	NA	**Summary of Existing and/or Proposed Easements or Covenants, applicable.** • Evidence of existing easements and any proposed easements, covenants, public or private rights-of-way
Yes	NA	**Waiver Requests** (see Waiver Table) • Written request for waiver describing request and compliance with applicable waiver standards
Yes	NA	**Financial Capability** • Letter or evidence from a financial institution or third party verifying financial capacity to undertake project
Yes	NA	**Technical Capability** • Evidence of technical capability of applicant and consultants – resumes and/or examples of past projects

MAJOR SITE PLAN
STANDARDS AND SUBMISSION CHECKLIST

Provide assessment of compliance with standards and include supplemental documentation, as applicable.
Please submit each document as a separate PDF file.

TRANSPORTATION	
Yes NA	**Impact on Surrounding Street Systems (14-14.6.1(A))** ● Describe incremental volume of traffic impacts and mitigation measures. If needed
Yes NA See Drawings	**Access and Circulation (14-14.6.1(B))** Identify and describe the following: ● Site access and internal circulation, including ADA access ● Drive-up features, if applicable ● Loading and servicing needs, routes, and geometry, providing turning templates for delivery vehicles, if applicable ● Sidewalks and condition along street frontages and internal walkways ● Engineered details for ADA ramps and public sidewalks, meeting sidewalk material policy and construction requirements (Technical Manual, Section 1)
Yes NA	**Public Transit (14-14.6.1(C)), if applicable** Identify and describe the following: ● Existing available transit service and proposed transit improvements, including design details, such as easement, pad base, and shelter
Yes NA See Drawings	**Off-Street Parking (14-14.6.1(D)), if applicable** Identify and describe the following: ● Proposed vehicular and bicycle parking supply (including ADA-compliant parking) in relation to applicable parking requirements in Article 19 of the land use code ● Curb cut separation and parking layout (Technical Manual, Section 1) ● Construction details for bicycle racks ● Management plan for snow storage and removal
Yes NA	**Transportation Demand Management (TDM) (14-14.6.1(E)), if applicable** ● Provide TDM plan drafted in accordance with Technical Manual Section 1 requirements

ENVIRONMENTAL	
Yes NA	**Preservation of Significant Natural Features (14-14.6.2(A)), if applicable** Identify and describe the following: ● High and moderate value waterfowl and wading habitat ● Aquifers (for Casco Bay Islands) ● Waterbodies (including wetlands, watercourses, significant vernal pools and floodplains) ● Proposed preservation areas and protection measures ● Documentation from environmental compliance consultants and determinations from applicable state and federal agencies
Yes NA	**Landscape Preservation (14-14.6.2(B))** Identify and describe the following: ● Measures to preserve trees, including within required zoning setbacks (Technical Manual, Section 4) ● Measures to protect existing vegetation during construction
Yes NA	**Site Landscaping and Buffers (14-14.6.2(C))** Identify and describe the following: ● Overall landscaping approach and consistency with standards ● The use of screening and buffering of service areas and between non-residential and residential uses ● Existing Heritage or Feature Trees on site and measures to preserve ● Compliance with street tree requirements
Yes NA	**Water Quality, Stormwater Management, and Erosion Control (14-14.6.2(D))** Identify and describe the following: ● Erosion and sedimentation control plan and measures ● Evidence of compliance with Urban Impaired Stream Standards pursuant to DEP Chapter 500 stormwater law, as applicable ● Subsurface sanitary sewage disposal and groundwater protection measures

PUBLIC INFRASTRUCTURE AND COMMUNITY SAFETY	
Yes NA	**Consistency with City Master Plans (14-14.6.3(A))** ● Describe proposed easements, rights and improvements to connect or continue off-premises public infrastructure, as applicable
Yes NA	**Public Safety and Fire Prevention (14-14.6.3(B))** Identify and describe the following: ● Compliance with Crime Prevention through Environmental Design (CPTED) requirements (Technical Manual, Section 3) ● Emergency vehicle access ● Consistency with public safety standards (Technical Manual, Section 3)
Yes NA	**Availability and Adequacy of Public Utilities (14-14.6.3(C)) (Technical Manual, Sections 2 & 9)** Identify and describe the following: ● Electrical services, including providing underground services ● Existing and proposed connections for public utilities and required public utility upgrades ● Sewer line connections
SITE DESIGN	
Yes NA	**Massing, Ventilations and Wind Impact (14-14.6.4(A))** Identify and describe the following: ● Wind and ventilation impacts on adjoining structures and/or adjacent public spaces, including wind study, if applicable ● Bulk, location, or height impacts on adjoining structures
Yes NA	**Shadows (14-14.6.4(B)), if applicable** ● Provide shadow analysis of impacts on publicly accessible open space (Technical Manual, Section 11)
Yes NA	**Snow and Ice Loading (14-14.6.4(C))** ● Describe building design measures to prevent snow and ice from loading or falling onto adjacent properties or public ways
Yes NA	**View Corridors (14-14.6.4(D)), if applicable** ● Describe any protection of designated view corridors (Portland Design Manual, Appendix. 1)
Yes NA	**Historic Resources (14-14.6.4(E)), if applicable** Identify and describe the following: ● The site's status as a designated landmark, within a historic district or historic landscape district, or within 100 feet of any designated landmark, historic district, or historic landscape district ● Compliance with standards for preservation and documentation of archaeological resources

Yes NA	Exterior Lighting (14-14.6.4(F)) ● Describe how the proposed site lighting will adhere to photometrics requirements as it relates to light trespass and full cutoff fixture design, pursuant to Technical Manual Section 12
Yes NA	Noise and Vibration (14-14.6.4(G)) ● Provide data on noise levels for HVAC and other mechanical equipment, such as design specifications, to demonstrate consistency with state and federal noise emissions requirements as well as City code
Yes NA	Signage and Wayfinding (14-14.6.4(H)), if applicable ● Provide signage plan showing the location, dimensions, height and setback of all existing and proposed signs ● Provide drawings of all commercial and directional signage on site
Yes NA	Zone-Related Design Standards (14-14.6.4(I)) ● Address any applicable design review standards by zone, including compliance with Design Manual

MAJOR SITE PLAN
DRAWINGS CHECKLIST

Please upload the following DRAWINGS with the listed details into e-Plan as separate pdfs.

All drawings must be submitted in a 24 x 36 sheet size.

BOUNDARY SURVEY (stamped by a Maine Licensed Surveyor and drawn as per Technical Manual Sec. 13)

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

All sheets – Include a title block with project title and the following information:

- Project street address
- Name and address of property owner & applicant
- Licensed design professional, incl firm that produced plans
- North arrow
- Date of preparation and revision history block
- Tax parcel (chart, block, and lot) number

Existing Conditions Plan with the following:

- Existing structures, with distance from primary building façade(s) to the property line
- Approximate location of structures on abutting properties
- All streets and intersections adjacent to the site
- Existing driveways, pedestrian ways, and bicycle infrastructure, including dimensions and materials
- Existing public transit infrastructure
- Existing vehicle & bicycle parking areas
- Existing utilities on site and within adjacent rights-of-way
- Existing grades (two-foot contours preferred)
- Location of water courses, wetlands, and vegetation, or other significant natural features
- Existing soil conditions and location of test pits and borings
- Zoning boundary lines, including overlays
- Location of all existing easements and rights-of-way

Proposed Site Plan with the following:

- Proposed structures, including distance from primary building façade(s) to property lines
- Ground floor area, and finished floor elevations for all buildings
- Any proposed geometric modifications to streets and intersections adjacent to site
- Location, dimensions and materials of all 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, including turning templates
- Proposed transit infrastructure with dimensions/ engineering specifications
- Location of vehicle and bicycle parking with dimensions and engineering specifications
- Location of all snow storage areas
- Exterior lighting (please see Technical Manual Sec. 12 for photometrics requirements)
- Location of fire hydrants

- Location of solid waste management receptacles
- Location of all proposed HVAC and mechanical equipment, including proposed screening, where applicable
- Location of proposed easements and rights-of-way, including dimensions
- Please utilize color-coding and/or hatches and shading to delineate changes between the pre and post development condition as needed

UTILITY PLAN including:

- Proposed electrical infrastructure
- Location, sizing and directional flows of all proposed sewer and stormwater infrastructure
- Location and dimensions of off-premises public or publicly accessible infrastructure adjacent to site
- Electric utility infrastructure

GRADING AND DRAINAGE PLAN including:

- Proposed grades
- Proposed stormwater management measures meeting Technical Manual (Section 5) standards
- Any proposed alteration of a watercourse or wetlands
- Any groundwater protection measures
- Proposed buffers and preservation measures for wetlands or significant natural features

LANDSCAPE PLAN including:

- Existing vegetation to be preserved and preservation measures
- Proposed landscaping, screening, and street trees, including caliper widths for trees
- Planting schedule, including street trees

ARCHITECTURAL PLANS AND RENDERINGS including:

- Exterior building elevations, color renderings, illustrations of all sides
- Axonometric and street-level views for structures greater than three stories in height
- Provide context drawings, if applicable (Design Manual, page 1)
- Floor plans

CONSTRUCTION MANAGEMENT PLAN including:

- Specifics on traffic control, sidewalk sheds, and pedestrian rerouting
- Include a drawing and written narrative

OTHER

- Details and cross-sections, as necessary

Lauren J. Reiter Architect / Cornerstone Building & Restoration
RA, LEED™ Accredited Professional

SECTION C: RIGHTS, TITLE & INTEREST

Please see attached documents for evidence of rights, title and interest of Kestrel, LLC to the property known as 30-32 Atlantic Street, Portland, Maine.

6 South Street, Portland, ME 04101 tel. 917.502.2225 email. laurenjreiter@yahoo.com www.reiterarchitecturedesign.com

SECTION C. RIGHT / TITLE / INTEREST:

DLN: 1002040113810

AFTER RECORDING RETURN TO:
Charlie Katz-Leavy, Esq.
Jensen Baird Gardner & Henry
P.O. Box 4510
Portland, Maine 04112-4510

WARRANTY DEED
(Maine Statutory Short Form)

KNOW ALL PERSONS BY THESE PRESENTS, that I, **MARY FRANCES CONNOLLY**, having a mailing address of 28 Atlantic Street, Unit 1, Portland, Maine 04101 ("Grantor"), for consideration paid. GRANT to **KESTREL, LLC**, a Connecticut Limited Liability Company, having a mailing address of 118 Rowley Drive, Stonington, Connecticut 06378 ("Grantee"), with WARRANTY COVENANTS, a certain lot or parcel of land, with any buildings and improvements thereon, located in the City of Portland, County of Cumberland and State of Maine, as more particularly described in Exhibit A attached hereto.

Meaning and intending to convey and hereby conveying a portion of the premises described in a Quitclaim Deed from Michael Vancleef Delahunt to Mary Francis Connolly, dated September 25, 2009 and recorded in Book 27292, Page 173, and a Corrective Quitclaim Deed to Mary Frances Connolly, dated September 29, 2011 and recorded in the Cumberland County Registry of Deeds, in Book 29016, Page 297.

IN WITNESS WHEREOF, the said Mary Frances Connolly has caused this instrument to be signed and sealed this 29 day of September, 2020.

Witness

Mary Frances Connolly

STATE OF Maine
COUNTY OF Cumberland, ss. September 29, 2020

Personally appeared the above named Mary Frances Connolly and acknowledged the foregoing instrument to be her free act and deed.

Before me,

Notary Public/ ~~Attorney At Law~~
Printed Name:
Commission Expiration

BETHANY A.W. GAIN
Notary Public-Maine
My Commission Expires
December 12, 2026



MAINE
Department of the Secretary of State
Bureau of Corporations, Elections and Commissions

Multiple Annual Report Filing

Limited Liability Company Record Information

DCN Number	2210019175664
Charter Number	20210373FC
Legal Name	KESTREL, LLC
Registered Agent and Registered Office	CHARLES M. KATZ-LEAVY PO BOX 4510 PORTLAND, ME 04112-4510
Home Office Address	118 ROWLEY DRIVE STONINGTON, CT 06378-Y

Please review transaction information below and make any necessary edits before submitting.

Brief Statement of the Character of the Business — Edit this section

REAL ESTATE AND RENTAL LEASING

Members, Managers or other Authorized Persons — Edit this section

KENT PARSON
118 ROWLEY DRIVE, STONINGTON, CT 06378

Authorizing Party — Edit this section

TITLE REGISTERED AGENT
NAME CHARLES M. KATZ-LEAVY
EMAIL ADDRESS ckatzleavy@jbgh.com

Submit filing NOW

Save for later

© Department of the Secretary of State

DOC :62385 BK:37252 PG:291
RECEIVED - RECORDED, CUMBERLAND COUNTY REGISTER OF DEEDS
10/01/2020, 09:59:40A
Register of Deeds Nancy A. Lane E-RECORDED

EXHIBIT A

Legal Description

Two certain lots or parcels of land situated on the southwesterly sideline of Atlantic Street in the City of Portland, County of Cumberland and State of Maine bounded and described as follows:

PARCEL ONE:

A certain lot or parcel of land, with any improvements thereon, situated on 30 Atlantic Street in said Portland, Maine, bounded and described as follows:

Beginning at a point on the southwesterly sideline of Atlantic Street, said point marking the northeasterly corner of land now or formerly of Michael F. Connolly and Norma I. Connolly; thence in a generally northerly direction 25 feet; thence in a westerly direction parallel to and maintaining a distance of 25 feet to land now or formerly of Rudolph Ferrante and Eleanor Ferrante, 100 feet, more or less; thence in a southerly direction 25 feet to northwesterly corner of land of said Michael F. Connolly et al; thence in a general easterly direction 100 feet more or less to the point of beginning.

PARCEL TWO:

A certain lot or parcel of land, with any improvements thereon, situated on 32 Atlantic Street in said Portland, Maine bounded and described as follows:.

Beginning at the southwesterly side of Atlantic Street, said point marking corner of land formerly of Florence Britting; thence southerly on Atlantic Street for 25 feet, more or less, to a point owned on July 22, 1970 by Michael F. Connolly and Norma I. Connolly; thence in a westerly direction on a course parallel to and maintaining a distance of 25 feet to land now or formerly of Rudolph Ferrante and Eleanor Ferrante, 100 feet, more or less; thence in a northerly direction to land formerly of Florence Britting; thence in an easterly direction 100 feet more or less to the point of beginning.

Lauren J. Reiter Architect / Cornerstone Building & Restoration
RA, LEED™ Accredited Professional

SECTION D: ZONING ASSESSMENT

May 15, 2021

Zoning Analysis for Zone R-6 (All Projects) & Munjoy Hill Conservation Overlay District

	Required	Proposed
Lot Size	2,000 SF	5,235 SF
Area per Dwelling Unit (D.U.)	725 SF	1,047 SF
Minimum Street Frontage	20’	51’
Front Yard Minimum	5’	5.25’
Front Yard Maximum	NA	NA
Rear Yard	10’	10.57'
Yard Right (north)	5’	5.50’
Yard Left (south)	5’	11.05’
Side Street Setback	NA	NA
Step Back	NA	NA
Maximum Lot Coverage	60%	57%
Minimum Lot Coverage	NA	NA
Maximum Height if no Workforce unit	35’	34.21’
Open Space	20%	20%
Maximum Impervious Area	80%	80%
Pavement Setback	NA	NA
Floor Area Ratio	NA	NA
Off-Street Parking Spaces	1 space/unit after 3 units = 1	3
Loading Bays	NA	NA
Maximum width of garage on front facade	9’ or 40% of width	NA (garage located on side of building)

SPACE & BULK STANDARDS for Zone R6

	Required	Proposed
Minimum Lot Size	2,000 SF	5,235 SF
Minimum Street Frontage	20’	51’
Minimum Front Yard Setback	5’	5.25’
Minimum Side Yard Setback	5’	5.50’
Minimum Rear yard Setback	10’	10.57’
Maximum Lot Coverage	60%	57%
Minimum Lot Width	20’	51’
Maximum Building Height	35’	34.21’
Minimum Landscaped Open Area	20%	20%
Maximum Number of Dwelling Units	725 SF/Unit = 7	4
Residential Parking	1 space after 3 units = 1	3
Minimum Inside Bicycle Storage spaces	2 spaces/5 D.U. = 2	2

E. Summary of Written Easements

There are no existing easements identified on the Boundary & Topographic Survey prepared by Owen Haskell, Inc.

Proposed easement(s) are under review.

Lauren J. Reiter Architect / Cornerstone Building & Restoration
RA, LEED™ Accredited Professional

SECTION F: CODE ANALYSIS

30-32 ATLANTIC STREET, PORTLAND ME – CODE SUMMARY

BUILDING AREA
Building Footprint: 2,632 SF
Building Gross: 8,736 SF
R-2 Gross: 7,384 SF
Parking Gross: 1,352 SF

IBC 2015 CODE OVERVIEW
Use & Occupancy: Mixed Use- R-2 (Apartments), S-2 Enclosed Parking Garage Construction Type: VA
Sprinkler: Yes
Note: in accordance with Table 602 and Section 705.5:
Proposed Fire Separation Distance of north exterior walls equals 5.56 feet. Therefore, Exterior Wall Rating at this wall = 1 hour .
Proposed South and West walls have fire separations of 10.07 feet and 10.56 feet, respectively. Therefore, Exterior Wall Rating at these walls = 1 hour from interior side only.

NFPA 2018 CODE OVERVIEW
Use & Occupancy: Mixed Use- New Apartment Building, Storage- Enclosed Parking Garage
Construction: Type V
Sprinkler: Yes

IECC 2009 CODE OVERVIEW- See Chapter 13 of IBC 2015

DETAILED CODES REVIEW (IBC / IECC / NFPA)

I. IBC 2015 DETAILED CODE REVIEW- Comply with all chapters in their entirety as applicable

Ch. 3. Use & Occupancy Classification
310.4. Residential Group R-2 (Apartments)
311.3. Low-Hazard Storage Group S-2 (Parking Garages, open or closed)

Ch. 4. Special Detailed Requirements Based on Use and Occupancy
Section 406 Motor Vehicle-Related Occupancies
406.6 Enclosed Parking Garages
406.6.1 Height and Areas: See Sections 504, 506 and 507
406.6.2 A Mechanical Ventilation System shall be provided in Accordance with the International Mechanical Code
406.6.3 An Enclosed Parking Garage shall be Equipped with an Automatic Sprinkler System in accordance with Section 903.2.10.

Ch. 5 General Building Height and Areas
Table 504.3 Building Height for R/ S13R (Building equipped with an automatic sprinkler system per Section 903.1.2), Type VA construction: max. height = 60'-0"
Table 504.4. Number of Stories: R-2/ S13R (see note above), Type VA construction: max. 4 Stories above grade

Table 506.2 Building Area: R-2/S13R, Type VA construction: max. 12,000 s.f per floor
Table 508.4. Required Separation of Occupancies: Required Separation between Occupancies R-2 & S-2 = 1 hour
508.4.4.1. Required separators between adjacent occupancies shall be Fire Barriers in accordance with Section 707 and/ or Horizontal Assemblies in accordance with Section 711

Ch. 6. Types of Construction

Table 601. Type VA
- Primary Structural Frame- 1 hour
- Bearing Walls Exterior- 1 hour
- Bearing Walls Interior- 1 hour
- Non-bearing Walls and Partitions, Exterior- per Table 602
- Non-bearing Walls and Partitions, Interior – no rating
- Floor Construction and Associated Secondary Members- 1 hour
- Roof Construction and Associated Secondary members- 1 hour

Table 602. Fire Resistance Rating for Exterior Walls based on Fire Separation Distance
- X less than 5'-0"- 1 hour
- X greater than or equal to 5'-0" and Less than 10'-0"- 1 hour
- X greater than or equal to 10'-0" and Less than 30'-0"- 1 hour, if greater than 10'-0" then rating is from interior only.
- Where Table 705.8 permits non-bearing exterior walls with unlimited area of unprotected openings, required fire resistance of exterior walls is 0 hours

602.5 In Type V construction, structural materials, exterior and interior walls are of any materials permitted by this code.

Ch.7. Fire and Smoke Protection Features

704.1 Structural members and assemblies shall comply with Table 601 for required fire ratings.
704.2 Where columns are required to be fire-rated, the entire column shall be encased for the full height of the column, including connections to other structural members and/or where extending through a ceiling.
705.2. Projections such as cornices and exterior balconies beyond the exterior wall shall conform to this section and Section 1406.
Table 705.2 Minimum distance of Projections
- 0' to 2' fire separation: no projections allowed.
- 2' $\geq$ 3' : 24 inches
- 3' $\geq$ 30' : 24 inches plus 8" for every foot beyond 3'

705.2.2 Projections from Type V construction shall be of any approved material
705.2.2. Projections from Type V construction (including Balconies) may be of any approved material.
705.2.3 Combustible projections extending to within 5' of fire separation distance shall be not less than 1-hour construction.
705.5 Fire Resistance Rating of Exterior Walls with a Fire separation distance of less than or Equal to 10'-0" shall be Rated for Exposure to Fire from Both Sides.
Table 705.8. Maximum Area of Exterior Wall Openings / Unprotected, Sprinklered / Distance to lot line
- Openings not permitted less than 3'
- Unprotected openings 3' to less than 5' in sprinklered building: 15% allowable area
- Unprotected openings 5' to less than 10' in sprinklered building: 25% allowable area
- Unprotected openings 10' to less than 15' in sprinklered building: 45% allowable area
- Unprotected openings 15' to less than 20' in sprinklered building: 75% allowable area
- Unprotected openings more than 20' in sprinklered building: No limit

707 Fire Barriers / Fire-Resistance Rating
Shaft Enclosures- Comply with Section 713.4.
Interior exit Stairway and ramp construction- Comply with section 1023.1.
Enclosures for Exit Access Stairways- Comply with section 713.4.
Exit Passageway- Comply with section 1024.3
Horizontal Exit- Comply with section 1026.1
707.3.7 Incidental Uses- Comply with Table 509
707.3.9 Separated Occupancies- Comply with Table 508.4 based on the occupancies being separated. R/ S-2= 2 Hour
Table 707.3.10. Fire Resistance separating Occupancies R and S-2 = 2 hours.
707.4 Exterior Walls- Where exterior walls serve as part of a required fire resistance-rated shaft of stairway enclosure or separation, comply with section 705 for exterior walls.
707.5 Continuity- Fire barriers shall extend from the top of the foundation or floor/ceiling assembly below to the underside of the floor or roof sheathing, slab, or deck above and shall be securely attached hereto. Such fire barriers shall be continuous through concealed spaces, such as the space above suspended ceilings. Joints and voids at intersections shall comply with sections 707.8 and 707.9.
707.5.1 Supporting Construction- Supporting construction of fire barriers shall be protected to afford the required fire-resistance rating of the fire barrier supported. Hollow vertical spaces within the fire barrier shall be fire blocked the full height of the support structure in accordance with section 718.2 at every floor and at the roof.
707.7 Penetrations- Comply with section 714. Penetrations into exit access stairways, interior exit stairways and exit passageways shall be allowed only where permitted by section 1019, 1023.5 and 1024.6, respectively.
707.8 Joints comply with section 715.
707.9 All voids at intersections of fire-resistance rated assemblies shall be filled with an approved material or system.
708.1 Fire Partitions
Separation Walls as required by section 420.2
Corridor walls as required by section 1020.1
Elevator Lobby separation as required by section 3006.2.
Fire-Resistance Rating Fire partitions shall have fire -resistance rating of not less than 1 hr.
Exceptions: 1. Corridor walls permitted to have a ½ hour fire-resistance rating by Table 1020.1. Occupancy R, Occupant load served by corridor with sprinkler system= 0.5 hours.
708.4 Fire barriers shall extend from the top of the foundation or floor/ceiling assembly below to the underside of the floor or roof sheathing, slab, or deck above and shall be securely attached hereto. Supporting construction shall be protected to maintain required fire-resistance.
708.9 Ducts and air transfer openings- Penetrations in a fire partition by ducts and air transfer openings shall comply with section 717.
711.2.3 At Horizontal Assemblies, supporting construction shall match fire-resistance rating of horizontal assembly being supported.
711.2.4.1 Separating Mixed Occupancies: comply with section 508.4 based on the occupancies being separated.
711.2.4.3 At Dwelling Units and Sleeping Units, horizontal assemblies serving as dwelling unit or sleeping unit separations shall not be less than 1-hour.
712.1.12 Vertical openings containing Exit Access Stairways and Ramps shall comply with section 1019. Horizontal fire doors shall achieve rating not less than the assembly being penetrated and shall be permanently labeled. Access doors shall be permitted in roof/ceiling in fire stair, provided that doors are tested per ASTM 119 or UL 263 and permanently labeled.
713.2 Shaft enclosures shall have a fire-resistance rating of not less than 2-hours where connecting four or more stories and *not less than one hour where connecting less than 3 stories.*

713.5 Shaft enclosures shall be constructed as fire barriers in accordance with section 707 or horizontal assemblies constructed in accordance with section 711 or both, and shall have continuity in accordance with section.
713.6 Where exterior walls servs as part of shaft enclosure, wall shall comply with Section 705, and fire-resistance rating of enclosure does not apply. However, exterior walls at interior fire stairs shall comply with Section 1023.7.
713.8 -- 713.10: Shaft Penetrations shall comply with section 714. Joints- comply with section 715. Ducts and air transfer openings- Penetrations in a fire partition by ducts and air transfer openings shall comply with section 717. Comply with entire section 714 to protect through penetrations and membrane penetrations of horizontal assemblies and fire-resistance rated wall assemblies.
713.14 Elevators shall be constructed in accordance with Section 713 and Chapter 30.
714.3 Penetrations into or through fire wall, fire barriers and fire partitions shall comply with Sections 714.3.1 through 714.3.3.
714.4 Penetrations of a fire-rated floor, floor/ceiling assembly, or ceilings or roof/ceiling assembly shall be protected in accordance with Sections 714.4.1—714.4.4.
715.1 Joints installed in fire-rated walls, floors or floor/ceiling assembly, or roof or roof/ceiling assembly shall be protected by approved Fire Resistant Joint Systems that maintain the required ratings. Fire resistant joints not required where shaft enclosure is already protected, and at walls allowed to have unprotected openings. Comply with all of Section 715,
Table 716.5 Opening Fire Protection Assemblies

Fire doors at Shafts & interior exit stairways with wall rating 2 hours: Min. Fire Door Rating- 1 ½ hour with maximum vision panel size of 100 sq. in.

Fire Doors at Corridor Walls with wall rating 0.5 hours: Min. Fire Door Rating- 1/3 hour, Door Vision panel size= max. Size tested.

Fire Doors at Exterior Walls with wall rating 1 hours: Min Fire Door Rating- 3/4 hour with maximum vision panel size of 100 sq. in.

716.5.9 Fire doors shall be latching and self-or automatic closing in accordance with Section 716.
717 At Ducts and Air Transfer Openings in rated assemblies, comply with entire section 717.
718 At Concealed Spaces, fireblocking and draftstopping shall comply with entire section 718
718.2 Fire blocking in combustible construction shall be installed to cut off concealed draft openings (both vertical and horizontal) and shall form an effective barrier between floors, between a top story and a roof or attic space, fire blocking shall be installed in the locations and in the manner specified in sections 718.2.2 through 718.2.7. Fire blocking shall be provided in concealed spaces between stair stringers at the top and bottom of a stair, and enclosed spaces under stair shall comply with Section 1011.7.3.
718.3.2 Draftstopping is required in R-2 building with 3 or more dwelling units, to be located above and in-line with the dwelling unit separations, unless building is equipped with automatic sprinkler system conforming with Section 903.1.1.
720 Thermal and Sound-Insulating Materials shall comply with entire section 720.
Table 721.1(2) Prescriptive Fire Resistance @ Partitions

CMU provides 1-hour fire resistance in 2.1" – 2.8" (depending on type)

Solid Concrete provides 1-hour fire resistance in 2.5" – 3.5" (depending on type)

Interior wall: 2x4 wood studs with 5/8" Type X gypsum board each side provides 1-hour fire resistance (See Table 721.1(2), item #14-1.3 for details) (4-3/4" th. Wall)

Exterior wall: 2x6 wood studs with 2 layers 5/8" Type X gypsum board each side and 5.5" mineral wool in cavity provides 2-hour fire resistance (See Table 721.1(2), item #15-1.16 for details) (8" th. Wall)

Exterior wall rated for fire resistance from interior only: 2x6 wood studs with 1 layer 5/8" Type X gypsum board on interior side and R19 mineral fiber in cavity provides 1-hour fire resistance (See Table 721.1(2), item #16-1.3 for details) (6.5" th. Wall)

722.2.1.4.3 and 722.3.2.3 For an exterior wall with a fire separation distance great than 5 feet, the fire shall be assumed to occur on the interior side only.
Table 722.3.2 Fire resistance ratings of different types of CMU
Table 722.6.2(1) Time assigned to Wallboard membranes
5/8" Type X Gypsum Wallboard = 40 minutes
Table 722.6.2(2) Time assigned to Wood Frame
Wood Studs @ 16" OC = 20 minutes
Table 722.6.2(5) Time assigned to Additional Protection
Fill spaces in wood stud walls with glass fiber mineral wool batts or cellulose insulation = 15 minutes
722.6.2.3 For an exterior wall with fire separation greater than 10 feet, the wall rating is assigned the rating dependent on interior membrane and framing. The membrane on the outside shall consist of sheathing, sheathing paper and siding as described in Table 722.6.2(3).
722.6.5 Table 722.6.2(%) indicates additional time increments that can be added to fire resistance where glass fiber, rockwool, slag mineral wool or cellulose is incorporated into the assembly.

Ch.8. Interior Finishes- Comply with Entire Chapter
Table 803.11 Class C finishes allowed in Sprinklered R2 building, including interior exit stairways, corridors and enclosures for exit access stairways.
804.4.2 Floor coverings in stairways, exit passageways, and corridors in R2 building shall be minimum Class II.

Ch.9. Fire Protection Systems - Comply with Entire Chapter
901.6.1 Automatic Sprinkler System- Automatic Sprinkler Systems shall be monitored by an approved supervising station.
901.6.2 Fire Alarm Systems required by the provisions of section 907.2 and sections 907.2 and 907.9 of the International Fire Code shall be monitored by an approved supervising station in accordance with section 907.6.6.
903.2.8 Group R- An automatic sprinkler system installed in accordance with section 903.3 shall be installed throughout buildings with a Group R fire area
903.2.10 Group S-2 enclosed parking garages- An automatic sprinkler system shall be provided throughout buildings classified as enclosed parking garages in accordance with section 406.6 where the enclosed parking garage is located beneath other groups.
903.3.1.2 NFPA 13R Sprinkler Systems- Allowed in Group R occupancies up to and including 4-stories in height and do not exceed 60 feet in height above the grade plane shall be permitted to be installed throughout.
903.3.1.2.1 Sprinkler protection shall be provided for Balconies, Decks and ground floor patios of Dwelling Units and Sleeping Units of Type V construction.
903.3.2 Quick Response and Residential sprinklers- Required in Dwelling units and sleeping units in R occupancies.
906.1. Each dwelling unit shall have a portable fire extinguisher min. rating of 1-A:10-B:C where required by international Fire Code in Table 906.1
907 Fire Alarm and Detection Systems- Comply with entire section 907
907.1.2 and 907.1.2 Construction Documents and Shop Drawings for fire alarm systems shall be submitted for review and approval prior to system installation.
907.2. Manual fire alarm box is not required for R-2 building unless required for the fire code official.
907.2.9 Group R-2 Fire Alarm systems and smoke alarms shall be installed in group R-2 occupancies as required in sections 907.2.9.1 through 907.2.9.3
907.2.9.1 Manual Fire Alarm System is required where a dwelling unit or sleeping unit is located three or more stories above the lowest level of exit discharge.

907.2.11 Single and Multiple-station smoke alarms must comply with UL 217 and install in accordance with section 907.2.11.2
907.2.11.3 In Group R-2 buildings, provide Single or Multiple-station smoke alarms at all the following locations:

On the ceiling or wall outside of each separate sleeping area in the immediate vicinity of the bedrooms
In each room used for sleeping purposes.
In each story within a dwelling unit.

907 2.11.4 Smoke alarms shall be installed not less than 3 feet of a bathroom door with shower or tub.
907.5.2.3.3 In R-2 buildings required to have a fire alarm systems by Section 907, all dwelling units shall be provided with the capability to support visual alarm notification appliances in accordance with Chapter 10 of ICC A117.1
912.1 Fire Department Connections shall be installed in accordance with the NFPA standard applicable to the system design and shall comply with sections 912.2 through 912.6.
914 Emergency Responder Safety Features- Comply with entire section 914
915.1.2 Carbon Monoxide Detection shall be provided in R occupancies that contain a fuel-burning appliance or fireplace.

Ch.10. Means of Egress

1003.2 Means of egress shall have a ceiling height not less than 7’-6”, and stair headroom as per Section 1011.3.
Table 1004.1.2 Occupant Load: Maximum Floor area for Residential Occupancy = 200 Gross Sq. Ft. per occupant
1005.3.1 Stairway width: occupant load of each floor = .3" per occupant. As per Section 1011.1, min. width = 36" and headroom clearance not less than 80".
1005.3.2 Other egress areas: width = .2" per occupant
1005.7.1 Doors when open onto egress path, shall not reduce required width by more than 7".
Doors in any positions shall not reduce the required width by more than one half. These restrictions do not apply to induvial dwelling units in R-2.
1006 Number of Exits and Exit access doorways 1006.3 Egress from stories or occupied roofs.
1006.2.1.1 R-2, one means of egress allowed from dwelling unit if sprinklered building and common path of egress is less than 125'. (Max occupant load of 10.)
Table 1006.3.1 Minimum number of exits or access to exits per story, Occupant load per story: 1-500, Minimum number of exits or access to exits from story: 2.
1006.3.2 Single exit allowed where rooms, areas & spaces discharge directly to exterior @ first floor; required emergency escape openings; max. distance to exit = 75'.
1006.3.2/Table 1006.3.2(1): R-2 building can have one exit as long as building is sprinklered, maximum 3 stories, less than 4 units per floor, automatic sprinkler and exit travel less than 125 feet.
1007 Exit or exit access doorway configuration- Comply with entire section 1007
1007.1.1 Where two exits required: in automatic sprinklered building, distance between exits shall not be less than one third of full floor, measured on a diagonal. Distance is measured to closest riser. If hall walls are 1-hr. rated, straightest point between exits may be used. (See 1007.1.1.1 for measuring.)
1008.1 Illumination shall be provided in means of egress in accordance with Section 1008.2.
1008.3.2 Emergency lighting is required at exit hallways and stairs if two exits are required
1010.1 Doorway widths. All doors in path of egress and to accessible spaces must be minimum 32” clear width. Other doors do not have minimum width requirement but must be min. 78” in height.
1010.1.6 Landings shall have width not less than the width of the stairway or the door, whichever is greater.

1010.1.8 Doors in series shall be minimum 48” apart plus the width of a door swinging into the space.
1010.1.9.1 Door hardware shall comply with this section.
1011 Stairways- Comply with entire section 1011
1011.2 Width and Capacity- Stairways serving an occupant load of less than 50 shall have minimum clear width of 36”.
Note: Occupant load is 8736 SF/ 200 gross SF= 44 people, Minimum Width of Stair = 36”
1011.3 Headroom- Minimum headroom clearance of 80 inches required.
1011.5.2 Stair Treads and risers- Maximum Riser height shall be 7” and minimum riser height shall be 4”, Minimum rectangular tread depth shall be 11” from riser to nosing. *Stairs within dwelling units may have maximum riser height of 7-3/4” and minimum tread depth of 10”.*
1011.6 Stairway landings- Width of landing shall be not less than the width of the stairways served. Doors opening on a landing shall not reduce width to less than ½ the required width.
1011.11 Handrails- Required on both sides of stair and shall comply with section 1014, except railings on one side permitted where stair is within dwelling unit.
Section 1011.12 In 4-story or more buildings, one stair must go to roof. Buildings without occupied roof access are permitted to have ships ladder or permanent ladder. Roof hatch shall not be less than 16 SF. Provide guards where roof hatch is less than 10 feet from roof edge.
Section 1011.12.2 Where stairway is provided to roof, access to roof shall be through a penthouse complying with Section 1510.2.
1013.1 Exit Signs are required in path of egress travel and shall be readily visible from any direction of egress travel. Comply with Section 1013. Exist signs are not required at main, obvious exterior exits.
1014.1 Handrails shall be not less than 34” and not higher than 38” and shall comply with entire section 1014.
1015.1 Guards are required at stairs and landings that are more than 30” to grade or floor below. Where required, guards shall be 42” high except at the open side of stairs, guards may be not less than 34” high. Guards shall be required where equipment requiring service is within 10’ of a roof edge or a roof hatch is within 10’ of roof edge. Comply with entire section 1015 .
1015.8 Windows must have opening control devices where window sill is less than 36” above finish floor and greater than 6' above grade or other surface below at the building exterior.
1016.2 Exit access through elevator lobby is permitted. Level of protection is not required to extend to the exit.
1016.2.3 Egress shall not pass through sleeping areas, bathrooms or rooms that can be locked.
Table 1017.2 Exit Access Travel Distance. Refer to NFPA 101-2009, Table A7.6. For Occupancy R, With Sprinkler System= 250 feet where building equipped throughout with an automatic sprinkler system.
Table 1020.1 Corridor Fire-Resistance Rating for Occupancy: R, Occupant Load Greater than 10, With Sprinkler System= 0.5 Hrs
1020.1.2. Fire resistance rating is not required for corridors within a dwelling unit in R buildings.
Table 1020.2 Minimum Corridor Width- Occupancy: R, Min. Width w/ Occupant load less than 50 (total= 48)= 36"
1020.4 Dead end corridors shall be max. 50 feet in length in sprinklered building.
1022 Exits- Comply with entire section 1022
1023 Interior Exit Stairways and Ramps- Comply with entire section 1023
1023.2 Stairs connecting 4 stories or more must be 2-hr. rated.
1023.7 Exterior walls of interior exit stairways shall comply with Section 705 for exterior walls, but shall not have a fire resistance rating of less than 1 hour within 10 feet horizontally and vertically of the exit stair.

1023.8 If an exit stair continues below the level of discharge, an approved barrier shall be provided at the discharge level to prevent people from unintentionally continuing to levels below exterior discharge.
1023.9 Signage shall be provided in stairs connecting more than three stories in compliance with this Section.
1024 Exit passageways shall not be used for any purpose other than as a means of egress and as circulation. Comply with all other provisions of this Section.
1030.1 – 1031.4 In addition to egress stairs, an emergency escape and rescue (E&R) shall be provided in sleeping rooms (bedrooms) in R2 occupancies below the fourth story above grade. Emergency E&R openings shall have minimum net clear opening of 5.7 SF, except at grade floor where net opening shall be minimum 5 SF, and shall have sill height at maximum 44" above floor.

Ch.11. Accessibility
1104 Accessible Entrances
1104.1 At least one accessible route shall be provided to the building entrance from public sidewalks & accessible parking.
1105.1.1 Parking Garage entrance from exterior and from within Garage to building's main entry shall be accessible.
1105.1.7 At least one accessible entrance shall be provided to each dwelling unit.
Table 1106.1 Accessible parking spaces: for 1-25 Parking Spaces, required minimum number of accessible spaces= 1
1107.2. Design- Dwelling Units and Sleeping Units that are required to be accessible units, type A and B units shall comply with the applicable portions of chapter 10 of ICC A117.1
1107.3 Accessible spaces in Type A or B units shall include toilet/bathing room, kitchen living and dining area and exterior spaces such as terraces.
1107.5.1.2. In a structure with 4 or more dwelling units , every dwelling unit shall be a Type B unit.
Table 1107.6.1.1 In a building of 25 units or less, no units are required to have roll-in showers.
1111.1 Signage- Accessible parking space(s) shall be marked by the International Symbol of Accessibility.
1111.3 Floor level signage shall be provided in accordance with Section 1023.9 in exit stairs.

Chapter 12 Interior Environment-
Section 1203 Ventilation. Comply with this section.
Section 1204 Temperature Control. Comply with this Section.
Section 1205 Lighting. Comply with this Section
1207.2 Air-borne sound. Walls, partitions, and floor/ceiling assemblies separating dwelling units from each other or from public or service areas shall have a sound transmission class (STC) of not less than 50 (45 if field tested) for air-borne noise when tested in accordance with ASTM E 90. Penetrations or openings in construction assemblies for piping; electrical devices; recessed cabinets; bathtubs; soffits; or heating, ventilating or exhaust ducts shall be sealed, lined, insulated, or otherwise treated to maintain the required ratings. This requirement shall not apply to dwelling unit entrance doors; however, such doors shall be tight fitting to the frame and sill.
Section 1208 Interior Space Dimensions. Comply with this Section

Chapter 13 Energy Efficiency
1301 General- Buildings shall be designed and constructed in accordance with the International Energy Conservation Code 2009.

Chapter 14 Exterior Walls
Section 1403 Performance requirements. Comply with this Section.
Section 1404 Materials. Comply with this Section.

Section 1405 Installation of Wall Coverings. Comply with this Section.
Table 1406.2.1.1.2 With a fire separation of 10 feet, combustible exterior wall covering shall have Tolerable Level Incident Radiant Heat Energy(kW/m2) of 8.9. With a fire separation of 5 feet, combustible exterior wall covering shall have Tolerable Level Incident Radiant Heat Energy(kW/m2) of 12.5.

II. IECC 2009 DETAILED CODE REVIEW - Comply with all chapters in their entirety as applicable

Chapter 3 General Requirements
301 Climate Zones
Table 301.1 Climate Zones, Main, Cumberland County, 6A
Table 402.1 Climate Zone 6
Minimum R-values
Windows: U value: .035
Wood Frame Walls: R20 cavity or 13 cavity+5 continuous
Mass Wall: 15/19
Ceiling: R 49
Floor: R 30
Basement Wall: R15 (continuous) or R19 cavity
Slab R10

Chapter 5 Commercial Energy Efficiency- Comply with entire Chapter 5
501.1 Scope
Commercial buildings shall meet either the requirements of ANSI/ASHRAE/IESNA Standard 90.1, Energy Standard for Buildings, Except for Low Rise Residential Buildings, or the requirements contained in this chapter.
502 Building Envelope Requirements
502.1.1 Insulation and Fenestration criteria. The building thermal envelope shall meet the requirements of Tables 502.2 (1) and 502.3 based on Climate Zone 6A.
Table 502.2 (1)- Building Envelope Requirements- Opaque Assemblies
Climate Zone- 6A
Roofs- Attic and Other- Group R, R-38
Walls Above Grade- Wood Framed and Other- Group R, R- 13 + R-7.5 ci.
Walls Below Grade- Below Grade Wall- Group R, R-7.5 ci. Floors- Joist/ Framing (Steel/ Wood)- Group R, R-30
Slab-on-Grade- Unheated Slabs- Group R, R-15 for 24” Below
Opaque Doors- Swinging, Roll-up or Sliding- Group R, U- 0.50.
Table 502.3 Building Envelope Requirements: Fenestration Vertical Fenestration (40% Maximum of above-grade wall)- Proposed = 25.7%
Climate Zone- 6A
Framing Materials other than metal- U-Factor = 0.35 SHGC all Frame types: PF less than 0.25= 0.40

III. NFPA 2018 DETAILED CODE REVIEW-Comply with all chapters in their entirety as applicable.

Chapter 6 Classification of Occupancy and Hazard of Contents
Classification of Occupancy
6.1.8.1.5 New Apartment Building
6.1.13 Storage- Enclosed Parking Garage
Separated Occupancies

Table 6.1.14.4.1 (b)- Apartment Buildings, Storage= 2 Hours, 1 hour allowable reduction where building is protected throughout by an approved automatic sprinkler system in accordance with 9.7.1.1 and supervised in accordance with 9.7.2.
6.2.2.2 Classification of Hazard of Contents: Low Hazards

Chapter 7 Means of Egress

Exit Access Corridors- Corridors used as an exit access and serving an occupant load exceeding 30 shall be separated by walls having not less than a 1- Hour fire-resistance rating in accordance with Section 8.3
Exits- Comply with section 8.2 and the following: 2, Minimum 2-hour fire resistance rating where the exit connects four or more stories, unless one of the following conditions exists: (c) Minimum 1 hour enclosures in accordance w/ 30.2.2.1.2 shall be permitted as an alternative to the requirement of 7.1.3.2.1
7.2.2.2.1.2 Minimum New Stair Width where the total occupant load of all stories served is less than 50, the minimum width clear of all obstructions, except obstructions 4 ½" at or below handrail height on each side, shall be 36".
Table 7.2.2.2.1.1 (a) New Stairs Minimum Width- 36"
Max. Ht. of Risers- 7" Minimum Ht. of Risers- 4" Minimum Tread Depth- 11" Minimum headroom- 6'-8"
Maximum ht. Between landings- 12 ft.
Landing- 7.2.1.4.3.1 Door Leaf Encroachment- During door swing, any door leaf in a means of egress shall leave not less than one-half of the required width of a landing unobstructed and shall project not more than 7" into the required width of the landing, when fully open.
7.2.2.4.4 Handrail Details- New handrails on stairs shall be not less than 34" and no more than 38" measured vertically from the leading edge of the tread.
7.2.2.5.4.1 Stairway Identification- New enclosed stairs three or more stories shall comply with A-M for signage.
7.2.2.5.4.3 Stairway Tread and Landing markings
7.3.1.2 Occupant Load Factor, Use Apartment, 200 Sq. Ft- 9,600 s.f/ 200 sq. ft. per person = 48 total occupants
Table 7.3.3.1 Capacity Factor, Stairways, width per person - 0.3 inch width per person x 48 =14.4" width required. Level Components, width per person- 0.2 inch width person x 48 =9.6" width required.
Minimum Width- The minimum width of any means of egress shall be not less than 36".
Number of Means of Egress- Not less than 2 from any story
7.4.1.6 Elevator Landing and Lobby Exit Access- Each elevator landing and lobby shall have access to at least one exit.
7.5.1.3.3 In buildings protected throughout by an approved , supervised automatic sprinkler system in accordance with section 9.7, the minimum separation distance between two exits or exit accesses, or exit discharges shall be not less than one-third the length of the maximum overall diagonal dimension of the building or area being served.

Chapter 8 Features of Fire Protection

Table 8.3.4.2 Minimum Fire Protection ratings for Opening Protectives Elevator Hoistways - Walls= 2 hours, Fire Door Assemblies= 1 ½ hours,
Vertical Shafts (Stairways) - Walls= 2 hours, Fire Door Assemblies= 1 ½ hours.
Exit Access Corridors - Walls= 1 hour, Fire Door Assemblies= 1/3 hours, Fire Window Assemblies= ¾.
Smoke Barriers - Walls= 1 hour, Fire Door Assemblies= 1/3 hours, Fire Window Assemblies= ¾.

Chapter 9 Building Service and Fire Protection Equipment - Comply with entire Chapter 9

Chapter 10 Interior Finish, Contents and Furnishings- Comply with entire Chapter 10

Chapter 29 Parking Garages

29.1.1 New Parking garages shall comply with this Chapter and Section 42.8 of NFPA.
29.1.2. New parking garages shall also comply with NFPA 88A
Reference: **NFPA 2015, Section 88A, Chapter 6 Building Service & Fire Protection**
6.4.1 Automatic Sprinkler systems shall conform to NFPA 13.

Chapter 30 New Apartment Buildings- Comply with entire Chapter 30

30.2.1.3
Where bathtubs, bathtub-shower combinations, or showers are present, grab bars shall be provided in accordance with the provisions of 24.2.8.
NOTE: Per ANSI 117: 1004.11.1. Reinforcement shall be provided for the future installation of grab bars at toilets and shower seats at shower compartments. Reinforcement shall be provided for the future installation of grab bars and seats complying with those requirements.
30.2.2.12 Areas of Refuge- Areas of Refuge are not required in Buildings protected throughout by an approved supervised automatic sprinkler system in accordance with 30.3.5.
30.2.5.3.2 No common path of travel shall exceed 50 ft. in Buildings protected throughout by an approved, supervised automatic sprinkler system installed in accordance with 30.3.5.
30.2.6.2 Travel Distance within a dwelling unit to a corridor shall not exceed 125 ft. in Buildings protected throughout by an approved supervised automatic sprinkler system.
30.2.6.3.2 In Buildings protected throughout by an approved automatic sprinkler system installed in accordance with 30.3.5, the travel distance from a dwelling unit entrance door to the nearest exit.
30.2.6.4 The travel distance, from areas other than those within living units, to the exit, shall not exceed 250’-0” in Buildings protected throughout by an approved supervised automatic sprinkler system.
Illumination of Means of Egress- Comply with section 7.8
Emergency Lighting- Comply with section 7.9.
Protection from Hazards
Table 30.2.3.1.1 Hazardous Area Protection
Storage Rooms outside of Dwelling Units- 1-hour and sprinklers.
Trash Collection Rooms- 1-hour and sprinklers.
Interior Finishes- Comply with entire section
30.3.4 Detection, Alarm and Communication Systems
30.3.4.1.1 Four story apartment building shall be provided with fire alarm system in accordance with Section 9.6.
30.3.4.2.2 Initiation of required fire alarm system by manual means shall not be required in buildings four stories or less and protected by approved supervised sprinkler system.
30.3.4.3.1 Occupant notifications shall be provided automatically in accordance with Section 9.6
30.3.4.3.4 Annunciation is not required in buildings four or fewer stories.
30.3.4.5 Smoke alarms shall be installed in accordance with 9.6.2.10 in every sleeping area , and outside of every sleeping area in immediate vicinity of bedrooms, and on all levels of dwelling units.
30.3.4.6.1 – 30.3.4.6.4 CO alarms or detections shall be provided if fuel-burning appliance or fireplace and shall be located outside of each sleeping area and on ceiling of room containing the fuel burning appliance or fireplace.

30.3.5.2. NFPA 13R Sprinkler system shall be permitted as building is less than or equal to 4 stories in height and less than 60 in height above the grade plane.

30.3.5.2.1 . Roof assembly is less than 55' above lowest level of fire dept. access and therefore special requirements of this section do not apply.

30.3.5.6 Listed quick response or listed residential sprinklers shall be used throughout all dwelling units.

Corridors- Comply with entire section
30.3.6.2 Doors- Comply with entire section

- Stair Walls – 2 hr.
- Elevator Shaft Walls: 2 hr.
- Hallway walls – 0.5 hr.
- Walls between Units – 1 hr.
- Non-bearing Interior walls within units – no rating
- Floor construction – 1 hr
- Roof construction – 1 hr
- Floor-Ceiling construction above Garage – 2 hr.

Separation Walls shall be constructed as fire partitions in accordance with section 708.
Horizontal Separation shall be constructed as Horizontal assemblies in accordance with section 711.
Automatic Sprinkler System Group R occupancies shall be equipped with an automatic sprinkler system in accordance with section 903.2.8. Quick response or residential automatic sprinklers shall be installed in accordance with section 903.3.2.
Fire Alarm systems and smoke alarms shall be provided in Group R occupancies in accordance with sections 907.2.6, 907.2.8, 907.2.9 and 907.2.10 respectively. Single or multiple station smoke alarms shall be provided in group r occupancies in accordance with section 907.2.11.

End of code summary

G. Waivers

See the table below regarding the waivers associated with the proposed Residential development project located at 30 Atlantic Street.

Standard to be Waived: Cite Ordinance or Technical Manual Standard	Cite Standard Language: Cite specific language of applicable Ordinance or Technical Manual Standard	Waiver Being Sought: Describe waiver being sought. Ex. – We are requesting a two-way parking lot drive aisle width of 20' feet.	Justification for Waiver: Address specific waiver criteria, if applicable, and document reasons for the waiver request.
Technical Manual 1.7.1 Driveway Width	Any site with driveway access to a street shall have a minimum width of 10 feet measured at the property line.	We are requesting a drive aisle with a minimum width of 9.65', with a width of 10.31' measured at the property line.	Due to the existing conditions and low turnover of residential uses, the driveway is anticipated to be functional serving the 3 proposed angled parking spaces.
Land Use Code Section 14.6.2.B.4&5 Landscape Preservation	Where the planting of replacement trees on the site is not feasible, the applicant shall contribute an amount proportionate to the cost of required replacement trees to the City of Portland Tree Fund	We are requesting to remove two trees 10" DBH or greater within the setbacks. Given the size of the site and the units proposed. A replacement street tree is proposed as well as contribute into the City of Portland Tree Fund	Due to the conditions of the site, preservation of existing vegetation would compromise development, and replacement trees on site are not feasible.

Lauren J. Reiter Architect / Cornerstone Building & Restoration
RA, LEED™ Accredited Professional

SECTION H: FINANCIAL CAPACITY

May 15, 2021

See attached documentation from Kestrel LLC indicating financial capacity for the project

Attachments:
- Letter from Kent Parson dated 6/16/21
- Ameritrade letter dated 6/17/21

6 South Street, Portland, ME 04101 tel. 917.502.2225 email. laurenjreiter@yahoo.com www.reiterarchitecturedesign.com

June 16, 2021

Planning Division
City of Portland Maine
389 Congress Street
Portland, Maine 04101

Kent Parson
President, Kestrel LLC
118 Rowley Dr.
Stonington, CT 06378

Dear Planning Division,

Kestrel LLC is a small company located in Stonington, CT. Kestrel LLC specializes in coastal rental properties. The company currently has rental units in Stonington, CT and South Kingstown, RI. This writer is president and sole member of Kestrel. The company purchased property at 30-32 Atlantic Street, Portland, ME, on October 1, 2020. It is my intention to build a residential apartment building at 30-32 Atlantic Street, Portland, ME.

Kestrel LLC has been working closely with Cornerstone Building & Restoration and Reiter Architecture & Design to develop a building where one once stood. It is my sincere hope that we can design and construct a building that is not only is in-keeping with the historic homes of Munjoy Hill, but one that actually enhances the neighborhood and offers additional rental units for Portland's growing population needs.

Kestrel LLC intends to finance this project with current liquid assets. Attached is a letter from my brokerage, TD Ameritrade, that can attest to my ability to fund a project from start through completion.

I thank the Planning Division for their consideration in this matter.

Sincerely,

Kent Parson

Kent Parson
President
Kestrel LLC
118 Rowley Dr.
Stonington, CT 06378

06/17/2021

Kent Parson
118 Rowley Dr
Stonington, CT 06378

Re: Your Equity Balance as of June 17, 2021

Dear Kent Parson,

Thank you for your request. As of the start of business on June 17, 2021, the equity in your TD Ameritrade accounts ending in 8026 and 9047 was $3,301,197.72 . The equity represents the market value of securities less any debit balance or plus any credit balance. Unpriced securities are not included in the account's equity.

If we can be of any further assistance, please let us know. Just reply to this message to write us. You can also call Private Client Services at 800-400-4078. We're available 24 hours a day, seven days a week.

Sincerely,



William Pieper
Resource Specialist
TD Ameritrade

This information is furnished as part of a general information service and TD Ameritrade shall not be liable for any damages arising out of any inaccuracy in the information. Because this information may differ from your TD Ameritrade monthly statement, you should rely only on the TD Ameritrade monthly statement as the official record of your TD Ameritrade account.

Market volatility, volume, and system availability may delay account access and trade executions.

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SECTION I. TECHNICAL CAPABILITY

The project team for 30-32 Atlantic Street is composed of four seasoned firms, with a breadth of project experience that extends well beyond the scale of this project. The team members are:

Architect: Lauren J. Reiter

Lauren J. Reiter, RA, LEED AP has had more than thirty years' experience in the practice of architecture. Her first 24 years in the profession were with Croxton Collaborative Architects PC in New York City, one of the pioneering 'green architecture' firms in America. During this time, she was also an adjunct professor at New York University, as well as a lecturer at multiple universities.

After moving to Maine in 2006, Ms. Reiter founded her firm – ***Reiter Architecture & Design*** – whose work includes multiple project types, from residences to restaurants to science labs. Some key projects though her career include:

- Forensics Science Center, City of Philadelphia
- Post 9/11 Programming for the redevelopment of the World Trade Center
- Headquarters buildings for multiple environmental groups: National Audubon Society (NYC), Natural Resources Defense Council (NYC), Environmental Defense Fund (NYC), Save the Bay (Providence, RI)
- Brooklin Town Offices (Brooklin, ME)
- Multiple residential projects (new and renovations) in the Blue Hill, ME area and in Portland, ME

Civil Engineer: Acorn Engineering

Acorn Engineering, Inc. was founded in 1988 and is led by Will H. Savage, P.E. The project manager for the project is Sam Lebel, P.E. Acorn has successfully permitted, engineered, and constructed a plethora of projects in Portland over the past several years. Some recent examples include:

- Eldredge Lumber
- Munjoy Heights
- 89 Anderson St. – East Bayside Lofts
- 121 Washington Ave
- 667 Congress St – the Hiawatha
- Cumberland Flats
- East End Lofts

Structural Engineer: Trillium Engineering Group

Trillium Engineering Group is led by Principals Eric Dube, P.E. & Tony Dumais, P.E. Eric and Tony have successfully designed building structures for several projects in southern Maine over the past several years. Some recent examples include:

- Patriot Insurance Company – Yarmouth, Maine
- Linda Beans – Freeport, Maine
- Lisbon High School Gymnasium – Lisbon, Maine
- Berlin City Lexus Addition – Portland, Maine

MEP Engineer: Bennett Engineering

Bennett Engineering, Inc. was founded in 1982 and is led by William S Bennett, P.E. Bennett Engineering has successfully permitted, engineered, and constructed many projects in Portland over the past several years. Some recent examples include:

- 387 Commercial Street
- Verdante Condominiums
- Deering Place
- 58 Boyd Street
- 16 Middle St

J. Conformity with Land Use Ordinance

The following outline is made in accordance with the City of Portland Code of Ordinances, Chapter 14 Land Use Code as well as with the City of Portland Technical Manual, and Chapter 14 Standards for Local Site Location of Development Review.

OVERVIEW

The proposed 3-story, four-unit residential building has been designed to conform to City standards where possible. This project conforms with the majority of the applicable standards of Portland's Land Use Ordinance Section 14, as demonstrated in the following narrative.

A. Transportation Standards

1. Impact on Surrounding Street Systems:

   a. The proposed development is not anticipated to create or aggravate any significant hazard to safety on the surrounding street network.

   b. The site is located along Atlantic Street and classified as a local street according to the City of Portland Federal Street Classification map. A minor traffic increase is expected for this project due to the change in use from the existing vacant lot to a residential building.

2. Access and Circulation:

   a. In General

      (i) The development will provide safe access and internal circulation for both pedestrians and vehicles as seen on the Site Plan.

      (ii) A continuous sidewalk is proposed to be rebuilt along the northeastern edge of Atlantic Street within the limits of impact to provide safe access to the proposed residential building entrance.

      (iii) The access and egress points are located to avoid conflicts with turning movements and traffic flows.

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

   b. Loading and Servicing:

      (i) There are no anticipated loading and servicing needs.

   c. Curb and Sidewalks:

      (i) The existing sidewalk and curb will be rebuilt with brick and vertical granite

curb in accordance with the street design standards of the City's technical manual and Chapter 25 of the City of Portland Code of Ordinances.

(ii) The existing brick sidewalk and granite curb connecting the property to Atlantic Street is to be replaced. The rebuilt sidewalk and curb conforms with Chapter 25 of the City's Code of Ordinances and the applicable design standards in the City's Technical Manual. The proposed driveway access is 10.08' wide, conforming with Portland's curb cut and driveways entrance which permits an entrance/ cut from 10' to 13' on the Eastern Promenade along Atlantic Street.

(iii) Waiver regarding sidewalk installation requirements is not applicable.

(iv) Waiver regarding curb installation requirements is not applicable.

3. Public Transit Access:

a. There is an existing Metro Bus stop located at 27 Atlantic Street. The residential development will not exceed 20 or more units therefore a transit shelter is not necessary.

b. Not applicable.

c. Not applicable.

4. Parking:

Onsite and off-street parking is designed in accordance with Section 1: Transportation systems and street design standards of the City of Portland's Technical manual as well as in accordance with Article 19 of the City Land use code.

a. Vehicular parking:

(i) The proposed project will provide 3 parking spaces in conformance with the requirements of the proposed uses within the new building. Table 19-B from The Land Use code states that there is no required off-street parking required for the first three dwelling units. For alterations containing three or more dwelling units in the R-6 zone, no parking shall be required for the creation of one additional dwelling unit.

(ii) A parking study is not required for this project.

(iii) The parking requirement for this site is one parking space. The project proposes three spaces for the four units. We find that providing a closer to 1:1 ratio where possible between units and parking spaces helps meet the residents needs.

(iv) The parking space and aisle dimensions are in conformance with the

Technical Standards. Please refer to the Site Plan for more information.

b. Bicycle parking

(i) The proposed development will provide 2 bicycle parking spaces in accordance with Article 19 of the City land use Code and Section 1 of the Technical Manual, which states 2 spaces shall be provided per every five dwelling units.

(ii) Wavier not applicable; appropriate bicycle parking units are provided.

c. Snow Storage:

(i) The proposed project includes a snow storage area can be seen on the Site Plan. A note has been added to the plans as well that states owner shall be responsible for the snow removal.

(ii) The proposed snow storage location is designed not to encroach or impede the design requirements for parking, pedestrian walkways and not affect the stormwater management systems.

d. Electric Vehicle (EV) charging
(i) Not applicable for site. Section 1 of the Technical Manual states electric vehicle infrastructure only necessary when 5 or more parking spaces are installed.

5. Transportation Demand Management (TDM):

a. A Transportation Demand Management plan is not required.

B. Environmental Quality Standards

1. Preservation of Significant Natural Features:

a. The proposed development does not impede on any significant natural features. The proposed location is not within a habitat where endangered species nest or feed, identified by Maine's endangered wildlife habitat source. The location does not house any existing trees or plants as identified on the Official List of Endangered and Threatened plants in Maine. The location does not include any significant water bodies, wetlands, or aquifers and is in accordance with the City Code.

b. The proposed site is not a part of a larger existing habitat block; therefore, extra preservation precautions are not necessary.

c. The proposed site does not impede on any significant natural features; therefore, extra preservation precautions are not necessary, granting this waiver not applicable.

2. Landscaping Preservation:

   a. The disturbance of trees and vegetation will be limited and replaced where possible.

   b. Measures to protect vegetation will be taken in accordance with Section 4 of the Technical Manual.

   c. The project anticipates preserving a minimum of 30% existing trees 10" or greater within the required setback.

   d. A waiver is not requested.

   e. Not applicable.

3. Site landscaping and buffers.

   a. Landscaping
      (i) All development with existing vegetation are required to include a minimum of one shade tree or six plantings per 30 linear feet of all frontages as measured along the property line, in accordance with Section 4 of the Technical Manual.

   b. Buffers

      (i) All exterior solid waste receptacle, as well as applicable utility structures, will be adequately screened within the development and from adjacent properties.

      (ii) Section is not applicable due to the proposed site solely being located in residential zone 6.

      (iii) The proposed residential development is to preserve/include evergreen vegetated buffers where necessary to buffer the development from detrimental impacts of existing surrounding development.

   c. Parking and vehicle display lot landscaping.

      (i) The current site proposes 3 covered parking spaces.

      (ii) There is no proposed area with greater than 40 parking spaces without interrupted pavement, therefor landscaped islands are not necessary.

      (iii) The parking lot landscaping requirements conform with the City Land Use Code; therefore, a contribution to the City of Portland Tree Fund is not necessary.

4. Street trees

   a. The development includes one replacement street tree along the R.O.W. between the property and Atlantic Street and is in accordance with Section 4 of the Technical Manual and is to be coordinated with the Portland City Arborist.

   b. Waiver demonstrating planting of street trees is not plausible, is not applicable for this development due to compliance with the City Land use Code and the Technical Manual.

5. Water Quality, Stormwater Management, and Erosion Control:

   a. Stormwater

      (i) The site drainage will not be directed to flow or pond onto adjacent lots. The proposed drainage patterns will be altered to intercept the roof runoff as well as the driveway runoff, with the addition of stormwater best management practices to attenuate the flows. Using the proposed stormwater rain garden and adequate drainage shall not impede or be directed to adjacent lots.

      (ii) The development implements a design to direct stormwater off of the property into an existing combined sewer system on Atlantic Street. This design will mitigate runoff to adjacent properties.

      (iii) The development connects the proposed drainage systems to the existing combined sewer system on Atlantic Street. The proposed developments increased stormwater volume and drainage rate is not anticipated to create downstream problems or to exceed the capacity of the stormwater system. An ability to serve letter will be sent to Portland Department of Public Works

   b. A site-specific Stormwater Management Plan has been developed for the project to show compliance with Section 5 of the Technical Manual, including the basic, general, and flooding standards of MEDEP Chapter 500. These regulations address the quantity and quality of the stormwater runoff in order to protect and improve water quality and meet Clean Water Act requirements. Please refer to the Stormwater Management Report for this information.

   c. The development is not anticipated to pose a contamination risk to groundwater during or after construction. The project will be serviced by a public wastewater 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 site does not connect to any off-premise public infrastructure, therefor section not applicable.

2. Public Safety and Fire Prevention:

a. Public Safety Design
(i) The site has been designed to promote safe and inviting public access to reduce the potential for crime.

(ii) The development provides adequate emergency vehicle access in compliance with the Public Safety Standards of the Technical Manual.

3. Public Utilities:

a. Public utilities in the vicinity of the site have capacity to serve the project. Ability to Serve letters have been sent to the respective companies. Responses have been included in the submission and any remaining responses will be submitted upon receipt.

b. The electrical service will be wired underground.

c. The new sewer and stormwater infrastructure will meet the provisions of the Technical Manual.

d. The project will be served by a connection to the public sewer system within Atlantic Street.

e. The residential development includes four dwelling units; therefore, temporary storage of trash and recyclables is not necessary.

(d) Site Design Standards

1. Massing, Ventilation, and Wind Impact:

a. The location and height of the structure will not result in health or safety problems from a reduction or ventilation to abutting structures.

b. The development is not to negatively affect or diminish the value or access of utilities for surrounding properties.

c. All HVAC venting mechanisms are to direct exhaust away from adjacent residential properties and public spaces.

d. Please refer to Section O, Architectural Design Narrative.

e. Please refer to Section O, Architectural Design Narrative.

f. Please refer to Section O, Architectural Design Narrative.

2. Shadows:

a. The shadows created by the building will not impact public open spaces.

3. Snow and Ice Loading:

a. The structure will not distribute snow and ice onto adjacent properties.

4. View Corridors:

a. The project site is located outside the Downtown Vision View Corridor Protection Plan area.

5. Historic Resources:

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

b. The development is not located adjacent to designated landmarks, historic districts, or historic landscape districts.

c. There are no known archaeological resources on the site.

6. Exterior Lighting:

a. Site Lighting.

(i) Exterior lighting will be designed to meet the requirements of Section 12 of the Technical Manual. A photometric plan will be uploaded as part of the Final Application.

(ii) Any lighting that may adversely influence the abutting residential properties will feature house-side shielding.

b. Architectural and Specialty Lighting.

(i) No architectural or specialty lighting is proposed.

(ii) No up-lighting is proposed.

c. Street Lighting.

(i) No new streetlights are proposed.

7. Noise and Vibration:

   a. The HVAC system will meet the applicable state and federal emissions requirements and will also be screened and directed away from abutters.

8. Signage and Wayfinding:

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

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

      (ii) Not applicable

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

9. Design Standards:

   a. The project has been designed to meet the standards set forth in the R-6 zone. Please refer to the Site Plan for more information on the Space & Bulk Standards.

ACORN ENGINEERING, INC.

K. STORMWATER MANAGEMENT REPORT

Prepared For:

Kestrel LLC.
30 Atlantic Street
Portland, Maine 04101

Prepared By:

Acorn Engineering, Inc.-
65 Hanover Street
Portland, Maine 04101



June 2021
Rev. December 2021

INTRODUCTION

Acorn Engineering, Inc. has been retained by Kestrel LLC., to provide civil engineering services for the proposed development at 30 Atlantic Street, Portland, Maine. The property consists of approximately .12 acres of land located in the R-6 residential zoning district.

A stormwater analysis was prepared to demonstrate that the project will meet the requirements set forth by Maine DEP Chapter 500 Basic and General Standards and the following requirements from the City of Portland (the City):

- City of Portland Land Use Ordinance Article 14.6.2.D.
- City of Portland Technical Manual – Section 5 – Portland Stormwater Management Standards and Maine DEP Chapter 500 Stormwater Management.

EXISTING CONDITIONS

The site is located on Atlantic Street. A boundary and Topographic Survey plan has been prepared by Owen Haskell, Inc. The property is in the R-6 Residential Zone and all abutting uses are residential.

The existing lot use is vacant, with grades ranging from 5 to 20 percent across the site, draining toward the eastern corner of the lot.

PROPOSED DEVELOPMENT

The proposed development includes the construction of a three-story four-unit structure. There will be three covered parking spaces and interior bike storage accessed by a proposed curb cut within Atlantic Street.

Through a series of roof drains, gutters, and a downspout, the entirety of the roof is proposed to be routed to a proprietary high-flow media rain garden at the northerly corner of the site. The design is based off a Focal Point system manufactured by ACF Environmental. The footprint of the filter media is 20 square feet and has an infiltration rate of 100 inches per hour. Below the media, 40 maintenance modules will sit above crushed stone to provide storage of the filtered water before being collected by the underdrain and piped to the street. Above the media, the garden will allow for 6 inches of ponding before overflowing into an overflow beehive grate which bypasses the filter media. The runoff generated by the driveway will be routed to a catch basin and storm drain lateral directed to the sewer main. The development will be served by the Portland Water District, underground power/cable/communications, natural gas and the municipal sewer system. The project anticipates incorporating Maine DEP approved stormwater Best Management Practices (BMP) to meet the General and Flooding Standards.

GENERAL STANDARDS – WATER QUALITY

The development shall provide water quality treatment for no less than 95% of the new impervious area and 80% of the developed area. The project includes the redevelopment of

existing impervious area including gravel driveways and a brick walkway. Water quality treatment shall be provided through the use of a proprietary high-flow filter media rain garden. The proposed system is a Focal Point rain garden with maintenance modules. This system is manufactured by ACF Environmental. There is flexibility within the plans for an approved equal to be used granted it provides the same water quality and quantity benefits.

The system was sized to meet or exceed the requirements set forth within the MDEP Volume III: BMPs Technical Design Manual Section 7. Filtration BMPs have been shown to be very effective at removing a wide range of pollutants from stormwater runoff. Stormwater runoff from the entire roof will be collected by roof drains and gutters before being piped to the rain garden. A downspout will outlet onto a splash stone before entering the BMP.

The treatment of the impervious surface is as follows:

Table 1 - Impervious Treatment Area Table

Existing Impervious Area (SF)	Proposed Total Impervious Area (SF)	Net Change in Impervious Area (SF)	Proposed Impervious Area with Treatment (SF)	% Overall New Impervious Area Treated
1,097	4,169	3,072	3,082	100.3%

As shown above, the project anticipates meeting and exceeding the required treatment for new impervious surfaces and developed area.

Table 2 - Developed Treatment Area Table

Existing Developed Area (SF)	Proposed Total Developed Area (SF)	Net Change in Developed Area (SF)	Proposed Developed Area with Treatment (SF)	% Overall New Developed Area Treated
1,614	5,153	3,539	3,082	87.1%

Furthermore, the minimum 80% treatment of new developed area is exceeded as ample stormwater treatment is being provided while the proposed development footprint is negligibly larger than the existing development footprint.

Regarding the water quality volume, this requirement is met by sizing the system to store 1 inch of runoff from the impervious tributary area and 0.4 inches of runoff from the landscaped tributary area.

Table 3 – Water Quality Volume			
Tributary Impervious Area (SF)	Tributary Pervious Area (SF)	Water Quality Volume Required (CF)	System Storage Volume Provided (CF)
3,082	509	273.80	283.73

Furthermore, the system is able to pass a 0.95" rainfall without overflowing into the beehive bypass drain as required by Chapter 7 Appendix B.

FLOODING STANDARD – WATER QUANTITY

The proposed project was modeled using HydroCAD to verify that the post-development conditions do not exceed the pre-development conditions. A 24-hour SCS Type III storm distribution for the 2, 10, and 25-year storm events were used. The corresponding rainfall amounts for these storms are 3.1", 4.60", and 5.80" respectively.

Due to the numerous variables, and inherent inaccuracies with the modeling program used to calculate stormwater runoff it is custom at Acorn Engineering, Inc. to round to the nearest whole number. However due to the small size of the project and the minimal existing flows, the stormwater runoff shall be rounded to the nearest tenth of a cubic feet per second (cfs).

Time of Concentration (T_c)

Time of concentration values were derived by calculating a combined Tc from the flow segments within subcatchment 1 in the pre-condition. Associated with these flow segments is the classification of stormwater flow and the corresponding surface. Refer to the attached HydroCAD calculations for a break-down of the Tc calculations.

Given the urban environment and the short flow paths in the pre subcatchment 2 and post condition, a minimum Tc of 6 minutes was used for the subcatchments.

Curve Number

The stormwater calculations used the following Curve Number (CN) values in the pre- and post- development conditions as follows:

Pre-Development

- Pavement, Concrete, Roofs – CN 98
- 50-75% Grass Cover – Fair, HSG A – CN 49
- Wood/grass comb – Fair, HSG A – CN 43
- >75% Grass Cover – Good, HSG A – CN 39

Post-Development

- Pavement, Concrete, Roofs – CN 98
- >75% Grass Cover – Good, HSG A – CN 39

Pre-development Calculations

The pre-development model was broken into two separate subcatchments.

- Subcatchment 1 – This tributary includes most of the site located on the northern section of the property. This area includes the existing gravel driveway entrance on Atlantic Street. This subcatchment drains toward Atlantic Street.
- Subcatchment 2 – This tributary includes the southern section of the site. Areas includes the brick walkway and drains to the rear of the site.

A pre-development watershed map developed for this project can be viewed in Attachment A and a copy of the HydroCAD calculations is included within Attachment C, of this report.

Peak flow rates for the storm events are as follows:

Table 4 – Pre-Development Peak Stormwater Flows			
Drainage Area	**2 – Year Storm Event (cfs)**	**10 – Year Storm Event (cfs)**	**25 – Year Storm Event (cfs)**
Total Runoff	0.05	0.12	0.22

Post-development Calculations:

The post-development model was broken into two separate subcatchments.

- Subcatchment 1.1 – This tributary includes the entirety of the roof, a portion of the rear bituminous walkway, and a small amount of green space all flowing to the high-flow rain garden. The rain garden would in include a 1.6" orifice on the outlet.
- Subcatchment 1 – This tributary includes driveway with two catch basins, green space flowing to field inlets, and a portion of the rear bituminous walkway.

A post-development Watershed Map developed for this project can be viewed in Attachment B and a copy of the HydroCAD calculations is included within Attachment C, of this report.

The post-development calculations include changes to the land use, and the compensation provided by the stormwater BMP. The following table represents comparison of pre-development and post-development condition peak runoff rates for the proposed development and tributary area.

Table 5 – Comparison of Peak Flows						
Drainage Area	**2 – Year Storm Event (cfs)**		**10 – Year Storm Event (cfs)**		**25 – Year Storm Event (cfs)**	
Total Runoff	**Pre**	**Post**	**Pre**	**Post**	**Pre**	**Post**
	.05	.15	.12	.25	.22	.34

As shown in Table 5 the net impact of the post development peak flows will result in a de minimis increase from the predevelopment levels. The predevelopment flows are low due to most of the site containing pervious area that is conservatively classified as type A soils. It is likely that the soil onsite is urban fill. The Medium Intensity Web Soil Survey shows the existing site containing 100% type A soils can be viewed in Attachment D of this report. A copy of the HydroCAD calculations is included within Attachment C of this report.

SOILS

Onsite soil information includes the following:

- Soil Conservation Service Medium Intensity Soil Survey for Cumberland County

Given the soils information, listed above, no onsite wastewater is proposed; the applicant does not intend to perform a more intense hydric soil boundary delineation because the waiver requirements set forth in the City of Portland Technical Manual – Section 7 – Soil Survey, Rev. 6/17/11 are met.

The area within and surrounding the project includes soil types listed in the table below. The susceptibility of soils to erosion is indicated on a relative "K" scale of values over a range of 0.02 to 0.69. Higher "K" values indicate more erodible soils.

Table 6 - "K" Value

Soils Type	Subsurface	Substratum
Hinkley loamy sand	.17	.17

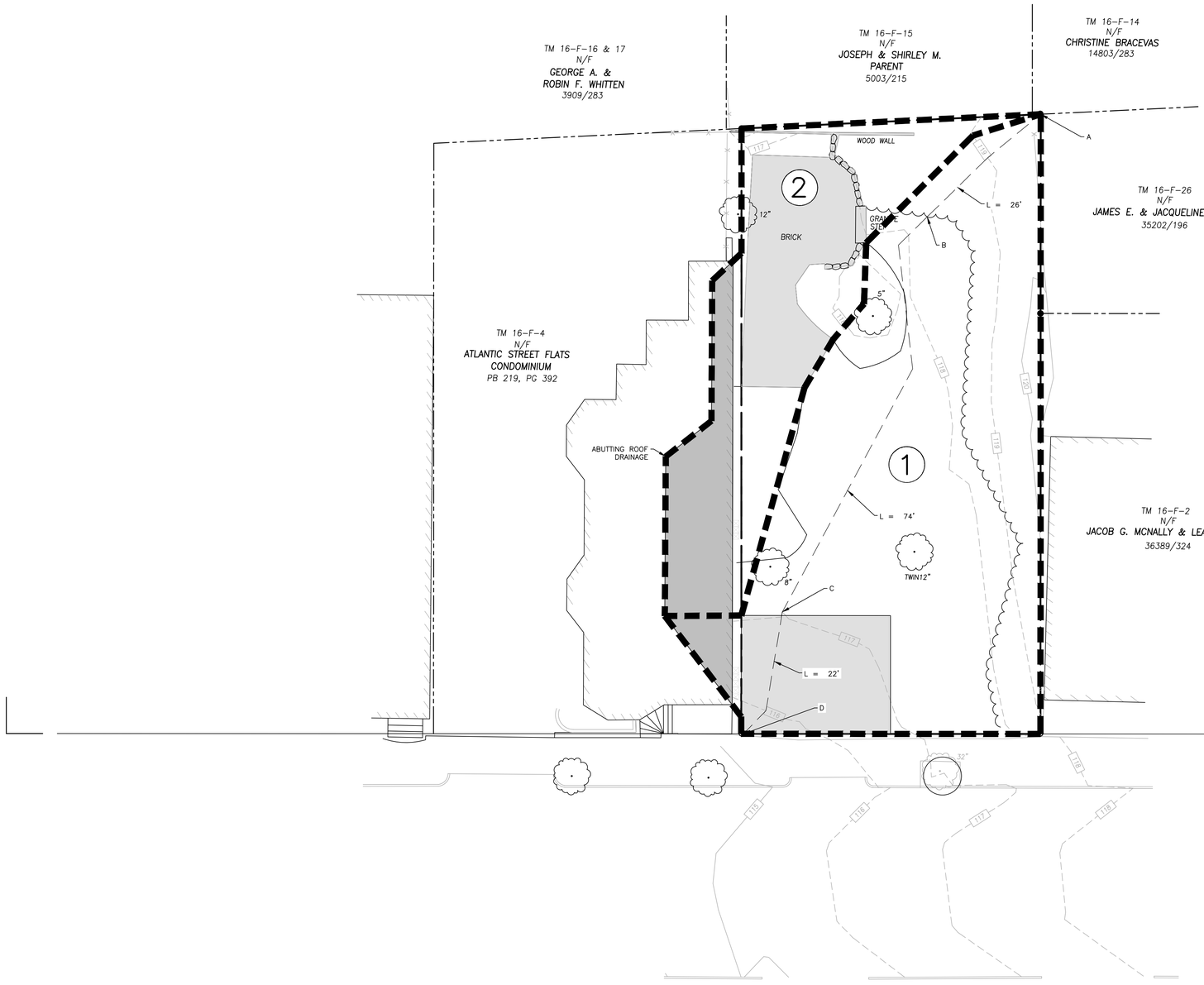
The soil "K" value for the soil, listed above, shows a low to medium susceptibility to erosion. The site's susceptibility to erosion is sourced from the Soil Conservation Service Medium Intensity Soil Survey for Cumberland County. Although the soil "K" value shows a low to medium susceptibility to erosion, implementation of the proposed Erosion & Sedimentation Measures by the contractor will be of the utmost importance given the sustained slope throughout the site.

CONCLUSION

The proposed development was designed to meet the requirements implemented by the MDEP under the Stormwater Management Statute (38 M.R.S.A. § 420-D) as well as the City of Portland Technical Manual – Section 5 – Portland Stormwater Management Standards. The proposed project as designed is not anticipated to cause flooding or erosion problems within the subject site, abutters' sites, nor within the right-of-way. Overall, the project will provide an improvement to stormwater runoff and overall management from several perspective as outlined above.

ATTACHMENTS

Attachment A: Pre-Development Watershed Map
Attachment B: Post-Development Watershed Map
Attachment C: HydroCAD Calculations
Attachment D: Medium Intensity Web Soil Survey



NOTE:

1. REFER TO STORMWATER REPORT AND SHEET C-30 FOR MORE INFORMATION.

P1 — STORMWATER POND

1 — SUBCATCHMENT NUMBER

SUBCATCHMENT EXTENTS

POI #1 — POINT OF INTEREST (POI)

FLOW LINE

10 0 10 20

SCALE: 1" = 10'

PERMIT LEVEL
NOT ISSUED FOR CONSTRUCTION

ISSUED FOR	BY	DATE
SCHEMATIC DESIGN/ISSUE FOR BUDGET ESTIMATE	SJL	1/8/21
MAJOR SITE PLAN	SJL	2/22/23

DRAWING NAME: PRE WATERSHED MAP

PROJECT NAME/ADDRESS: 30-32 ATLANTIC STREET DEVELOPMENT

CLIENT/OWNER OF RECORD: KESTREL LLC.
72 PINE STREET SUITE #16, PORTLAND, MAINE 04102

ACORN ENGINEERING, INC.

THESE PLANS SHALL NOT BE MODIFIED WITHOUT WRITTEN PERMISSION FROM ACORN ENGINEERING, INC. AND ALTERATIONS SHALL BE AT THE USER'S SOLE RISK AND WITHOUT LIABILITY TO ACORN ENGINEERING, INC.

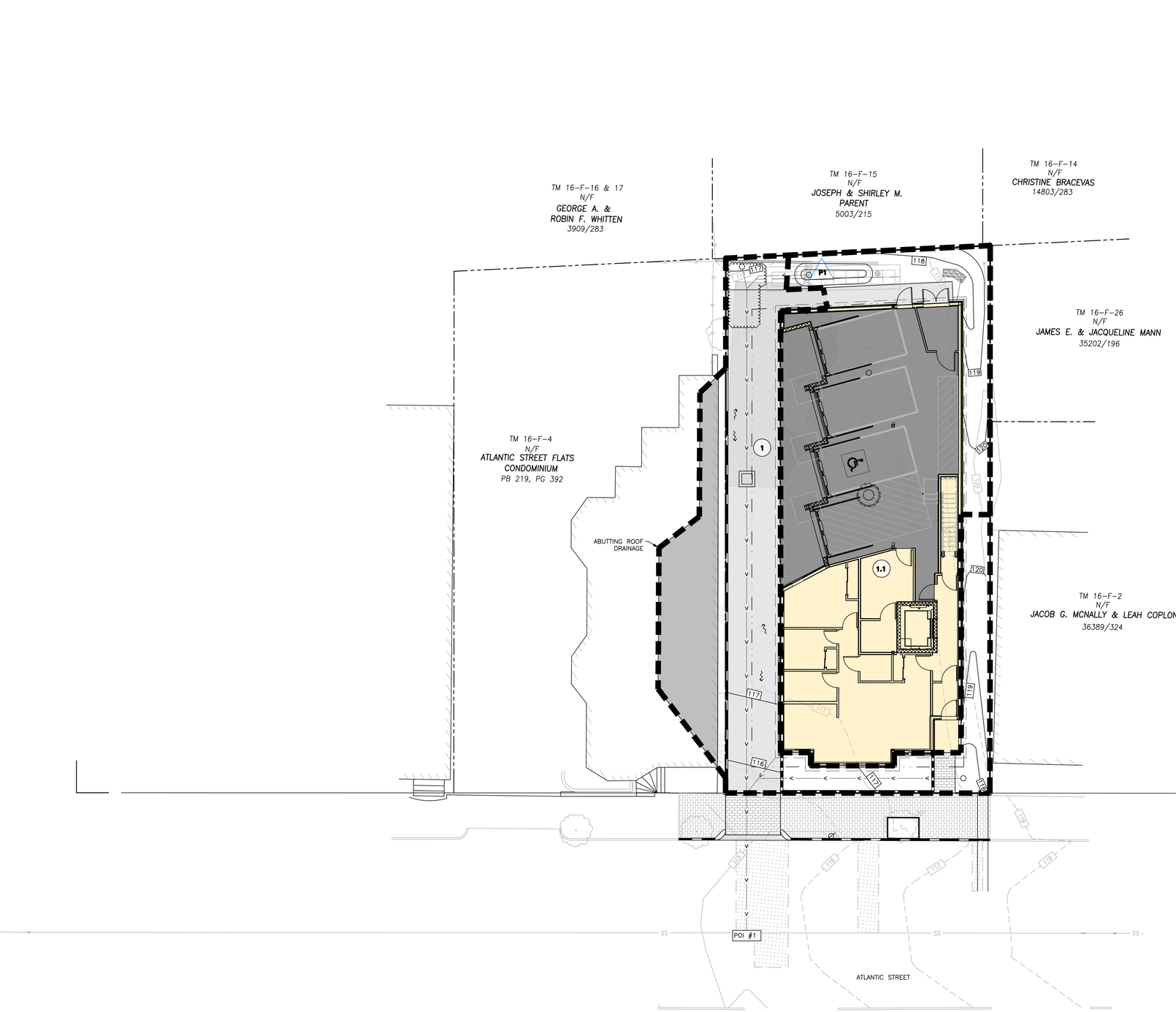
ACORN ENGINEERING, INC.
72 PINE STREET, PORTLAND, MAINE 04101
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(207) 775-2655

FILE:	1109.5_CIVIL
JN:	1109.5
SCALE:	AS NOTED
DESIGNED BY:	SJL
DRAWN BY:	ZMS
CHECKED BY:	SJL/WHS

SAMUEL J. LEBEL No. 16505 — PROFESSIONAL ENGINEER — LICENSED
8/18/21

DRAWING NO.

PRE



NOTE:

1. REFER TO STORMWATER REPORT AND SHEET C-30 FOR MORE INFORMATION.

P1 — STORMWATER POND

1 — SUBCATCHMENT NUMBER

SUBCATCHMENT EXTENTS

POI #1 — POINT OF INTEREST (POI)

FLOW LINE

10 0 10 20

SCALE: 1" = 10'

PERMIT LEVEL
NOT ISSUED FOR
CONSTRUCTION

ISSUED FOR	BY	DATE
SCHEMATIC DESIGN/ISSUE FOR BUDGET ESTIMATE	SJL	3/8/21
MAJOR SITE PLAN	SJL	7/22/21

DRAWING NAME: POST WATERSHED MAP

PROJECT NAME/ADDRESS: 30-32 ATLANTIC STREET DEVELOPMENT

CLIENT/OWNER OF RECORD: KESTREL LLC.
72 PINE STREET SUITE #16, PORTLAND, MAINE 04102

ACORN ENGINEERING, INC.

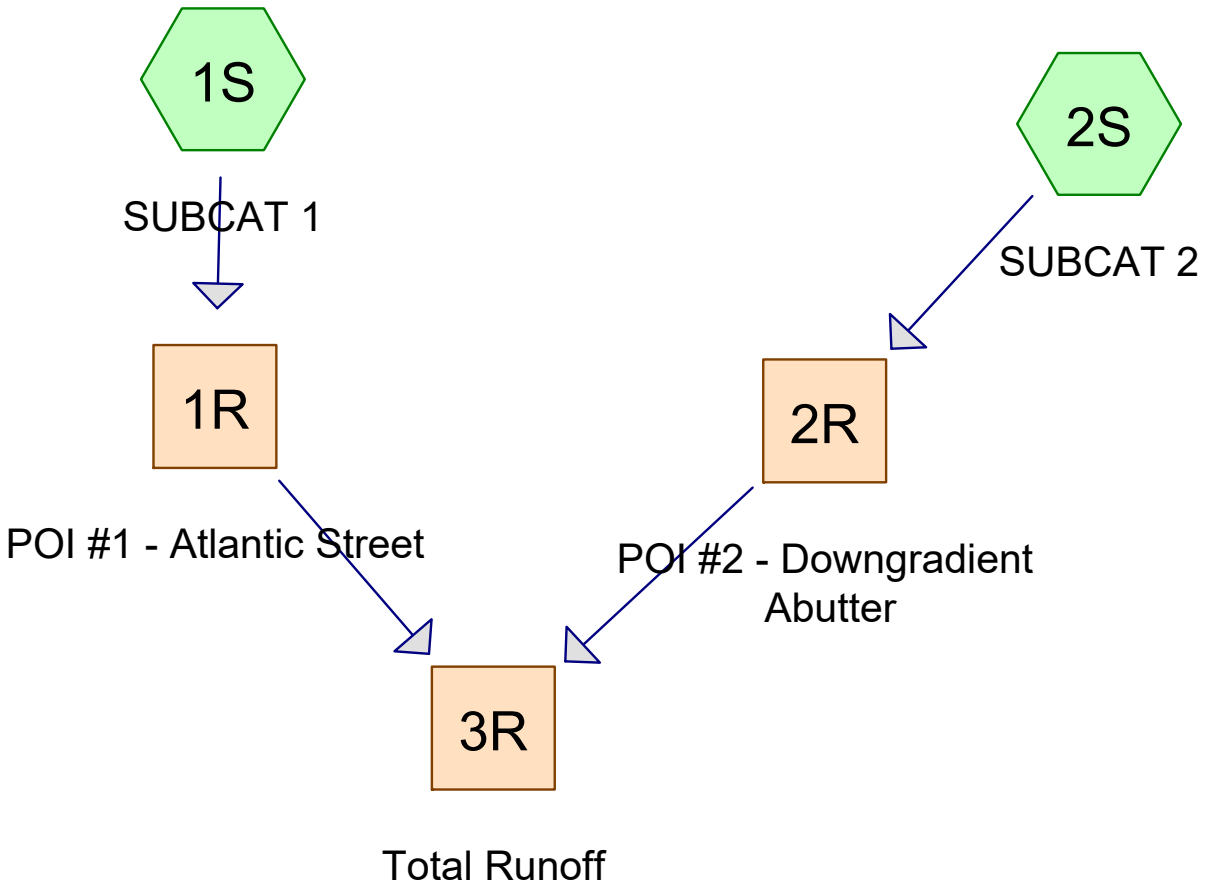
THIS PLAN SHALL NOT BE MODIFIED WITHOUT PERMISSION FROM ACORN ENGINEERING, INC. AND ANY UNAUTHORIZED CHANGES OR OTHERWISE, SHALL BE AT THE USER'S SOLE RISK AND WITHOUT LIABILITY TO ACORN ENGINEERING, INC.

ACORN ENGINEERING, INC.
70 MILK STREET, SUITE 201
PO BOX 3422
PORTLAND, MAINE 04101
(207) 775-2655

FILE: 1109.5_CIVIL
JN: 1109.5
SCALE: AS NOTED
DESIGNED BY: SJL
DRAWN BY: ZMS
CHECKED BY: SJL/WHS

STATE OF MAINE
SAMUEL J. LEBEL
No. 16505
REGISTERED PROFESSIONAL ENGINEER
8/17/21

DRAWING NO.
POST



Subcat Reach Pond Link

Routing Diagram for 6.22.21.PRE 1109
Prepared by HP, Printed 6/22/2021
HydroCAD® 10.00-26 s/n 00620 © 2020 HydroCAD Software Solutions LLC

Area Listing (all nodes)

Area (acres)	CN	Description (subcatchment-numbers)
0.067	49	50-75% Grass cover, Fair, HSG A (1S, 2S)
0.025	98	Unconnected pavement, HSG A (1S, 2S)
0.012	98	Unconnected roofs, (ABUTTER) (1S, 2S)
0.030	43	Woods/grass comb., Fair, HSG A (1S, 2S)
0.135	**61**	**TOTAL AREA**

Soil Listing (all nodes)

Area (acres)	Soil Group	Subcatchment Numbers
0.123	HSG A	1S, 2S
0.000	HSG B	
0.000	HSG C	
0.000	HSG D	
0.012	Other	1S, 2S
0.135		**TOTAL AREA**

Ground Covers (all nodes)

HSG-A (acres)	HSG-B (acres)	HSG-C (acres)	HSG-D (acres)	Other (acres)	Total (acres)	Ground Cover	Subcatchment Numbers
0.067	0.000	0.000	0.000	0.000	0.067	50-75% Grass cover, Fair	1S, 2S
0.025	0.000	0.000	0.000	0.000	0.025	Unconnected pavement	1S, 2S
0.000	0.000	0.000	0.000	0.012	0.012	Unconnected roofs, (ABUTTER)	1S, 2S
0.030	0.000	0.000	0.000	0.000	0.030	Woods/grass comb., Fair	1S, 2S
0.123	**0.000**	**0.000**	**0.000**	**0.012**	**0.135**	**TOTAL AREA**	

Time span=5.00-36.00 hrs, dt=0.04 hrs, 776 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment 1S: SUBCAT 1 Runoff Area=4,064 sf 14.57% Impervious Runoff Depth=0.13"
Flow Length=124' Tc=10.4 min UI Adjusted CN=51 Runoff=0.00 cfs 0.001 af

Subcatchment 2S: SUBCAT 2 Runoff Area=1,811 sf 56.99% Impervious Runoff Depth=1.08"
Tc=6.0 min CN=76 Runoff=0.05 cfs 0.004 af

Reach 1R: POI #1 - Atlantic Street Inflow=0.00 cfs 0.001 af
Outflow=0.00 cfs 0.001 af

Reach 2R: POI #2 - Downgradient Abutter Inflow=0.05 cfs 0.004 af
Outflow=0.05 cfs 0.004 af

Reach 3R: Total Runoff Inflow=0.05 cfs 0.005 af
Outflow=0.05 cfs 0.005 af

Total Runoff Area = 0.135 ac Runoff Volume = 0.005 af Average Runoff Depth = 0.42"
72.36% Pervious = 0.098 ac 27.64% Impervious = 0.037 ac

Summary for Subcatchment 1S: SUBCAT 1

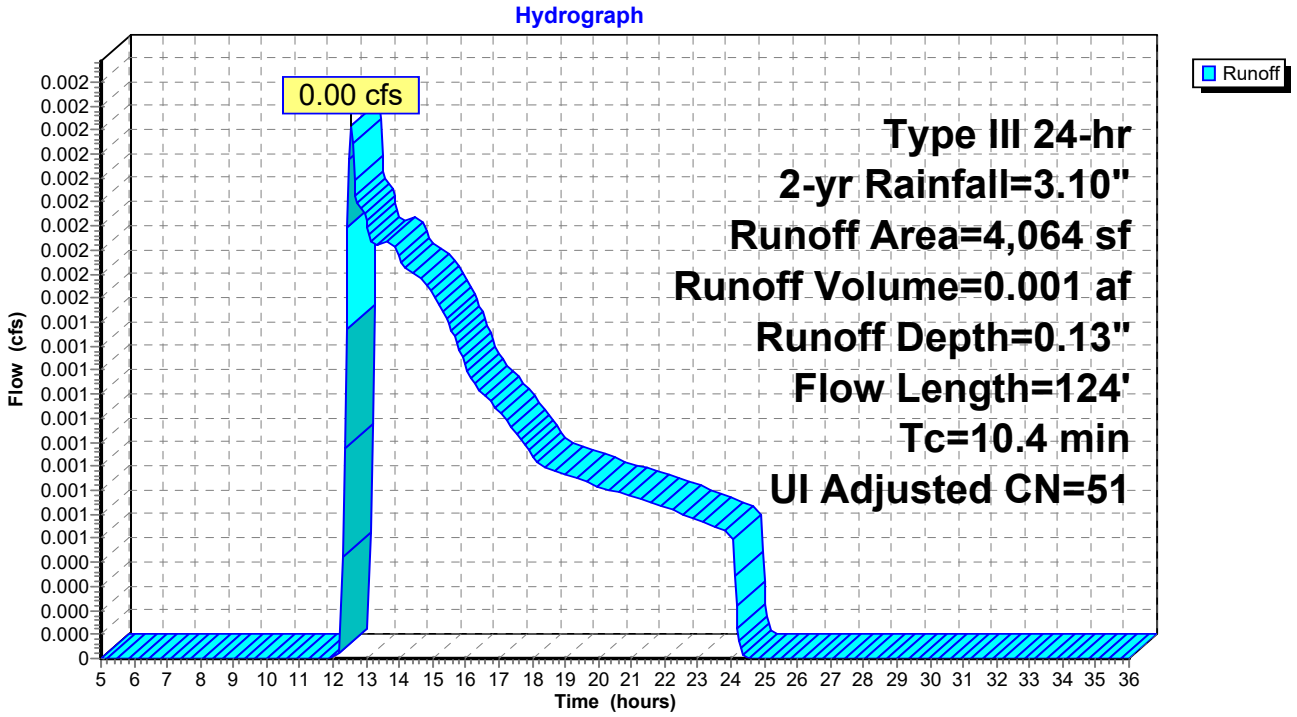
Runoff = 0.00 cfs @ 12.54 hrs, Volume= 0.001 af, Depth= 0.13"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-36.00 hrs, dt= 0.04 hrs
Type III 24-hr 2-yr Rainfall=3.10"

	Area (sf)	CN	Adj	Description
	505	98		Unconnected pavement, HSG A
	1,048	43		Woods/grass comb., Fair, HSG A
	2,400	49		50-75% Grass cover, Fair, HSG A
*	87	98		Unconnected roofs, (ABUTTER)
	24	49		50-75% Grass cover, Fair, HSG A
	4,064	55	51	Weighted Average, UI Adjusted
	3,472			85.43% Pervious Area
	592			14.57% Impervious Area
	592			100.00% Unconnected

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
2.3	26	0.0550	0.19		**Sheet Flow, A-B** Grass: Short n= 0.150 P2= 3.10"
8.0	76	0.0200	0.16		**Sheet Flow, B-C** Grass: Short n= 0.150 P2= 3.10"
0.1	22	0.0680	4.20		**Shallow Concentrated Flow, C-D** Unpaved Kv= 16.1 fps
10.4	124	Total			

Subcatchment 1S: SUBCAT 1



Summary for Subcatchment 2S: SUBCAT 2

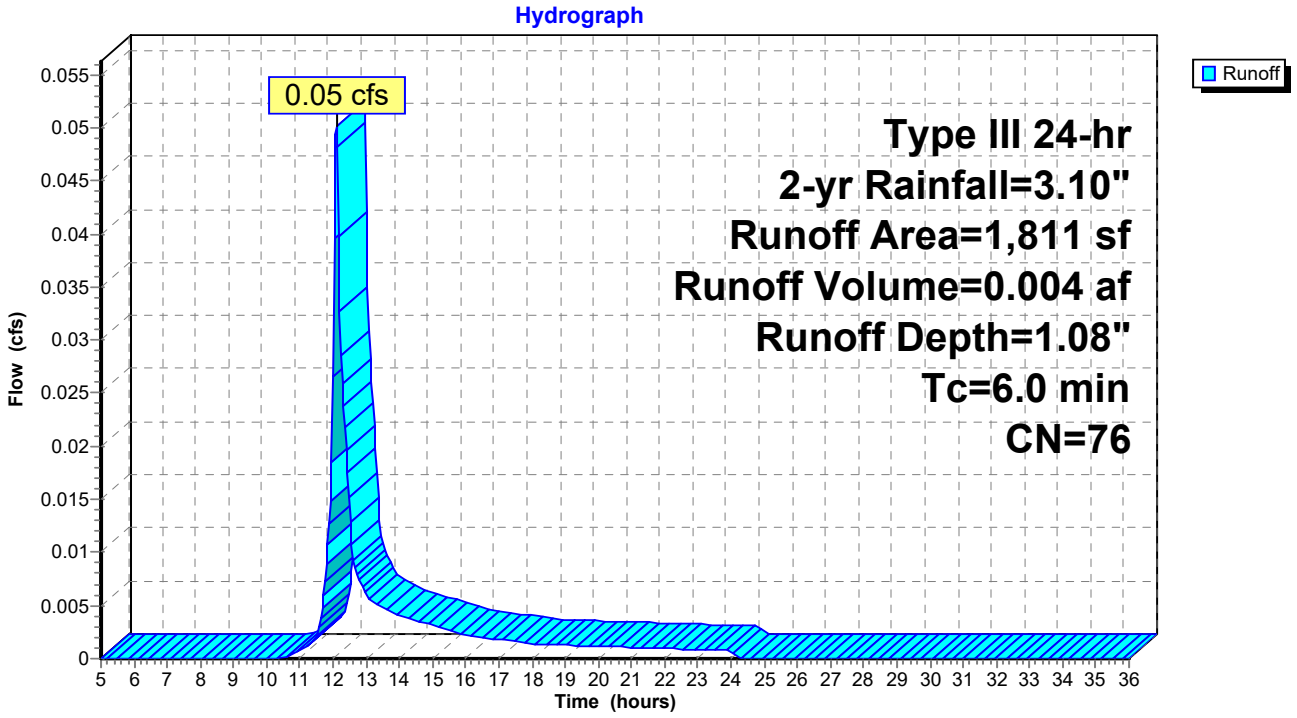
Runoff = 0.05 cfs @ 12.10 hrs, Volume= 0.004 af, Depth= 1.08"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-36.00 hrs, dt= 0.04 hrs
Type III 24-hr 2-yr Rainfall=3.10"

	Area (sf)	CN	Description
	592	98	Unconnected pavement, HSG A
	274	43	Woods/grass comb., Fair, HSG A
	416	49	50-75% Grass cover, Fair, HSG A
*	440	98	Unconnected roofs, (ABUTTER)
	89	49	50-75% Grass cover, Fair, HSG A
	1,811	76	Weighted Average
	779		43.01% Pervious Area
	1,032		56.99% Impervious Area
	1,032		100.00% Unconnected

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					**Direct Entry,**

Subcatchment 2S: SUBCAT 2



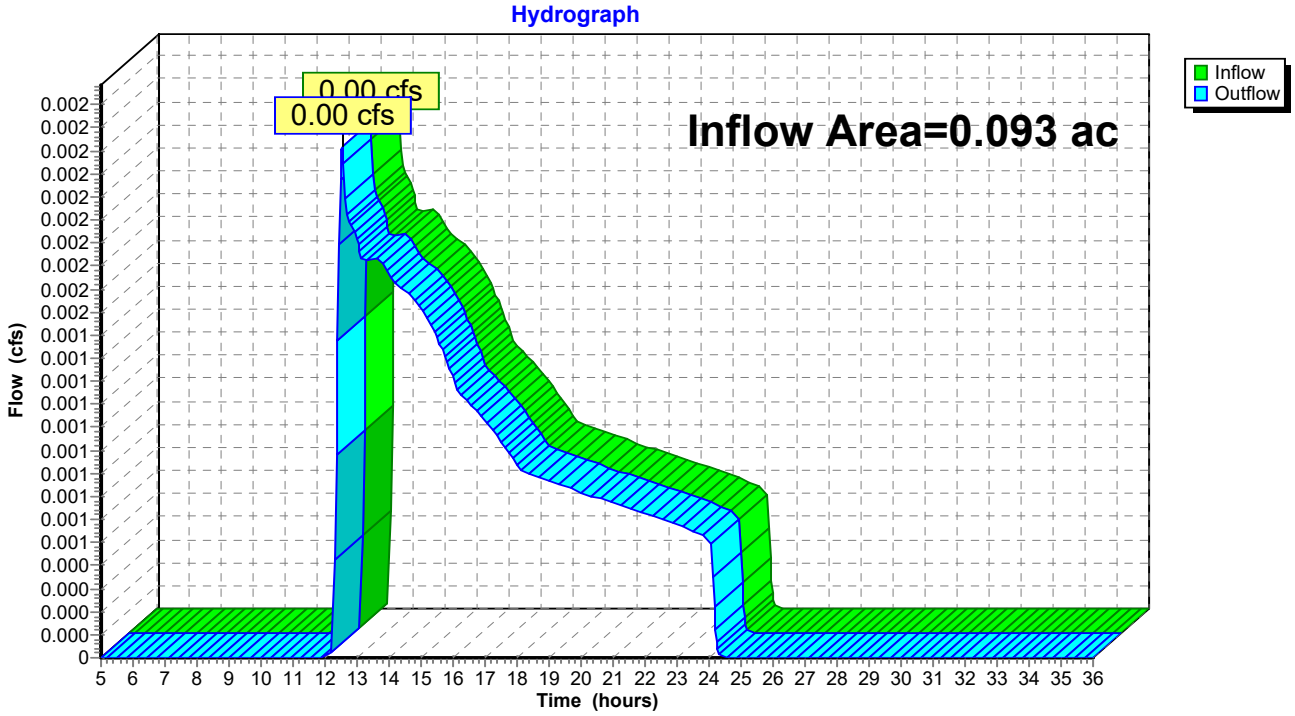
Summary for Reach 1R: POI #1 - Atlantic Street

[40] Hint: Not Described (Outflow=Inflow)

Inflow Area = 0.093 ac, 14.57% Impervious, Inflow Depth = 0.13" for 2-yr event
Inflow = 0.00 cfs @ 12.54 hrs, Volume= 0.001 af
Outflow = 0.00 cfs @ 12.54 hrs, Volume= 0.001 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-36.00 hrs, dt= 0.04 hrs

Reach 1R: POI #1 - Atlantic Street



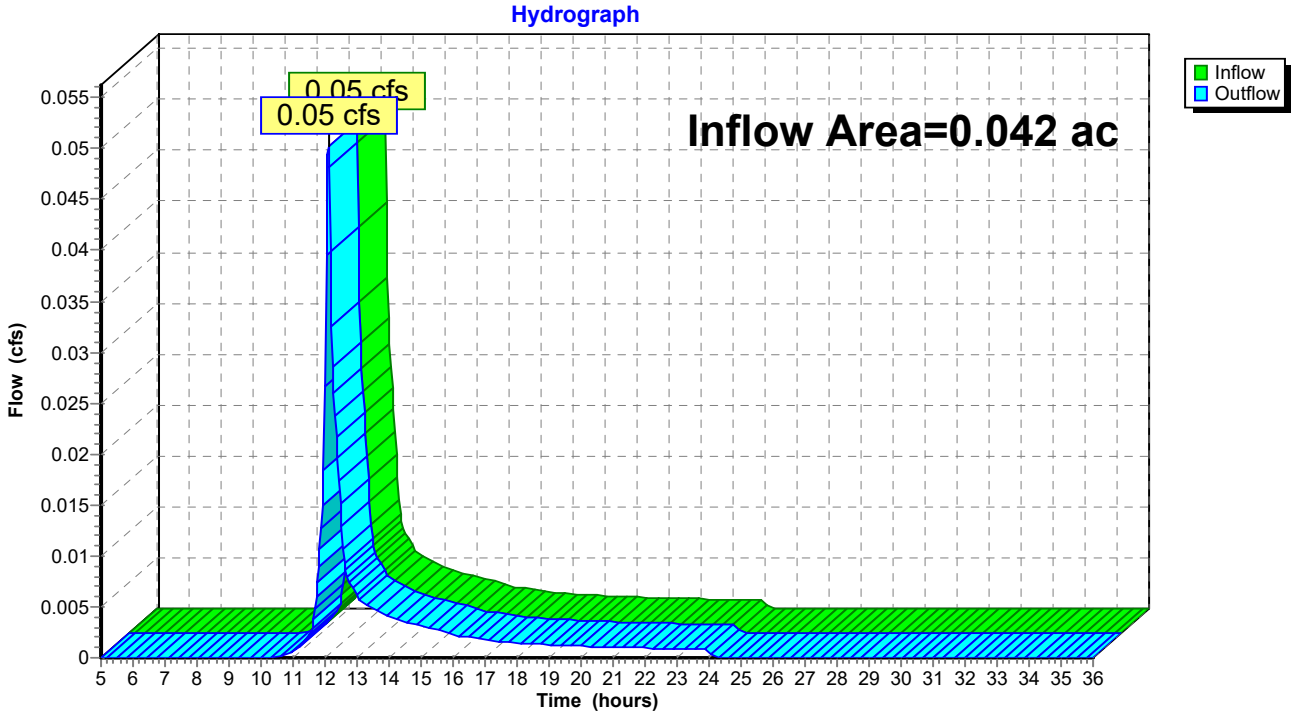
Summary for Reach 2R: POI #2 - Downgradient Abutter

[40] Hint: Not Described (Outflow=Inflow)

Inflow Area = 0.042 ac, 56.99% Impervious, Inflow Depth = 1.08" for 2-yr event
Inflow = 0.05 cfs @ 12.10 hrs, Volume= 0.004 af
Outflow = 0.05 cfs @ 12.10 hrs, Volume= 0.004 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-36.00 hrs, dt= 0.04 hrs

Reach 2R: POI #2 - Downgradient Abutter



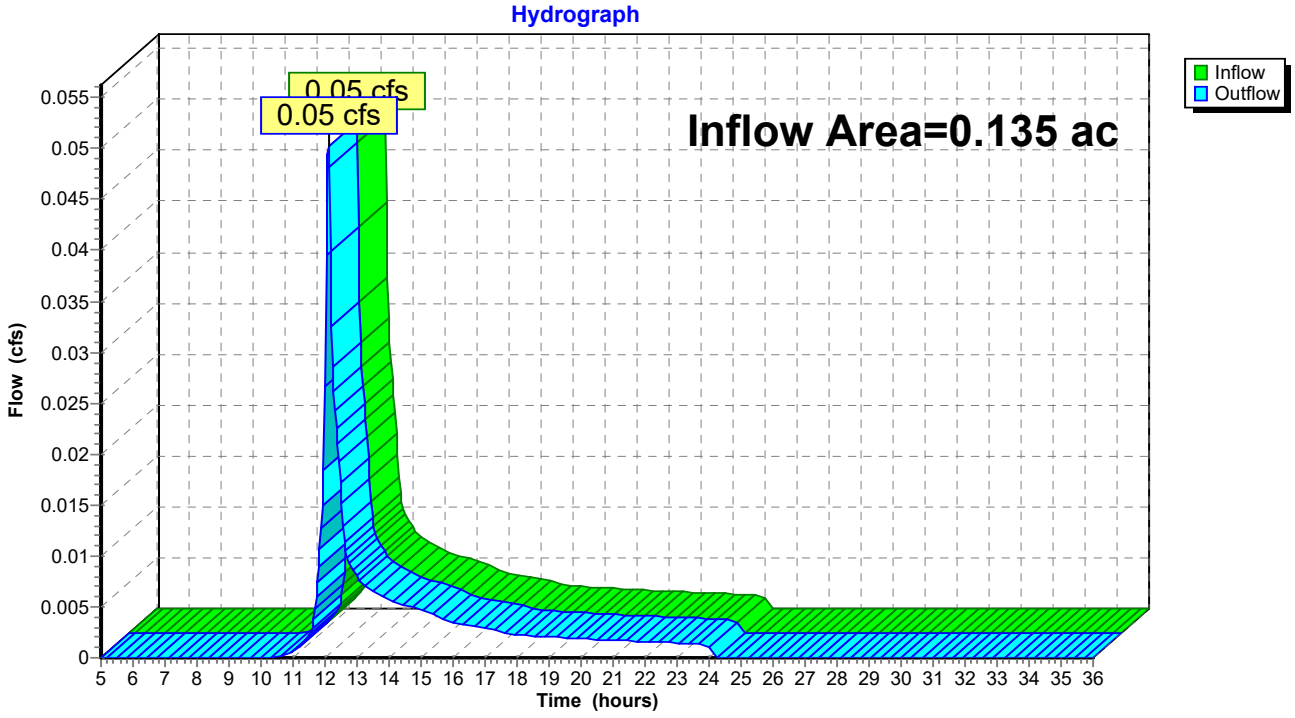
Summary for Reach 3R: Total Runoff

[40] Hint: Not Described (Outflow=Inflow)

Inflow Area = 0.135 ac, 27.64% Impervious, Inflow Depth = 0.42" for 2-yr event
Inflow = 0.05 cfs @ 12.10 hrs, Volume= 0.005 af
Outflow = 0.05 cfs @ 12.10 hrs, Volume= 0.005 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-36.00 hrs, dt= 0.04 hrs

Reach 3R: Total Runoff



Time span=5.00-36.00 hrs, dt=0.04 hrs, 776 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment 1S: SUBCAT 1 Runoff Area=4,064 sf 14.57% Impervious Runoff Depth=0.58"
Flow Length=124' Tc=10.4 min UI Adjusted CN=51 Runoff=0.03 cfs 0.005 af

Subcatchment 2S: SUBCAT 2 Runoff Area=1,811 sf 56.99% Impervious Runoff Depth=2.21"
Tc=6.0 min CN=76 Runoff=0.11 cfs 0.008 af

Reach 1R: POI #1 - Atlantic Street Inflow=0.03 cfs 0.005 af
Outflow=0.03 cfs 0.005 af

Reach 2R: POI #2 - Downgradient Abutter Inflow=0.11 cfs 0.008 af
Outflow=0.11 cfs 0.008 af

Reach 3R: Total Runoff Inflow=0.12 cfs 0.012 af
Outflow=0.12 cfs 0.012 af

Total Runoff Area = 0.135 ac Runoff Volume = 0.012 af Average Runoff Depth = 1.09"
72.36% Pervious = 0.098 ac 27.64% Impervious = 0.037 ac

Summary for Subcatchment 1S: SUBCAT 1

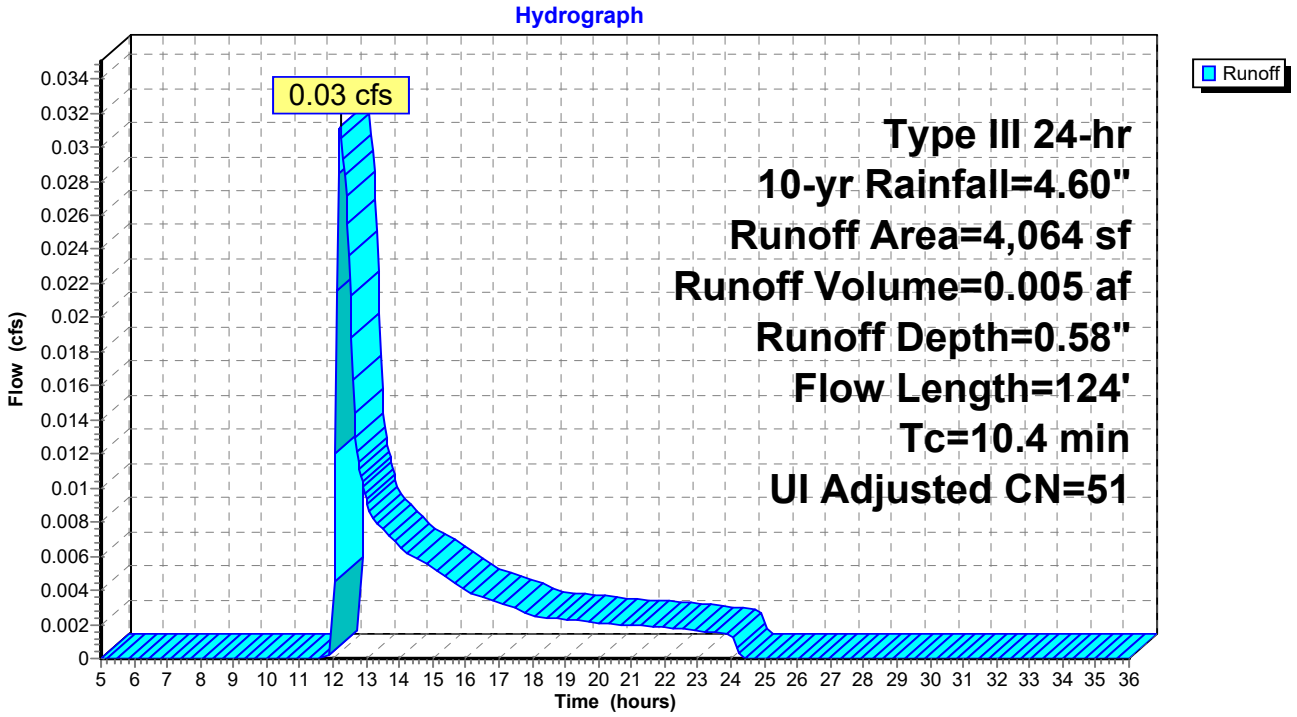
Runoff = 0.03 cfs @ 12.22 hrs, Volume= 0.005 af, Depth= 0.58"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-36.00 hrs, dt= 0.04 hrs
Type III 24-hr 10-yr Rainfall=4.60"

	Area (sf)	CN	Adj	Description
	505	98		Unconnected pavement, HSG A
	1,048	43		Woods/grass comb., Fair, HSG A
	2,400	49		50-75% Grass cover, Fair, HSG A
*	87	98		Unconnected roofs, (ABUTTER)
	24	49		50-75% Grass cover, Fair, HSG A
	4,064	55	51	Weighted Average, UI Adjusted
	3,472			85.43% Pervious Area
	592			14.57% Impervious Area
	592			100.00% Unconnected

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
2.3	26	0.0550	0.19		**Sheet Flow, A-B** Grass: Short n= 0.150 P2= 3.10"
8.0	76	0.0200	0.16		**Sheet Flow, B-C** Grass: Short n= 0.150 P2= 3.10"
0.1	22	0.0680	4.20		**Shallow Concentrated Flow, C-D** Unpaved Kv= 16.1 fps
10.4	124	Total			

Subcatchment 1S: SUBCAT 1



Summary for Subcatchment 2S: SUBCAT 2

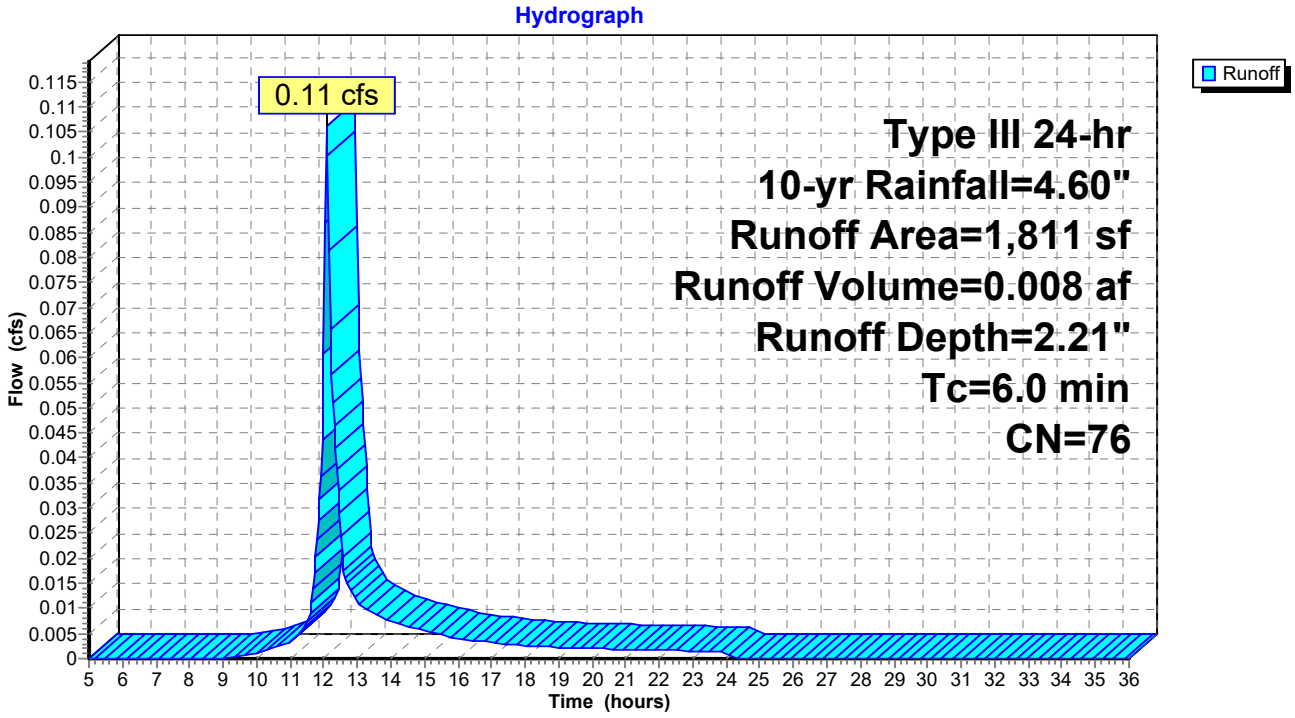
Runoff = 0.11 cfs @ 12.09 hrs, Volume= 0.008 af, Depth= 2.21"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-36.00 hrs, dt= 0.04 hrs
Type III 24-hr 10-yr Rainfall=4.60"

	Area (sf)	CN	Description
	592	98	Unconnected pavement, HSG A
	274	43	Woods/grass comb., Fair, HSG A
	416	49	50-75% Grass cover, Fair, HSG A
*	440	98	Unconnected roofs, (ABUTTER)
	89	49	50-75% Grass cover, Fair, HSG A
	1,811	76	Weighted Average
	779		43.01% Pervious Area
	1,032		56.99% Impervious Area
	1,032		100.00% Unconnected

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					**Direct Entry,**

Subcatchment 2S: SUBCAT 2



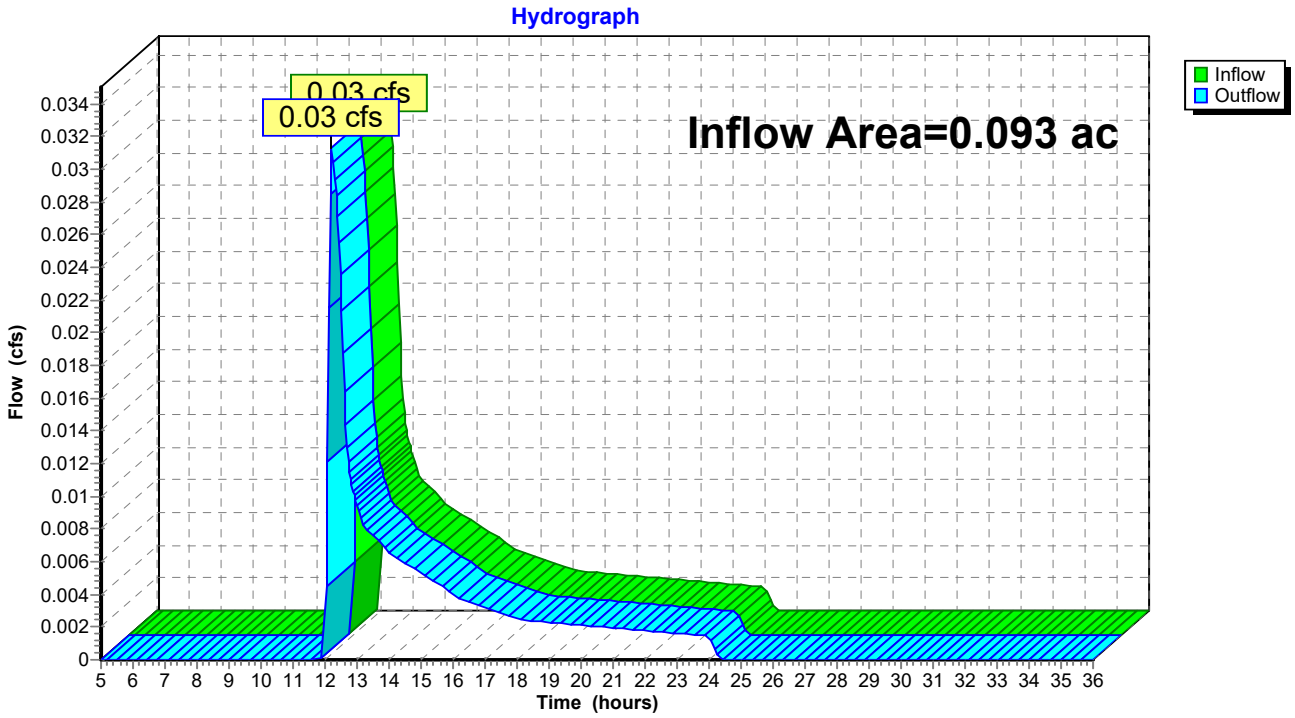
Summary for Reach 1R: POI #1 - Atlantic Street

[40] Hint: Not Described (Outflow=Inflow)

Inflow Area = 0.093 ac, 14.57% Impervious, Inflow Depth = 0.58" for 10-yr event
Inflow = 0.03 cfs @ 12.22 hrs, Volume= 0.005 af
Outflow = 0.03 cfs @ 12.22 hrs, Volume= 0.005 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-36.00 hrs, dt= 0.04 hrs

Reach 1R: POI #1 - Atlantic Street



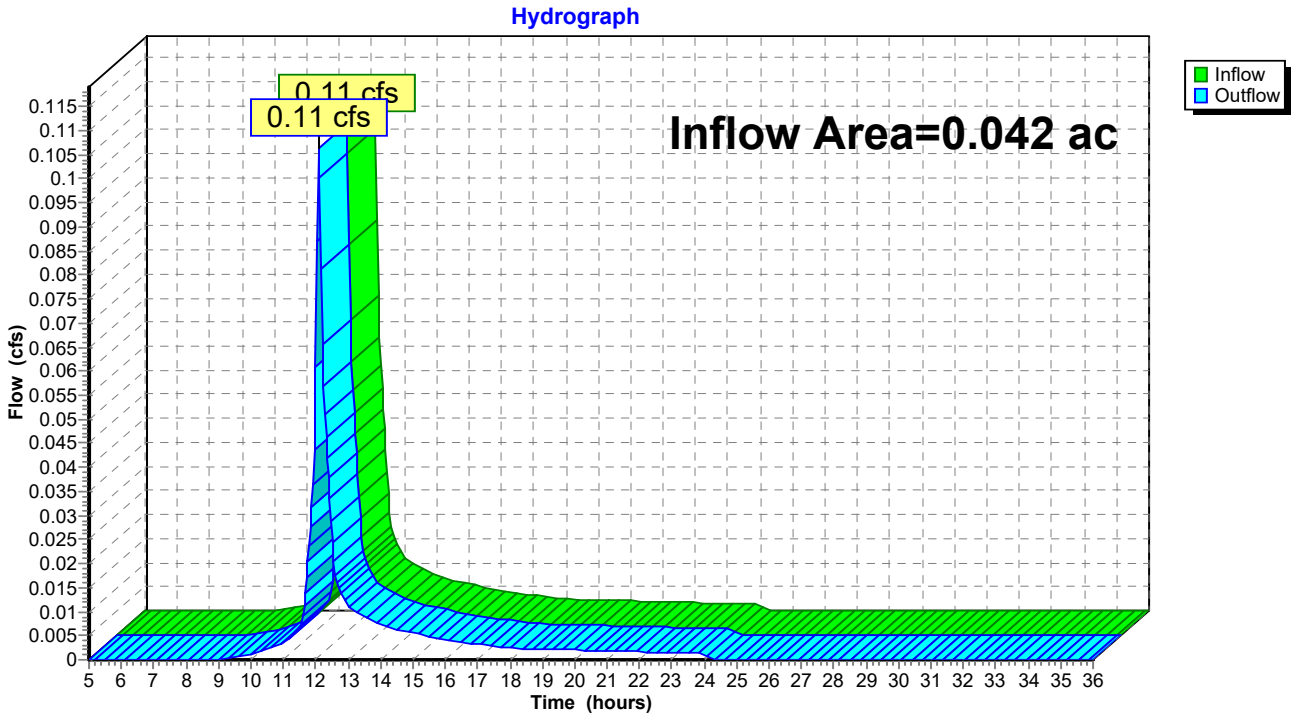
Summary for Reach 2R: POI #2 - Downgradient Abutter

[40] Hint: Not Described (Outflow=Inflow)

Inflow Area = 0.042 ac, 56.99% Impervious, Inflow Depth = 2.21" for 10-yr event
Inflow = 0.11 cfs @ 12.09 hrs, Volume= 0.008 af
Outflow = 0.11 cfs @ 12.09 hrs, Volume= 0.008 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-36.00 hrs, dt= 0.04 hrs

Reach 2R: POI #2 - Downgradient Abutter



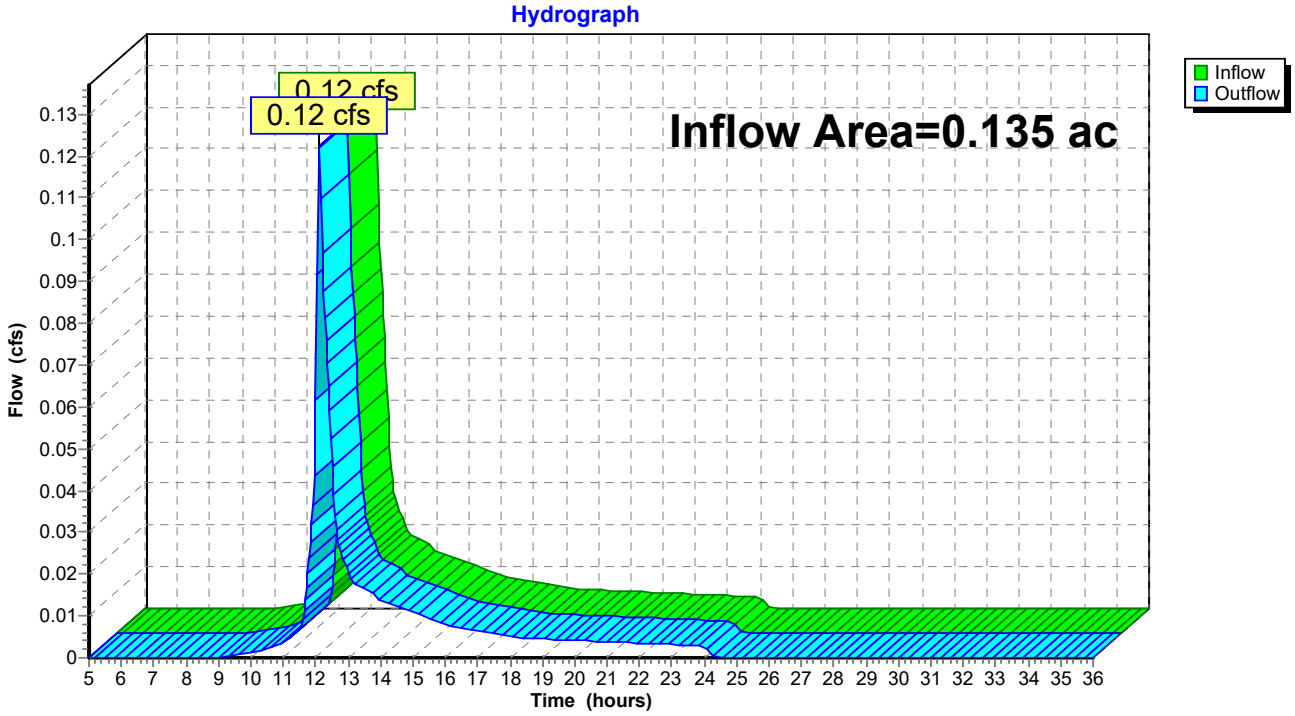
Summary for Reach 3R: Total Runoff

[40] Hint: Not Described (Outflow=Inflow)

Inflow Area = 0.135 ac, 27.64% Impervious, Inflow Depth = 1.09" for 10-yr event
Inflow = 0.12 cfs @ 12.11 hrs, Volume= 0.012 af
Outflow = 0.12 cfs @ 12.11 hrs, Volume= 0.012 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-36.00 hrs, dt= 0.04 hrs

Reach 3R: Total Runoff



Time span=5.00-36.00 hrs, dt=0.04 hrs, 776 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment 1S: SUBCAT 1 Runoff Area=4,064 sf 14.57% Impervious Runoff Depth=1.12"
Flow Length=124' Tc=10.4 min UI Adjusted CN=51 Runoff=0.08 cfs 0.009 af

Subcatchment 2S: SUBCAT 2 Runoff Area=1,811 sf 56.99% Impervious Runoff Depth=3.21"
Tc=6.0 min CN=76 Runoff=0.16 cfs 0.011 af

Reach 1R: POI #1 - Atlantic Street Inflow=0.08 cfs 0.009 af
Outflow=0.08 cfs 0.009 af

Reach 2R: POI #2 - Downgradient Abutter Inflow=0.16 cfs 0.011 af
Outflow=0.16 cfs 0.011 af

Reach 3R: Total Runoff Inflow=0.22 cfs 0.020 af
Outflow=0.22 cfs 0.020 af

Total Runoff Area = 0.135 ac Runoff Volume = 0.020 af Average Runoff Depth = 1.76"
72.36% Pervious = 0.098 ac 27.64% Impervious = 0.037 ac

Summary for Subcatchment 1S: SUBCAT 1

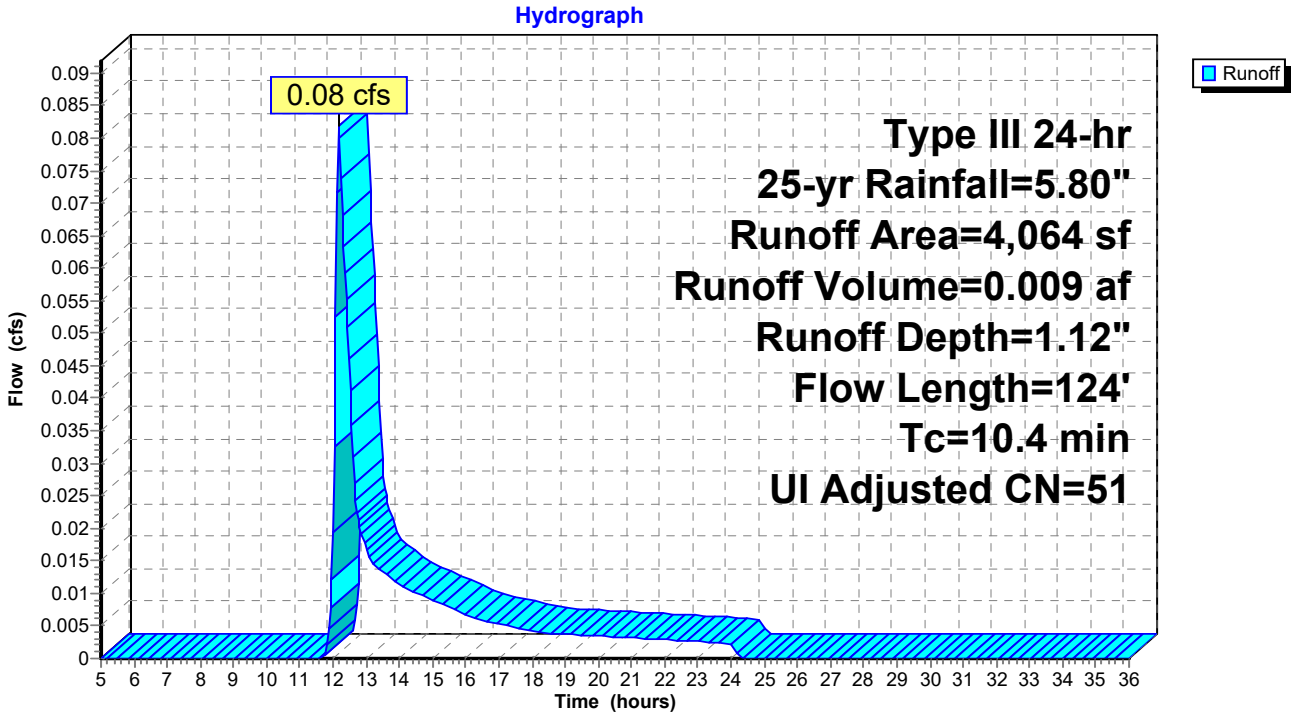
Runoff = 0.08 cfs @ 12.18 hrs, Volume= 0.009 af, Depth= 1.12"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-36.00 hrs, dt= 0.04 hrs
Type III 24-hr 25-yr Rainfall=5.80"

	Area (sf)	CN	Adj	Description
	505	98		Unconnected pavement, HSG A
	1,048	43		Woods/grass comb., Fair, HSG A
	2,400	49		50-75% Grass cover, Fair, HSG A
*	87	98		Unconnected roofs, (ABUTTER)
	24	49		50-75% Grass cover, Fair, HSG A
	4,064	55	51	Weighted Average, UI Adjusted
	3,472			85.43% Pervious Area
	592			14.57% Impervious Area
	592			100.00% Unconnected

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
2.3	26	0.0550	0.19		**Sheet Flow, A-B** Grass: Short n= 0.150 P2= 3.10"
8.0	76	0.0200	0.16		**Sheet Flow, B-C** Grass: Short n= 0.150 P2= 3.10"
0.1	22	0.0680	4.20		**Shallow Concentrated Flow, C-D** Unpaved Kv= 16.1 fps
10.4	124	Total			

Subcatchment 1S: SUBCAT 1



Summary for Subcatchment 2S: SUBCAT 2

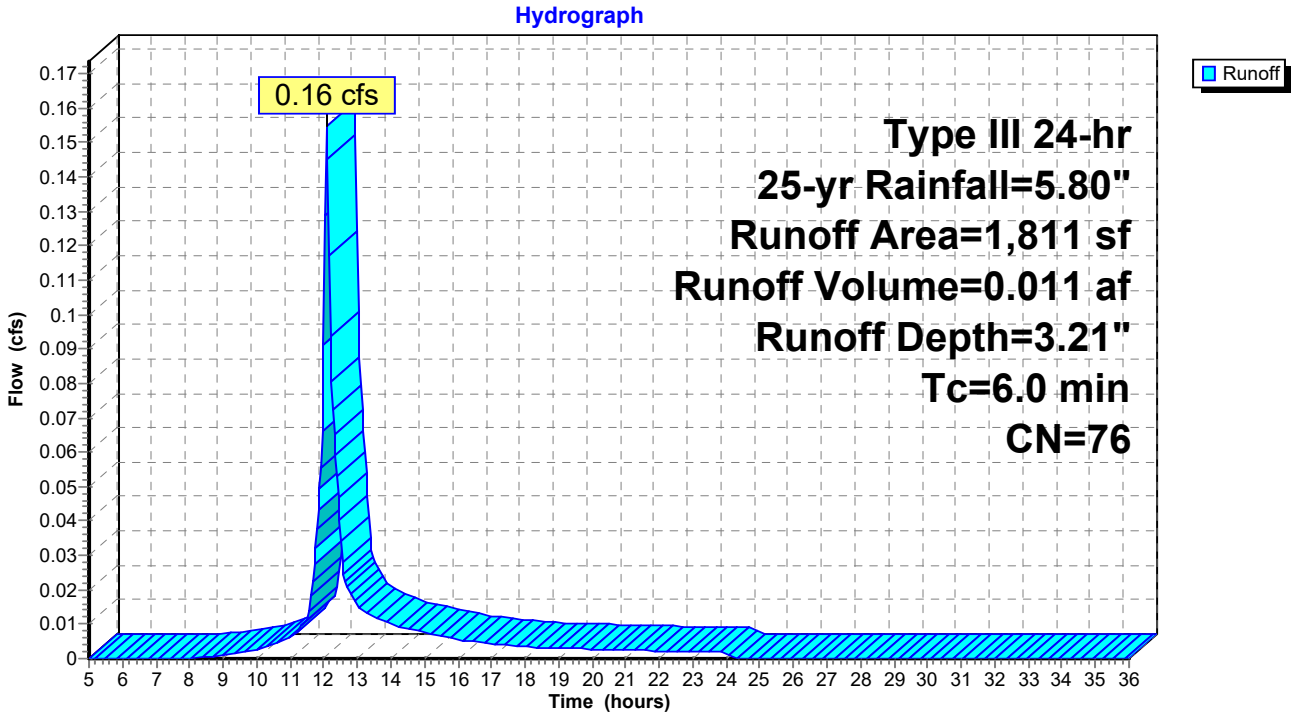
Runoff = 0.16 cfs @ 12.09 hrs, Volume= 0.011 af, Depth= 3.21"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-36.00 hrs, dt= 0.04 hrs
Type III 24-hr 25-yr Rainfall=5.80"

	Area (sf)	CN	Description
	592	98	Unconnected pavement, HSG A
	274	43	Woods/grass comb., Fair, HSG A
	416	49	50-75% Grass cover, Fair, HSG A
*	440	98	Unconnected roofs, (ABUTTER)
	89	49	50-75% Grass cover, Fair, HSG A
	1,811	76	Weighted Average
	779		43.01% Pervious Area
	1,032		56.99% Impervious Area
	1,032		100.00% Unconnected

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					**Direct Entry,**

Subcatchment 2S: SUBCAT 2



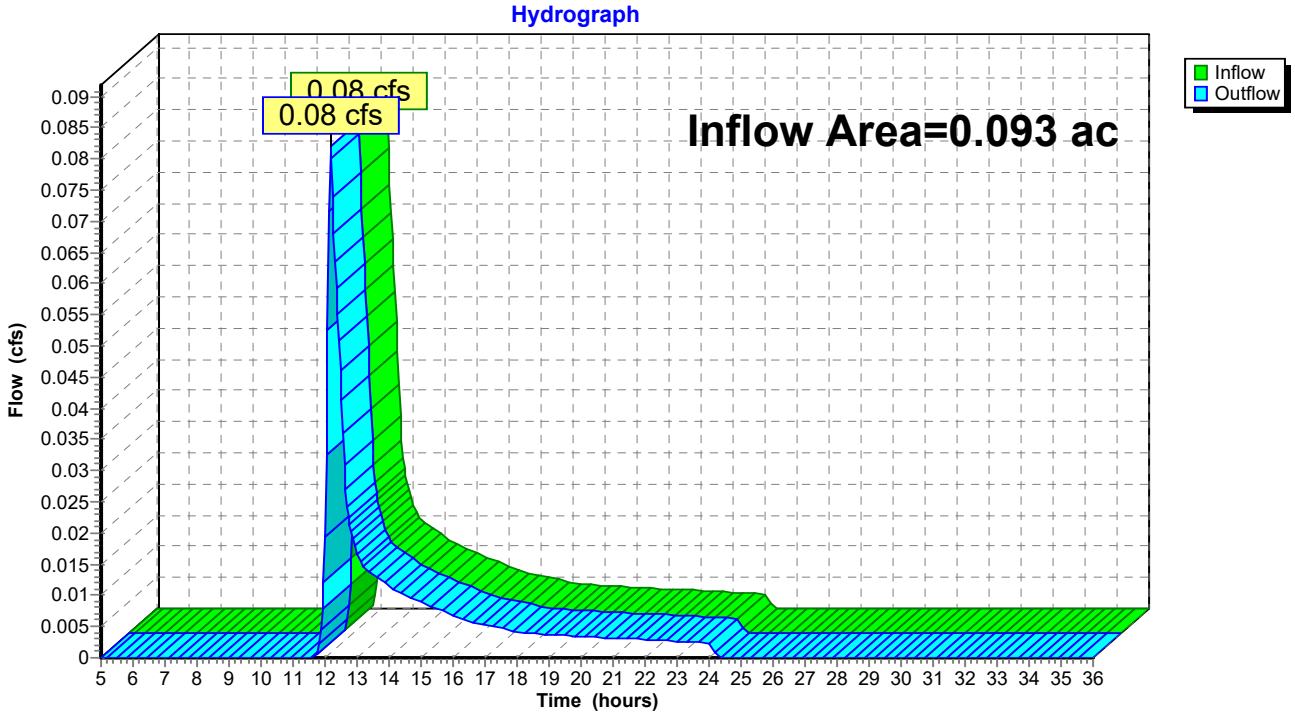
Summary for Reach 1R: POI #1 - Atlantic Street

[40] Hint: Not Described (Outflow=Inflow)

Inflow Area = 0.093 ac, 14.57% Impervious, Inflow Depth = 1.12" for 25-yr event
Inflow = 0.08 cfs @ 12.18 hrs, Volume= 0.009 af
Outflow = 0.08 cfs @ 12.18 hrs, Volume= 0.009 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-36.00 hrs, dt= 0.04 hrs

Reach 1R: POI #1 - Atlantic Street



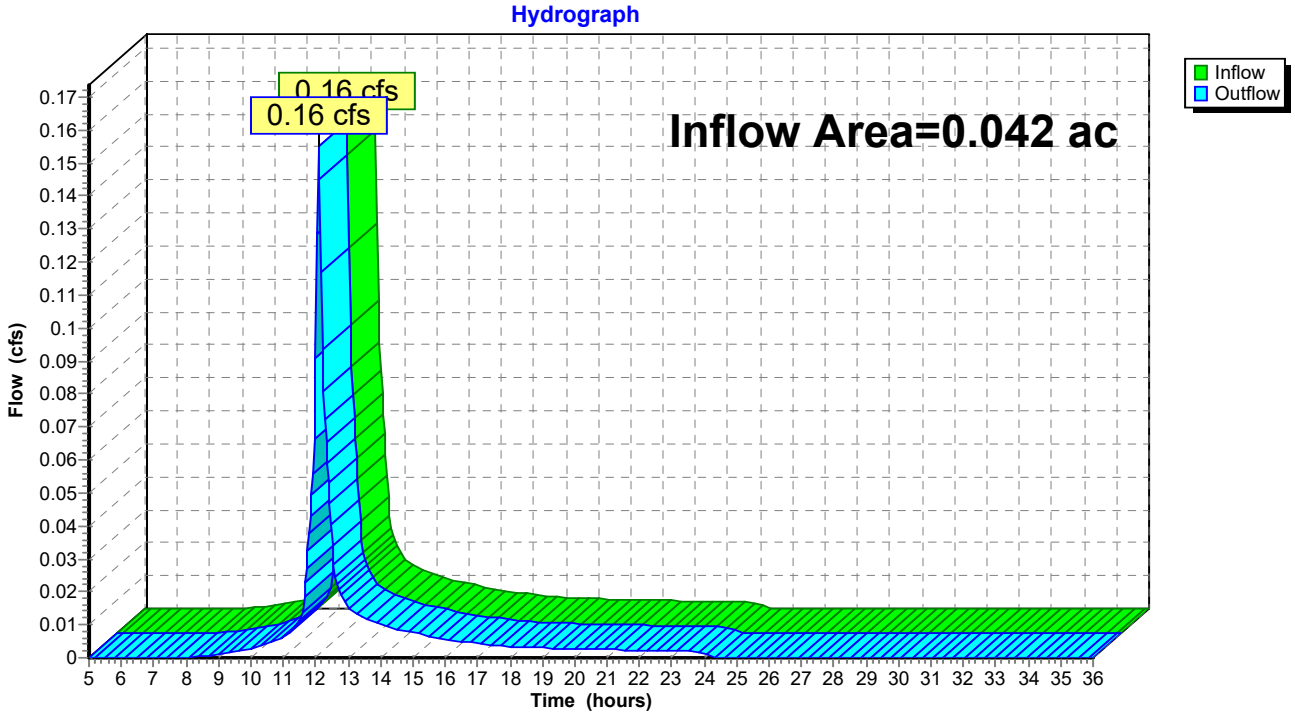
Summary for Reach 2R: POI #2 - Downgradient Abutter

[40] Hint: Not Described (Outflow=Inflow)

Inflow Area = 0.042 ac, 56.99% Impervious, Inflow Depth = 3.21" for 25-yr event
Inflow = 0.16 cfs @ 12.09 hrs, Volume= 0.011 af
Outflow = 0.16 cfs @ 12.09 hrs, Volume= 0.011 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-36.00 hrs, dt= 0.04 hrs

Reach 2R: POI #2 - Downgradient Abutter



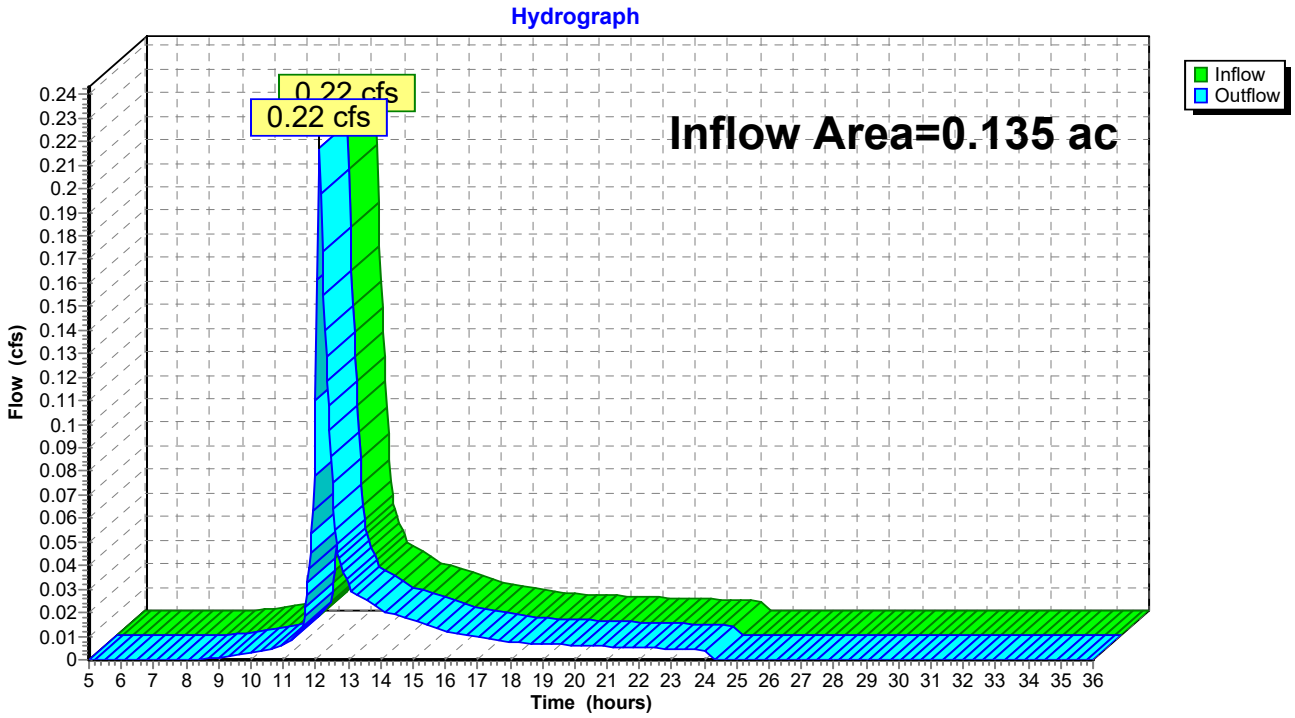
Summary for Reach 3R: Total Runoff

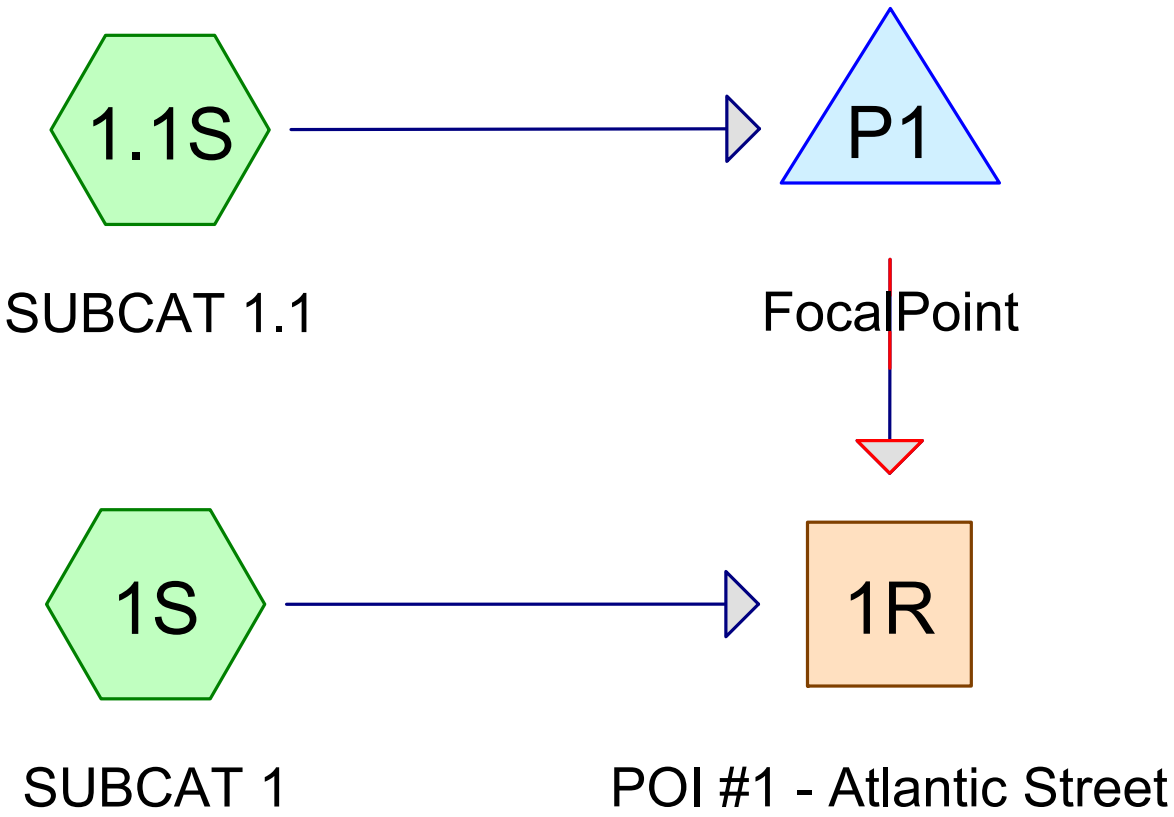
[40] Hint: Not Described (Outflow=Inflow)

Inflow Area = 0.135 ac, 27.64% Impervious, Inflow Depth = 1.76" for 25-yr event
Inflow = 0.22 cfs @ 12.11 hrs, Volume= 0.020 af
Outflow = 0.22 cfs @ 12.11 hrs, Volume= 0.020 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-36.00 hrs, dt= 0.04 hrs

Reach 3R: Total Runoff





Subcat Reach Pond Link

Routing Diagram for 8.4.21.Post 1109
Prepared by HP, Printed 8/26/2021
HydroCAD® 10.00-26 s/n 00620 © 2020 HydroCAD Software Solutions LLC

Area Listing (all nodes)

Area (acres)	CN	Description (subcatchment-numbers)
0.027	39	>75% Grass cover, Good, HSG A (1.1S, 1S)
0.025	98	Paved parking, HSG A (1S)
0.069	98	Roof Runoff (1.1S)
0.002	98	Unconnected pavement, HSG A (1.1S)
0.012	98	Unconnected roofs, (ABUTTER) (1S)
0.135	**86**	**TOTAL AREA**

Soil Listing (all nodes)

Area (acres)	Soil Group	Subcatchment Numbers
0.054	HSG A	1.1S, 1S
0.000	HSG B	
0.000	HSG C	
0.000	HSG D	
0.081	Other	1.1S, 1S
0.135		**TOTAL AREA**

Ground Covers (all nodes)

HSG-A (acres)	HSG-B (acres)	HSG-C (acres)	HSG-D (acres)	Other (acres)	Total (acres)	Ground Cover	Subcatchment Numbers
0.027	0.000	0.000	0.000	0.000	0.027	>75% Grass cover, Good	1.1S, 1S
0.025	0.000	0.000	0.000	0.000	0.025	Paved parking	1S
0.000	0.000	0.000	0.000	0.069	0.069	Roof Runoff	1.1S
0.002	0.000	0.000	0.000	0.000	0.002	Unconnected pavement	1.1S
0.000	0.000	0.000	0.000	0.012	0.012	Unconnected roofs, (ABUTTER)	1S
0.054	**0.000**	**0.000**	**0.000**	**0.081**	**0.135**	**TOTAL AREA**	

Pipe Listing (all nodes)

Line#	Node Number	In-Invert (feet)	Out-Invert (feet)	Length (feet)	Slope (ft/ft)	n	Diam/Width (inches)	Height (inches)	Inside-Fill (inches)
1	P1	111.38	111.24	28.0	0.0050	0.010	4.0	0.0	0.0

Time span=1.00-36.00 hrs, dt=0.04 hrs, 876 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment 1.1S: SUBCAT 1.1 Runoff Area=3,591 sf 85.83% Impervious Runoff Depth=2.08"
Tc=6.0 min CN=90 Runoff=0.20 cfs 0.014 af

Subcatchment 1S: SUBCAT 1 Runoff Area=2,284 sf 70.67% Impervious Runoff Depth=1.39"
Tc=6.0 min CN=81 Runoff=0.08 cfs 0.006 af

Reach 1R: POI #1 - Atlantic Street Inflow=0.15 cfs 0.020 af
Outflow=0.15 cfs 0.020 af

Pond P1: FocalPoint Peak Elev=112.90' Storage=113 cf Inflow=0.20 cfs 0.014 af
Outflow=0.08 cfs 0.014 af

Total Runoff Area = 0.135 ac Runoff Volume = 0.020 af Average Runoff Depth = 1.81"
20.07% Pervious = 0.027 ac 79.93% Impervious = 0.108 ac

Summary for Subcatchment 1.1S: SUBCAT 1.1

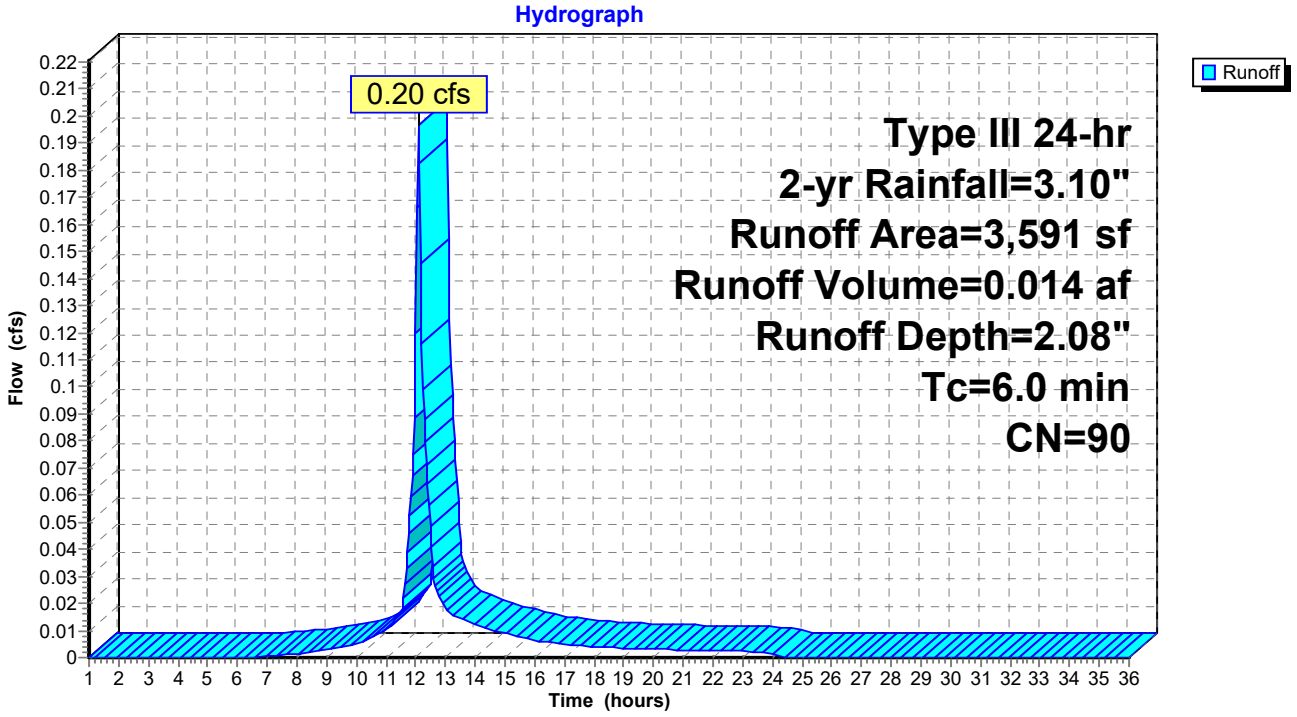
Runoff = 0.20 cfs @ 12.09 hrs, Volume= 0.014 af, Depth= 2.08"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 1.00-36.00 hrs, dt= 0.04 hrs
Type III 24-hr 2-yr Rainfall=3.10"

	Area (sf)	CN	Description
*	2,984	98	Roof Runoff
	98	98	Unconnected pavement, HSG A
	509	39	>75% Grass cover, Good, HSG A
	3,591	90	Weighted Average
	509		14.17% Pervious Area
	3,082		85.83% Impervious Area
	98		3.18% Unconnected

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					**Direct Entry, TC LINE**

Subcatchment 1.1S: SUBCAT 1.1



Summary for Subcatchment 1S: SUBCAT 1

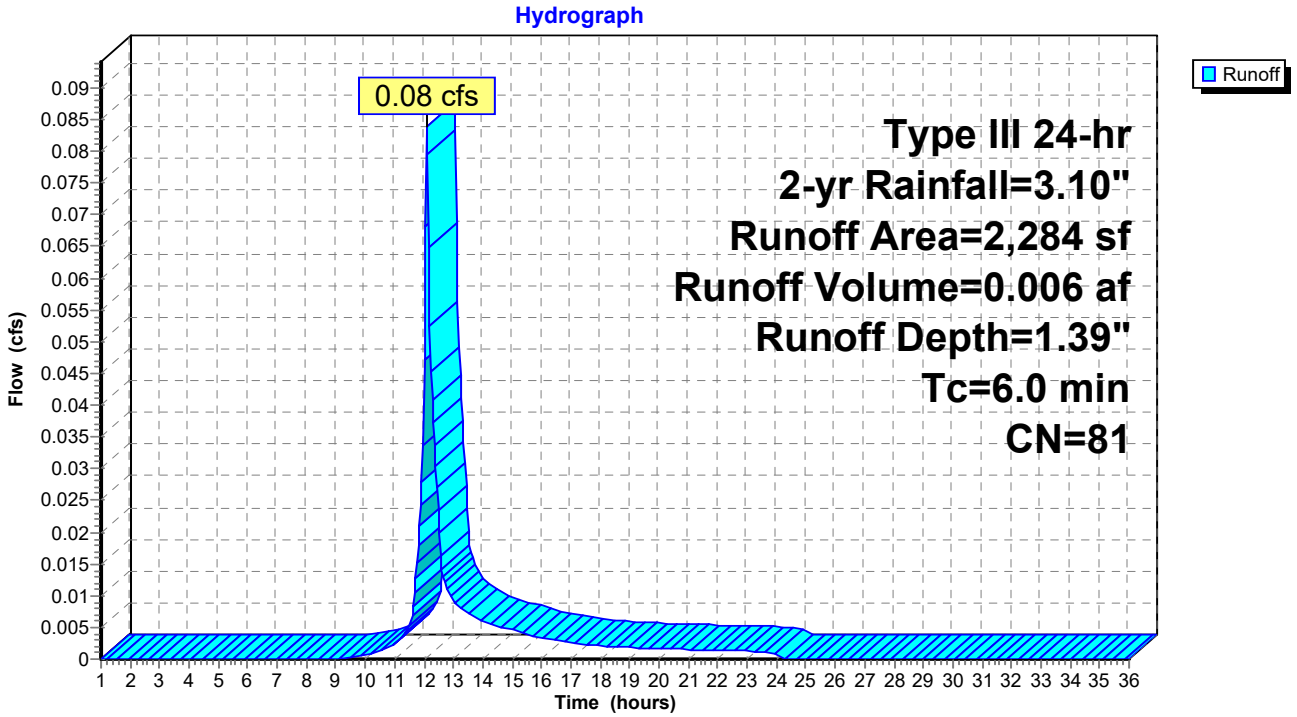
Runoff = 0.08 cfs @ 12.09 hrs, Volume= 0.006 af, Depth= 1.39"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 1.00-36.00 hrs, dt= 0.04 hrs
Type III 24-hr 2-yr Rainfall=3.10"

	Area (sf)	CN	Description
	1,087	98	Paved parking, HSG A
	557	39	>75% Grass cover, Good, HSG A
*	527	98	Unconnected roofs, (ABUTTER)
	113	39	>75% Grass cover, Good, HSG A
	2,284	81	Weighted Average
	670		29.33% Pervious Area
	1,614		70.67% Impervious Area
	527		32.65% Unconnected

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					**Direct Entry,**

Subcatchment 1S: SUBCAT 1



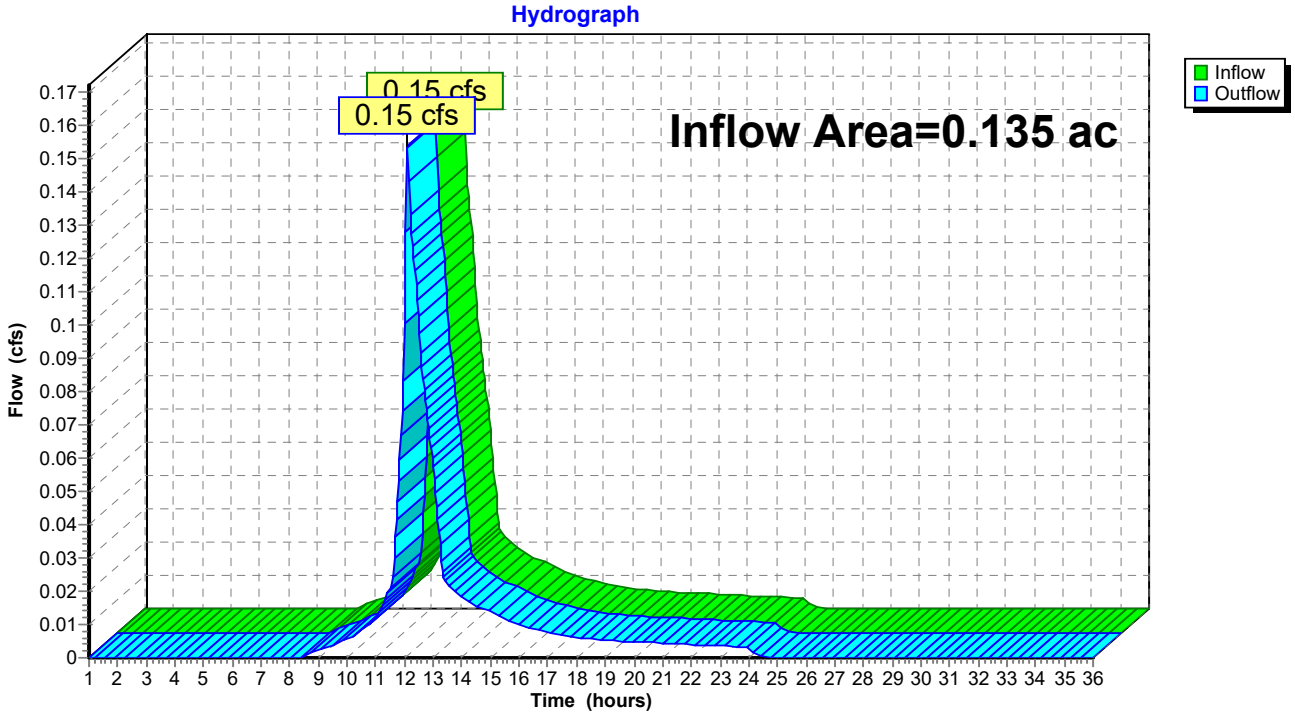
Summary for Reach 1R: POI #1 - Atlantic Street

[40] Hint: Not Described (Outflow=Inflow)

Inflow Area = 0.135 ac, 79.93% Impervious, Inflow Depth = 1.80" for 2-yr event
Inflow = 0.15 cfs @ 12.11 hrs, Volume= 0.020 af
Outflow = 0.15 cfs @ 12.11 hrs, Volume= 0.020 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 1.00-36.00 hrs, dt= 0.04 hrs

Reach 1R: POI #1 - Atlantic Street



Summary for Pond P1: FocalPoint

[92] Warning: Device #4 is above defined storage

Inflow Area = 0.082 ac, 85.83% Impervious, Inflow Depth = 2.08" for 2-yr event
Inflow = 0.20 cfs @ 12.09 hrs, Volume= 0.014 af
Outflow = 0.08 cfs @ 12.30 hrs, Volume= 0.014 af, Atten= 58%, Lag= 13.0 min
Primary = 0.08 cfs @ 12.30 hrs, Volume= 0.014 af

Routing by Stor-Ind method, Time Span= 1.00-36.00 hrs, dt= 0.04 hrs
Peak Elev= 112.90' @ 12.30 hrs Surf.Area= 118 sf Storage= 113 cf

Plug-Flow detention time= 21.6 min calculated for 0.014 af (99% of inflow)
Center-of-Mass det. time= 15.4 min (823.6 - 808.1)

Volume	Invert	Avail.Storage	Storage Description
#1	111.25'	118 cf	**3/4 Stone (Prismatic)**Listed below (Recalc) 472 cf Overall - 177 cf Embedded = 295 cf x 40.0% Voids
#2	111.86'	168 cf	**1.31'W x 2.35'L x 2.88'H Tanks** x 20 Inside #1 177 cf Overall x 95.0% Voids
#3	115.25'	6 cf	**1.60'W x 12.50'L x 1.50'H FocalPoint (MEDIA)** 30 cf Overall x 20.0% Voids
#4	116.75'	19 cf	**Custom Stage Data (Prismatic)**Listed below (Recalc) -Impervious
		312 cf	Total Available Storage

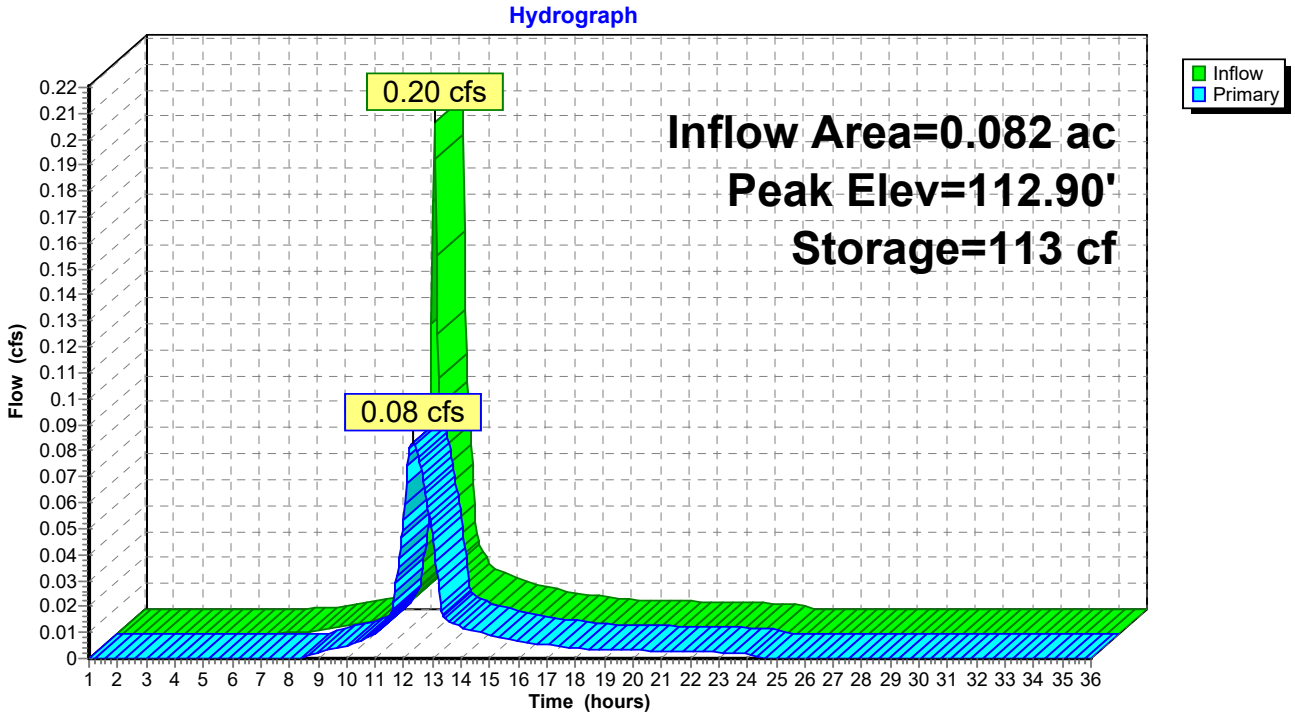
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
111.25	118	0	0
115.25	118	472	472

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
116.75	20	0	0
117.25	57	19	19

Device	Routing	Invert	Outlet Devices
#1	Primary	111.38'	**4.0" Round 4" UD** L= 28.0' CMP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 111.38' / 111.24' S= 0.0050 '/' Cc= 0.600 n= 0.010 PVC, smooth interior, Flow Area= 0.09 sf
#2	Device 1	111.25'	**1.6" Vert. Orifice/Grate** C= 0.600
#3	Device 2	111.25'	**100.000 in/hr Exfiltration over Surface area** Phase-In= 0.10'
#4	Device 1	117.25'	**8.0" Horiz. Overflow Grate** C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=0.08 cfs @ 12.30 hrs HW=112.90' (Free Discharge)
└**1=4" UD** (Passes 0.08 cfs of 0.26 cfs potential flow)
  ├**2=Orifice/Grate** (Orifice Controls 0.08 cfs @ 5.94 fps)
  │ └**3=Exfiltration** (Passes 0.08 cfs of 0.27 cfs potential flow)
  └**4=Overflow Grate** (Controls 0.00 cfs)

Pond P1: FocalPoint



Time span=1.00-36.00 hrs, dt=0.04 hrs, 876 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment 1.1S: SUBCAT 1.1 Runoff Area=3,591 sf 85.83% Impervious Runoff Depth=3.49"
Tc=6.0 min CN=90 Runoff=0.32 cfs 0.024 af

Subcatchment 1S: SUBCAT 1 Runoff Area=2,284 sf 70.67% Impervious Runoff Depth=2.63"
Tc=6.0 min CN=81 Runoff=0.16 cfs 0.012 af

Reach 1R: POI #1 - Atlantic Street Inflow=0.25 cfs 0.035 af
Outflow=0.25 cfs 0.035 af

Pond P1: FocalPoint Peak Elev=114.29' Storage=226 cf Inflow=0.32 cfs 0.024 af
Outflow=0.11 cfs 0.024 af

Total Runoff Area = 0.135 ac Runoff Volume = 0.035 af Average Runoff Depth = 3.16"
20.07% Pervious = 0.027 ac 79.93% Impervious = 0.108 ac

Summary for Subcatchment 1.1S: SUBCAT 1.1

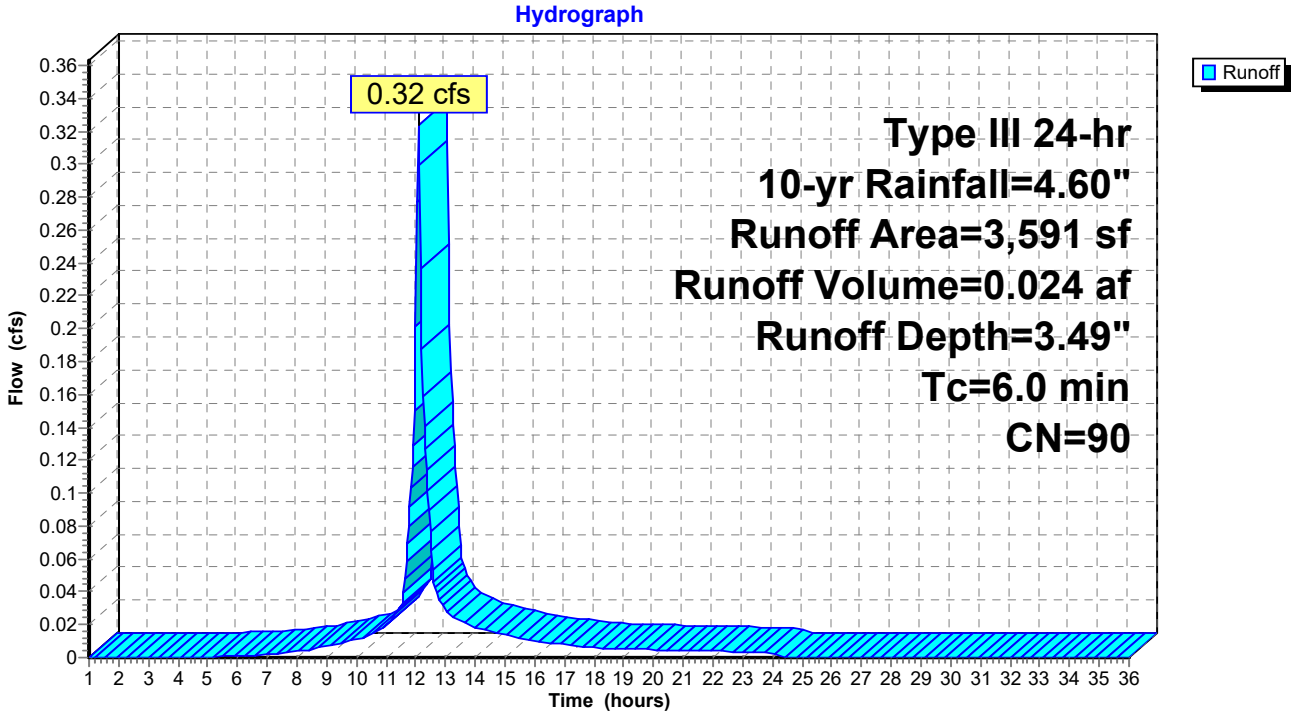
Runoff = 0.32 cfs @ 12.09 hrs, Volume= 0.024 af, Depth= 3.49"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 1.00-36.00 hrs, dt= 0.04 hrs
Type III 24-hr 10-yr Rainfall=4.60"

	Area (sf)	CN	Description
*	2,984	98	Roof Runoff
	98	98	Unconnected pavement, HSG A
	509	39	>75% Grass cover, Good, HSG A
	3,591	90	Weighted Average
	509		14.17% Pervious Area
	3,082		85.83% Impervious Area
	98		3.18% Unconnected

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					**Direct Entry, TC LINE**

Subcatchment 1.1S: SUBCAT 1.1



Summary for Subcatchment 1S: SUBCAT 1

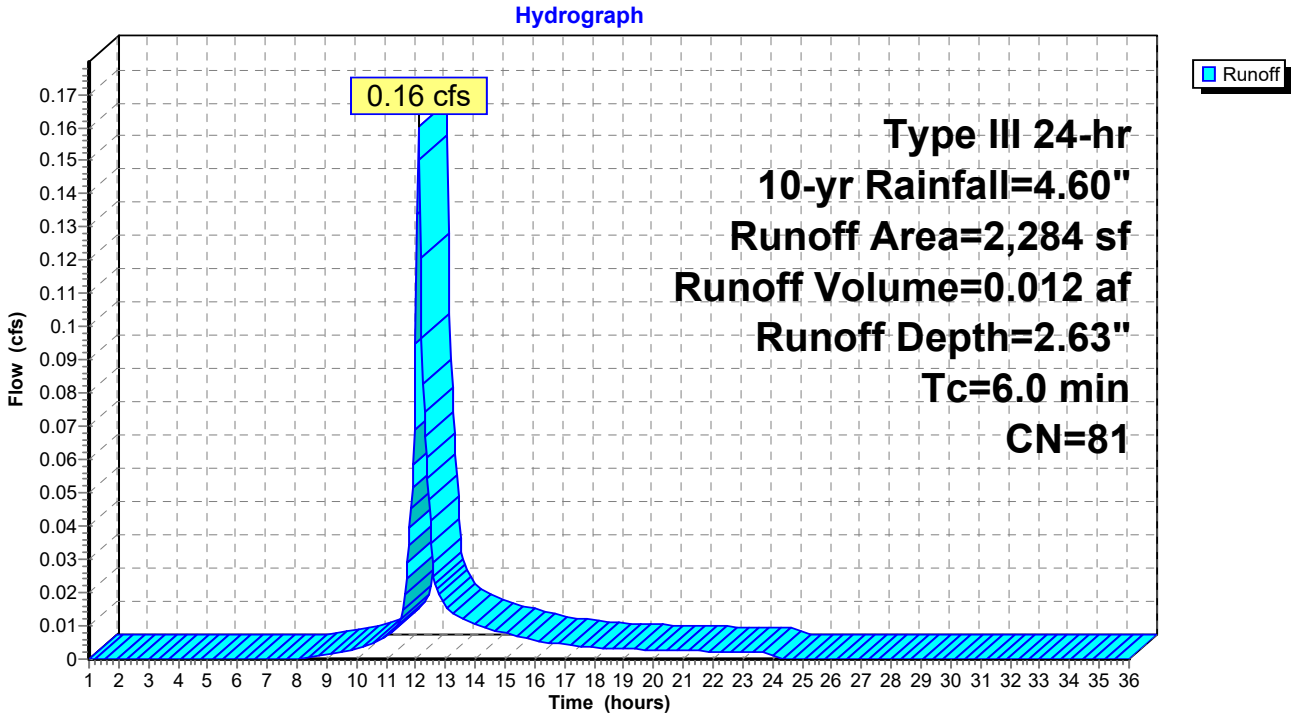
Runoff = 0.16 cfs @ 12.09 hrs, Volume= 0.012 af, Depth= 2.63"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 1.00-36.00 hrs, dt= 0.04 hrs
Type III 24-hr 10-yr Rainfall=4.60"

	Area (sf)	CN	Description
	1,087	98	Paved parking, HSG A
	557	39	>75% Grass cover, Good, HSG A
*	527	98	Unconnected roofs, (ABUTTER)
	113	39	>75% Grass cover, Good, HSG A
	2,284	81	Weighted Average
	670		29.33% Pervious Area
	1,614		70.67% Impervious Area
	527		32.65% Unconnected

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					**Direct Entry,**

Subcatchment 1S: SUBCAT 1



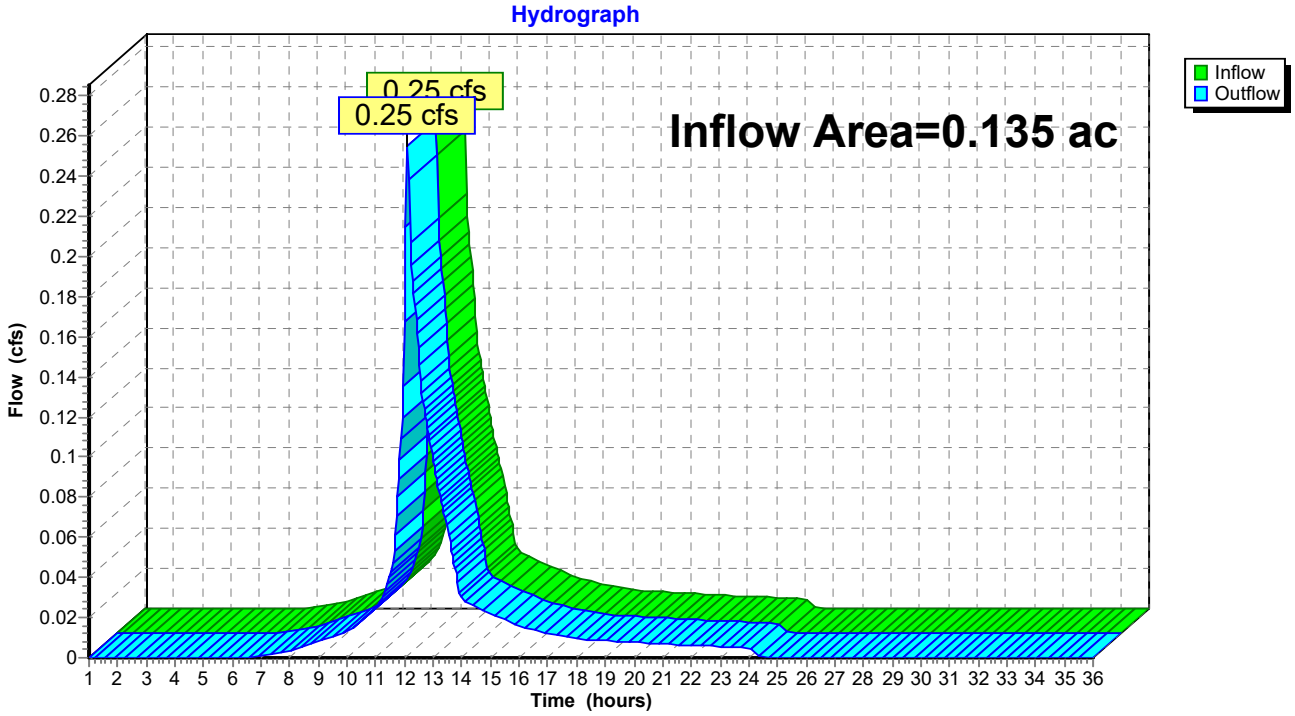
Summary for Reach 1R: POI #1 - Atlantic Street

[40] Hint: Not Described (Outflow=Inflow)

Inflow Area = 0.135 ac, 79.93% Impervious, Inflow Depth = 3.15" for 10-yr event
Inflow = 0.25 cfs @ 12.10 hrs, Volume= 0.035 af
Outflow = 0.25 cfs @ 12.10 hrs, Volume= 0.035 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 1.00-36.00 hrs, dt= 0.04 hrs

Reach 1R: POI #1 - Atlantic Street



Summary for Pond P1: FocalPoint

[92] Warning: Device #4 is above defined storage

Inflow Area = 0.082 ac, 85.83% Impervious, Inflow Depth = 3.49" for 10-yr event
Inflow = 0.32 cfs @ 12.09 hrs, Volume= 0.024 af
Outflow = 0.11 cfs @ 12.36 hrs, Volume= 0.024 af, Atten= 65%, Lag= 16.3 min
Primary = 0.11 cfs @ 12.36 hrs, Volume= 0.024 af

Routing by Stor-Ind method, Time Span= 1.00-36.00 hrs, dt= 0.04 hrs
Peak Elev= 114.29' @ 12.36 hrs Surf.Area= 118 sf Storage= 226 cf

Plug-Flow detention time= 22.3 min calculated for 0.024 af (99% of inflow)
Center-of-Mass det. time= 18.5 min (812.0 - 793.6)

Volume	Invert	Avail.Storage	Storage Description
#1	111.25'	118 cf	**3/4 Stone (Prismatic)**Listed below (Recalc) 472 cf Overall - 177 cf Embedded = 295 cf x 40.0% Voids
#2	111.86'	168 cf	**1.31'W x 2.35'L x 2.88'H Tanks** x 20 Inside #1 177 cf Overall x 95.0% Voids
#3	115.25'	6 cf	**1.60'W x 12.50'L x 1.50'H FocalPoint (MEDIA)** 30 cf Overall x 20.0% Voids
#4	116.75'	19 cf	**Custom Stage Data (Prismatic)**Listed below (Recalc) -Impervious
		312 cf	Total Available Storage

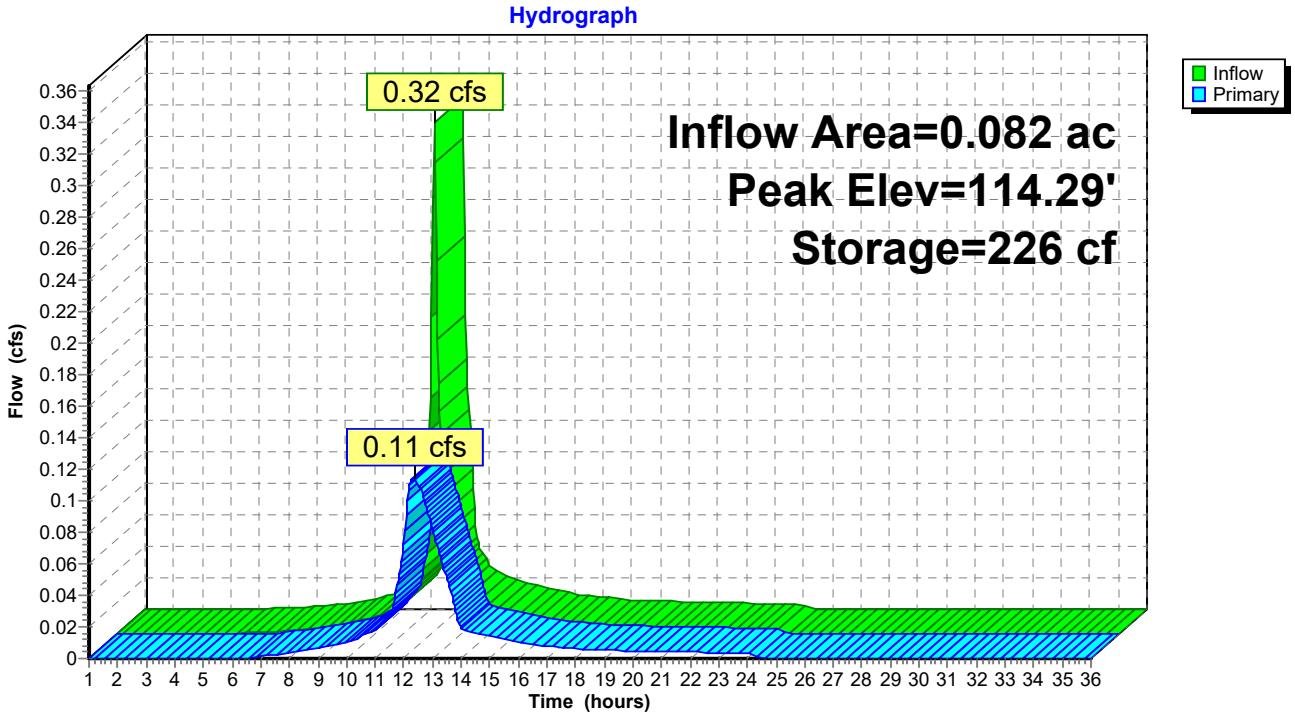
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
111.25	118	0	0
115.25	118	472	472

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
116.75	20	0	0
117.25	57	19	19

Device	Routing	Invert	Outlet Devices
#1	Primary	111.38'	**4.0" Round 4" UD** L= 28.0' CMP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 111.38' / 111.24' S= 0.0050 '/' Cc= 0.600 n= 0.010 PVC, smooth interior, Flow Area= 0.09 sf
#2	Device 1	111.25'	**1.6" Vert. Orifice/Grate** C= 0.600
#3	Device 2	111.25'	**100.000 in/hr Exfiltration over Surface area** Phase-In= 0.10'
#4	Device 1	117.25'	**8.0" Horiz. Overflow Grate** C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=0.11 cfs @ 12.36 hrs HW=114.29' (Free Discharge)
└**1=4" UD** (Passes 0.11 cfs of 0.37 cfs potential flow)
  ├**2=Orifice/Grate** (Orifice Controls 0.11 cfs @ 8.21 fps)
  │ └**3=Exfiltration** (Passes 0.11 cfs of 0.27 cfs potential flow)
  └**4=Overflow Grate** (Controls 0.00 cfs)

Pond P1: FocalPoint



Time span=1.00-36.00 hrs, dt=0.04 hrs, 876 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment 1.1S: SUBCAT 1.1 Runoff Area=3,591 sf 85.83% Impervious Runoff Depth=4.65"
Tc=6.0 min CN=90 Runoff=0.43 cfs 0.032 af

Subcatchment 1S: SUBCAT 1 Runoff Area=2,284 sf 70.67% Impervious Runoff Depth=3.70"
Tc=6.0 min CN=81 Runoff=0.22 cfs 0.016 af

Reach 1R: POI #1 - Atlantic Street Inflow=0.34 cfs 0.048 af
Outflow=0.34 cfs 0.048 af

Pond P1: FocalPoint Peak Elev=117.20' Storage=309 cf Inflow=0.43 cfs 0.032 af
Outflow=0.16 cfs 0.032 af

Total Runoff Area = 0.135 ac Runoff Volume = 0.048 af Average Runoff Depth = 4.28"
20.07% Pervious = 0.027 ac 79.93% Impervious = 0.108 ac

Summary for Subcatchment 1.1S: SUBCAT 1.1

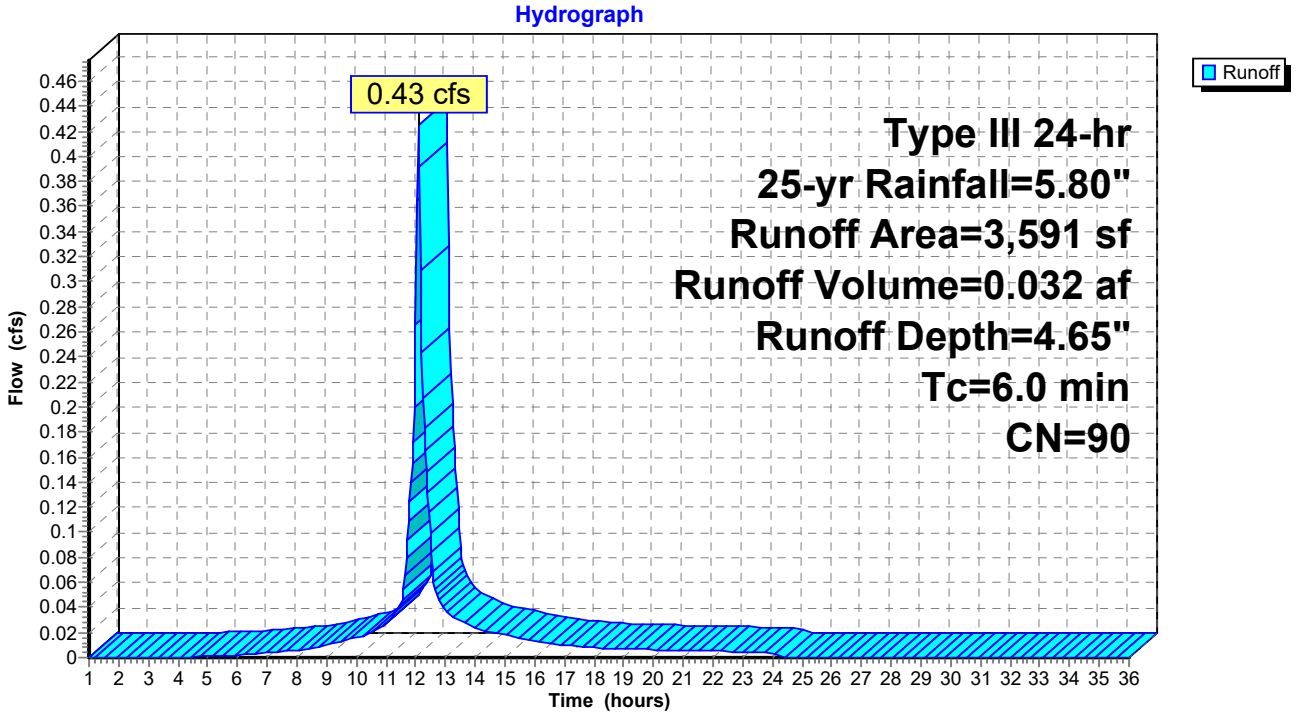
Runoff = 0.43 cfs @ 12.09 hrs, Volume= 0.032 af, Depth= 4.65"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 1.00-36.00 hrs, dt= 0.04 hrs
Type III 24-hr 25-yr Rainfall=5.80"

	Area (sf)	CN	Description
*	2,984	98	Roof Runoff
	98	98	Unconnected pavement, HSG A
	509	39	>75% Grass cover, Good, HSG A
	3,591	90	Weighted Average
	509		14.17% Pervious Area
	3,082		85.83% Impervious Area
	98		3.18% Unconnected

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					**Direct Entry, TC LINE**

Subcatchment 1.1S: SUBCAT 1.1



Summary for Subcatchment 1S: SUBCAT 1

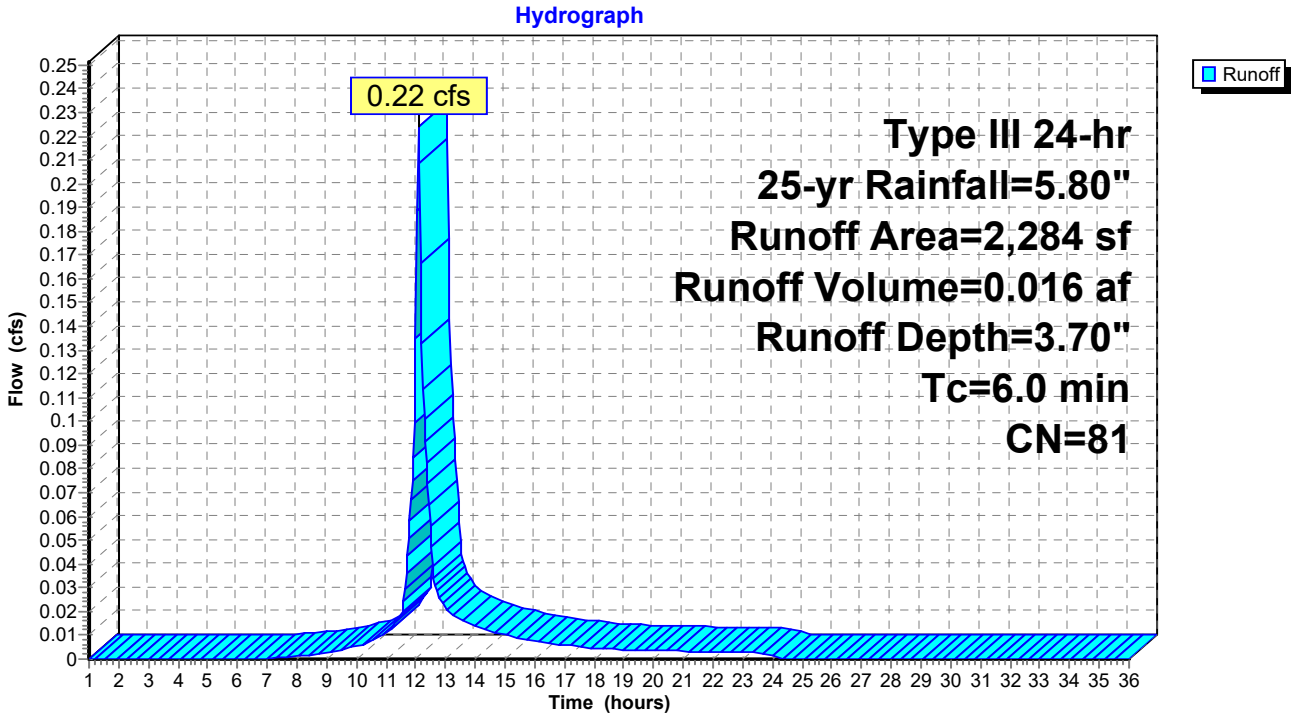
Runoff = 0.22 cfs @ 12.09 hrs, Volume= 0.016 af, Depth= 3.70"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 1.00-36.00 hrs, dt= 0.04 hrs
Type III 24-hr 25-yr Rainfall=5.80"

	Area (sf)	CN	Description
	1,087	98	Paved parking, HSG A
	557	39	>75% Grass cover, Good, HSG A
*	527	98	Unconnected roofs, (ABUTTER)
	113	39	>75% Grass cover, Good, HSG A
	2,284	81	Weighted Average
	670		29.33% Pervious Area
	1,614		70.67% Impervious Area
	527		32.65% Unconnected

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					**Direct Entry,**

Subcatchment 1S: SUBCAT 1



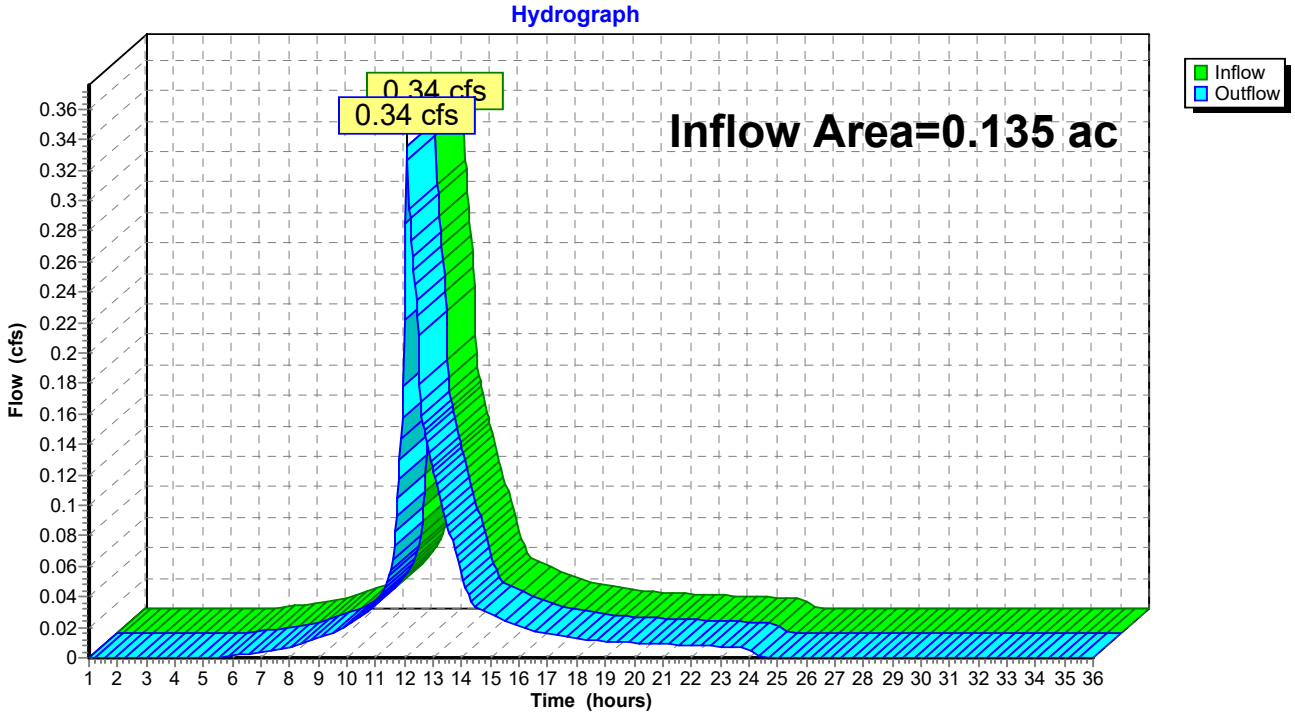
Summary for Reach 1R: POI #1 - Atlantic Street

[40] Hint: Not Described (Outflow=Inflow)

Inflow Area = 0.135 ac, 79.93% Impervious, Inflow Depth = 4.27" for 25-yr event
Inflow = 0.34 cfs @ 12.10 hrs, Volume= 0.048 af
Outflow = 0.34 cfs @ 12.10 hrs, Volume= 0.048 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 1.00-36.00 hrs, dt= 0.04 hrs

Reach 1R: POI #1 - Atlantic Street



Summary for Pond P1: FocalPoint

[92] Warning: Device #4 is above defined storage

Inflow Area = 0.082 ac, 85.83% Impervious, Inflow Depth = 4.65" for 25-yr event
Inflow = 0.43 cfs @ 12.09 hrs, Volume= 0.032 af
Outflow = 0.16 cfs @ 12.33 hrs, Volume= 0.032 af, Atten= 62%, Lag= 14.5 min
Primary = 0.16 cfs @ 12.33 hrs, Volume= 0.032 af

Routing by Stor-Ind method, Time Span= 1.00-36.00 hrs, dt= 0.04 hrs
Peak Elev= 117.20' @ 12.33 hrs Surf.Area= 138 sf Storage= 309 cf

Plug-Flow detention time= 22.5 min calculated for 0.032 af (99% of inflow)
Center-of-Mass det. time= 19.8 min (805.6 - 785.8)

Volume	Invert	Avail.Storage	Storage Description
#1	111.25'	118 cf	**3/4 Stone (Prismatic)**Listed below (Recalc) 472 cf Overall - 177 cf Embedded = 295 cf x 40.0% Voids
#2	111.86'	168 cf	**1.31'W x 2.35'L x 2.88'H Tanks** x 20 Inside #1 177 cf Overall x 95.0% Voids
#3	115.25'	6 cf	**1.60'W x 12.50'L x 1.50'H FocalPoint (MEDIA)** 30 cf Overall x 20.0% Voids
#4	116.75'	19 cf	**Custom Stage Data (Prismatic)**Listed below (Recalc) -Impervious
		312 cf	Total Available Storage

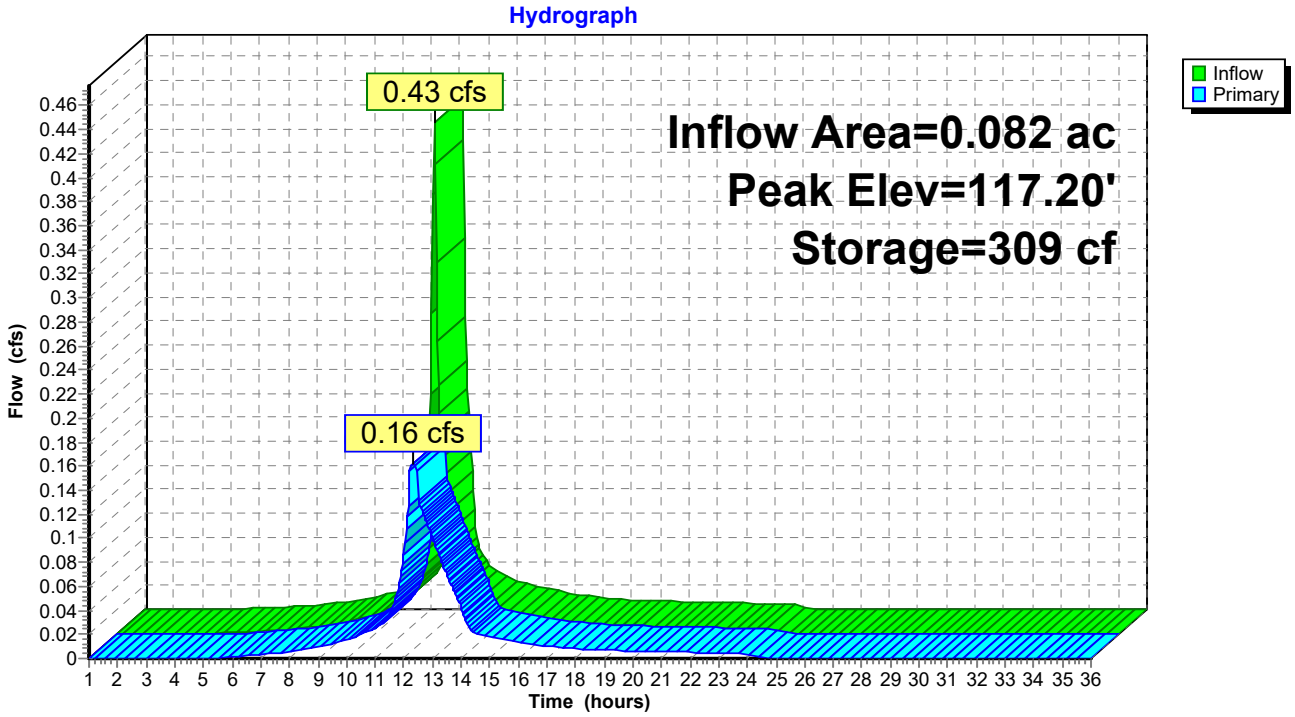
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
111.25	118	0	0
115.25	118	472	472

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
116.75	20	0	0
117.25	57	19	19

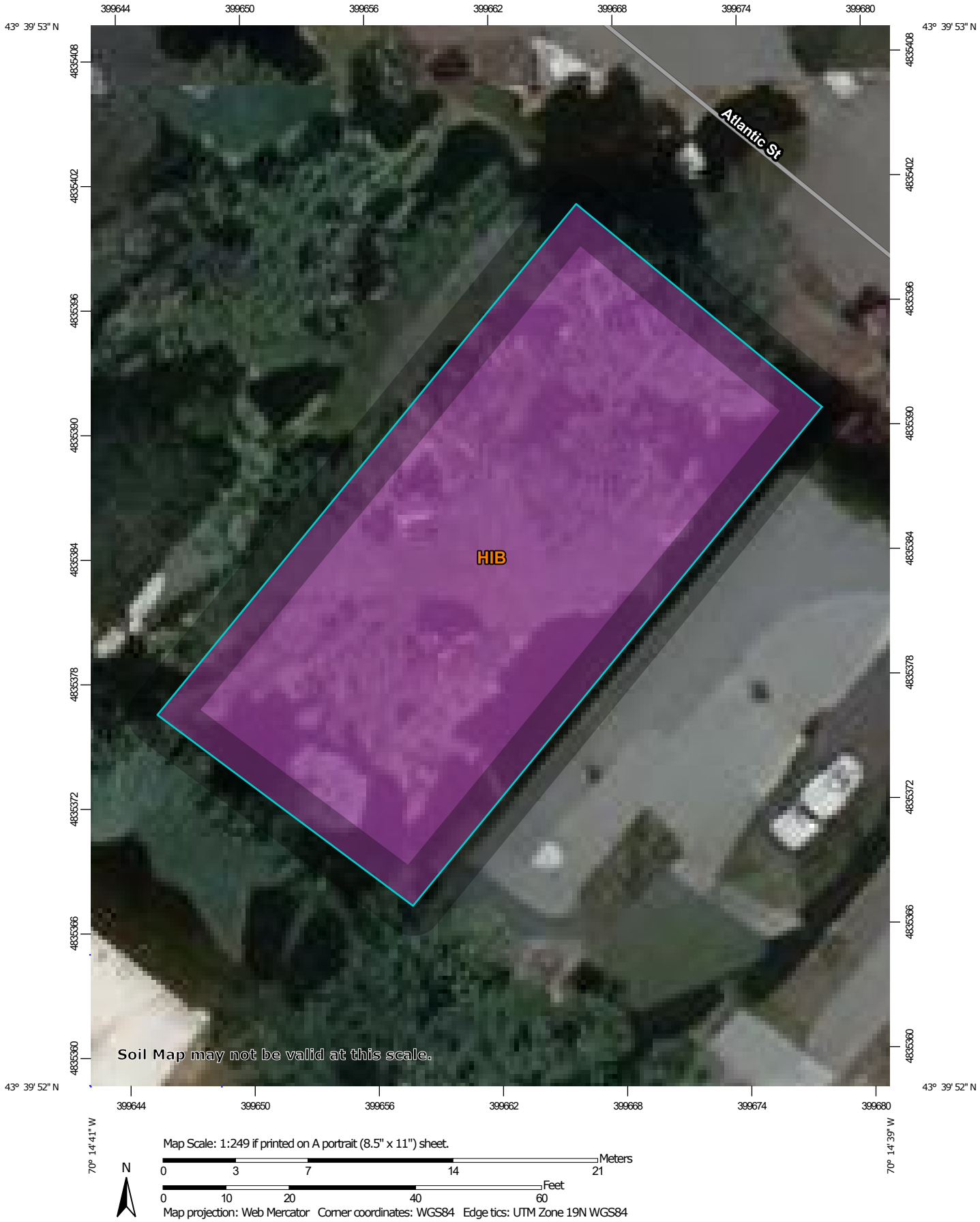
Device	Routing	Invert	Outlet Devices
#1	Primary	111.38'	**4.0" Round 4" UD** L= 28.0' CMP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 111.38' / 111.24' S= 0.0050 '/' Cc= 0.600 n= 0.010 PVC, smooth interior, Flow Area= 0.09 sf
#2	Device 1	111.25'	**1.6" Vert. Orifice/Grate** C= 0.600
#3	Device 2	111.25'	**100.000 in/hr Exfiltration over Surface area** Phase-In= 0.10'
#4	Device 1	117.25'	**8.0" Horiz. Overflow Grate** C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=0.16 cfs @ 12.33 hrs HW=117.20' (Free Discharge)
└**1=4" UD** (Passes 0.16 cfs of 0.53 cfs potential flow)
  ├**2=Orifice/Grate** (Orifice Controls 0.16 cfs @ 11.62 fps)
  │ └**3=Exfiltration** (Passes 0.16 cfs of 0.32 cfs potential flow)
  └**4=Overflow Grate** (Controls 0.00 cfs)

Pond P1: FocalPoint



Hydrologic Soil Group—Cumberland County and Part of Oxford County, Maine
(PL)



Map Scale: 1:249 if printed on A portrait (8.5" x 11") sheet.

N

Meters
0 3 7 14 21

Feet
0 10 20 40 60

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 Rating Polygons
- A
- A/D
- B
- B/D
- C
- C/D
- D
- Not rated or not available

Soil Rating Lines
- A
- A/D
- B
- B/D
- C
- C/D
- D
- Not rated or not available

Soil Rating Points
- A
- A/D
- B
- B/D
- C
- C/D
- D
- Not rated or not available

Water Features
- Streams and Canals

Transportation
- Rails
- Interstate Highways
- US Routes
- Major Roads
- Local Roads

Background
- Aerial Photography

MAP INFORMATION

The soil surveys that comprise your AOI were mapped at 1:24,000.

Warning: Soil Map may not be valid at this scale.

Enlargement of maps beyond the scale of mapping can cause misunderstanding of the detail of mapping and accuracy of soil line placement. The maps do not show the small areas of contrasting soils that could have been shown at a more detailed scale.

Please rely on the bar scale on each map sheet for map measurements.

Source of Map: Natural Resources Conservation Service
Web Soil Survey URL:
Coordinate System: Web Mercator (EPSG:3857)

Maps from the Web Soil Survey are based on the Web Mercator projection, which preserves direction and shape but distorts distance and area. A projection that preserves area, such as the Albers equal-area conic projection, should be used if more accurate calculations of distance or area are required.

This product is generated from the USDA-NRCS certified data as of the version date(s) listed below.

Soil Survey Area: Cumberland County and Part of Oxford County, Maine
Survey Area Data: Version 17, Jun 5, 2020

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.

Hydrologic Soil Group

Map unit symbol	Map unit name	Rating	Acres in AOI	Percent of AOI
HIB	Hinckley loamy sand, 3 to 8 percent slopes	A	0.1	100.0%
Totals for Area of Interest			**0.1**	**100.0%**

Description

Hydrologic soil groups are based on estimates of runoff potential. Soils are assigned to one of four groups according to the rate of water infiltration when the soils are not protected by vegetation, are thoroughly wet, and receive precipitation from long-duration storms.

The soils in the United States are assigned to four groups (A, B, C, and D) and three dual classes (A/D, B/D, and C/D). The groups are defined as follows:

Group A. Soils having a high infiltration rate (low runoff potential) when thoroughly wet. These consist mainly of deep, well drained to excessively drained sands or gravelly sands. These soils have a high rate of water transmission.

Group B. Soils having a moderate infiltration rate when thoroughly wet. These consist chiefly of moderately deep or deep, moderately well drained or well drained soils that have moderately fine texture to moderately coarse texture. These soils have a moderate rate of water transmission.

Group C. Soils having a slow infiltration rate when thoroughly wet. These consist chiefly of soils having a layer that impedes the downward movement of water or soils of moderately fine texture or fine texture. These soils have a slow rate of water transmission.

Group D. Soils having a very slow infiltration rate (high runoff potential) when thoroughly wet. These consist chiefly of clays that have a high shrink-swell potential, soils that have a high water table, soils that have a claypan or clay layer at or near the surface, and soils that are shallow over nearly impervious material. These soils have a very slow rate of water transmission.

If a soil is assigned to a dual hydrologic group (A/D, B/D, or C/D), the first letter is for drained areas and the second is for undrained areas. Only the soils that in their natural condition are in group D are assigned to dual classes.

Rating Options

Aggregation Method: Dominant Condition

Component Percent Cutoff: None Specified

Tie-break Rule: Higher

ACORN ENGINEERING, INC.

K. EROSION & SEDIMENTATION CONTROL REPORT

Prepared For:

Kestrel LLC.
30 Atlantic Street
Portland, Maine 04101

Prepared By:

Acorn Engineering, Inc.
65 Hanover Street
Portland, Maine 04101



May 2021

INTRODUCTION

Acorn Engineering, Inc. has been retained by Kestrel LLC., to provide civil engineering services for the proposed residential building at 30 Atlantic Street. The proposed project includes the development of a three-story building consisting of 4 residential units with associated parking.

The following Erosion and Sedimentation Control Report was developed in accordance with the City of Portland Technical Manual – Section 5 – Portland Stormwater Management Standards and the Maine DEP Chapter 500 Stormwater Management Appendix A and B (1), Amended August 12, 2015. This narrative also meets the standards required in the Maine DEP's Erosion & Sediment Control BMP's Manual, revised in 2016.

1.0 EXISTING CONDITIONS

The proposed project site is located on Atlantic Street. A boundary and Topographic Survey plan has been prepared by Owen Haskell, Inc. of Falmouth, Maine Dated December 14th, 2020.

The property is in the R-6 Residential Zone. See below for abutting uses.

Abutting Uses:

- North R-6 Zone — Single Family Residential
- East R-6 Zone — Multi Family Residential
- South R-6 Zone — Multi Family Residential
- West R-6 Zone — Single Family Residential

The existing lot use is vacant, with grades ranging from 5 to 20 percent across the site, draining toward the eastern corner of the lot.

1.1 Existing Soils

Onsite soil information includes the following:

- Soil Conservation Service Medium Intensity Soil Survey for Cumberland County
- United States Department of Agriculture Web Soil Survey

Given the soils information, listed above, no onsite wastewater is proposed; the applicant does not intend to perform a more intense hydric soil boundary delineation because the waiver requirements set forth in the City of Portland Technical Manual – Section 7 – Soil Survey, Rev. 6/17/11 are met.

The area within and surrounding the project includes soil types listed in the table below. The susceptibility of soils to erosion is indicated on a relative "K" scale of values over a range of 0.02 to 0.69. Higher "K" values indicate more erodible soils.

Table 1 - "K" Value

Soils Type	Subsurface	Substratum
Hinkley loamy sand	.17	.17

The soil "K" value for the soil, listed above, shows a low susceptibility to erosion. The site's susceptibility to erosion is from the Soil Conservation Service Medium Intensity Soil Survey for Cumberland County. Although the soil "K" value shows a low susceptibility to erosion, implementation of the proposed Erosion & Sedimentation Measures by the contractor will be of the utmost importance given the sustained slope throughout the site.

1.2 Existing Erosion Problems

The current lot is vacant with no signs of erosion.

1.3 Critical Areas

The Northern corner of the lot has existing slopes that can reach up to 20 percent.

1.4 Protected Natural Resource

The client is not aware of any existing significant natural features located on the site as listed in Section 14.6.2 (A) of the Land Use Code. The project is not located within a watershed classified as an Urban Impaired Stream by the Maine DEP.

1.5 Previous Construction Activity (5 years)

Acorn Engineering, Inc. is not aware of any construction related activities within the project limits within the past 5 years.

1.6 Timber Harvesting

Acorn Engineering, Inc. is not aware of any timber harvesting within the past 5 years.

2.0 EROSION CONTROL MEASURES AND SITE STABILIZATION

MDEP requires all projects to provide prior to construction an erosion and sediment control plan as part of the site development. The following temporary and permanent erosion and sedimentation control devices shall be implemented. Devices shall be installed as described in this report or within the plan set. See the Maine Erosion and Sediment Control Handbook for Construction: Best Management Practices for further reference.

2.1 Temporary Erosion Control Measures

The following temporary erosion and sedimentation control measures are planned for the project's construction period:

2.1.1 Crushed stone stabilized construction entrances shall be placed at all access points to the project site where there are disturbed areas prior to construction. The following specifications shall be followed at a minimum:

- Stone size shall be 2-3 inches or reclaimed or recycled concrete equivalent.
- The thickness of the entrance stone layer shall be no less than 6 inches.
- The entrance shall not be less than 20 feet wide, however not less than the full width of points where ingress or egress occurs. The length shall not be less than 50 feet in length.
- The stabilized construction entrance shall be underlain by a geotextile fabric (woven or non-woven) shall be placed over the entire entrance area.
- The entrance/exit shall be maintained to the extent that it will prevent the tracking of sediment onto public roadways.

2.1.2 Siltation fence or erosion control berm shall be installed downgradient of any disturbed areas to trap runoff borne sediments until permanent stabilization is achieved. The silt fence or erosion control berm shall be installed per the details provided in the plan set and inspected before and immediately after each rainfall and at least daily during prolonged rainfall. Repairs shall be made if there are any signs of erosion or sedimentation below the fence line or berm. If there are signs of undercutting at the center or the edges or impounding large volumes of water behind the fence or berm, the barrier shall be replaced with a stone check dam. When time for removal, it is recommended that silt fences be removed by cutting the fence material at ground level to avoid additional soil disturbance.

2.1.3 Hay mulch, including hydroseeding, is intended to provide cover for denuded or seeded areas until revegetation is established. Temporary mulch should be applied to areas that will not be actively worked for more than 14 days (7 days in sensitive areas). Mulch placed between April 15th and November 1st on slopes of less than 15 percent shall be covered by fabric netting and anchored with staples in accordance with the manufacturer's recommendation. Mulch

placed between November 1st and April 15th on slopes equal to or steeper than 8 percent and equal to or flatter than 2:1 shall use mats or fabric netting and anchored with staples in accordance with the manufacturer's recommendation.

2.1.4 At any time of the year, all slopes greater than 3:1 shall be stabilized with Double Net Erosion Control Blanket Bionet SC150BN by North American Green or Approved Equal, or Erosion Control Mix Slope Protection as detailed within the plans.

2.1.5 Atlantic street shall be swept to control mud and dust from the construction site as necessary. Additional stone shall be added to the stabilized construction entrance to minimize the tracking of material off the site and onto the surrounding roadways.

2.1.6 During demolition, clearing and grubbing operations, stone check dams shall be installed at any areas of concentrated flow. The maximum height of the check dam shall not exceed 2 feet. The center of the check dam shall be 6 inches below the outer edges of the dam. The contractor shall mulch the side slopes and install stone check dams for all newly excavated ditch lines within 24 hours of their creation.

2.1.7 Silt fence stake spacing shall not exceed 6 feet unless the fence is supported with 14-gauge wire, in which case the maximum spacing shall not exceed 10 feet. The silt fence shall be "toed" into the ground.

2.1.8 Storm drain inlet protection shall be provided to storm drains using any of the following: hay bale drop inlet structures, silt fence drop inlet sediment filter, gravel and wire mesh drop inlet sediment filter, or curb inlet sediment filter. Barriers shall be inspected after every rainfall event and repaired as necessary. Sediments shall be removed when accumulation has reached ½ the design height.

2.1.9 Dust control shall be accomplished using any of the following: water, calcium chloride, stone, or an approved MDEP product. Dust control shall be applied as needed to accomplish dust control.

2.1.10 Temporary loam, seed, and mulching shall be used in areas where no other erosion control measure is used. Application rates for seeding are provided at the end of this report.

2.1.11 Stockpiles shall be stabilized and anchored within 7 days of formation unless a scheduled rain event occurs prior to the 7-day window, in which case the stockpile shall be stabilized prior to the rain event. Methods of stabilization shall be mulch, erosion control mix, or erosion control blankets/mats. Silt fence or a wood waste compost filter berm shall be placed downhill of any soil stockpile location.

2.1.12 For disturbance between November 1 and April 15, please refer to the winter stabilization plan in this report and the Maine Erosion and Sediment Control BMP manual for further information.

2.1.13 It is of the utmost importance that stormwater runoff and potential sediment from the construction site be diverted around the proposed underdrains until the trench is backfilled.

2.2 Permanent Erosion Control Measures

The following permanent erosion control measures are intended for post disturbance areas of the project.

2.2.1 All disturbed areas during construction, not subject to other proposed conditions, shall receive a minimum 4" of loam, limed, and mulched. Erosion control blankets or mats shall be placed over the mulch in areas noted in paragraph 5.2 of this report.

2.2.2 All stormwater devices shall be installed and tributary areas stabilized prior to receiving stormwater.

2.2.3 Refer to the Maine Erosion and Sediment Control BMP manual for additional information.

3.0 EROSION AND SEDIMENTATION CONTROL PLAN

3.1 The Construction Management & Erosion Control Plan is included within the plan set.

4.0 DETAILS AND SPECIFICATIONS

4.1 Erosion & Sedimentation Control Details and Specifications are included in the plan set.

5.0 STABILIZATION PLAN FOR WINTER CONSTRUCTION

Winter Construction consists of earthwork disturbance between the dates of November 1st and April 15th. If a construction site is not stabilized with pavement, a road gravel base, 75% mature vegetation cover, or riprap by November 15th, then the site shall be protected with over-winter stabilization. Any area not stabilized with pavement, vegetation, mulching, erosion control mix, erosion control mats, riprap, or gravel base on the road shall be considered open.

The contractor shall limit the work area to areas where work will occur within the subsequent 15 days so that it can be mulched one day prior to a snow event. The contractor shall stabilize

work areas prior to opening additional work areas to minimize areas without erosion control measures.

The following measures shall be implemented during winter construction periods:

5.1 Sediment Barriers

During frozen conditions, sediment barriers may consist of erosion control mix berms or any other recognized sediment barriers as frozen soil prevents the proper installation of hay bales or silt fences.

5.2 Mulching

All areas shall be considered to be denuded until seeded and mulched. Hay and straw mulch shall be applied at a rate of 150 lb. per 1,000 square feet or 3 tons/acre (twice the normal accepted rate of 75-lbs./1,000 s.f. or 1.5 tons/acre) and shall be properly anchored. Erosion control mix must be applied with a minimum 4-inch thickness. Mulch shall not be spread on top of snow. The snow shall be removed down to a one-inch depth or less prior to application. After each day of final grading, the area shall be properly stabilized with anchored hay or straw or erosion control matting. An area shall be considered to have been stabilized when exposed surfaces have been either mulched or adequately anchored so that the ground surface is not visible through the mulch. Between the dates of November 1st and April 15th, all mulch shall be anchored by either mulch netting, tracking, or wood cellulose fiber. The cover will be considered sufficient when the ground surface is not visible through the mulch. After November 1st, mulch and anchoring of all exposed soil shall occur at the end of each final grading workday.

5.3 Soil Stockpiling

Stockpiles of soil or subsoil shall be mulched for over winter protection with hay or straw at twice the normal rate or with a four-inch layer of erosion control mix. This shall be done within 24 hours of stocking and re-established prior to any rainfall or snowfall.

5.4 Seeding

Between the dates of October 15th and April 1st, loam or seed shall not be required. During periods of above-freezing temperatures, finished areas shall be fine graded and either protected with mulch or temporarily seeded and mulched until the final treatment can be applied. If the date is after November 1st and if the exposed area has not been loamed, final grading with a uniform surface, then the area may be dormant seeded at a rate of 3 times higher than specified for permanent seed and then mulched.

All dormant seeding beds shall be covered with overwintering mulch or an anchored erosion control blanket. If dormant seeding is used for the site, all disturbed areas shall receive 4" of loam and seed at an application rate of 5 lbs./1,000 s.f. All areas seeded during the winter shall be inspected in the spring for an adequate catch. All areas insufficiently vegetated (less than 75% catch) shall be revegetated by replacing loam, seed and mulch. If dormant seeding is not used for the site, all disturbed areas shall be revegetated in the spring.

5.5 Over winter stabilization of disturbed soils

By September 15th, all disturbed soils on areas having a slope less than 15% shall be seeded and mulched. If the disturbed areas are not stabilized by this date, then one of the following actions shall be taken to stabilize the soil for late fall and winter:

- Stabilize the soil with temporary vegetation – By October 1st, seed the disturbed soil with winter rye at a seeding rate of 3lbs per 1,000 s.f., lightly mulch the seeded soil with hay or straw at 75 lbs per 1,000 s.f., and anchor the mulch with plastic netting. Monitor growth of the rye over the next 30 days. If the rye fails to grow at least three inches or fails to cover at least 75% of the disturbed soil before November 1st, then mulch the area for over-winter protection.

- Stabilize the soil with sod – Stabilize the disturbed soil with properly installed sod by October 1st. Proper installation includes pinning the sod onto the soil with wire pins, rolling the sod to guarantee contact between the sod and underlying soil, and watering the sod to promote root growth into the disturbed soil.

- Stabilize the soil with mulch – By November 15th, mulch the disturbed soil by spreading hay or straw at a rate of at least 150 lbs per 1,000 s.f. on the area so that no soil is visible through the mulch. Immediately after applying the mulch, anchor the mulch with plastic netting to prevent wind from moving the mulch off the disturbed soil.

5.6 Over winter stabilization of disturbed slopes

All stone-covered slopes shall be constructed and stabilized by November 15th. All slopes to be vegetated shall be seeded and mulched by September 1st. A slope is considered a grade greater than 15%. If a slope to be vegetated is not stabilized by September 1st, then one of the following action shall be taken to stabilize the slope for late fall and winter:

- Stabilize the soil with temporary vegetation and erosion control mats – By October 1st, the disturbed slope shall be seeded with winter rye at a seeding rate of 3 lbs per 1,000 s.f. and then install erosion control mats or anchored mulch over the seeding. If the rye fails to grow at least three inches or fails to cover at least 75% of the slope by November 1st, then the contractor shall cover the slope with a layer of erosion control mix or with stone riprap.

- Stabilize the soil with sod – The disturbed slope shall be stabilized with properly installed sod for late-season stabilization after October 1st. Proper installation includes the contractor pinning the sod onto the slope with wire pins, rolling the sod to guarantee contact between the sod and underlying soil, and watering the sod to promote root growth into the disturbed soil. The contractor shall not use late-season sod installation to stabilize slopes having a grade greater than 3H:1V or having groundwater seeps on the slope face.

- Stabilize the soil with erosion control mix – Erosion control mix shall be properly installed by November 15th. The contractor shall not use erosion control mix to stabilize slopes having grades greater than 1H:1V or in areas with flowing water. Full contact between the blanket and the soil is critical for an effective erosion control cover.

- Stabilize the soil with stone riprap – Ditches and channels constructed in winter shall be stabilized with riprap. Riprap shall be layered over a nonwoven geotextile fabric blanket on top of a 6-inch layer of clean drainage sand. Place a layer of stone riprap on the slope by November 15th. A registered professional engineer shall be hired to determine the stone size needed for stability on the slope and to design a filter layer for underneath the riprap.

6.0 INSPECTION AND MAINTENANCE

A person with knowledge of erosion and stormwater control, including the standards and conditions in the permit, shall conduct periodic visual inspections of installed erosion control measures. The frequency of inspection shall occur at least once every week, as well as after a "storm event". A "storm event" shall consist of 0.5 inches of rain within a 24-hour period. The following Erosion and Sediment Control - Best Management Practices (BMP's) shall be inspected in the manner as described.

6.1 Sediment Barriers

Hay bale barriers, silt fences, and filter berms shall be inspected and repaired for the following if there are any signs of erosion or sedimentation below them. If there are signs of undercutting at the center or the edges of the barrier or impounding of large volumes of water behind them, sediment barriers shall be replaced with a temporary check dam. Should the fabric on a silt fence or filter barrier decompose or become ineffective prior to the end of the expected usable life and the barrier is still necessary, the fabric shall be replaced promptly. Sediment deposits should be removed when deposits reach approximately one-half the height of the barrier. Filter berms should be reshaped as needed. Any sediment deposits remaining in place after the silt fence or filter barrier is no longer required should be dressed to conform to the existing grade, prepared and seeded.

6.2 Stabilized Stone Construction Entrances

The exit shall be maintained in a condition that will prevent tracking of sediment onto public rights-of-way. The entrance/exit pad shall be inspected weekly and before and after each storm event. When the control pad becomes ineffective, the stone shall be removed along with the collected soil material and redistributed on-site in a stable manner. The entrance should then be reconstructed. The contractor shall sweep or wash pavement at exits, which have experienced mud-tracking onto the pavement or traveled way. When washing is required, it shall be done on an area stabilized with aggregate, which drains into an approved sediment trapping device. All sediment shall be prevented from entering storm drains, ditches, or waterways.

6.3 Mulched Areas

All mulches must be inspected periodically, in particular after rainstorms, to check for rill erosion. If less than 90% of the soil surface is covered by mulch, additional mulch shall be immediately applied. Nets must be inspected after rain events for dislocation or failure. If washouts or breakage occur, re-install the nets as necessary after repairing damage to the slope. Where mulch is used in conjunction with ornamental plantings, inspect periodically throughout the year to determine if mulch is maintaining coverage of the soil surface. Repair as needed.

6.4 Dust Control

When temporary dust control measures are used, repetitive treatment shall be applied as needed to accomplish control. Frequent reapplication of water may be necessary to mitigate dust occurring on warm sunny days, the distribution of water should not cause turbid runoff. Sweeping of paved road surface should occur during dry conditions and shall be swept from the centerline to the edge of the travel way, and shall not to be swept into a waterbody or wetland. Public roads may also require sweeping when necessary.

6.5 Stormwater Appurtenances

All underdrains, storm drains, and catch basins need to be operating effectively and free of debris.

6.6 Erosion and Sedimentation Control Inspections:

Acorn Engineering has personnel qualified to conduct Erosion and Sedimentation Control Inspections. For further information, contact:

Contact: Will Savage, PE
Telephone: (207) 775-2655

Qualifications:

- Maine Professional Engineering License #11419
- Maine DEP - Certified in Maintenance & Inspection of Stormwater BMP's Cert #14
- Certified Erosion, Sediment and Storm Water Inspector (CESSWI) Cert #0293
- Certified Professional in Erosion and Sediment Control (CPESC) Cert. #4620

The Contractor has sole responsibility for complying with the Erosion and Sedimentation Report/Plan, including control of fugitive dust. The Contractor shall be responsible for any monetary penalties resulting from failure to comply with these standards.

7.0 IMPLEMENTATION SCHEDULE

The following implementation sequence is intended to maximize the effectiveness of the above-described erosion control measures. Measures should be in accordance with the proper erosion control measures for the season in which construction will be conducted. Contractors should avoid overexposing disturbed areas and limit the amount of stabilization area.

1. Install a stabilized construction entrance in all locations where construction traffic will enter and exit the site.
2. Install perimeter silt fence or erosion control berm.
3. Install all other erosion control devices as necessary throughout the remainder of this schedule.
4. Commence installation of drainage infrastructure.
5. Commence earthwork operations associated with the parking lot construction.
6. Commence installation of utilities.
7. Continue earthwork and grading to subgrade as necessary for construction.
8. Complete installation of drainage infrastructure, as well as other utility work.
9. Complete remaining earthwork operations.
10. Install sub-base and base gravels in paved areas.
11. Install paving, curbing, and brickwork.
12. Loam, lime, fertilize, seed, and mulch disturbed areas and complete all landscaping.
13. Once the site is stabilized and mulching of landscape areas is complete, remove all temporary erosion control measures.
14. Touch up areas without a vigorous catch of grass with loam and seed.
15. Complete site signage and striping.
16. Execute proper maintenance and inspections of all temporary and permanent erosion control measures throughout the project.

The contractor shall re-vegetate disturbed areas as rapidly as possible. All areas shall be permanently stabilized within 7 days of final grading or before a storm event. The contractor shall incorporate planned inlets and drainage systems as early as possible into the construction phase.

The above implementation sequence should be generally followed by the site contractor. However, the contractor may construct several items simultaneously. The contractor shall submit to the owner a schedule of the completion of the work. If the contractor is to commence the construction of more than one item above, they shall limit the amount of exposed areas to those areas in which work is expected to be undertaken within the following 30 days.

8.0 CONCLUSION

The above erosion control narrative is intended to minimize any negative development impact caused by erosion and sedimentation. The contractor shall also refer to the Maine Erosion and Sediment Control BMP manual for additional information.

9.0 ATTACHMENTS

- Temporary Seeding Plan
- Permanent Seeding Plan

TEMPORARY SEEDING PLAN

Site Preparation

The seeded areas shall be feasibly graded out to provide the use of equipment for seedbed preparation, seeding, mulch application, and mulch anchoring. If necessary, the site may require additional temporary erosion control measures outlined in the Erosion Control report.

Seedbed Preparation

Fertilizer shall be applied to the site at a rate of 13.8 pounds per 1,000 square feet. The composition of the fertilizer shall be 10-10-10 (N-P2O5-K2O) or equivalent.

Limestone shall be applied to the site at a rate of 138 pounds per 1,000 square feet.

Seeding

The composition and amount of temporary seed applied to a site shall be determined by the following table:

Seed	Pounds / 1,000 S.F.	Recommended Seeding Dates
Winter Rye	2.57	Aug-15 to Oct-1
Oats	1.84	Apr-1 to Jul-1 Aug-15 to Sep-15
Annual Ryegrass	0.92	Apr-1 to Jul-1
Sudangrass	0.92	May-15 to Aug-15
Perennial	0.92	Aug-15 to Sep-15

Mulching

Mulch shall be applied at a rate of 70 lbs – 90 lbs per 1,000 square feet. The mulch shall be installed at a minimum depth of 4 inches. The seeded area shall be mulched immediately after seed is applied. Mulching during the winter season shall be double the normal amount.

Conclusion

Please refer to the Maine Erosion and Sediment Control BMP manual for additional information pertaining to temporary seeding and mulching.

PERMANENT SEEDING PLAN

Site Preparation

The seeded areas shall be feasibly graded out to provide the use of equipment for seedbed preparation, seeding, mulch application, and mulch anchoring. If necessary, the site may require additional temporary erosion control measures outlined in the Erosion Control report.

Seedbed Preparation

Fertilizer shall be applied to the site at a rate of 13.8 pounds per 1,000 square feet. The composition of the fertilizer shall be 10-10-10 (N-P2O5-K2O) or equivalent.

Limestone shall be applied to the site at a rate of 138 pounds per 1,000 square feet.

Seeding

The composition and amount of permanent seed applied to a site shall be determined by the following table:

Seed	Pounds / 1,000 S.F.
Kentucky Bluegrass	0.46
Creeping Red Fescue	0.46
Perennial Ryegrass	0.11
Total	1.03

Mulching

Mulch shall be applied at a rate of 70 lbs – 90 lbs per 1,000 square feet. The mulch shall be installed at a minimum depth of 4 inches. The seeded area shall be mulched immediately after seed is applied. Mulching during the winter season shall be double the normal amount.

Recommendations

Permanent seeding is recommended to be completed in the spring. Later summer seeding is allowed if completed prior to September 1st. If seeding cannot be accomplished during the periods recommended for permanent seeding, then the contractor shall perform temporary seeding per the temporary seeding plan.

Conclusion

Please refer to the Maine Erosion and Sediment Control BMP manual for additional information pertaining to permanent seeding and mulching.

SECTION M: FIRE DEPARTMENT LETTER & PUBLIC SAFETY & FIRE PREVENTION

May 15, 2021

Chief Keith Gautreau
City of Portland Fire Department
380 Congress St.
Portland, ME 04101

Subject: 30-32 Atlantic Street – Fire Department Checklist, Public Safety
Section M of Application

On behalf of Kestrel LLC, Project Owner, the design team is pleased to respond to the Portland Fire Department Site Review Checklist.

1. Name, address, telephone number of Applicant:

   Kestrel LLC
   118 Rowley Drive
   Stonington, CT 06378
   860-391-7322

2. Name address, telephone number of Architect:

   Lauren J. Reiter, RA, LEED AP
   6 South Street
   Portland, Maine 04101
   917-502-2225

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

   NFPA: Apartments / IBC: R-2

4. Square footage of all structures, including decks [total and per story]

Existing Building		
Total	N/A	**sf**

Proposed Building		
Garage	1,352	sf
1st Floor not include. Garage	1,280	sf
2nd Floor	3,052	sf
3rd Floor	3,052	sf
Total	8,736	**sf**

5. Elevation of all structures

   Based upon the average grade plane defined by the IBC, the proposed building height is just under 35', which is below the allowable 35 feet within the R-6 zone. Please refer to the building elevations on the "A" drawings for additional information.

6. Proposed fire protection of all structures

   The building will have a 13R sprinkler system. Fire flows and requirements for system storage or booster pumping are subject to the fire designer which will be performed prior the request for a building permit.

7. Hydrant locations

   An existing hydrant is located approximately 98 ft north of the property in front of 19 Atlantic Street. Another hydrant at the corner of Wilson and Atlantic Streets is approximately 274 ft. from the property. Hydrant flow data from the Portland Water District has been received and is attached to this document.

8. Water main size and location

   The redevelopment will be serviced by a new 6" sprinkler line and domestic water main within Atlantic Street. A 6" fire service line will extend from the domestic water main to the building fire suppression system. The building is expected to have internal sprinkler risers and a Fire Department pump connection on the side of the building near Atlantic Street.

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

   Access to the structure is provided directly on Atlantic Street. Additionally, there will be access to the property's driveway.

10. Site Lighting / CPTED

    Site lighting, activated by motion sensors, shall be provided around the perimeter of the building. See attached cut-sheet and site plan showing light levels. Additionally, downlights at the cantilevered soffit over the garage entrances, and a wall-mounted fixture at the covered entrance vestibule will be on timeclocks, such that building entrances will always be lit at night. See documents under Section O. Exterior Lighting.

11. Please see the attached code summary.

NFPA 1 – Chapter 18 Fire Department Access and Water Supply

18.2 Fire Department Access:

The project site is located in a developed area and is fronted by a public street. The following pavement street width is currently available:

- Atlantic Street: 50 feet

Per NFPA 1 – Chapter 18.2.3.3.1, there will be public street access within 50 feet of at least one exterior door. Per NFPA 1 – Chapter 18.2.3.2.2.1, all first story floors shall be located not more than 450 feet from a Fire Department access road.

City of Portland Technical Manual – Section 3 Public Safety

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

Response: Not applicable

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

Response: As depicted on the site plan, the proposed building layout provides a minimum of two paved access points to the structure: from Atlantic Street directly and one from the driveway.

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

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

Response: The proposed development layout has contemplated emergency access conditions and provides for safe and efficient access along the public street for emergency vehicles.

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

Response: The building will be provided with exterior doors that will be within 50' of a Fire Department access route, namely Atlantic Street.

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

Response: The proposed site maintains the required clearance height of nine feet in all cases except for the first floor parking area.

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

Response: The elevators will be sized to accommodate an 80 x 24 stretcher, per the Architect's designs.

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

Response: The applicant will work with the City's Public Works Division to assign street addresses and numbering to meet City Standards.

Thank you for your review. Please let me know if you have any additional questions or comments.

Sincerely,



Lauren J. Reiter
Registered Architect, Maine Lic. ARC#3302

Attachments:

- Code Analysis

30-32 ATLANTIC STREET, PORTLAND ME – CODE SUMMARY

BUILDING AREA
Building Footprint: 2,632 SF
Building Gross: 8,736 SF
R-2 Gross: 7,384 SF
Parking Gross: 1,352 SF

IBC 2015 CODE OVERVIEW
Use & Occupancy: Mixed Use- R-2 (Apartments), S-2 Enclosed Parking Garage Construction Type: VA
Sprinkler: Yes
Note: in accordance with Table 602 and Section 705.5:
Proposed Fire Separation Distance of north exterior walls equals 5.56 feet. Therefore, Exterior Wall Rating at this wall = 1 hour .
Proposed South and West walls have fire separations of 10.07 feet and 10.56 feet, respectively. Therefore, Exterior Wall Rating at these walls = 1 hour from interior side only.

NFPA 2009 CODE OVERVIEW
Use & Occupancy: Mixed Use- New Apartment Building, Storage- Enclosed Parking Garage
Construction: Type V
Sprinkler: Yes

IECC 2009 CODE OVERVIEW- See Chapter 13 of IBC 2015

DETAILED CODES REVIEW (IBC / IECC / NFPA)

I. IBC 2015 DETAILED CODE REVIEW- Comply with all chapters in their entirety as applicable

Ch. 3. Use & Occupancy Classification
310.4. Residential Group R-2 (Apartments)
311.3. Low-Hazard Storage Group S-2 (Parking Garages, open or closed)

Ch. 4. Special Detailed Requirements Based on Use and Occupancy
Section 406 Motor Vehicle-Related Occupancies
406.6 Enclosed Parking Garages
406.6.1 Height and Areas: See Sections 504, 506 and 507
406.6.2 A Mechanical Ventilation System shall be provided in Accordance with the International Mechanical Code
406.6.3 An Enclosed Parking Garage shall be Equipped with an Automatic Sprinkler System in accordance with Section 903.2.10.

Ch. 5 General Building Height and Areas
Table 504.3 Building Height for R/ S13R (Building equipped with an automatic sprinkler system per Section 903.1.2), Type VA construction: max. height = 60'-0"
Table 504.4. Number of Stories: R-2/ S13R (see note above), Type VA construction: max. 4 Stories above grade
Table 506.2 Building Area: R-2/S13R, Type VA construction: max. 12,000 s.f per floor

Table 508.4. Required Separation of Occupancies: Required Separation between Occupancies R-2 & S-2 = 1 hour
508.4.4.1. Required separators between adjacent occupancies shall be Fire Barriers in accordance with Section 707 and/ or Horizontal Assemblies in accordance with Section 711

Ch. 6. Types of Construction

Table 601. Type VA
Primary Structural Frame- 1 hour
Bearing Walls Exterior- 1 hour
Bearing Walls Interior- 1 hour
Non-bearing Walls and Partitions, Exterior- per Table 602
Non-bearing Walls and Partitions, Interior – no rating
Floor Construction and Associated Secondary Members- 1 hour
Roof Construction and Associated Secondary members- 1 hour

Table 602. Fire Resistance Rating for Exterior Walls based on Fire Separation Distance
X less than 5'-0"- 1 hour
X greater than or equal to 5'-0" and Less than 10'-0"- 1 hour
X greater than or equal to 10'-0" and Less than 30'-0"- 1 hour, if greater than 10'-0" then rating is from interior only.
Where Table 705.8 permits non-bearing exterior walls with unlimited area of unprotected openings, required fire resistance of exterior walls is 0 hours

602.5 In Type V construction, structural materials, exterior and interior walls are of any materials permitted by this code.

Ch.7. Fire and Smoke Protection Features

704.1 Structural members and assemblies shall comply with Table 601 for required fire ratings.
704.2 Where columns are required to be fire-rated, the entire column shall be encased for the full height of the column, including connections to other structural members and/or where extending through a ceiling.
705.2. Projections such as cornices and exterior balconies beyond the exterior wall shall conform to this section and Section 1406.

Table 705.2 Minimum distance of Projections
0' to 2' fire separation: no projections allowed.
2' $\geq$ 3' : 24 inches
3' $\geq$ 30' : 24 inches plus 8" for every foot beyond 3'

705.2.2 Projections from Type V construction shall be of any approved material
705.2.2. Projections from Type V construction (including Balconies) may be of any approved material.
705.2.3 Combustible projections extending to within 5' of fire separation distance shall be not less than 1-hour construction.
705.5 Fire Resistance Rating of Exterior Walls with a Fire separation distance of less than or Equal to 10'-0" shall be Rated for Exposure to Fire from Both Sides.

Table 705.8. Maximum Area of Exterior Wall Openings / Unprotected, Sprinklered / Distance to lot line
Openings not permitted less than 3'
Unprotected openings 3' to less than 5' in sprinklered building: 15% allowable area
Unprotected openings 5' to less than 10' in sprinklered building: 25% allowable area
Unprotected openings 10' to less than 15' in sprinklered building: 45% allowable area
Unprotected openings 15' to less than 20' in sprinklered building: 75% allowable area
Unprotected openings more than 20' in sprinklered building: No limit

707 Fire Barriers / Fire-Resistance Rating

Shaft Enclosures- Comply with Section 713.4.
Interior exit Stairway and ramp construction- Comply with section 1023.1.
Enclosures for Exit Access Stairways- Comply with section 713.4.
Exit Passageway- Comply with section 1024.3
Horizontal Exit- Comply with section 1026.1

707.3.7 Incidental Uses- Comply with Table 509

707.3.9 Separated Occupancies- Comply with Table 508.4 based on the occupancies being separated. R/ S-2= 2 Hour

Table 707.3.10. Fire Resistance separating Occupancies R and S-2 = 2 hours.

707.4 Exterior Walls- Where exterior walls serve as part of a required fire resistance-rated shaft of stairway enclosure or separation, comply with section 705 for exterior walls.

707.5 Continuity- Fire barriers shall extend from the top of the foundation or floor/ceiling assembly below to the underside of the floor or roof sheathing, slab, or deck above and shall be securely attached hereto. Such fire barriers shall be continuous through concealed spaces, such as the space above suspended ceilings. Joints and voids at intersections shall comply with sections 707.8 and 707.9.

707.5.1 Supporting Construction- Supporting construction of fire barriers shall be protected to afford the required fire-resistance rating of the fire barrier supported. Hollow vertical spaces within the fire barrier shall be fire blocked the full height of the support structure in accordance with section 718.2 at every floor and at the roof.

707.7 Penetrations- Comply with section 714. Penetrations into exit access stairways, interior exit stairways and exit passageways shall be allowed only where permitted by section 1019, 1023.5 and 1024.6, respectively.

707.8 Joints comply with section 715.

707.9 All voids at intersections of fire-resistance rated assemblies shall be filled with an approved material or system.

708.1 Fire Partitions

Separation Walls as required by section 420.2
Corridor walls as required by section 1020.1
Elevator Lobby separation as required by section 3006.2.
Fire-Resistance Rating Fire partitions shall have a fire -resistance rating of not less than 1 hour.
Exceptions: 1. Corridor walls permitted to have a ½ hour fire-resistance rating by Table 1020.1. Occupancy R, Occupant load served by corridor with sprinkler system= 0.5 hours.

708.4 Fire barriers shall extend from the top of the foundation or floor/ceiling assembly below to the underside of the floor or roof sheathing, slab, or deck above and shall be securely attached hereto. Supporting construction shall be protected to maintain required fire-resistance.

708.9 Ducts and air transfer openings- Penetrations in a fire partition by ducts and air transfer openings shall comply with section 717.

711.2.3 At Horizontal Assemblies, supporting construction shall match fire-resistance rating of horizontal assembly being supported.

711.2.4.1 Separating Mixed Occupancies: comply with section 508.4 based on the occupancies being separated.

711.2.4.3 At Dwelling Units and Sleeping Units, horizontal assemblies serving as dwelling unit or sleeping unit separations shall not be less than 1-hour.

712.1.12 Vertical openings containing Exit Access Stairways and Ramps shall comply with section 1019. Horizontal fire doors shall achieve rating not less than the assembly being penetrated and shall be permanently labeled. Access doors shall be permitted in roof/ceiling in fire stair, provided that doors are tested per ASTM 119 or UL 263 and permanently labeled.

713.2 Shaft enclosures shall have a fire-resistance rating of not less than 2-hours where connecting four or more stories and *not less than one hour where connecting less than 3 stories.*

713.5 Shaft enclosures shall be constructed as fire barriers in accordance with section 707 or horizontal assemblies constructed in accordance with section 711 or both, and shall have continuity in accordance with section.
713.6 Where exterior walls servs as part of shaft enclosure, wall shall comply with Section 705, and fire-resistance rating of enclosure does not apply. However, exterior walls at interior fire stairs shall comply with Section 1023.7.
713.8 -- 713.10: Shaft Penetrations shall comply with section 714. Joints- comply with section 715. Ducts and air transfer openings- Penetrations in a fire partition by ducts and air transfer openings shall comply with section 717. Comply with entire section 714 to protect through penetrations and membrane penetrations of horizontal assemblies and fire-resistance rated wall assemblies.
713.14 Elevators shall be constructed in accordance with Section 713 and Chapter 30.
714.3 Penetrations into or through fire wall, fire barriers and fire partitions shall comply with Sections 714.3.1 through 714.3.3.
714.4 Penetrations of a fire-rated floor, floor/ceiling assembly, or ceilings or roof/ceiling assembly shall be protected in accordance with Sections 714.4.1—714.4.4.
715.1 Joints installed in fire-rated walls, floors or floor/ceiling assembly, or roof or roof/ceiling assembly shall be protected by approved Fire Resistant Joint Systems that maintain the required ratings. Fire resistant joints not required where shaft enclosure is already protected, and at walls allowed to have unprotected openings. Comply with all of Section 715,
Table 716.5 Opening Fire Protection Assemblies

Fire doors at Shafts & interior exit stairways with wall rating 2 hours: Min. Fire Door Rating- 1 ½ hour with maximum vision panel size of 100 sq. in.
Fire Doors at Corridor Walls with wall rating 0.5 hours: Min. Fire Door Rating- 1/3 hour, Door Vision panel size= max. Size tested.
Fire Doors at Exterior Walls with wall rating 1 hours: Min Fire Door Rating- 3/4 hour with maximum vision panel size of 100 sq. in.

716.5.9 Fire doors shall be latching and self-or automatic closing in accordance with Section 716.
717 At Ducts and Air Transfer Openings in rated assemblies, comply with entire section 717.
718 At Concealed Spaces, fireblocking and draftstopping shall comply with entire section 718
718.2 Fire blocking in combustible construction shall be installed to cut off concealed draft openings (both vertical and horizontal) and shall form an effective barrier between floors, between a top story and a roof or attic space, fire blocking shall be installed in the locations and in the manner specified in sections 718.2.2 through 718.2.7. Fire blocking shall be provided in concealed spaces between stair stringers at the top and bottom of a stair, and enclosed spaces under stair shall comply with Section 1011.7.3.
718.3.2 Draftstopping is required in R-2 building with 3 or more dwelling units, to be located above and in-line with the dwelling unit separations, unless building is equipped with automatic sprinkler system conforming with Section 903.1.1.
720 Thermal and Sound-Insulating Materials shall comply with entire section 720.
Table 721.1(2) Prescriptive Fire Resistance @ Partitions

CMU provides 1-hour fire resistance in 2.1" – 2.8" (depending on type)
Solid Concrete provides 1-hour fire resistance in 2.5" – 3.5" (depending on type)
Interior wall: 2x4 wood studs with 5/8" Type X gypsum board each side provides 1-hour fire resistance (See Table 721.1(2), item #14-1.3 for details) (4-3/4" th. Wall)
Exterior wall: 2x6 wood studs with 2 layers 5/8" Type X gypsum board each side and 5.5" mineral wool in cavity provides 2-hour fire resistance (See Table 721.1(2), item #15-1.16 for details) (8" th. Wall)
Exterior wall rated for fire resistance from interior only: 2x6 wood studs with 1 layer 5/8" Type X gypsum board on interior side and R19 mineral fiber in cavity provides 1-hour fire resistance (See Table 721.1(2), item #16-1.3 for details) (6.5" th. Wall)

722.2.1.4.3 and 722.3.2.3 For an exterior wall with a fire separation distance great than 5 feet, the fire shall be assumed to occur on the interior side only.
Table 722.3.2 Fire resistance ratings of different types of CMU
Table 722.6.2(1) Time assigned to Wallboard membranes
5/8" Type X Gypsum Wallboard = 40 minutes
Table 722.6.2(2) Time assigned to Wood Frame
Wood Studs @ 16" OC = 20 minutes
Table 722.6.2(5) Time assigned to Additional Protection
Fill spaces in wood stud walls with galls fiber mineral wool batts or cellulose insulation = 15 minutes
722.6.2.3 For an exterior wall with fire separation greater than 10 feet, the wall rating is assigned the rating dependent on interior membrane and framing. The membrane on the outside shall consist of sheathing, sheathing paper and siding as described in Table 722.6.2(3).
722.6.5 Table 722.6.2(%) indicates additional time increments that can be added to fire resistance where glass fiber, rockwool, slag mineral wool or cellulose is incorporated into the assembly.

Ch.8. Interior Finishes- Comply with Entire Chapter
Table 803.11 Class C finishes allowed in Sprinklered R2 building, including interior exit stairways, corridors and enclosures for exit access stairways.
804.4.2 Floor coverings in stairways, exit passageways, and corridors in R2 building shall be minimum Class II.
Ch.9. Fire Protection Systems - Comply with Entire Chapter
901.6.1 Automatic Sprinkler System- Automatic Sprinkler Systems shall be monitored by an approved supervising station.
901.6.2 Fire Alarm Systems required by the provisions of section 907.2 and sections 907.2 and 907.9 of the International Fire Code shall be monitored by an approved supervising station in accordance with section 907.6.6.
903.2.8 Group R- An automatic sprinkler system installed in accordance with section 903.3 shall be installed throughout buildings with a Group R fire area
903.2.10 Group S-2 enclosed parking garages- An automatic sprinkler system shall be provided throughout buildings classified as enclosed parking garages in accordance with section 406.6 where the enclosed parking garage is located beneath other groups.
903.3.1.2 NFPA 13R Sprinkler Systems- Allowed in Group R occupancies up to and including 4-stories in height and do not exceed 60 feet in height above the grade plane shall be permitted to be installed throughout.
903.3.1.2.1 Sprinkler protection shall be provided for Balconies, Decks and ground floor patios of Dwelling Units and Sleeping Units of Type V construction.
903.3.2 Quick Response and Residential sprinklers- Required in Dwelling units and sleeping units in R occupancies.
906.1. Each dwelling unit shall have a portable fire extinguisher min. rating of 1-A:10-B:C where required by international Fire Code in Table 906.1
907 Fire Alarm and Detection Systems- Comply with entire section 907
907.1.2 and 907.1.2 Construction Documents and Shop Drawings for fire alarm systems shall be submitted for review and approval prior to system installation.
907.2. Manual fire alarm box is not required for R-2 building unless required for the fire code official.
907.2.9 Group R-2 Fire Alarm systems and smoke alarms shall be installed in group R-2 occupancies as required in sections 907.2.9.1 through 907.2.9.3
907.2.9.1 Manual Fire Alarm System is required where a dwelling unit or sleeping unit is located three or more stories above the lowest level of exit discharge.

907.2.11 Single and Multiple-station smoke alarms must comply with UL 217 and install in accordance with section 907.2.11.2
907.2.11.3 In Group R-2 buildings, provide Single or Multiple-station smoke alarms at all the following locations:

On the ceiling or wall outside of each separate sleeping area in the immediate vicinity of the bedrooms
In each room used for sleeping purposes.
In each story within a dwelling unit.

907 2.11.4 Smoke alarms shall be installed not less than 3 feet of a bathroom door with shower or tub.
907.5.2.3.3 In R-2 buildings required to have a fire alarm systems by Section 907, all dwelling units shall be provided with the capability to support visual alarm notification appliances in accordance with Chapter 10 of ICC A117.1
912.1 Fire Department Connections shall be installed in accordance with the NFPA standard applicable to the system design and shall comply with sections 912.2 through 912.6.
914 Emergency Responder Safety Features- Comply with entire section 914
915.1.2 Carbon Monoxide Detection shall be provided in R occupancies that contain a fuel-burning appliance or fireplace.

Ch.10. Means of Egress

1003.2 Means of egress shall have a ceiling height not less than 7'-6", and stair headroom as per Section 1011.3.
Table 1004.1.2 Occupant Load: Maximum Floor area for Residential Occupancy = 200 Gross Sq. Ft. per occupant
1005.3.1 Stairway width: occupant load of each floor = .3" per occupant. As per Section 1011.1, min. width = 36" and headroom clearance not less than 80".
1005.3.2 Other egress areas: width = .2" per occupant
1005.7.1 Doors when open onto egress path, shall not reduce required width by more than 7".
Doors in any positions shall not reduce the required width by more than one half. These restrictions do not apply to induvial dwelling units in R-2.
1006 Number of Exits and Exit access doorways 1006.3 Egress from stories or occupied roofs.
1006.2.1.1 R-2, one means of egress allowed from dwelling unit if sprinklered building and common path of egress is less than 125'. (Max occupant load of 10.)
Table 1006.3.1 Minimum number of exits or access to exits per story, Occupant load per story: 1-500, Minimum number of exits or access to exits from story: 2.
1006.3.2 Single exit allowed where rooms, areas & spaces discharge directly to exterior @ first floor; required emergency escape openings; max. distance to exit = 75'.
1006.3.2/Table 1006.3.2(1): R-2 building can have one exit as long as building is sprinklered, maximum 3 stories, less than 4 units per floor, automatic sprinkler and exit travel less than 125 feet.
1007 Exit or exit access doorway configuration- Comply with entire section 1007
1007.1.1 Where two exits required: in automatic sprinklered building, distance between exits shall not be less than one third of full floor, measured on a diagonal. Distance is measured to closest riser. If hall walls are 1-hr. rated, straightest point between exits may be used. (See 1007.1.1.1 for measuring.)
1008.1 Illumination shall be provided in means of egress in accordance with Section 1008.2.
1008.3.2 Emergency lighting is required at exit hallways and stairs if two exits are required
1010.1 Doorway widths. All doors in path of egress and to accessible spaces must be minimum 32" clear width. Other doors do not have minimum width requirement but must be min. 78" in height.

1010.1.6 Landings shall have width not less than the width of the stairway or the door, whichever is greater.
1010.1.8 Doors in series shall be minimum 48” apart plus the width of a door swinging into the space.
1010.1.9.1 Door hardware shall comply with this section.
1011 Stairways- Comply with entire section 1011
1011.2 Width and Capacity- Stairways serving an occupant load of less than 50 shall have minimum clear width of 36”.
Note: Occupant load is 9,600 s.f./ 200 gross sq. ft.= 48 people, Minimum Width of Stair = 36”
1011.3 Headroom- Minimum headroom clearance of 80 inches required.
1011.5.2 Stair Treads and risers- Maximum Riser height shall be 7” and minimum riser height shall be 4”, Minimum rectangular tread depth shall be 11” from riser to nosing. *Stairs within dwelling units may have maximum riser height of 7-3/4” and minimum tread depth of 10”.*
1011.6 Stairway landings- Width of landing shall be not less than the width of the stairways served. Doors opening on a landing shall not reduce width to less than ½ the required width.
1011.11 Handrails- Required on both sides of stair and shall comply with section 1014, except railings on one side permitted where stair is within dwelling unit.
Section 1011.12 In 4-story or more buildings, one stair must go to roof. Buildings without occupied roof access are permitted to have ships ladder or permanent ladder. Roof hatch shall not be less than 16 SF. Provide guards where roof hatch is less than 10 feet from roof edge.
Section 1011.12.2 Where stairway is provided to roof, access to roof shall be through a penthouse complying with Section 1510.2.
1013.1 Exit Signs are required in path of egress travel and shall be readily visible from any direction of egress travel. Comply with Section 1013. Exist signs are not required at main, obvious exterior exits.
1014.1 Handrails shall be not less than 34” and not higher than 38” and shall comply with entire section 1014.
1015.1 Guards are required at stairs and landings that are more than 30” to grade or floor below. Where required, guards shall be 42” high except at the open side of stairs, guards may be not less than 34” high. Guards shall be required where equipment requiring service is within 10’ of a roof edge or a roof hatch is within 10’ of roof edge. Comply with entire section 1015 .
1015.8 Windows must have opening control devices where window sill is less than 36” above finish floor and greater than 6' above grade or other surface below at the building exterior.
1016.2 Exit access through elevator lobby is permitted. Level of protection is not required to extend to the exit.
1016.2.3 Egress shall not pass through sleeping areas, bathrooms or rooms that can be locked.
Table 1017.2 Exit Access Travel Distance. Refer to NFPA 101-2009, Table A7.6. For Occupancy R, With Sprinkler System= 250 feet where building equipped throughout with an automatic sprinkler system.
Table 1020.1 Corridor Fire-Resistance Rating for Occupancy: R, Occupant Load Greater than 10, With Sprinkler System= 0.5 Hrs
1020.1.2. Fire resistance rating is not required for corridors within a dwelling unit in R buildings.
Table 1020.2 Minimum Corridor Width- Occupancy: R, Min. Width w/ Occupant load less than 50 (total= 48)= 36"
1020.4 Dead end corridors shall be max. 50 feet in length in sprinklered building.
1022 Exits- Comply with entire section 1022
1023 Interior Exit Stairways and Ramps- Comply with entire section 1023
1023.2 Stairs connecting 4 stories or more must be 2-hr. rated.

1023.7 Exterior walls of interior exit stairways shall comply with Section 705 for exterior walls, but shall not have a fire resistance rating of less than 1 hour within 10 feet horizontally and vertically of the exit stair.
1023.8 If an exit stair continues below the level of discharge, an approved barrier shall be provided at the discharge level to prevent people from unintentionally continuing to levels below exterior discharge.
1023.9 Signage shall be provided in stairs connecting more than three stories in compliance with this Section.
1024 Exit passageways shall not be used for any purpose other than as a means of egress and as circulation. Comply with all other provisions of this Section.
1030.1 – 1031.4 In addition to egress stairs, an emergency escape and rescue (E&R) shall be provided in sleeping rooms (bedrooms) in R2 occupancies below the fourth story above grade. Emergency E&R openings shall have minimum net clear opening of 5.7 SF, except at grade floor where net opening shall be minimum 5 SF, and shall have sill height at maximum 44” above floor.

Ch.11. Accessibility
1104 Accessible Entrances
1104.1 At least one accessible route shall be provided to the building entrance from public sidewalks & accessible parking.
1105.1.1 Parking Garage entrance from exterior and from within Garage to building’s main entry shall be accessible.
1105.1.7 At least one accessible entrance shall be provided to each dwelling unit.
Table 1106.1 Accessible parking spaces: for 1-25 Parking Spaces, required minimum number of accessible spaces= 1
1107.2. Design- Dwelling Units and Sleeping Units that are required to be accessible units, type A and B units shall comply with the applicable portions of chapter 10 of ICC A117.1
1107.3 Accessible spaces in Type A or B units shall include toilet/bathing room, kitchen living and dining area and exterior spaces such as terraces.
1107.5.1.2. In a structure with 4 or more dwelling units , every dwelling unit shall be a Type B unit.
Table 1107.6.1.1 In a building of 25 units or less, no units are required to have roll-in showers.
1111.1 Signage- Accessible parking space(s) shall be marked by the International Symbol of Accessibility.
1111.3 Floor level signage shall be provided in accordance with Section 1023.9 in exit stairs.

Chapter 12 Interior Environment-
Section 1203 Ventilation. Comply with this section.
Section 1204 Temperature Control. Comply with this Section.
Section 1205 Lighting. Comply with this Section
1207.2 Air-borne sound. Walls, partitions, and floor/ceiling assemblies separating dwelling units from each other or from public or service areas shall have a sound transmission class (STC) of not less than 50 (45 if field tested) for air-borne noise when tested in accordance with ASTM E 90. Penetrations or openings in construction assemblies for piping; electrical devices; recessed cabinets; bathtubs; soffits; or heating, ventilating or exhaust ducts shall be sealed, lined, insulated, or otherwise treated to maintain the required ratings. This requirement shall not apply to dwelling unit entrance doors; however, such doors shall be tight fitting to the frame and sill.
Section 1208 Interior Space Dimensions. Comply with this Section

Chapter 13 Energy Efficiency
1301 General- Buildings shall be designed and constructed in accordance with the International Energy Conservation Code 2009.

Chapter 14 Exterior Walls
Section 1403 Performance requirements. Comply with this Section.
Section 1404 Materials. Comply with this Section.
Section 1405 Installation of Wall Coverings. Comply with this Section.
Table 1406.2.1.1.2 With a fire separation of 10 feet, combustible exterior wall covering shall have Tolerable Level Incident Radiant Heat Energy(kW/m2) of 8.9. With a fire separation of 5 feet, combustible exterior wall covering shall have Tolerable Level Incident Radiant Heat Energy(kW/m2) of 12.5.

II. IECC 2009 DETAILED CODE REVIEW - Comply with all chapters in their entirety as applicable

Chapter 3 General Requirements
301 Climate Zones
Table 301.1 Climate Zones, Main, Cumberland County, 6A
Table 402.1 Climate Zone 6
Minimum R-values
Windows: U value: .035
Wood Frame Walls: R20 cavity or 13 cavity+5 continuous
Mass Wall: 15/19
Ceiling: R 49
Floor: R 30
Basement Wall: R15 (continuous) or R19 cavity
Slab R10

Chapter 5 Commercial Energy Efficiency- Comply with entire Chapter 5
501.1 Scope
Commercial buildings shall meet either the requirements of ANSI/ASHRAE/IESNA Standard 90.1, Energy Standard for Buildings, Except for Low Rise Residential Buildings, or the requirements contained in this chapter.
502 Building Envelope Requirements
502.1.1 Insulation and Fenestration criteria. The building thermal envelope shall meet the requirements of Tables 502.2 (1) and 502.3 based on Climate Zone 6A.
Table 502.2 (1)- Building Envelope Requirements- Opaque Assemblies
Climate Zone- 6A
Roofs- Attic and Other- Group R, R-38
Walls Above Grade- Wood Framed and Other- Group R, R- 13 + R-7.5 ci.
Walls Below Grade- Below Grade Wall- Group R, R-7.5 ci. Floors- Joist/ Framing (Steel/ Wood)- Group R, R-30
Slab-on-Grade- Unheated Slabs- Group R, R-15 for 24” Below
Opaque Doors- Swinging, Roll-up or Sliding- Group R, U- 0.50.
Table 502.3 Building Envelope Requirements: Fenestration Vertical Fenestration (40% Maximum of above-grade wall)- Proposed = 25.7%
Climate Zone- 6A
Framing Materials other than metal- U-Factor = 0.35 SHGC all Frame types: PF less than 0.25= 0.40

III. NFPA 2009 DETAILED CODE REVIEW-Comply with all chapters in their entirety as applicable.

Chapter 6 Classification of Occupancy and Hazard of Contents

Classification of Occupancy
6.1.8.1.5 New Apartment Building
6.1.13 Storage- Enclosed Parking Garage
Separated Occupancies
Table 6.1.14.4.1 (b)- Apartment Buildings, Storage= 2 Hours, 1 hour allowable reduction where building is protected throughout by an approved automatic sprinkler system in accordance with 9.7.1.1 and supervised in accordance with 9.7.2.
6.2.2.2 Classification of Hazard of Contents: Low Hazards

Chapter 7 Means of Egress

Exit Access Corridors- Corridors used as an exit access and serving an occupant load exceeding 30 shall be separated by walls having not less than a 1- Hour fire-resistance rating in accordance with Section 8.3
Exits- Comply with section 8.2 and the following: 2, Minimum 2-hour fire resistance rating where the exit connects four or more stories, unless one of the following conditions exists: (c) Minimum 1 hour enclosures in accordance w/ 30.2.2.1.2 shall be permitted as an alternative to the requirement of 7.1.3.2.1
7.2.2.2.1.2 Minimum New Stair Width where the total occupant load of all stories served is less than 50, the minimum width clear of all obstructions, except obstructions 4 ½" at or below handrail height on each side, shall be 36".
Table 7.2.2.2.1.1 (a) New Stairs Minimum Width- 36"
Max. Ht. of Risers- 7" Minimum Ht. of Risers- 4" Minimum Tread Depth- 11" Minimum headroom- 6'-8"
Maximum ht. Between landings- 12 ft.
Landing- 7.2.1.4.3.1 Door Leaf Encroachment- During door swing, any door leaf in a means of egress shall leave not less than one-half of the required width of a landing unobstructed and shall project not more than 7" into the required width of the landing, when fully open.
7.2.2.4.4 Handrail Details- New handrails on stairs shall be not less than 34" and no more than 38" measured vertically from the leading edge of the tread.
7.2.2.5.4.1 Stairway Identification- New enclosed stairs three or more stories shall comply with A-M for signage.
7.2.2.5.4.3 Stairway Tread and Landing markings
7.3.1.2 Occupant Load Factor, Use Apartment, 200 Sq. Ft- 9,600 s.f/ 200 sq. ft. per person = 48 total occupants
Table 7.3.3.1 Capacity Factor, Stairways, width per person - 0.3 inch width per person x 48 =14.4" width required. Level Components, width per person- 0.2 inch width person x 48 =9.6" width required.
Minimum Width- The minimum width of any means of egress shall be not less than 36".
Number of Means of Egress- Not less than 2 from any story
7.4.1.6 Elevator Landing and Lobby Exit Access- Each elevator landing and lobby shall have access to at least one exit.
7.5.1.3.3 In buildings protected throughout by an approved , supervised automatic sprinkler system in accordance with section 9.7, the minimum separation distance between two exits or exit accesses, or exit discharges shall be not less than one-third the length of the maximum overall diagonal dimension of the building or area being served.

Chapter 8 Features of Fire Protection

Table 8.3.4.2 Minimum Fire Protection ratings for Opening Protectives Elevator Hoistways - Walls= 2 hours, Fire Door Assemblies= 1 ½ hours,

Vertical Shafts (Stairways) - Walls= 2 hours, Fire Door Assemblies= 1 ½ hours.
Exit Access Corridors - Walls= 1 hour, Fire Door Assemblies= 1/3 hours, Fire Window Assemblies= ¾.
Smoke Barriers - Walls= 1 hour, Fire Door Assemblies= 1/3 hours, Fire Window Assemblies= ¾.

Chapter 9 Building Service and Fire Protection Equipment - Comply with entire Chapter 9

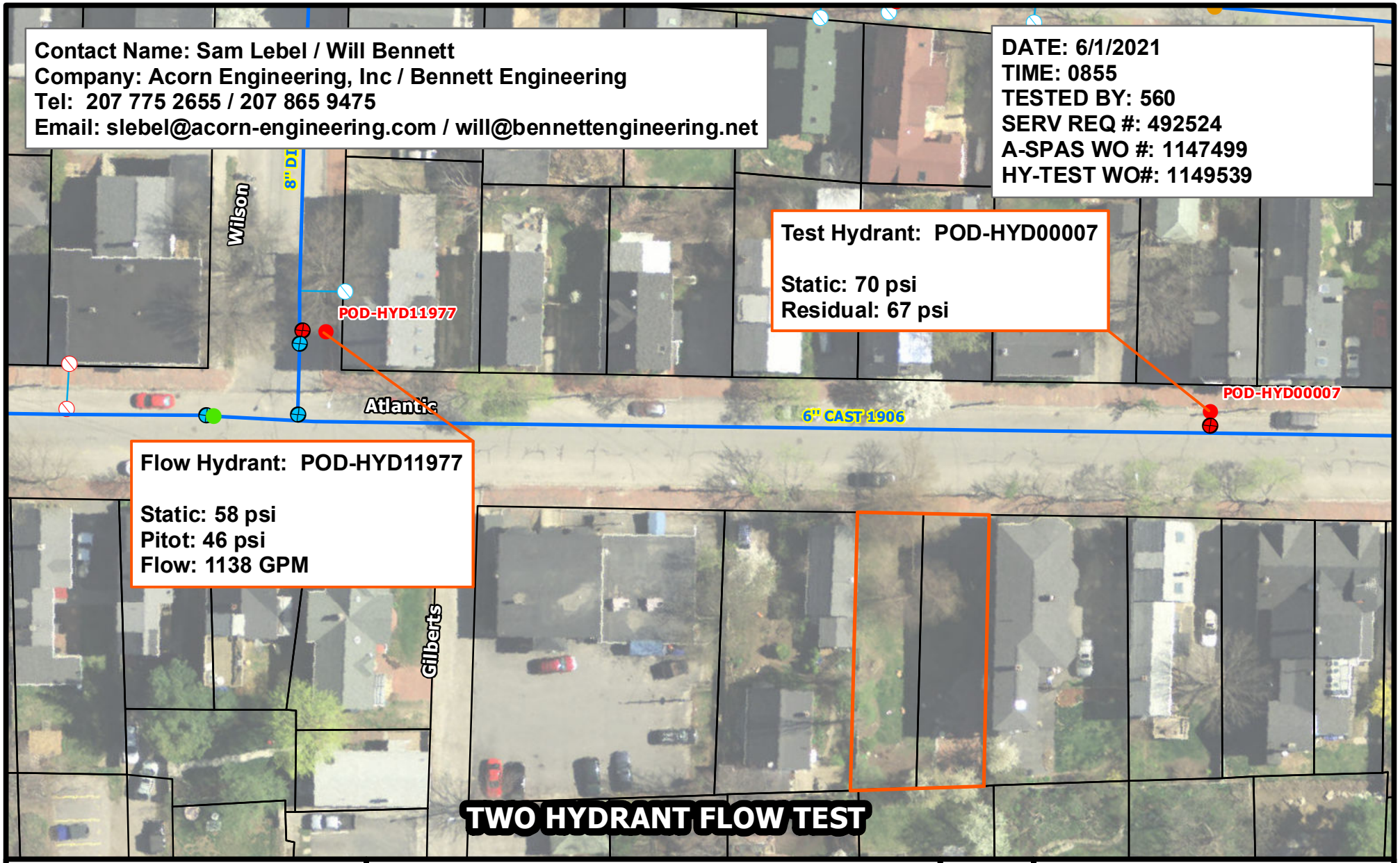
Chapter 10 Interior Finish, Contents and Furnishings- Comply with entire Chapter 10

Chapter 30 New Apartment Buildings- Comply with entire Chapter 30
30.2.2.12 Areas of Refuge- Areas of Refuge are not required in Buildings protected throughout by an approved supervised automatic sprinkler system in accordance with 30.3.5.
30.2.5.3.2 No common path of travel shall exceed 50 ft. in Buildings protected throughout by an approved, supervised automatic sprinkler system installed in accordance with 30.3.5.
30.2.6.2 Travel Distance within a dwelling unit to a corridor shall not exceed 125 ft. in Buildings protected throughout by an approved supervised automatic sprinkler system.
30.2.6.3.2 In Buildings protected throughout by an approved automatic sprinkler system installed in accordance with 30.3.5, the travel distance from a dwelling unit entrance door to the nearest exit.
30.2.6.4 The travel distance, from areas other than those within living units, to the exit, shall not exceed 250'-0" in Buildings protected throughout by an approved supervised automatic sprinkler system.
Illumination of Means of Egress- Comply with section 7.8
Emergency Lighting- Comply with section 7.9.
Protection from Hazards
Table 30.2.3.1.1 Hazardous Area Protection
Storage Rooms outside of Dwelling Units- 1-hour and sprinklers.
Trash Collection Rooms- 1-hour and sprinklers.
Interior Finishes- Comply with entire section
Detection, Alarm and Communication Systems- Comply with entire section.
Extinguisher requirements- Comply with entire section
Corridors- Comply with entire section
30.3.6.2 Doors- Comply with entire section

- Stair Walls – 2 hr.
- Elevator Shaft Walls: 2 hr.
- Hallway walls – 0.5 hr.
- Walls between Units – 1 hr.
- Non-bearing Interior walls within units – no rating
- Floor construction – 1 hr
- Roof construction – 1 hr
- Floor-Ceiling construction above Garage – 2 hr.

Separation Walls shall be constructed as fire partitions in accordance with section 708.
Horizontal Separation shall be constructed as Horizontal assemblies in accordance with section 711.
Automatic Sprinkler System Group R occupancies shall be equipped with an automatic sprinkler system in accordance with section 903.2.8. Quick response or residential automatic sprinklers shall be installed in accordance with section 903.3.2.
Fire Alarm systems and smoke alarms shall be provided in Group R occupancies in accordance with sections 907.2.6, 907.2.8, 907.2.9 and 907.2.10 respectively. Single or multiple station smoke alarms shall be provided in group r occupancies in accordance with section 907.2.11.

End of code summary



30 Atlantic Street
Portland

Scale 0 25 50 75 100 Feet — 1 inch = 50 feet

PORTLAND WATER DISTRICT
225 Douglass Street
PO Box 3553
Portland, ME 04104
Telephone: (207) 774-5961
Fax: (207) 761-8307

Legend

Air Valve	Connection	Combined Service	Manhole
Blow Off	Attribute Change	Domestic Service	CSO
By Pass	Reducer	Fire Service	Gravity
Distribution	Hydrant	Private Hydrants	Force
Transmission	Hydrant Control	Meter Pits	

N E S W

Disclaimer: This map is suitable for preliminary study and analysis and is based on PWD record information. PWD is not liable for any damages whatsoever resulting from inaccurate data or from errors made in the location and marking of its infrastructure.

Drawn By: KAR

Test Fee: $209.00 **Date:** June 2, 2021

M. Calculation of Wastewater Flowrate for 30-32 Atlantic Street Redevelopment

The project proposes to construct a 3-story, 4-unit residential building on an existing vacant lot. Based upon Section 4 of the Maine Subsurface Wastewater Disposal Rules, the project anticipates the following daily flows:

Estimate of Design Flows			
Classification of Water Demand	**Number of Units**	**Gallons per Day per Unit**	**Total Gallons per Day**
Existing			
No existing units	0	0	0
Proposed			
Multiple family dwelling unit (2-bedroom)	3	180	540
Multiple family dwelling unit (3-bedroom)	1	270	270
		Total Existing	**0 GPD**
		Total Proposed	**810 GPD**
		Net Change	**+ 810 GPD**
*Values based on STATE OF MAINE: SUBSURFACE WASTEWATER DISPOSAL RULES, most recent edition			

Based on the table above, the project anticipates an increase of wastewater flow by 810 gallons per day (GPD).

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: 5/15/21

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

Site Address: 30 - 32 Atlantic Street, Portland, ME 04101

Chart Block Lot Number: 016: F003 & F025

Proposed Use: Residential Building
Previous Use: Vacant
Existing Sanitary Flows: 0 GPD
Existing Process Flows: 0 GPD
Description and location of City sewer that is to receive the proposed building sewer lateral.
6" Cast Iron Combined Sewer Main on Atlantic Street

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

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

2. Please, Submit Contact Information.

City Planner's Name: TBD Phone: _____
Owner/Developer Name: Lauren Reiter, AIA with Cornerstone Building & Restoration
Owner/Developer Address: 72 Pine Street Suite #16, Portland, Maine 04102
Phone: 917-502-2225 Fax: _____ E-mail: laurenjreiter@yahoo.com
Engineering Consultant Name: Acorn Engineering
Engineering Consultant Address: 62 Hanover St. Portland, ME 04101
Phone: 207-317-1884 Fax: _____ E-mail: wsavage@acorn-engineering.com

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

3. Please, Submit Domestic Wastewater Design Flow Calculations.

Estimated Domestic Wastewater Flow Generated: 810 GPD
Peaking Factor/ Peak Times: Diurnal Flow Pattern
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)* Handbook of Subsurface Wastewater Disposal In Maine

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

4. Please, Submit External Grease Interceptor Calculations.

Total Drainage Fixture Unit (DFU) Values: N/A

Size of External Grease Interceptor: _____

Retention Time: _____

Peaking Factor/ Peak Times: _____

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

5. Please, Submit Industrial Process Wastewater Flow Calculations

Estimated Industrial Process Wastewater Flows Generated: N/A GPD

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

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

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

Peaking Factor/Peak Process Times: _____

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

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

Lauren J. Reiter Architect / Cornerstone Building & Restoration
RA, LEED™ Accredited Professional

SECTION O: EXTERIOR LIGHTING

May 15, 2021

Exterior lighting will be placed around the perimeter of the building, as per attached plan. The plan, showing photometric calculations, indicates that amount of light at the property line is maximum 0.1 footcandles, as required by code. All of the lamping will be 3000K (max) LED lighting.

Cut sheets are attached for the four types of fixtures, which are described below:

"A2": **Kichler "Toman"**: Wall-mounted sconce at covered entrance porch: up-down lighting, LED 7 watts. This will be controlled by a time clock.

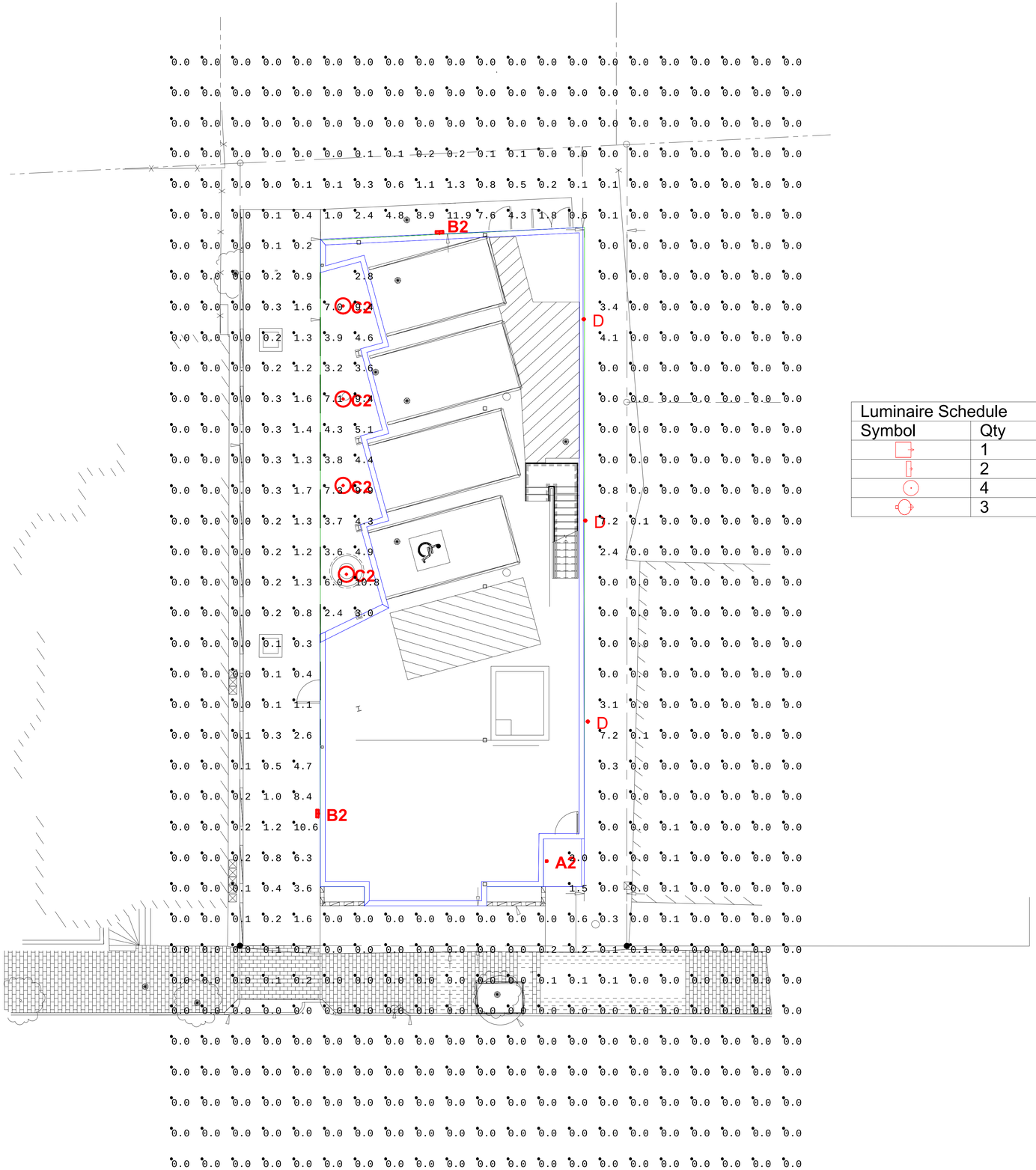
"B2": **Compass Cuso**: Wall-mounted sconce at perimeter walls, down-lighting only, LED 17 watts. These fixtures will be motion detector fixtures.

"C2": **Halo "ML 56":** Recessed downlights in soffit above garage doors, down-lighting only, LED 9.6 watts. These fixtures will be controlled by a time clock.

"D": **Bega 33580**: Wall-mounted fixture, LED 4 W, with very narrow light distribution. These fixtures will be motion detector fixtures.

Attachments:
Photometric calculation plan
cut sheets for light fixtures

6 South Street, Portland, ME 04101 tel. 917.502.2225 email. laurenjreiter@yahoo.com www.reiterarchitecturedesign.com



Luminaire Schedule				
Symbol	Qty	Label	Tag	Description
	1	A2	Kichler	49687BK/7W LED LAMP MAX
	2	B2	Compass	CUSO XX
	4	C2	HALO	ML5606930-692SC
	3	D	BEGA	33 580 K3 XX

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Kichler 49687BKL18

Toman LED 14 inch Black Outdoor Wall, Medium

Call 844.344.3536 For Trade Pricing



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Original List Price: ~~$286.05~~ (You Save 33%)

Finish: Black

Bulb Type: LED

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Toman 1 Light 10 inch Black Outdoor Wall...
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Toman LED 10 inch Black Outdoor Wall, Sm...
$104.99


Kichler 49686OZ
Toman 1 Light 10 inch Olde Bronze Outdoo...
$93.99

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Product Information | General Information | Manufacturer's Catalog(s) | Questions

General Information

Get 25% Off

ı LED 14 inch Black Outdoor Wall, Medium

This 1 light Outdoor Wall from the Toman collection by Kichler will enhance your home with a perfect mix of form and function. The features include a Black finish applied by experts. This item qualifies for free shipping!

ENERGY STAR

Brand Informa

- Brand: Ki

+ FREE SHIPPING & RETURNS ON ALL BRANDS

Free Returns
Within 30 days of purchase for like new, uninstalled items.

110% Price Match
Find a lower price and we'll beat it by 10% of the difference.

Have a question about this product? Ask us! Live Chat | Submit a Question

ew York
ours

COMPASS®

DATE: LOCATION:

TYPE: PROJECT:

CATALOG #:

CUSO

SLIM LED AC/EMERGENCY OUTDOOR LIGHT

tradeSELECT®

FEATURES

- Includes self-diagnostic/self-test feature to monitor proper operation
- Quick installation
- Universal 120-277VAC input, 60Hz.
- Includes long-life 7.2V Nickel Cadmium battery for UL recognized 90 minute operation
- Full re-charge within 24 hours
- Provided with water-proof test switch and AC-On indicator
- 0°C to 50°C Standard Model, -25°C to 50°C with optional heater
- UL924 and Wet Location Listed

UL924 NFPA 70 NFPA 101



RELATED PRODUCTS

- Exit & Message Signs
- Emergency Lighting Units
- Battery Packs
- Remote Heads & Fixtures

SPECIFICATIONS

DESCRIPTION

- The CUSO Series is an architectural, low-profile outdoor light, offering “normally On” AC and emergency lighting with powerful LED illumination
- The housing is fully sealed and gasketed, and has an IP65 rating
- Designed for wall mounting with universal K/O pattern in back-plate for easy installation to most standard size junction boxes
- Includes a single ½” NPT conduit entry in the top, center of the housing
- Illumination provided by 8 high power LEDs which achieve 1,600 lumens in AC and 600 lumens in emergency
- Available in 3000K or 4000K color temperature
- Models at 3000K include a photo-sensor and PIR(passive infra-red) motion detector which cannot be altered
- The unit will only turn on in AC mode when motion is detected. Models at 4000K include a photo-sensor and do not include motion detector
- The unit can be controlled by a switch, timer or the photo-cell

APPLICATION

- The CUSO Series can be applied in areas that are susceptible to rain and severe moisture like parking decks, and outdoor commercial applications to meet all Path of Egress requirements

COMPLIANCES

- UL924 Listed for Wet Location
- NFPA 101
- NFPA 70
- OSHA

WARRANTY

- 5 year full unit warranty
- See HLI Standard Warranty for additional information

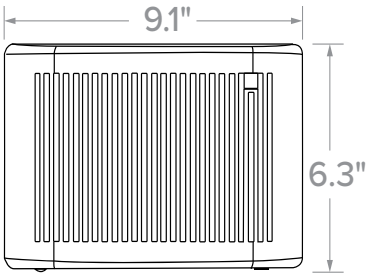
ENERGY CONSUMPTION

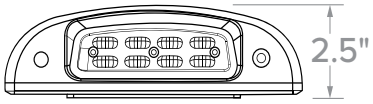
	Max.	Max. with heater
120VAC, 60Hz	3.59W	3.40W
277VAC, 60Hz	3.59W	3.40W

ORDERING GUIDE

Catalog Number	Description
CUSO DB	Outdoor AC/EM, 3000K, Photo-sensor and PIR Motion Detect, Self-Diag., Dark Bronze
CUSO DB-H	Outdoor AC/EM, 3000K, Photo-sensor and PIR Motion Detect, Self-Diag., Dark Bronze, Heater
CUSO BK	Outdoor AC/EM, 3000K, Photo-sensor and PIR Motion Detect, Self-Diag., Black
CUSO BK-H	Outdoor AC/EM, 3000K, Photo-sensor and PIR Motion Detect, Self-Diag., Black, Heater
CUSO WH	Outdoor AC/EM, 3000K, Photo-sensor and PIR Motion Detect, Self-Diag., White
CUSO WH-H	Outdoor AC/EM, 3000K, Photo-sensor and PIR Motion Detect, Self-Diag., White, Heater
CUSO4DB-ND	Outdoor AC/EM, 4000K, Photo-sensor, Self-Diag., Dark Bronze
CUSO4DB-H-ND	Outdoor AC/EM, 4000K, Photo-sensor, Self-Diag., Dark Bronze, Heater
CUSO4BK-ND	Outdoor AC/EM, 4000K, Photo-sensor, Self-Diag., Black
CUSO4BK-H-ND	Outdoor AC/EM, 4000K, Photo-sensor, Self-Diag., Black, Heater
CUSO4WH-ND	Outdoor AC/EM, 4000K, Photo-sensor, Self-Diag., White
CUSO4WH-H-ND	Outdoor AC/EM, 4000K, Photo-sensor, Self-Diag., White, Heater

DIMENSIONS





Single Carton Weight	4 lbs.
Master Carton Quantity	6 each

© 2020 Compass, a division of Hubbell Lighting, Inc. Specifications subject to change without notice.
701 Millennium Blvd • Greenville, SC 29607 / Tel (800) 888-1000 / Website www.compasslightingproducts.com

HUBBELL Lighting

Type:
BEGA Product:
Project:
Modified:

Application
Designed to provide down lighting effects for interior and exterior locations featuring narrow beam light distribution.

Materials
Luminaire housing constructed of die-cast marine grade, copper free (≤ 0.3% copper content) A360.0 aluminum alloy
Clear safety glass
Reflector made of pure anodized aluminum
Silicone applied robotically to casting, plasma treated for increased adhesion
High temperature silicone gasket
Mechanically captive stainless steel fasteners

NRTL listed to North American Standards, suitable for wet locations
Protection class IP 64
Weight: 3.5 lbs

Electrical

Operating voltage	120-277V AC
Minimum start temperature	-40° C
LED module wattage	4.0 W
System wattage	6.0 W
Controllability	0-10V dimmable
Color rendering index	Ra > 80
Luminaire lumens	318 lumens (3000K)
LED service life (L70)	60,000 hours

LED color temperature

☐ 4000K - Product number + **K4 (*EXPRESS*)**
○ 3500K - Product number + **K35**
○ 3000K - Product number + **K3 (*EXPRESS*)**
○ 2700K - Product number + **K27**
○ Amber - Product number + **AMB**

Wildlife friendly amber LED - Optional
Luminaire is optionally available with a narrow bandwidth, amber LED source (585-600nm) approved by the FWC. This light output is suggested for use within close proximity to sea turtle nesting and hatching habitats. Electrical and control information may vary from standard luminaire.

LED module wattage	4.5 W (Amber)
System wattage	8.8 W (Amber)
Luminaire lumens	90 lumens (Amber)

BEGA can supply you with suitable LED replacement modules for up to 20 years after the purchase of LED luminaires - see website for details

Finish
All BEGA standard finishes are matte, textured polyester powder coat with minimum 3 mil thickness.

Available colors ☐ Black (BLK) ○ White (WHT) ○ RAL:
○ Bronze (BRZ) ○ Silver (SLV) ○ CUS:





Wall luminaires with light in downward direction

	LED	β	A	B	C
33 580	4.0 W	23°	4 3/8	7 1/2	5

β = Beam angle

BEGA 1000 BEGA Way, Carpinteria, CA 93013 (805) 684-0533 info@bega-us.com

Due to the dynamic nature of lighting products and the associated technologies, luminaire data on this sheet is subject to change at the discretion of BEGA North America. For the most current technical data, please refer to bega-us.com
© copyright BEGA 2018
Updated 03/20/19

Description

The Halo ML56 LED Downlighting System is a series of modular LED Modules for use with designated 5" or 6" ML56 LED trims in new construction, remodel and retrofit installation. Compatible with Halo 5" H550 and 6" H750, H2750 Series LED housings. And in retrofit of existing housings the ML56 Series fits 5" or 6" Halo and others. ML56 Modules are offered in 600 Series, 900 Series, and 1200 Series, 90CRI, and four color temperatures 2700K, 3000K, 3500K, 4000K. ML56 Modules are universal voltage 120V – 277V and dimmable at 120V. The ML56 lens provides uniform diffuse illumination standard.

Catalog #		Type
Project		
Comments		Date
Prepared by		

Specification Features

Mechanical

Light Module
- Module includes LED package, LED driver, heat sink, and lens
- Durable die-cast aluminum construction.
- Heat sink designed to conduct heat away from the LED keeping the junction temperatures below specified maximums, including insulated ceiling environments

Lens
- Impact-resistant polycarbonate
- Convex form for lamp-like appearance
- High lumen transmission
- Diffusing for even illumination

Mounting
- Modules attach to reflector and baffle trims via locking tabs, and attach to eyeballs via keyed twist-to-lock mating bosses
- The complete module and trim assembly installs into housings with precision formed torsion springs located on the trim
- Friction Blade mounting is an alternate option using the accessory 6" Friction Blade Kit model ML56CLIP (order separately). Friction blades provide alternative to torsion springs for retrofit in 6" housings without torsion mounting tabs. ML56CLIP is compatible with 6" baffle and reflector trims only (691, 692, 693, 695, 696 series). For eyeball trim (694 series) use ML7RAB retrofit adapter band.

Housing Compatibility

A complete ML56 system includes a LED Module, LED trim, and a compatible housing (new construction, remodel, or existing retrofit). Housing compatibility in the ML56 System is determined by the ML56 trim dimensions. ML56 trims are available in 5" and 6" aperture (5" = 59xx series and 6" = 69xx series trims). Refer to Housing – Trim Section in this document.

LED
- 900 Series = 900 design lumens typical.
- Delivered lumens vary depending upon 5" or 6", color temperature, and trim finish.
- Color Temperature options: 2700K, 3000K, 3500K, 4000K
- CRI: 90, R9>50
- L70 at 50,000 hours, projected in accordance with IES TM-21
- LED is a chip on board design consisting of a multiple LED package to create one virtual light source for a productive "cone of light"

Color Specification & Quality Standards
- A tight chromaticity specification to ensures LED color uniformity, sustainable Color Rendering Index (CRI) and Correlated Color Temperature (CCT) over the useful life of the LED
- LED color uniformity of 3 SDCM exceeds ENERGY STAR® color standards per ANSI C78.377- 2008.
- High color performance with 90CRI minimum, and R9 greater than 50.
- Every Halo LED Module is quality tested and performance measured, and then serialized in a permanent record to register lumens, wattage, CRI and CCT.
- Halo LED serialized testing and measurement process ensures color and lumen consistency on a per-unit basis, and validates long-term product consistency over time
- Halo ML56 LED Modules include lumen, CRI, and CCT designations in the model number Example: **ML5609930**
  56 = 5" / 6" aperture series
  09 = 900 lumen series
  9 = >90 CRI
  30 = 3000K nominal CCT

Electrical Power Connections
- LED connector is a non-screw base luminaire disconnect offering easy installation with the matching Halo 5" H550 series and 6" H750 and H2750 series housings (housing selected depends upon LED trim 5" or 6").
- LED Connector meets high-efficacy luminaire requirement for a non-screw base, and where required.
- The included E26 medium screw-base

  Edison adapter* provides easy retrofit of incandescent housings (see Housing Section).

Ground Connection

Separate grounding cable included on the module for attachment to the housing during installation.

LED Driver
- Driver is universal voltage 120V-277V, and may be controlled from a switch in this range of main inputs (switchable at 120V, 220V, 230V, 240V, and 277V)
- Driver is dimmable at 120V operation when connected to a compatible dimmer.
- Driver is a high efficiency, electronic power supply providing DC power to the LED.
- Driver meets FCC EMI/RFI Consumer Level limits on 120V main inputs, and is compliant for use in residential and commercial installations.
- Driver features high power factor, low THD, and has integral thermal protection in the event of over temperature or internal failure.
- Driver is replaceable, if replacement should be required.

Dimming

Designed for dimming capability to nominal 5% in normal operation with standard 120V Leading Edge (LE) and Trailing Edge (TE) phase control dimmers (Consult dimmer manufacturer for dimmer compatibility and details. Note, some dimmers require a neutral in the wallbox.)

Warranty

Cooper Lighting Solutions provides a (5) five year limited warranty on the Halo ML56 LED Module.

LED Module in New or Retrofit Existing Construction – Housings other than Halo
- If used in recessed housings other than Halo the Cooper Lighting Solutions 5-year limited warranty applies to the LED Module and Trim only.
- As with any electrical installation, a qualified electrician must ensure compatibility of use with a particular housing; this includes all applicable national and local electrical and building codes. Installer is responsible to properly and securely retain the LED Module and LED Trim in the housing at time of installation.

D2W™



ML56 LED System

900 Series / 90 CRI

ML5609927
ML5609930
ML5609935
ML5609940

5-Inch and 6-Inch 900 Lumen LED Module for New Construction, Remodel and Retrofit

For use with 59x and 69x Series Trims

FOR USE IN INSULATED CEILING AND NON-INSULATED CEILING RATED HOUSINGS

HIGH EFFICACY LED WITH INTEGRAL DRIVER - DIMMABLE

Energy Data
ML56 900/90 Series
(Values at non-dimming line voltage)
Minimum Starting Temp: -30°C (-22°F)
EMI/RFI: FCC Title 47 CFR, Part 15, (Consumer)
Sound Rating: Class A
Input Voltage: UNV 120V-277V
Power Factor: >0.95 @ 120V and >0.9 @277V
Input Frequency: 50/60Hz
THD: <20%
Input Power: 9.4W
Input Current at 120V: 0.15A
Input Current at 277V: 0.08A
Driver Compliance: UL8750, Class II rated
Maximum IC (Insulated Ceiling) Ambient Continuous Operating Temperature: 25°C (77°F)
Maximum Non-IC Ambient Continuous Operating Temperature: 40°C (104°F)



ML5609927
5" or 6" LED 900 Series



ML5609930
5" or 6" LED 900 Series



ML5609935
5" or 6" LED 900 Series



ML5609940
5" or 6" LED 900 Series

Lauren J. Reiter Architect / Cornerstone Building & Restoration
RA, LEED™ Accredited Professional

SECTION P: ARCHITECTURAL DESIGN NARRATIVE

May15, 2021

City of Portland
Historic Preservation Board
Planning and Development
389 Congress Street
Portland, ME 04101

RE: Major Site Plan Review- Alternative Design Review Certificate submission for 30-32 Atlantic Street, Portland ME

To Whom it may concern:

On behalf of Kestrel, LLC, the owner and developer of the 30-32 Atlantic Street project, we are submitting the attached application and associated materials for review by the Historic Preservation Board and staff for the purpose of issuing a Certificate of Approval for the project to proceed under the Alternative Design Review process and the Munjoy Hill Neighborhood Conservation District overlay zone.

The proposed building is on a vacant site, on as street that has a mixture of 1-1/2 to 3-1/2 story houses (plus a one-story American Legion); there are also a number of 4 to 4-1/2 story residential buildings on nearby streets.

The R-6 Infill Development Design Principles & Standards have shaped this building's design, and as such, the current design takes its inspiration from the classic triple-decker, with a dominant vertical bay on the street elevation, flat roof, brick base below the wood siding, vertically-proportioned windows, a human-scaled entrance porch, and a street facade with more than 80% of living space on the ground floor (100% at upper floors). Garage doors are well-set back from the street view and recessed into the facade. The primary siding is an engineered wood lap siding, with a complementary vertical siding of the same material and same color at selected areas – primarily the central bay.

As you will see, we have chosen to NOT max-out the height of the building, except at the central bay; we found that a consistent 35' roof all across the building width made the building look far too boxy, and therefore reduced both height and width of rooflines. Set back from the street, selective other areas (such as the elevator shaft) are also at the maximum 35', but these elements will be nearly invisible from the street view. Similarly, roof deck, railings and mechanical equipment are all positioned at the lower, main roof elevation and are obscured by the high level roof at the central bay – thus, for all intents and purposed, invisible from the street. The one exception to the under-35’ roofs is the bulkhead for the stair up to the roof, which is approximately 4’-0” above the 35’, but this is set far back from the main façade of the building.

The side yard location on the north side of the building is slightly wider than the minimum 5' setback, but note that this facade is the least fenestrated, both due to the internal plan layouts and to the limitation on window openings when the building wall is less than 10' from the lot line.

Other notable details are the fairly tall fascia trim on the primary roof, to either side of the higher bay. This fascia serves to obscure the roof slope behind, as well as the gutters along the long side walls of the building. A brick base along the front façade, integrated with brick planters in front, reference the traditional masonry bases seen consistently throughout the neighborhood.

And, importantly, the building's design includes numerous sustainable features, including a highly insulated envelope with triple-glazed windows, low VOC materials and finishes, high-efficiency lighting throughout, plentiful daylight, ERVs to provide high levels of filtered outside air, infrastructure to allow for a future photovoltaic array on the roof, and a rain-garden to manage stormwater.

We believe that the proposed multi-family building will be a handsome building in scale with its context and will be a quiet - but genuine - asset to the neighborhood.

DESIGN PRINCIPLES AND STANDARDS

PRINCIPLE A: Overall Context

Atlantic Street is a two-way, 50' wide street that runs between Congress Street at the north and Fore Street at the south end. The proposed project site is on the west side of the street, between Gilberts Lane and Fore Street. The street has a significant downward slope, starting at Congress Street, though the actual proposed project site has a relatively gentle downward slope of approximately 2.5' from north to south.

The project is located on a vacant site that was formerly owned by the neighboring property to the south, #28, and was used as a side yard to that building. As such, it is currently home to grass and some trees, as well as a brick-paved on-grade patio. It is, however, interesting to note that a residential building once stood on the site, with an unknown demolition date. (The buildings on either side, visible in the photograph below, remain to this day.)



32 Atlantic St., circa 1924
source: City of Portland

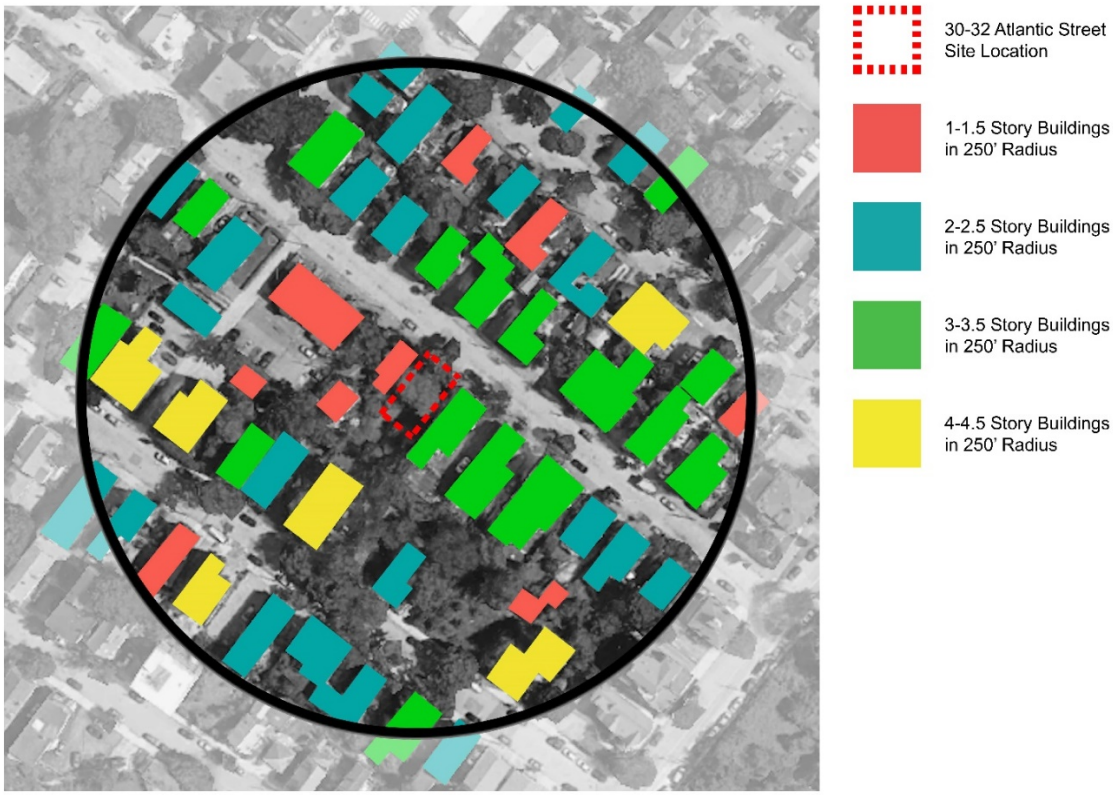
The dominant building disposition context of the area is that the buildings are located along one of the side lot lines, with a driveway along the opposing lot line. Relative to our site at 30-32 Atlantic, #28 to the south has a driveway on the south side of the lot, while #34 to the north has a driveway on the north side of the lot – but the majority of driveways along Atlantic Street are on the south (downhill) side of the lots. An existing curb-cut is already in place on the south side of the 30-32 Atlantic lot. There are very few vacant lots in the area, though there are two other lots on Atlantic Street without buildings.

Other general observations about Atlantic St. and its neighboring parallel streets, St. Lawrence and Munjoy Streets include:

- The west side of Atlantic Street, from Fore to Congress is truly a polyglot of sizes and shapes, from a 1-story ranch (#68) to the bizarre flat-roofed American Legion building (#42), to a wide 3-story Mansard-roofed building sitting on a grassy plinth and deep front yard (#74). The only triple-decker on the west side of Atlantic Street is directly adjacent to the project site (#28).
- The east side of Atlantic Street is more consistent in size, with several 3-story or very tall 2.5 story buildings. One of the more striking buildings on the east side is a very wide, all-brick, 3-story building with a flat roof (#55). Many of the buildings on the east side have entrance porches located along the side of the building – i.e. no doorway along the front façade. There appear to be fewer building with projecting bays on the east side of Atlantic.
- St Lawrence Street, from Fore to Congress, has more large buildings than Atlantic Street, including eight flat-roofed triple deckers, and some very tall 3-story buildings.
- Munjoy Street has some very handsome new multi-families: the 4-story building at #72, as well as the 3-story, very wide #65. This street sems to set a local “precedent’ of multi-unit buildings with garages entered from the side of the building, rather than having garage doors within the street facade.

It is hard to say that there is a dominant size of building in the immediate context: there are many of each size ranging from one-an-a-half stories to four+ stories. While the neighboring building adjacent to the proposed building site on the south side is a classic flat-roofed triple-unit 3-story building, the neighbor directly north is a small one-and-a-half gabled roof building. The home directly across the street is a two-and-half story with the first floor raised well above the street, so that the building appears quite tall.

The diagram below shows building sizes within a 250’ radius of the site.



It is also very difficult to find consistent building typologies on Atlantic Street and its neighboring parallel streets, St. Lawrence and Munjoy Streets. Buildings vary from simple one-and-half story single-family residences to four-plus story multi-family buildings -- and everything in between. While the majority of the buildings are older, gable-roofed buildings, there are also numerous examples of classic flat-roofed triple deckers, and contemporary interpretations of all sizes. This variety can be seen in the photos below of the immediate context (project site is highlighted in yellow) as well as in Section U.


West side of Atlantic St.


East side of Atlantic St.
(directly across from project site)

However, considering the three streets (Atlantic/St. Lawrence/Munjoy) in the blocks from Fore Street to Congress Street, there are some distinct commonalities:

- Almost every building, of any size, has an exposed brick basement wall, rising roughly 2’ to 4’ above grade, with a change to clapboard or other siding at the elevated first floor height.
- Most buildings are set approximately 2’ to 5’ back from the sidewalk line. Many have narrow-tread stairs rising from the sidewalk line to a shallow stoop at the first floor level, while others have side entrance porches. The space between the front façade and the sidewalk is often planted. Most first floors are elevated – presumably, in part, because of the steep slope of the streets.
- Very few houses have centered entrances – the entrance is usually on one side of the front façade, or around the side of the building. Entrances are usually defined by some kind of porch structure, even if it is very shallow in depth.
- The vast majority of buildings are two-and-a-half stories or higher.
- Facade materials above the brick base are typically painted clapboard, but the exposure width varies. Even newer buildings tend to use horizontal lap siding. Colors run the gamut from white with white window trim, to very dark blue with black window trim.
- If a building has a projecting bay, the bay usually has its own unique roof line. The bay is usually defined by unique trim around the windows and at the cornice of the projecting bay. The windows in the bay are often different from the other windows on the building, and thus there may be two to three sizes of windows on the front façade.
- Almost all windows are vertically proportioned and vary on the front façade from two to three sizes per building.

- Massing and roof forms are typically simple, though most gable roofs have dormers. Gables are generally perpendicular to the street.
- The houses along the corners of Fore Street are almost uniformly larger and grander, and the buildings along the corners at Congress Street are generally more commercial, than the buildings in the blocks in-between.
- The dominant building-site disposition of the area is that the buildings are located along one of the side lot lines, with a driveway along the opposing lot line. No buildings on Atlantic Street have garage doors along the front façade, though there are several free-standing garages recessed to the back and side of the lots.

Standard A-1: Scale and Form- *Height/Massing/Principle Façade Proportion, Roof Shapes, Scale*
The scale, form and proportion of the proposed building all fall within or under the maximum allowed by the prevailing zoning of the site. The building's design is predicated on the three-story flat-roofed "triple decker" typology as the underlying form-giver, with a dominant vertical bay and flat roof, and an entrance oriented to the street. The adjacent building to the south, #28, is also a triple-decker.

Standard A-2: Composition of Principle Façade – *Openings Proportion, Rhythm solids to voids*
There is no single dominant building type or façade in the immediate vicinity of the site, so it is difficult to compare facades, other than some of the unifying characteristics noted above (brick base, shallow setback from the street, asymmetrical entrance, etc.) The proposed building is relatively wide, compared to other buildings nearby, but the three story bay in the middle of the width serves to mitigate the perception of a too-wide building. The vertical bay is just under 50% of the width of the overall façade (16.25':35'), and – like so many of the bays on all building types in the area - has its own unique windows. The brick base wraps around the entire front façade, like almost all others in the area. The bay is closer to the south corner of the façade, in order to create an adequate width for the entrance porch on the north corner. The asymmetrical bay and entrance oriented to one side of the building are typical of buildings in the area. The total area of windows is 24% of the front façade, similar in proportion to many neighboring buildings.

Standard A-3: Relationship to the Street- *Rhythm of Spacing/Structure on Streets/Orientation*
The proposed building is set back from the street by 5.25', in keeping with the small front yards found on adjoining properties and most properties in the area. The front setback is approximately the average distance of the neighboring buildings' setbacks from the sidewall: #28 (4.8') and #36 (5.6'). As an observation, it seems that most neighboring buildings' setbacks are just enough to allow for steps and a shallow stoop to get up to the first floor level, with the remaining interstitial yard used as a planter. As a modern day equivalent, our setback is just enough to accommodate an ADA-compliant ramp from the sidewalk up to the entrance porch, with planters filling the remaining yard between the building and the sidewalk.
Similar to the dominant pattern of the neighborhood, the building is closer to one lot line, in order to provide a driveway along the other side. As with a great many buildings on Atlantic Avenue, this driveway is on the "downhill' side.

PRINCIPLE B: Massing

Standard B-1: Massing- *Bulk/Size/Volume/Scale/Shape*
As noted above, the "inspiration" for this building is the ubiquitous triple-decker. However, it must be said that this typology – while common and "beloved" - is one of Portland's homeliest building types. Reminiscent of a shoebox turned on its side, the flat-topped buildings are usually relieved only by the front bays and perhaps a jog or two on one of the two long building facades. To that end, this project seeks to create a livelier and more appealing version in its roofline and form, by

letting its vertical bay pop up above the main roof form – thus breaking up the mass both vertically and horizontally. The higher bay rises to a few inches under the maximum allowable height of 35' and serves to hide from view the mechanical equipment and roof terrace railings behind. The lower primary roof, at just over 30', is well under the maximum allowable height – thus reducing the overall scale of the building in relation to its neighbors. The resultant primary roof is actually lower than the neighboring 3 story building, and – while it is much higher than the building to the north, is 15% lower than lower than what is allowed by zoning.



The cladding on the center bay is vertical, in contrast the horizontal siding elsewhere; again, this appears to reduce the width of the building, while also creating a unique treatment at the bay, taking cues from the unique decorative treatment that is often given to bays on historic buildings of all types.

As is typical with the triple decker typology, the building is the maximum length allowed by zoning, and therefore has long north and south facades. The south and west facades are relieved by a covered terrace on the second floor and full-width terrace on the third floor, again, referential to the typical rear decks or balconies of the classic triple deckers. The south massing is further diminished by the recessed garage bays at the first floor level.

Standard B-2: Roof Forms
As is common with 3 story, multi-unit building in Munjoy Hill and throughout Portland, the roof is for all intents and purposes flat. (For drainage purposes, it actually crowns along the center east-west axis and pitches to north and south by ¼" per foot to gutters on the north and south facades). Because of the slight pitch, the cornice trim on the east façade is quite tall in order to present to the street a uniform cornice height, with built-up trim providing depth and shadow lines to the cornice. The upper roof - also flat - at the top of the bay has a similar cornice trim, though the cornice trim's height in this location clearly marks this roof as the secondary roof-form. The roof of the recessed entrance porch has a protruding cornice, similar to the upper cornices.

Standard B-3: Main Roofs & Subsidiary Roofs
See Standard B-2 above.

Standard B-4: Roof Pitch
See Standard B-2 above.

Standard B-5: Façade Articulation
The façade offers a fresh version of many of the enlivening features of buildings in the area; the bay is asymmetrically set along the width of the building, but has a symmetrical treatment within itself, similar to bays throughout the area. The bay serves to break down the scale of the building, with a better relationship to its north neighbor, #36. The clearly-articulated entrance provides an inviting sheltered transition space into the building entrance. While the siding is intended to all be the same color, the change in orientation clearly marks that the bay is a "special' part of the building.



Standard B-6: Garages
Much of the recent outcry about Munjoy Hill's "modern building boom" was focused on the newer buildings' incorporation of dominating street-facing garage doors at the expense of inviting living spaces along the streetscape. Having always hated the gaping maw of garage doors in urban and suburban architecture, it did not take regulations to determine that the garage doors were not going to sully this street façade! The gently zig-zagging south façade, recessed under the second floor at the rear half of the building, provides space for the five individual garage doors. Though seen obliquely from the street, this creates an inviting, small-scaled passage to multiple parking spaces. The resultant front façade, including the entrance porch, is thus 100% living- and people-space.

PRINCIPLE C: Orientation to the Street

Standard C-1: Entrances
The proposed design includes an inviting recessed entrance porch with a decorative cornice around the projecting roof, wood floor, and sconce light. The orientation of the entrance is along one side of the house, as is typical. While the typical first floor in this neighborhood is at least a few feet above grade, the first floor entrance to this building is just a few inches above grade, in order to provide an ADA-compliant transition from the sidewalk to the entrance door, as well as an ADA-compliant entrance from the garage interior to the building. As such, it is not consistent with the context, but on the other hand, this avoids visually-discordant lifts or ramps. The framing of the porch, with its corner column and projecting cornice does reference local details.

Standard C-2: Visual Privacy
Given the first floor elevation at just a few inches above average grade and an 8'-0" ceiling height at the first floor, the first floor window sills are approximately 42" above grade. Any higher sill height would make the first floor apartment unpleasant. The planter in front of all windows in the first floor apartment create a buffer that will prevent people from getting too close and peering into windows, and the apartment interior includes "public" living spaces (i.e. not bedrooms or bathroom). The building owner will provide window treatment to provide further privacy.

Standard C-3: Transition Spaces
As described above, the recessed entrance porch provides a transition space between the brick-paved entrance path and building entrance, as does the planter between the building and the sidewalk. Planting will be symmetrical about the bay, with taller plants in front of windows to either side of the bay.

PRINCIPLE D: Proportion & Scale

Standard D-1: Windows
In keeping with the local vernacular, all windows are vertically proportioned. With the exception of the windows on the front bay, all of the other windows on the front façade, and in the majority of the south façade are 30" wide x 48" high windows. The front bay assembles three vertical windows as a single unit and central feature window at the center of the bay at each floor, with a common width; the height changes from 4'-6" at the first floor to 5'-6" at the 2nd floor, to 6'-6" at the third floor, reflective of the increasing ceiling heights within. The same window sizes occur on the other facades – that is, the 30"x48" windows with the tripe-unit windows (all 5'-6"high) occurring at the living spaces. Fundamentally, there are the two major window types: the single vertical unit and the triple-unit. All windows (and exterior sliders at the rear terraces) are Bruegmann bluEvolution 82 MD triple-glazed, high performance, tilt-turn UPVC windows.

Standard D-2: Fenestration
The percentages of window & door areas relative to each façade are the following:
East (main street façade): 24%
South: 25%
West: 28%
North: 7%. *Note: this façade is 5.6 feet from the lot line, and the spaces behind this wall are generally circulation, fire stair and other non-primary spaces – thus the decision and/or requirement to limit windows on this façade.*

Standard D-3: Porches
The entrance porch is intended as a transition space, not a "resting space"; its dimensions are 5.3' wide x 6.6' deep, with a total area of 35 SF. It is not required for open space calculations and is intended to reflect the characteristic provision of the "get- out-of-the-rain-and-get-your-keys-out" space just in front of the entrance doors, similar to entrance stoops nearby.

PRINCIPLE E: Balance

Standard E-1: Window & Door Height
On the east, primary façade, there are two clear window patterns. The smaller, single windows all align vertically, while the taller windows at the center of the bay have a higher head height. This rhythm of alignments is consistent on all three floors. Similarly, on the south facades, all of the single windows are vertically aligned, while the "special" triple units are taller and higher. At the west façade, all windows have a uniform height across the façade, though the sliders onto the

terraces at the recessed walls have a lower head height for structural reasons. On the north wall, all windows are the same height and have uniform head heights across all floors.

Standard E-2: Window & Door Alignment
Windows and/or doors are stacked for vertical alignment throughout.

Standard E-3: Symmetricity
The center bay, though not symmetrically located in the width of the façade, is clearly the central visual element of the east façade, and all windows are clearly centered in this bay. It would be reasonable to say that the facade has an A-B-AA rhythm, as do other buildings in the neighborhood.

PRINCIPLE F: Articulation

Standard F-1: Articulation
The primary articulation of the public, street-facing façade is the three-story bay, which is directly reminiscent of the articulated bay of triple-deckers. As with that typology, the windows on the bay are vertically proportioned, but slightly different than the windows on the flat façade to either side. The bay is formed with perpendicular sides, rather than angled, for a more contemporary interpretation of the bay, and siding is run vertically for further emphasis on the 'special-ness' of this section. Finally, this bay crowns at a higher level than the primary roof height, to provide interest at the skyline and to reduce the perceived width of the overall building.
The higher bay serves to conceal roof terraces and mechanical equipment set far back from the front façade, though the roof terrace trees will provide a lovely green skyline, when seen from a distance.
Cornices at the top of all roof lines along the front façade, and including the first floor level entrance porch, are articulated similarly, though will be dimensionally different for their respective scales.
A brick base, up to approximately 2.5' above grade, wraps the front facade below the siding, giving a solid base to the building.

Standard F-2: Window Types
Windows are fundamentally two types: a single vertical unit of consistent size, and a triple unit comprised of three equal-width sashes. On the front facade, the height of the triple units varies with the floor level, relating to interior ceiling heights, but the width remains constant. A 3" wide flat trim cases all around all windows.

Standard F-3: Visual Cohesion
The building materials are very simple: engineered wood lap siding run horizontally; vertical siding *in the same color* at the front bay and at rooftop bulkheads which rise above the primary roof level; a dark brick base below the siding along the front façade. A similarly-colored dark masonry will be used at the set-back wall of the garage doors at the south elevation. The siding is intended to be a mid-intensity color, with dark window and door frames as seen below.

Standard F-4: Delineation between Floors
Window heads, aligned across all facades, clearly indicate the delineation of floors. A horizontal trim is added at the vertical siding on the bay, directly above the window heads. This serves two purposes: to delineate the top of each floor, as well as to conceal the horizontal joint in siding panel heights.

Standard F-5: Porches
As described above, the entrance porch is seen as a transitional space and version of the neighborhood entrance stoop, as opposed to an outdoor living space. It is tucked in under the second floor, within the mass of the building. The side wall is solid and clad in the same wood siding as elsewhere, for a "quiet' enclosure without introducing a new material at such a small area. A square wooden column anchors the open corner of the porch.

Standard F-6: Main Entries
The main entrance, located within the entrance porch, is oriented to the street and is a clear part of the front façade. The entry sequence is domestic in scale, with a full glass door and sconce-lit porch providing a welcoming entrance in the day or night.

Standard F-6: Articulation
All eaves project over the building façade by a minimum of 6". The cornice trim on the east, primary façade serves to obscure the gutters and wraps around both corners of the building until the gutters begin. The cornice trim on the upper bay roof wraps around and continues for the full length of the bay roof. Cornices on the rear bulkheads and west faced are simpler, flat trim details and follow the slight pitch of the roof-lines.
As noted above, the proposed trim is a flat stock 3" all around the window and door openings, which is in proper scale with the openings and overall building.

PRINCIPLE G: Materials

Standard G-1: Materials
Consistent with the majority of buildings in the neighborhood context, the primary siding for the project is painted horizontal lap siding. The proposed material is LP SmartSiding, with a horizontal lap at the majority of the building, and a vertical board & batten treatment at the central bay and at the bulkhead walls above the primary roof. All siding will be in the same color. The horizontal siding will have an exposure of 6.84". The battens on the vertical siding will be centered every 8", using 1.5" wide battens, so the exposure between battens is 6.5".

Standard G-2: Material & façade design
The layering of materials on the building facades is conventional, with a masonry base (brick at the front façade, concrete foundation walls, elsewhere), with wood siding above.

Standard G-3: Chimneys
Not applicable.

Standard G-4: Window Types
There are fundamentally two window types: the single unit and the triple unit. The triple units are higher than the single units, consistently, and there is a small height difference at each floor at the triple units. Reference Standards E-1 and F-1 above.

Standard G-5: Patios & Plazas
Not applicable.

Q. Utilities

The project will include the installation of multiple utility services to the proposed residential building. There are no existing utilities located on the proposed site per Boundary & Topographic Survey prepared by Owen Haskell, Inc. apart from the infringing gas services located on the east and west property boundaries. See Sheet C-20 for additional Information.

Water:

A proposed 6" parent connection will tie into the existing 6" cast iron water main and will branch off to provide a 6" sprinkler and 1.5" domestic service connection to the proposed development. These services will have an associated 6" gate valve and a 1.5" curb stop.

Sewer:

The proposed 6" sewer lateral is anticipated to accept the wastewater within the internal parking area and elevator sump, after draining from an oil water separator. The proposed service will tie into an existing combined sewer main within Atlantic Street.

Stormwater:

The proposed stormwater drainage plan includes floor drains, a field inlet, foundation drain and a high-performance rain garden. The rain garden will capture the runoff from the roof drain providing attenuation and treatment. The remaining stormwater will be caught by the proposed floor drains, catch basins, and field inlet. The stormwater will tie into the existing combined sewer main within Atlantic Street.

UGE/T/C:

Features surrounding the site include overhead wires connecting to an existing utility pole located on the Atlantic Street frontage of the proposed property. This pole is proposed to be relocated, remaining along the same frontage to accommodate safe site access. The proposed services are to be routed underground from the relocated utility pole.

Gas:

It is proposed to install a gas service off the existing main within Atlantic Street to service the proposed building.

Ability to serve letters were sent out to the respective utility companies on June 21, 2021, in accordance with the City of Portland Code of Ordinances. Responses from the utility companies can be found attached to this section.

ACORN ENGINEERING, INC.

Central Maine Power Company
Attn: Jon Deschenes
162 Canco Road
Portland, Maine 04103

July 26th, 2021

Subject: 30 Atlantic Street Development
Re: Ability to Serve; CMP

Mr. Deschenes:

On behalf of Kestrel LLC., we are pleased to submit the following request for Central Maine Power's ability to serve the proposed development. The proposed project is located along 30 Atlantic Street, within the R-6 Residential Zoning District in Portland, Maine. The existing vacant lot is proposed to be developed into a 3 story, 4-unit multi-family residential building.

The current utility pole servicing abutting lots along Atlantic Street consist of overhead wire connections. The existing pole is within the proposed curb cut for the site and is anticipated to be relocated along the frontage of the property. This relocated pole shall remain to service the existing properties with the addition of the servicing the new development with underground connections.

On behalf of the client, we are requesting the following information:

1. Any easements for overhead services currently crossing the proposed development.
2. Alternative connection locations from the development to the existing system.
3. CMP's proposed infrastructure improvements within the project vicinity.
4. CMP's ability to serve the project.
5. Access requirements to the CMP meters.

I have attached an existing conditions plan created by Owen Haskell Inc. dated December 2020, as well as the proposed preliminary utility plan from our office to facilitate your review. Please do not hesitate to contact me or the office for any questions or clarifications.

Sincerely,

Sam Lebel

Sam Lebel, PE
Project Manager
Acorn Engineering, Inc.

CENTRAL MAINE POWER

July 22, 2021

Acorn Engineering Inc.
C/O Mr. Stevens
PO Box 3372
Portland, Maine 04104

RE: Electric Service, 30 Atlantic St, Portland Me

Dear Mr. Stevens,

This letter is to advise you Central Maine Power has sufficient single-phase electrical capacity in the area to serve the subject project.

Please provide to CMP what size service the Customer will be requiring in order to get the needed information for costs and an easement will be required for this project.

If you have any questions, please feel free to call me at 629-1423.

Sincerely,

Jon Deschenes
Energy Service Specialist

Printed on recycled paper

162 Canco Road, Portland, ME 04103
Telephone 800.750.4000, Fax 207.791.1026
cmpco.com

IBERDROLA USA

An equal opportunity employer

ACORN ENGINEERING, INC.

Consolidated Communications
Attn: Mr. Jay Cunha
5 Davis Farm Road
Portland, Maine 04103

June 21st, 2021

Subject: 30 Atlantic Street Redevelopment
Re: Ability to Serve

Mr. Cunha

On behalf of Kestrel LLC., we are pleased to submit the following request for Consolidated Communication's ability to serve the proposed development. The proposed project is located along 30 Atlantic Street, within the R-6 Residential Zoning District in Portland, Maine. The existing vacant lot is proposed to be developed into a 3 story, 4-unit multi-family residential building.

The current utility pole servicing abutting lots along Atlantic Street consist of overhead wire connections. The existing pole is within the proposed curb cut for the site and is anticipated to be relocated along the frontage of the property. This relocated pole shall remain to service the existing properties with the addition of the servicing the new development with underground connections.

On behalf of the client, we are requesting the following information:

1. Any additional information, such as utility mapping within Atlantic Street.
2. Any easements for overhead services currently crossing the proposed development.
3. Alternative connection locations from the property to the existing communication system.
4. Consolidated Communication's proposed infrastructure improvements within the project vicinity.
5. Consolidated Communication's ability to serve the project.

I have attached an existing conditions plan created by Owen Haskell Inc. dated December 2020 as well as the proposed preliminary utility plan from our office to facilitate your review. Please do not hesitate to contact me or the office for any questions or clarifications.

Sincerely,

Sam Lebel

Sam Lebel, PE
Project Manager
Acorn Engineering, Inc.

ACORN ENGINEERING, INC.

Department of Public Works
Attn: Bradley Roland
250 Canco Road
Portland, Maine 04103

June 21st, 2021

Subject: 30 Atlantic Street Development
Re: Ability to Serve

To Whom It May Concern:

On behalf of Kestrel LLC., we are pleased to submit the accompanying package of materials related to the development of 30 Atlantic Street located within the R-6 Residential Zoning District in Portland, Maine. The existing vacant lot is proposed to be developed into a 3 story, 4-unit multi-family residential building.

There is no known sewer infrastructure located on the existing lot. It is proposed to tap a 6" PVC sewer lateral to service to proposed structure. The proposed 6" service will have connections to an oil/water separator, floor drain, and the elevator sump.

Based upon the Section 4 of the Maine Subsurface Wastewater Disposal Rules, the project anticipates the following design flows:

Estimate of Anticipated Daily Flows				
Development	Unit Size	Number of Units	Gallons per Day per Unit	Total Gallons per Day
Existing Flow				
Vacant lot	N/A	0	0	0
Total Gallons per Day (Existing)				0 GPD
Proposed Flow				
Multifamily	2-Bedroom	3	180	540
Multifamily	3-Bedroom	1	270	270
Total Gallons per Day (Proposed)				810 GPD
Net Change				**+810 GPD**
*Values based on STATE OF MAINE: SUBSURFACE WASTEWTAER DISPOSAL RULES, most recent edition				

The proposed project is anticipated to increase the net flow by approximately 810 gallons per day (GPD). It should be noted that these values were developed using conservative estimates from the State of Maine Subsurface Wastewater Disposal Rules.

On behalf of the client, we are requesting the following information:

1. Any additional information, such as utility mapping within Atlantic Street and confirmation of the location and size of the services to the existing property and the size and material of the main with within Atlantic Street.
2. DPW's proposed infrastructure improvements within the project vicinity.
3. DPW's ability to serve the project.
4. Any project related offsite sewer main improvements.

I have attached a fixture count, an existing conditions plan created by Owen Haskell Inc. dated December 2020, and the proposed preliminary utility plan from our office to facilitate your review. Please do not hesitate to contact me or the office for any questions or clarifications.

Sincerely,

Sam Lebel

Sam Lebel, PE
Project Manager
Acorn Engineering, Inc.

CITY OF PORTLAND
Department of Public Works
Christopher C. Branch, P.E., Director

Date: October 26, 2021

Re: Wastewater Capacity Authorization

Address: 30-32 Atlantic Street
Applicant: Lauren Reiter, Cornerstone Building & Renovation

Planner: Austen Torres Davis

Anticipated Wastewater Flow:

Estimate of Anticipated Design Flows				
Development	Unit Size	Number of Units	Gallons per Day per Unit	Total Gallons per Day
Existing flow to be removed				
Vacant				0
Proposed flow				
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,

Bradley A. Roland, P.E.
Senior Project Engineer

212 Canco Road, Ste B · Portland, ME 04103 · 207-874-8801
cbranch@portlandmaine.gov · www.portlandmaine.gov

ACORN ENGINEERING, INC.

Portland Water District
Attn: MEANS Department
225 Douglass Street
Portland, Maine 04104

June 21st, 2021

Subject: 30 Atlantic Street Development
Re: Ability to Serve

To Whom It May Concern:

On behalf of Kestrel LLC., we are pleased to submit the accompanying package of materials related to the development of 30 Atlantic Street located within the R-6 Residential Zoning District in Portland, Maine. The existing vacant lot is proposed to be developed into a 3 story, 4-unit multi-family residential building.

The proposed development is to service a 4-unit residential building. The proposed connection lines are to tap into an existing 6" cast iron water main located within Atlantic Street. The service lines will consist of a 1.5" type K copper domestic line, along with a proposed 4" D.I. Sprinkler line to support a 13R sprinkler system. Based upon the Section 4 of the Maine Subsurface Wastewater Disposal Rules, the project anticipates the following design flows:

Estimate of Anticipated Daily Flows				
Development	Unit Size	Number of Units	Gallons per Day per Unit	Total Gallons per Day
Existing Flow				
Vacant lot	N/A	0	0	0
Total Gallons per Day (Existing)				0 GPD
Proposed Flow				
Multifamily	2-Bedroom	3	180	540
Multifamily	3-Bedroom	1	270	270
Total Gallons per Day (Proposed)				810 GPD
Net Change				**+810 GPD**
*Values based on STATE OF MAINE: SUBSURFACE WASTEWTAER DISPOSAL RULES, most recent edition				

The proposed project is anticipated to increase the net flow by approximately 810 gallons per day

(GPD). It should be noted that these values were developed using conservative estimates from the State of Maine Subsurface Wastewater Disposal Rules.

On behalf of the client, we are requesting the following information:

1. Any additional information, such as utility mapping within Atlantic Street and confirmation of the location and size of the services to the existing property and the size and material of the water main.
2. Alternative connection locations from the property to the existing system.
3. PWD's proposed infrastructure improvements within the project vicinity.
4. Flow data for adjacent hydrant.
5. PWD's ability to serve the project.

I have attached a fixture count, an existing conditions plan created by Owen Haskell Inc. dated December 2020, and the proposed preliminary utility plan from our office to facilitate your review. Please do not hesitate to contact me or the office for any questions or clarifications.

Sincerely,

Sam Lebel

Sam Lebel, PE
Project Manager
Acorn Engineering, Inc.

Portland Water District

FROM SEBAGO LAKE TO CASCO BAY

August 25, 2021

Acorn Engineering
ATTN: Zach Stevens
PO Box 3372
Portland, ME 04101

Re: 30 Atlantic Street, Portland
Ability to Serve with PWD Water

Dear Mr. Stevens:

The Portland Water District has received your request for an Ability to Serve Determination for the noted site submitted on June 22, 2021. Based on the information provided per plans dated August 17, 2021 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 and is valid for eighteen (18) months after the date of issue. 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 1.5-inch domestic service with a 1-inch meter may be installed from the water main in Atlantic Street. An approved non-testable dual check backflow prevention device must be installed on the service line directly after the meter prior to service activation.
- A new 4-inch fire service may be installed from the water main in Atlantic Street. An approved testable double check backflow prevention device must be installed on the service line directly before the sprinkler riser prior to service activation.
- The Portland Water District does not have record of any other existing infrastructure in public roads and recommends a survey and test pitting be performed by the development team prior to construction. Any conflicts that arise during construction are at the risk of the developer and may result in job shutdown until new plans are submitted by the developer and reviewed and approved by PWD.

Prior to construction, the owner or contractor will need to complete a Service Application and pay all necessary fees for each proposed service. When the project is ready for construction, an Application for each service can be requested by contacting the MEANS Group at MEANS@pwd.org or 207-774-5961 ext. 3199. Once a completed Application has been submitted with payment, please allow seven (7) days for processing.

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 cast iron water main in Atlantic Street and a public fire hydrant located approximately 100 feet from the site. The most recent static pressure reading was 70 psi on June 1, 2021.

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

ACORN ENGINEERING, INC.

Spectrum Cable
Attn: Mr. Mark Pelletier
118 Johnson Road
Portland, Maine 04102

June 21st, 2021

Subject: 30 Atlantic Street Development
Re: Ability to Serve

Dear Mr. Pelletier:

On behalf of Kestrel LLC., we are pleased to submit the following request for Spectrum's ability to serve the proposed development. The proposed project is located along 30-32 Atlantic Street (Chart, Book, Lot / 16-F-003 and 16-F-025), within the R-6 Residential Zoning District in Portland, Maine. The lot will be redeveloped into a three-story, 4-unit residential building with associated parking.

The current utility pole servicing abutting lots along Atlantic Street consist of overhead wire connections. The existing pole is within the proposed curb cut for the site and is anticipated to be relocated along the frontage of the property. This relocated pole shall remain to service the existing properties with the addition of the servicing the new development with underground connections.

On behalf of the client, we are requesting the following information:

1. Any additional information, such as utility mapping within Atlantic Street.
2. Any easements for overhead services currently crossing the proposed development.
3. Alternative connection locations from the property to the existing communication system.
4. Spectrum's proposed infrastructure improvements within the project vicinity.
5. Spectrum's ability to serve the project.

I have attached an existing conditions plan created by Owen Haskell, Inc. as well as the proposed preliminary utility plan from our office to facilitate your review. Please do not hesitate to contact me or the office for any questions or clarifications.

Sincerely,

Sam Lebel, PE
Project Manager
Acorn Engineering, Inc.

From: Pelletier, Mark
To: Zach Stevens
Subject: RE: 30 Atlantic Ability to Serve Request
Date: Thursday, June 24, 2021 9:40:09 AM

Zach,

This project is within Charter/Spectrum's service area. As long as the developer provides any conduit infrastructure needed for the build, we anticipate they would be able to get services if they call to subscribe.

Mark

Mark Pelletier
Construction Coordinator III, Northern New England
118 Johnson Rd Portland ME 04102
207-253-2324 Mon-Fri 7 to 3:30pm
mark.pelletier@charter.com

From: Zach Stevens [mailto:zstevens@acorn-engineering.com]
Sent: Tuesday, June 22, 2021 8:22 AM
To: Pelletier, Mark <Mark.Pelletier@charter.com>
Cc: Sam Lebel <slebel@acorn-engineering.com>
Subject: [EXTERNAL] 30 Atlantic Ability to Serve Request

CAUTION: The e-mail below is from an external source. Please exercise caution before opening attachments, clicking links, or following guidance.

Good afternoon,

On behalf of Kestrel LLC., please find the attached ability to serve request letter for the proposed 4-unit residential building development located at 30 Atlantic Street, Portland, Maine. I have attached a Boundary Survey by Owen Haskell Surveying, Inc. and a Preliminary Site Plan from our office as a reference.

Please let us know if you have any questions during your review.

Thanks,

Zachary Stevens, E.I.
Design Engineer

Licensed in Maine

Acorn Engineering, Inc.
PO Box 3372
Portland, Maine 04104
Acorn's Website | Instagram | LinkedIn

B. 207.775.2655
C. 207.240.2993

Please note Acorn Engineering employees may be working remotely. All employees have laptops and full access to project files using Sharepoint. To do our part and reduce unnecessary exposure all meetings will be held remotely using video conferencing software such as Teams or Zoom. If an in-person meeting is necessary then the meeting will be held outside.

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ACORN ENGINEERING, INC.

Unitil Service Corp.
Attn: Bridget Harmon
376 Riverside Industrial Parkway
Portland, Maine 04103

June 21st, 2021

Subject: 30 Atlantic Street Development
Re: Ability to Serve

Dear Ms. Harmon:

On behalf of Kestrel LLC., we are pleased to submit the following request for Unitil's ability to serve the proposed development. The proposed project is located along 30-32 Atlantic Street (Chart, Book, Lot / 16-F-003 and 16-F-025), within the R-6 Residential Zoning District in Portland, Maine. The lot will be redeveloped into a three-story, 4-unit residential building with associated parking.

We are not aware of any existing gas services to the property. It is proposed to route a service from the existing gas main within Atlantic Street to the proposed building.

On behalf of the client, we are requesting the following information:

1. Any additional utility mapping such as gas lines within Atlantic Street.
2. A confirmation of an existing gas main within Atlantic Street, as well as the size of any gas lines and services in the vicinity.
3. Unitil's proposed infrastructure improvements within the project vicinity.
4. Unitil's ability to serve the project.

I have attached an existing conditions plan created by Owen Haskell Inc. dated December 2020, as well as the proposed preliminary utility plan from our office to facilitate your review. Please do not hesitate to contact me or the office for any questions or clarifications.

Sincerely,

Sam Lebel

Sam Lebel, PE
Project Manager
Acorn Engineering, Inc.

June 22, 2021

Sam Lebel, PE
Project Manager
Acorn Engineering, Inc.

Subject: 30 Atlantic Street Development
Re: Ability to Serve

Dear Mr. Lebel:

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.

You will see from the attached GIS map, the size, location and material of the nearby natural gas infrastructure. The neighboring parcels located at #'s 26/28 and 34 Atlantic Street, each have an active ½" natural gas service. Any improvements to the existing distribution system necessary to provide this service, as well as the design of the gas system in the project itself will be established as the overall design and scope of your project progresses. Please provide gas load requirements in order for the evaluation to be completed.

If you have any further questions or require additional information, please do not hesitate to call or email.

Sincerely,

ME GAS CUSTOMER ENERGY SOLUTIONS
376 Riverside Industrial Parkway
Portland, ME 04103

T 207-541-2508 www.unitil.com

Bridget Harmon
Business Development Representative
Unitil Corporation
(o) 207-541-2536 (f) 207-541-2586

ME GAS CUSTOMER ENERGY SOLUTIONS
376 Riverside Industrial Parkway
Portland, ME 04103

T 207-541-2508 www.unitil.com

Q. Construction Management Plan

Project Address: 30-32 Atlantic Street, Portland, ME

Project Description:

The proposed project includes the development of a 3-story building with four units of residential housing and on-site parking.

Project Team Summary:

Owner:	Kestrel LLC
General Contractor:	TBD
Civil Engineer:	Acorn Engineering, Inc.
Architect:	Lauren Reiter
Structural Engineer:	TBD

The Owner/GC and all subcontractors will work with the City of Portland and adjacent landowners to minimize potential project impacts.

The GC will remain responsible for enforcement of all compliance with 1) all contract plans and specifications in their scope of work and 2) all site working conditions and safety requirements, day and night, for both persons and property, in each case for the duration of their work. These include OSHA, NIOSH, U.S. EPA, local Ordinances, and any other applicable governmental regulations. Both the Owner/GC and any subcontractors will remain responsible for safeguarding the general public.

The GC shall review all permits and conditions associated with the project.
Refer to the Civil/Site Plan Set, Sheet C-03 Construction Management Plan for visual representation of the measures to be taken during construction.

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

A. Construction Management Principles

The control of noise, vibrations, ground movement, truck traffic, and other construction-related factors will be of utmost importance. Care shall be taken to minimize these effects in the best interest of neighbors and the general public. GC to ensure that work hours conform to the City of Portland's Ordinance.

B. Development Review of Construction Management Plan

Logistics and safety program shall be submitted at or prior to the pre-construction meeting by the GC with all pertinent information required by the Maine Department of Transportation's Traffic Control Plan Standard Specification 652.3.3.

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

Guarantees and fees will be paid at the time of the respective application. Prior to scheduling a preconstruction meeting and issuance of permits all requirements from the following sections are to conform; Section 1.5 Enforcement, Section 14.5 Review Procedures, Section 14.11 Post-Approval Procedures, and 14.14 Amendments.

1. Street Opening and Street Occupancy Permits:

   Required permits regarding street opening and occupancy will be obtained from the Department of Public Works. The requests shall conform to the approved Construction Management Plan.

2. Blasting:

   Although not anticipated, if blasting occurs, it shall conform to Article VIII. In Chapter 14 of the City Code and Section 3.7 in the City's Technical Manual.

3. Building Code:

   Employ the best practices, as applicable, of Chapter 33 Safeguards During Construction, from the 2009 International Building Code.

D. Construction Administration and Communication

The Contractor will work closely with adjacent abutters, businesses, and all parties informed, as far in advance as possible, of scheduled work, particularly work anticipated to cause significant noise, vibrations, or dust. Communication in order to comply with all agreements, ordinances, and special permits will be of the utmost importance. Contractor contact information shall be posted on a sign on the construction fence along the Atlantic Street frontage. Additional signage necessary for communication shall be provided but will be temporary and removed upon completion of the project.
The contact information for the project personnel is:

Lauren Reiter
Cornerstone Building & Restoration
(917) 502-2225

GC and Subcontractor information will be posted along the Atlantic Street frontage once contracted.

E. Construction Schedule

The GC shall submit a construction timeline at or prior to the pre-construction meeting. Construction may occur during the daytime hours as defined in Section 17-18 of the Construction Activities for Building permit and City Code Section 25-129, Noise, dust, and debris. Between September 1st and May 31st, the following year, no person shall engage in construction activities generating noise exceeding 50 decibels between the hours of 7 pm and 7 am of the following day within 500 feet of any buildings. From June 1st to August 31st, construction activity may continue until 8 pm. No construction activity shall begin

before 8 am on a Saturday, Sunday, or legal holiday. Extended hours or night work may be requested for special circumstances and street utility work if needed. These requests will be subject to approval by the Public Works Authority.

Due to the limited space within the project parcel, deliveries will need to be stored in an alternate location, or deliveries must be small enough to fit within the property. Deliveries will be scheduled between 7 am and 5 pm.

The estimated timeframe of the proposed project is outlined below:

Project Start Date:	Spring 2022
Project End Date:	Fall 2022

A more detailed work schedule shall be provided by the GC at or before the pre-construction meeting with the City.

F. Security

1. The Construction Management Plan, Sheet C-03, depicts all proposed fencing and other barriers, with the intent of separating pedestrian and vehicle circulation from the construction site. Construction entrances per detail shall be installed.

2. Structures undergoing construction, alteration, or demolition operations, including those in underground locations, shall comply with NFPA 1 Chapter 16. *Safeguarding Construction, Alteration, and Demolition Operations.*

3. Fire Safety Program: Prior to construction, an overall construction and demolition fire safety program shall be developed. Essential items to be emphasized include the following:
    - 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.

4. Blasting, if required, shall conform with all measures of Article VIII. Regulation of Explosives in the Land Use Code and Section 3.7 Standards for Blasting and Regulation of Explosives in Portland's Technical Manual.

5. Temporary security lighting shall be shown on the Construction Management Plan, and all fixtures shall be full cutoffs.

G. Construction Permitting and Traffic Control Plans

1. Construction Activity in Public Streets

Construction activity in the public right-of-way shall be compliant with Chapter 25 Article VII of the City Code. At no time will it be permissible for construction activity, including delivery vehicle to close or block streets or affect public safety access without prior notice and approval of the Department of Public Works.

2. Sewer and Stormwater

Sewer and stormwater system connections are controlled by Chapters 24 and 32 of the City Code of Ordinance. Required permits for new connections and/or abandonment of existing connections are available through the Street Opening Clerk at the Department of Public Works. Rules and Regulations for these utility systems are available through the City Engineer's office of the Department of Public Works and in Section II of the Technical Manual. This will apply to the new connections within Atlantic Street.

3. Traffic Control Plans

Construction activity that impacts the existing public street system must be controlled to protect the safety of the construction workers and all modes of the traveling public. The Contractor shall submit a satisfactory "Maintenance of Traffic" (MOT) plan prior to any street opening permit approval. This document shall contain all pertinent information from the Maine Department of Transportation's Traffic Control Plan Standard Specification 652.3.3.

The MOT will address the work required for utility connections in Atlantic Street. Traffic will be channelized utilizing drums and cones. Proper signage will be installed prior to the through work zone. Alternating traffic will be controlled with flaggers. Trenches will be patched with pavement daily.

The MOT plan shall provide for the safe passage of the public through or along the construction work zone. It may be permissible to close a portion of Atlantic Street during utility connections and/or detour a mode of traffic when absolutely necessary for safety. All requests shall be subject to City approval. MOT plans shall employ the appropriate techniques and devices as called for in the latest edition of the Manual on Uniform Traffic Control Devices (MUTCD). In addition:

- Construction speed signing may be used as needed to slow traffic.
- Traffic Control signs shall not be placed where they would create any obstructions to bicycles or pedestrians.
- Flaggers will be utilized when necessary.

All existing modes of travel in the work zone area shall be accommodated if impacted by the activity. The safe passage of pedestrians, bicyclists, transit providers, and motorists are of equal importance when planning and laying out the work zone; no pre-existing travel mode may be eliminated without the express approval of the Department of Public Works. The MOT should also address on-street parking impacts, including deliveries and parking for adjoining businesses and property owners, analysis of roadway capacity or diversion capacity if street closure or change to roadway capacity is required, and coordination with other on-going or future construction or utility projects in the vicinity.

- Traffic control bicycle and pedestrian facilities or routes through work zones shall be maintained until the bicycle and pedestrian facilities or routes are ready for safe operation. Traffic control will not be removed to allow 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 in all capacities shall be maintained.

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

H. Site Management and Controls

1. Regular trash and debris shall be managed appropriately, and its removal shall comply with all local, state, and federal regulations.

2. Street cleaning and sweeping shall be followed as outlined in the erosion and sedimentation control notes and report. Damage to the street shall be avoided and shall be the responsibility of the Contractor.

3. Dust shall be controlled and shall comply with Section 25-129 and the erosion and sedimentation control notes, plan, and details.

4. Noise shall be controlled and shall comply with Section 17-18 and Section 25-129.

5. Rodent Control shall be provided, if applicable, by a professional exterminator and shall be consistent with Chapter 22 of the City Code.

6. Snow and Ice Removal shall be provided. Pursuant to Section 25-173, the Contractor shall ensure a safe means of travel within the work zone by the following steps:

    a. Snow/ice removal or commence automatically from 1" or greater of snow or ice
    b. Remove snow as needed within the work zone, including parking spaces. Driveways and site lines shall not be blocked by piles of snow.
    c. Clear all walks and ramps within the work zone
    d. Sand or salt as needed
    e. Clear all basin or drainage to help snow melt
    f. The above steps shall be carried out Sunday-Saturday including holidays.

I. Erosion & Sedimentation Control

1. The Contractor shall install all erosion and sedimentation controls as depicted on the approved Construction Management Plan, C-03, and the approved erosion and sedimentation control report, prior to the pre-construction meeting for inspection by the City. The Contractor shall regularly inspect the control measures, no less than weekly and after storm events (0.5" or more in 24 hours). Additionally, temporary or permanent stormwater management systems shall be inspected and maintained to ensure working order. The Contractor shall document all inspection activities and corrective actions and be prepared to

provide these documents for inspection by the City, Maine Department of Environmental Protection (MDEP) or the U.S. Environmental Protection Agency (EPA) upon request.

2. Due to the existing sparse landscaping on site, no protection during construction will be necessary.

3. Stored materials shall be identified and avoid being located under/near trees.

J. Construction Staging Area

1. The Contractor shall submit a plan with locations depicted for the location of material staging areas, the location of on-site temporary construction trailers, the location of on-site truck delivery holding areas, the location of on-site truck washing stations, masonry mixing stations, the general location of the construction security fence and the general location of temporary construction dumpsters. This plan shall be submitted at or prior to the pre-construction meeting. Any open storage areas shall be shown on the plan.

2. Delivery Truck Holding Areas On-Site: The majority of materials delivered to the site will be scheduled such that they are able to be off-loaded immediately. On days when the construction activities require multiple truck deliveries, these deliveries will be carefully scheduled so that there is always adequate on-site area for the holding of trucks until they can be unloaded. Once at the site, all vehicles will be brought within the fence line and will make every attempt to avoid queuing on public streets. If, for any reason, on-site holding of trucks is not feasible, an off-site location must be designated and shown on the submitted plan referenced above in J.1.

3. All deliveries for materials shall comply with the City's noise requirements.

K. Parking During Construction

1. Adequate parking for construction workers shall be provided along Atlantic Street or arrangements for off-street parking at an off-site location shall be provided.

2. Truck Routes and Volumes: The following quantities are estimated as part of the reconstruction:

    - Gravel & Stone – 155 CY. Earthwork subcontractor(s) pit to project site.
    - Hot Mix Asphalt – 51 tons. Paving subcontractor(s) pit to project site.

L. Special Measures as Necessary

No special measures are necessary for the proposed reconstruction.

S. Solid Waste Disposal

The property management company or Owner shall be responsible for locating the solid waste and recyclable material to the space allocated for solid waste storage.

The solid waste containers will be enclosed and screened from the public view. A private hauler will be contracted with for removal.

T. Parking Analysis

Per Land Use Code Section 19 Off Street Parking Table 19-A: Off Street Parking Minimums for Single, Two, or Multifamily units: 1 space is required per dwelling unit. Additionally, Table 19-B Categorical Vehicular Exceptions to Off-Street Parking Minimums Zone R6: No off-street parking required for first three dwelling units. See calculation below for required off street parking for the proposed 4-unit structure proposed at 30 Atlantic Street.

Required Off Street Parking = 4 units at 1 space per unit – first three units = (4 spaces – 3 spaces) = 1 Off street parking spaces required.

Proposed Parking = 3 Off street parking spaces

Lauren J. Reiter Architect / Cornerstone Building & Restoration
RA, LEED™ Accredited Professional

SECTION U: PHOTOGRPAHIC DOCUMENTATION of NEIGHBORHOOD

May 15, 2021

Please see the attached photographs and other documents describing the neighborhood context and nearby examples of three- and four-story buildings – both historic and contemporary.

Included in this section are renderings of the proposed building, shown in context with the existing neighbors.

6 South Street, Portland, ME 04101 tel. 917.502.2225 email. laurenjreiter@yahoo.com www.reiterarchitecturedesign.com

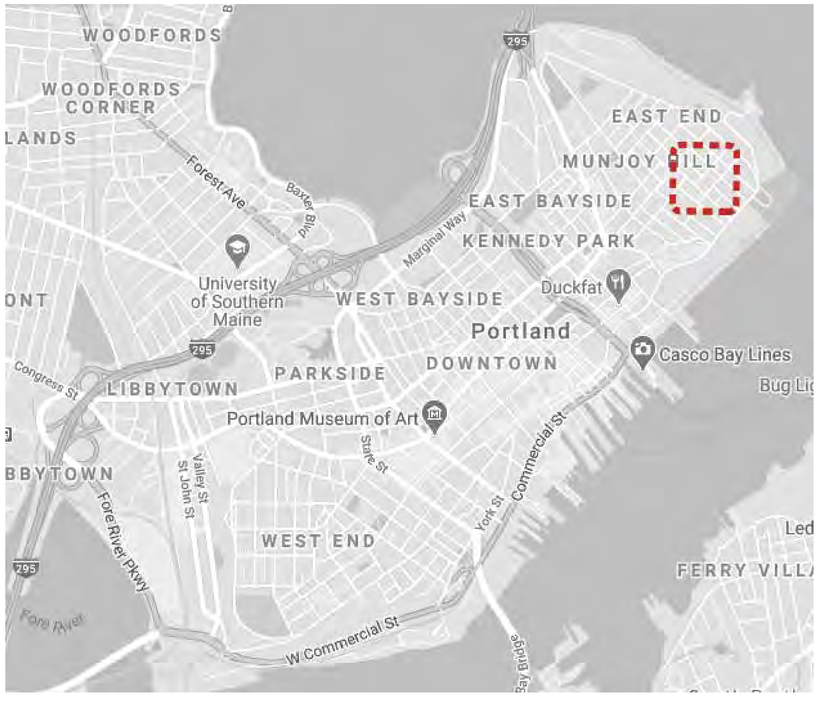
30-32 Atlantic Street

Lauren J. Reiter Architect / Cornerstone Building and Restoration

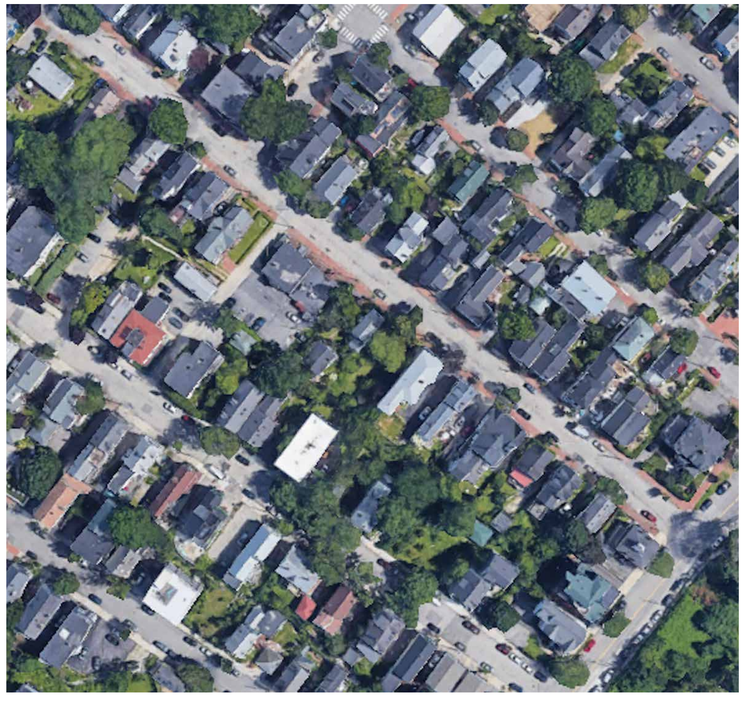
05/15/2021



30-32 Atlantic Street Project Site Context



Map of Portland with Site Neighborhood Highlighted



Atlantic Street and Surrounding Blocks



Site with Superimposed 250’ Radius

Atlantic Street (East Side)



← Congress Street

Fore Street →

Atlantic Street (West Side)



← Fore Street

Congress Street →

Atlantic Street “Zoomed In” Elevations

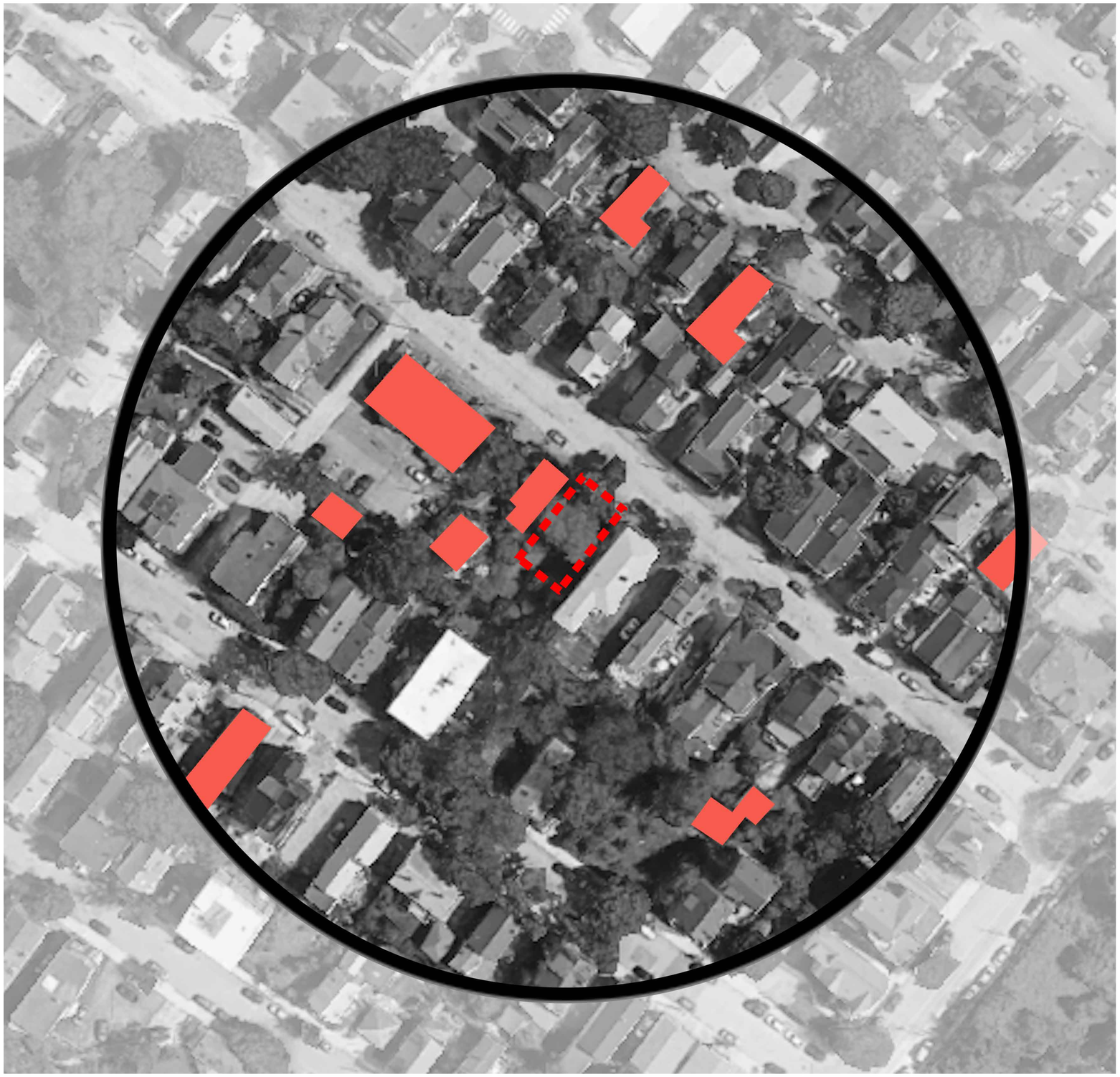


30-32 Atlantic Street and Immediately Surrounding Buildings (Looking West)



View Across the Street from 30-32 Atlantic Street (Looking East)

Relative Heights of Surrounding Buildings



30-32 Atlantic Street
Site Location

1-1.5 Story Buildings
in 250’ Radius

Relative Heights of Surrounding Buildings

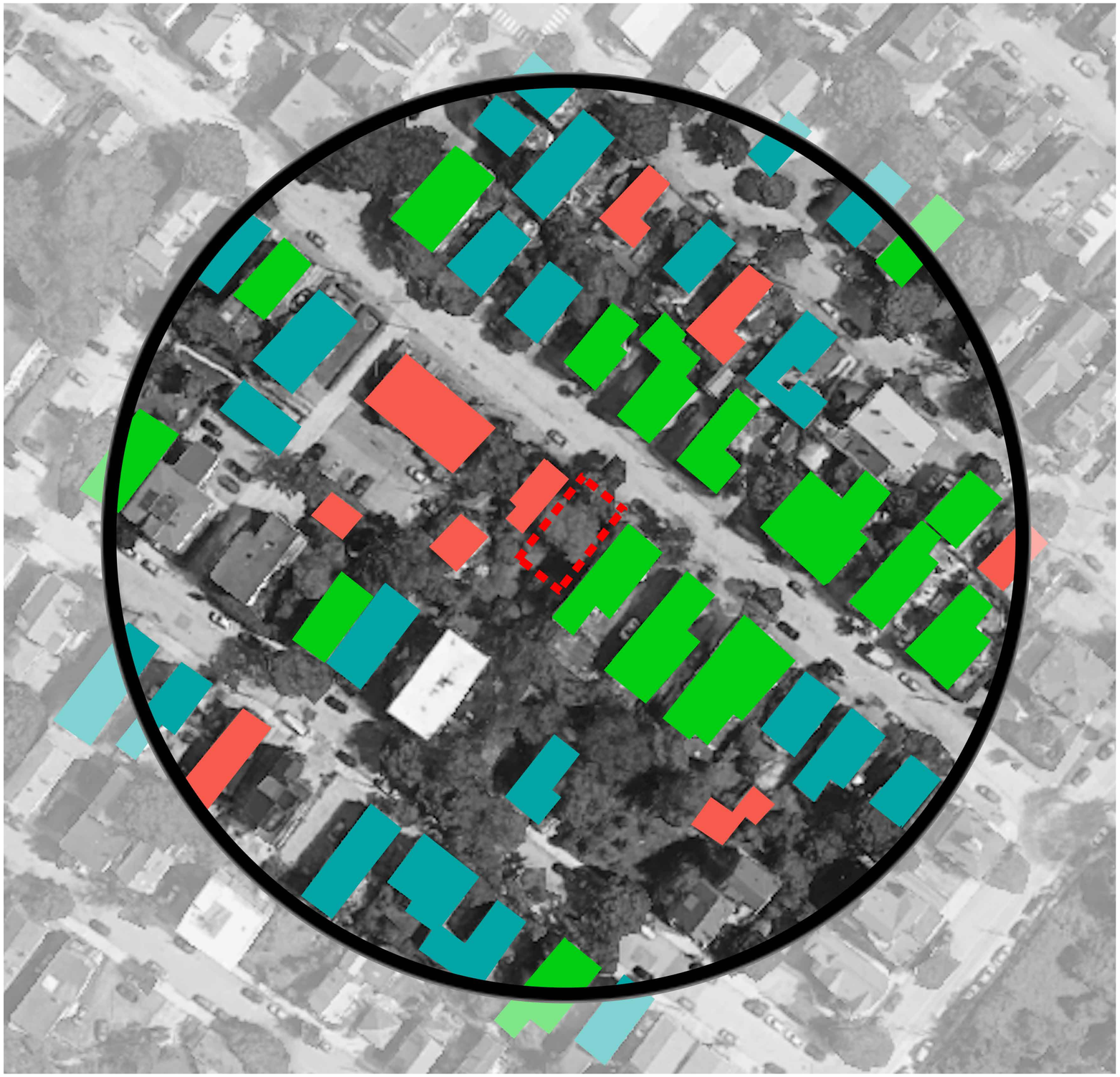


30-32 Atlantic Street
Site Location

1-1.5 Story Buildings
in 250’ Radius

2-2.5 Story Buildings
in 250’ Radius

Relative Heights of Surrounding Buildings



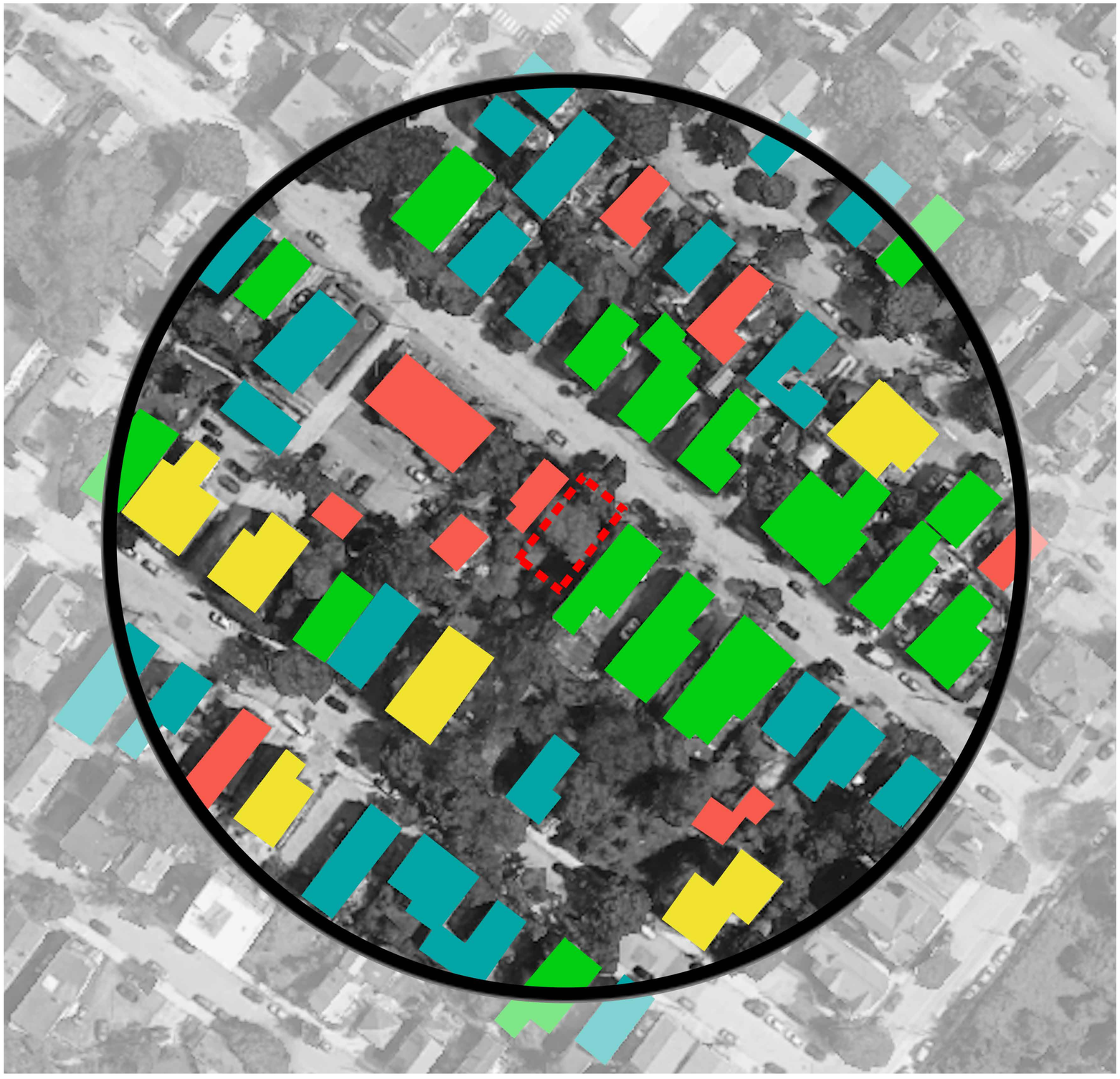
30-32 Atlantic Street
Site Location

1-1.5 Story Buildings
in 250’ Radius

2-2.5 Story Buildings
in 250’ Radius

3-3.5 Story Buildings
in 250’ Radius

Relative Heights of Surrounding Buildings



30-32 Atlantic Street
Site Location

1-1.5 Story Buildings
in 250’ Radius

2-2.5 Story Buildings
in 250’ Radius

3-3.5 Story Buildings
in 250’ Radius

4-4.5 Story Buildings
in 250’ Radius

Context: 3 Story Buildings Near Project



1. 65 Munjoy Street



2. 91-93 Atlantic Street



3. 60 Munjoy Street



4. 22 O'Brion Street



5. 74 Atlantic Street



6. 55 Atlantic Street



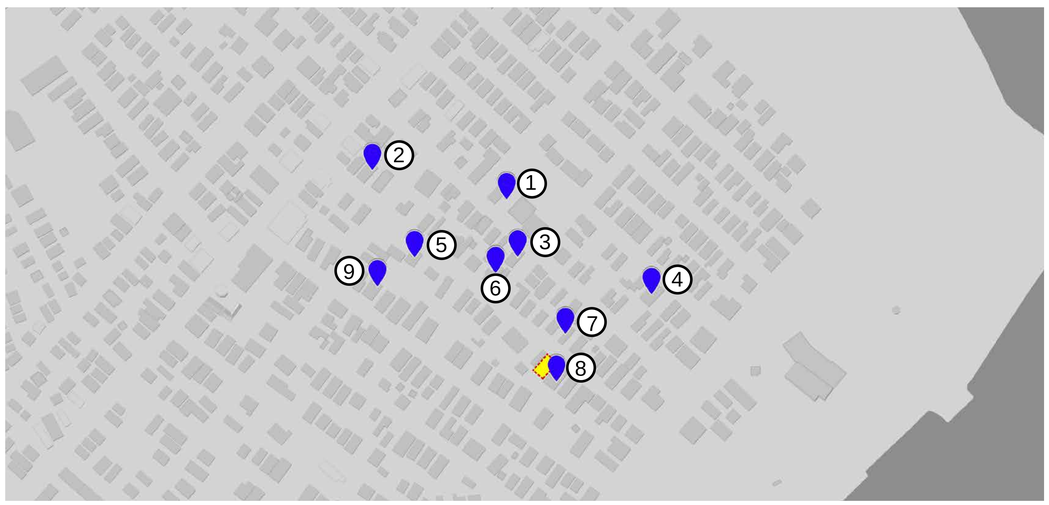
7. 29 Atlantic Street



8. 28 Atlantic Street



9. 77 St. Lawrence Street



Relative Locations to 30-32 Atlantic Street

Context: 4 Story Buildings Near Project Site



1. 9 Moody Street



2. 56 Wilson Street



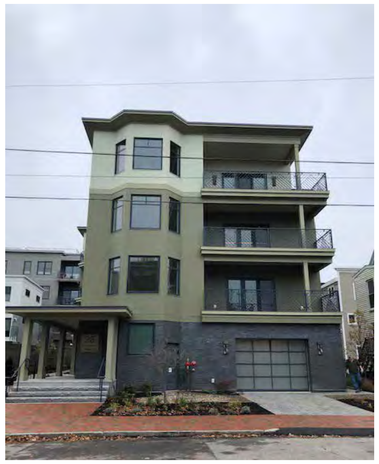
3. 72 Munjoy Street



4. 60 Munjoy Street



5. 18-20 Munjoy Street



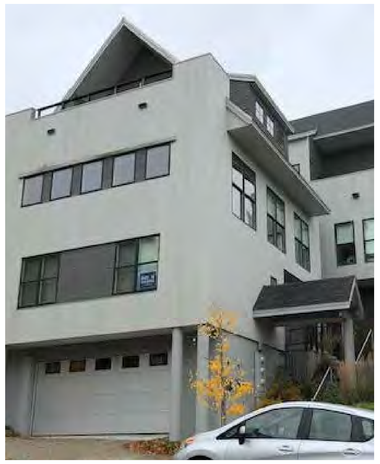
6. 25 Monument Street



7. 65 Waterville Street



8. 29 St. Lawrence Street



9. St. Lawrence Street



10. 32 St. Lawrence Street



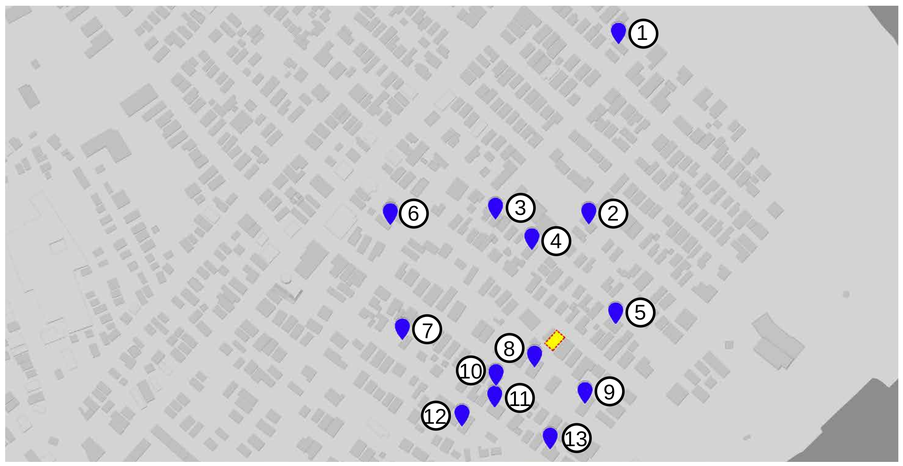
11. 29 Waterville Street



12. 36 Waterville Street



13. 9 Waterville Street



Relative Locations to 30-32 Atlantic Street

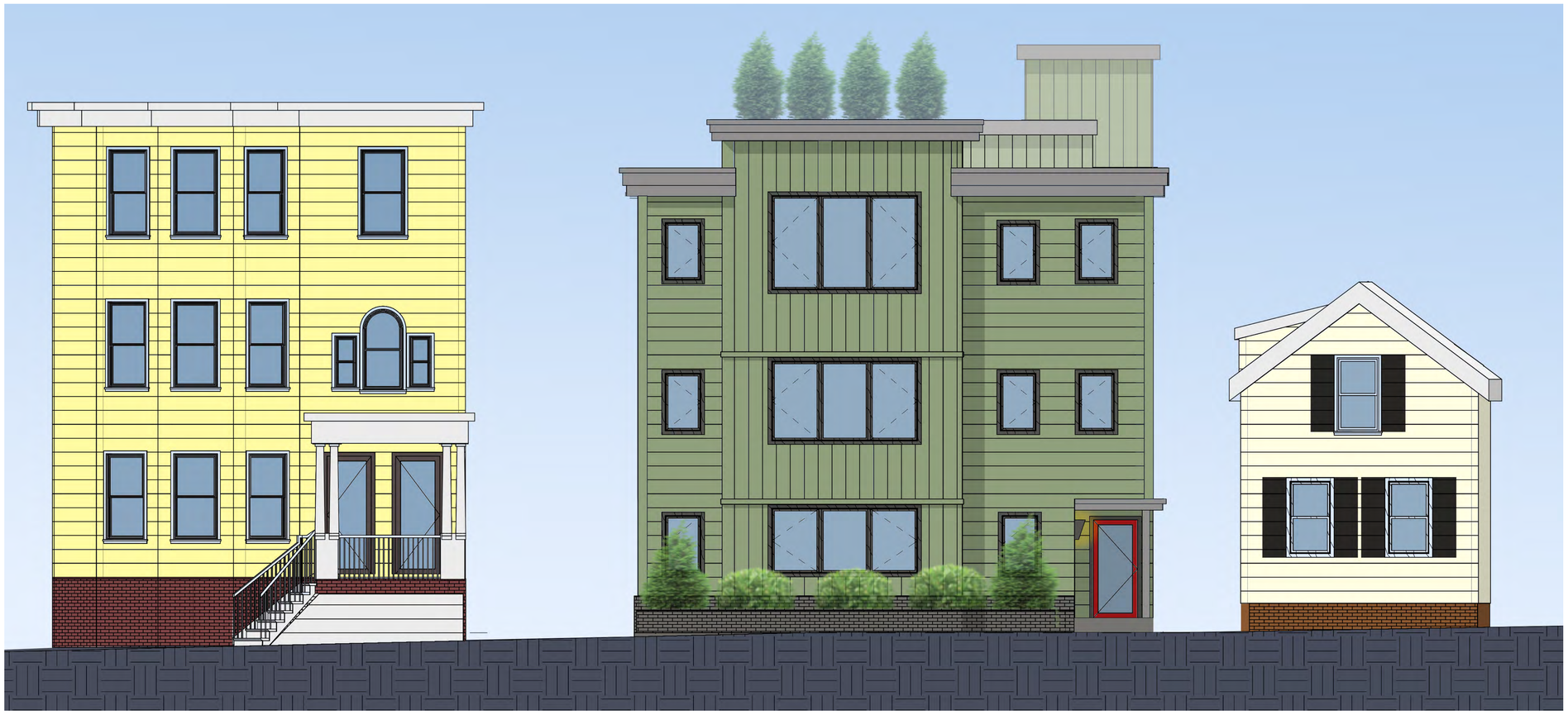
30-32 Atlantic Street Site



Existing Site (Open Lot 30-32)



1928 Photo of 28 Atlantic Street



Proposed Infill on 30-32



1924 Photo of 30-32 Atlantic Street (Demolished)

28-36 Atlantic Street 3D Render



30-32 Atlantic Street

Lauren J. Reiter Architect / Cornerstone Building & Restoration

ACORN ENGINEERING, INC.

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

October 6, 2021

Subject: 30-32 Atlantic Street Development

I, Samuel Lebel, hereby certify that a neighborhood meeting was held on October 5, 2021, remote via Zoom at 5:30 pm.

I also certify that on September 24, 2021, invitations were mailed to the following:

1. All addresses on the mailing list provided by the Planning Division which includes property owners within 500 feet of the proposed development.

2. Residents on the "interested parties" list.

Sincerely,

Sam Lebel

Samuel Lebel, P.E.
Project Manager
Acorn Engineering, Inc.

Included with this certification are:

1. Copy of the invitation sent
2. Sign-in sheet
3. Meeting minutes

ACORN ENGINEERING, INC.

Dear Neighbor: September 24, 2021

On behalf of Cornerstone Building & Restoration, we are pleased to invite you to a virtual neighborhood meeting to discuss a proposed Major Site Plan/Subdivision Application related to the property located at 30 Atlantic Street. The project proposes to construct a 3-story, 4-unit residential building on a 0.12-acre infill lot which is currently vacant. There will be three covered parking spaces and interior bike storage, with improvements to the sidewalk along the project frontage.

Meeting Location: As a safety measure, this meeting will **be held remotely via Zoom**, consistent with the City's Planning Board protocol. **Please email office@acorn–engineering.com to request a link or phone number to join the meeting.** You may also call the office line (listed below) to request this information.

Meeting Date/Time: Tuesday, October 5, 2021, at 5:30 p.m.

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. Both the sign-in sheet and recorded meeting minutes will be submitted to the Planning Board. If you have any questions, please do not hesitate to call the office at (207) 775–2655. We look forward to seeing you at the meeting.

Sincerely,

Samuel J. Lebel, P.E.
Acorn Engineering, Inc.

Lauren J. Reiter, R.A.
Project Architect

Sign In Sheet

10/5/2021
30-32 Atlantic Street Portland, ME 04101

Members of the Public in Attendance:

	NAME	E-MAIL
1.	Ali Mann	alimann@gmail.com
2.	Joe Lewis	joe@portcitylegal.com
3.	Maryellen Sullivan	Maryellen@portcitylegal.com
4.	Jackie Mann	jackiemann5@gmail.com
5.	Bernard Moor-Jankowski	

Developer and Consultant Team in Attendance:

NAME	E-MAIL
1. Sam Lebel	slebel@acorn-engineering.com
2. Zachary Stevens	zstevens@acorn-engineering.com
3. Lauren Reiter	lreiter@cornerstonebr.com
4. Kent Parson	waspstar@comcast.net

ACORN ENGINEERING, INC.

30-32 Atlantic Street
Major Site Plan Submission

Neighborhood Meeting Minutes

October 5, 2021 / 5:30 pm
Remote meeting via Zoom

Project Team Attendees:

Sam Lebel (SL): Civil Engineer/Presenter (Acorn Engineering)

Zachary Stevens (ZS): Civil Engineer/Note Taker (Acorn Engineering)

Lauren Reiter (LR): Architect/Presenter (Cornerstone Building & Restoration)

Kent Parson (KP): Owner/Applicant (Kestrel LLC)

Meeting started at approximately 5:30 pm.

Presentation:

Kent Parson:

- Introduction and Background of himself
- Looking forward to becoming part of the community.

Sam Lebel:

- Project manager/civil engineer
- Introduction of project and project team
- Meeting about site plan review
- This meeting is part of the planning board approval process, a sign in sheet is available for everyone which will become public record along with the meeting minutes.
- Overview of site in relation to neighborhood
- Site is currently vacant
- Proposed use is a 3-story, 4-unit building.
- Site layout follows local pattern with the driveway building layout in regard to abutting properties.

- Includes covered parking for 3 parking spaces that are hidden from the street. The parking includes an ADA parking space.
- Access from public sidewalk with landscaped front yard
    - Additional landscape area on north and rear sides of structure meets the city's requirement of landscape area
- Located in the R6 zoning district
- The proposed rain garden will provide water quality treatment for the site and discharge into the municipal system with Atlantic Street.
- Field inlets will also be utilized to collect the site's stormwater, and route it to the municipal system within Atlantic Street.
- Overview of proposed utilities.

Lauren Reiter:

- Project architect
- Neighborhood Study
    - Including review of building sizes in the vicinity to show scale relationship to proposed building.
- Overview of floor plans and layout and different uses
    - First floor covered parking, with 3 parking spaces which includes ADA parking space. First floor includes one two-bedroom apartment unit.
    - Second floor – consists of two two-bedroom apartments
    - Third Floor – consists of one three-bedroom unit (for owner to live).
    - Roof Plan – multiple roof/bay heights – all under the maximum height of 35' except for the proposed roof access which is slightly above the 35' height
- Building is ADA accessible throughout, including the front entrance
- Overview of elevations
- Rendering of proposed building in relation to adjacent buildings.

Sam Lebel:

- Development presentation concluded and public comment process will start.

<u>Comments, Questions & Answers:</u>

Please note that the following questions and answers were not recorded verbatim and aim to represent and summarize the actual questions, answers, and discussion that took place at the meeting.

Ali Mann: What will happen to the existing street tree on the proposed project's frontage?

- **Sam**: The street tree is proposed to be removed and replaced as a part of this project

Jackie Mann: Can you clarify the location of the replacement street tree?

- **Sam**: The street tree is proposed to be located a few feet to the north of the existing tree, we are looking at replacing with a Regal Oak.

Jackie Mann: What is the scale of the proposed tree?
- **Sam**: The caliper would be 2 or 2.5" . It is assumed to be roughly 15' tall when planted.

Joe Lewis: Will the client do any form of mitigation to Atlantic Street in an act of good will for the street to compensate the removal of the tree?
- **Lauren**: As a part of this project there will be a landscaped area including a garden with a brick base along the front façade of the site.
- **Kent**: I'll be giving this some thought, I don't live in the community currently and I'm not sure of its needs. Thank you for bringing this up.
- **Sam**: As part of this project, we are required to contribute to the Street Tree Fund, it's possible those funds could be used within the project vicinity.

Jackie Mann: Could we get an arborist to assess the tree to possibly save the existing tree?
- **Sam**: We can look into this. There are a few factors as a part of construction that will be challenging such as the tree root system conflicting with the proposed utilities and the ADA sidewalk requirement.

Bernard Moor-Jankowski: We are not happy with the proposed replacement tree.
- **Kent**: We will investigate hiring an arborist.

Ali Mann: Will these units be apartments or condos?
- **Lauren**: That is to be determined. Construction cost may be a factor in determining the answer to this question.

Bernard Moor-Jankowski: Do you have an anticipated date for construction?
- **Kent**: The fluctuating construction price is a factor, and we have not set a concrete date for construction.
- **Lauren**: The city review process takes time. As soon as we obtain approvals from the city, we will take it from there.

Joe Lewis: There is now a Historic Preservation District. Now that there are other design considerations, does that play a factor with the design of this project?
- **Lauren**: We are preparing for the first workshop with the Historic Preservation District, we will hear what they have to say, and we will revise our design from there as needed. We don't anticipate a lot of changes from this additional review, since we considered the historic prototypes while designing this project.

Joe Lewis: Do you have any projects within a Historic Zone that have gone to construction?
- **Lauren**: We have a couple active projects going into construction, but they were not in the Historic District, or they were approved prior to the Historic Preservation District being approved for Munjoy Hill. The projects we do have within the Historic Zone are renovations.

Closing Comments

Sam Lebel:

- Meeting Minutes will be available on planning board website / attached to memo as part of the public record
- A Planning Board Workshop is the next step, the date for that is unknown.
- Thanks everyone for joining and the discussion

Meeting concluded at approximately 6:15 pm.

The abovementioned material was as interpreted and recorded from handwritten notes. Please note and relay any discrepancies or disputed information in the recorded minutes to the below address so that they can be reviewed, revised, and resubmitted, as necessary.

Recorded by,

Zachary Stevens, EI
Design Engineer
Acorn Engineering, Inc.
ZStevens@acorn-engineering.com

ACORN ENGINEERING, INC.

Austen Torres Davis – City Planner
Planning Division, City of Portland
389 Congress Street
Portland, ME 04101

October 22, 2021

Subject: Comment Response Letter
30-32 Atlantic Street Redevelopment – Portland, Maine

On behalf of Kestrel LLC, we are pleased to respond to the comments that we've received thus far.

Planning Dpt.

Comment – *Deed & Title Document does not mention specifically 30-32 Atlantic Street.*

Response – Please refer to the updated Section C. and note that Exhibit A had been inadvertently left off of this. This exhibit, now attached, references both 30 and 32 Atlantic St.

Comment – *Please clarify – are units to be apartments or condominiums?*

Response – The Owner's preference is to build apartments, but may convert the building to condominiums for financial reasons. Please note that the Owner plans to live full-time in the third-floor unit.

Comment – *Please clarify total area of site. Our municipal GIS portal shows one lot is 2,597 and the other is 2,598 square feet. Combined totaling 5,195, which differs from the 5,235 used in application. This is important for accurately calculating impervious surface ratio.*

Response – A Boundary & Topographic Survey was conducted by Owen Haskell, Inc on December 14th, 2020. The Survey shows a 5,235-sf lot size for 30-32 Atlantic Street and is accurate within the CAD linework and would take precedence over the GIS.

Utilities:

Comment – *If power line crosses both over lot frontage and Atlantic Street, additional planning and coordination with Central Maine Power is likely necessary for wire tension etc. Please provide additional information about removal/relocation of utility pole.*

Response – Additional notes have been added to the plans to communicate that continued coordination with CMP will be required, depending on the final service layout. This is typical during the local planning process. The existing utility pole is located within the proposed drive aisle. On July 22nd 2021, A site visit was conducted by Acorn Engineering and CMP to coordinate the existing Utility pole to be relocated. A field planner represented CMP onsite and marked out

the proposed location for the proposed utility pole. Approximately 7.75' of sidewalk is available between the proposed utility pole and the proposed curbing on the property line of 30-32 Atlantic Street.

Americans with Disabilities Act Considerations:

***Comment** – The driveway and parking spaces do not currently conform to ADA van-accessible parking space standards.*

- *9 foot width complies with ADA but aisles should be at least 5 feet in width, considering tenant may enter on either side of vehicle.*
- *Van-accessible standards are 11 feet in width, wider than the proposed width of the driveway.*

Response –

- The proposed ADA space is 9' wide and has an adjacent 9' wide access aisle. Both of these dimensions exceed the standard for a Van space (16' total width).
- The proposed ADA parking space is in conformance with Americans with Disabilities Act standards per the below requirement since it applies to a parking space where a person would physically exit the vehicle. We are not aware of any standard that requires a minimum corridor width since exiting the vehicle would not occur in this area.
    - Space width for van: 11' (although it may be 8' wide if its access aisle is eight feet wide).

***Comment** – Each floor is accessible via elevator, but the roof is not. Considering the roof would only be used by those occupying the third-floor apartment, it would remain inaccessible to those occupants if they need to use an elevator. (Defeating the purpose of having a rooftop deck)*

Response – The developer/owner plans to live full-time in the third-floor unit. In addition, height requirements within the Munjoy Hill Neighborhood Conservation Overlay District prevent an elevator bulkhead location on the roof level.

Landscape Preservation:

***Comment** – The application does not include information on steps taken to avoid removing the street tree in the public right-of-way, or the cost of doing so. Were any steps taken to preserve and maintain this tree?*

Response – The project team anticipates the removal of the tree for the following reasons:

- ADA accessibility: Presently the sidewalk is severely warped and out of compliance with the ADA regulations, due to the tree roots force and facilitation of heaving.
- Ground disturbance: given the minimal frontage, subsurface utilities will be relatively congested and will undoubtedly disrupt the root system when trenching. Furthermore, the foundation footings will be less than 10' from the center of the tree with an excavated depth of at least 5', causing more disturbance to the tree roots. Lastly, the granite curb along the sidewalk is currently well below its required 7" reveal. The excavation of these granite slabs and resetting of curb directly adjacent to the tree will cause more disturbance. Lastly, the tree itself is noted on the Tree GIS as having a "root issue".

- De-Limbing: As shown on Google Street View, the tree is required to be de-limbed by utility companies to facilitate overhead electrical and telecom infrastructure. In addition, the proposed construction of the building and ongoing maintenance will require de-limbing of the tree at the property line. As a result, the tree will likely lose much more of its canopy than what's typically recommended at any one time.

In conclusion, while it is not the preference of the project team to remove mature street trees, in this case it is not feasible to preserve this tree which is a function of conformance with federal laws as well as its actual survivability post-construction. In favor of providing infill housing, the tree is proposed to be replaced with a more appropriate street tree species that grows in a more columnar fashion.

Comment *– Tree on site is noted as Twin 12" while the street tree is shown as 32". Please confirm adherence to tree replacement standards in Land Use Code.*

Response – The 12" tree is near the center of the site and will need to be removed as part of this project. The project will contribute to the Street Tree Fund in compliance with the Land Use Code.

Comment *– Application notes that, "The project anticipates preserving a minimum of 30% existing trees 10" or greater within the required setback." but site plan shows no existing trees to be preserved.*

Response – This passage was written erroneously as the survey lacks some of the existing trees. Based upon a site visit, a waiver is requested to remove two trees as allowed under the Land Use Code Sec 14.6.2.B.4 & 5 with a contribution to the City fund.

Comment *– Are there any plans to salvage or reuse the brick on site, those on the current sidewalk, or the granite step shown in the site survey?*

Response – They will likely be salvaged for use elsewhere, but are not currently proposed to be reused on site.

Zoning:

Comment *– Please revise building plan to conform to required height of 35'. While HVAC equipment shielded from view is allowed to be higher than this limit, the proposed stairway bulkhead is not.*

Response – The proposed rooftop stairway bulkhead has been removed from the plan set. In place, a hatch on the roof will be used to access the roof level which will be reflected in the forthcoming revised elevations and floor plans.

Comment *– How was the landscaped area calculated? > 20.4% is rather close to what is required.*

Response – The landscaped area is calculated by the below equation.

- (1 - (Impervious Area / Lot Area)) = Landscaped Open Space Ratio.

Thus, resulting in 20.4% open space. Any surface that does not consist of uncompacted vegetation was counted as impervious area.

Transportation:

Comment *– The applicant shall provide vehicle turning template details that confirm vehicles can perform ingress and egress movements into and out of the parking spaces.*

Response – Please see Section AA for the vehicle turning templates.

Comment *– A barrier should be installed that protects the abutting building from vehicle maneuvers. A wooden guard rail barrier has been installed on similar projects in the city. The turning template analysis should assume this guard rail, as should calculations of driveway dimensions.*

Response – A wood guardrail has been added to the plans and incorporated into the turning templates.

Comment *– The City is concerned the area as part of the handicap vehicle space, to the right of space #3, will be used as a parking space. The applicant should consider strategies that address this concern.*

Response – Should a tenant (or owner) require an accessible space, that person will have claim to the ADA space and accompanying aisle. This will be written into the condo docs and/or rental agreement.

Comment *– The plan should note changes to the number of on-street parking spaces on Atlantic Avenue.*

Response – There is no change to the on-street parking count.

Comment *– The applicant should consider plantings in front of the proposed building that do not impact sight distance as vehicles back into the street.*

Response – The plantings are not anticipated to impact sight distances for vehicles exiting 30-32 Atlantic Street as they are all low-lying shrubs and flowers.

Public Works Dpt:

Construction Management Plan:

Comment *– The CMP should be updated with contact information for the earthwork contractor and the general contractor.*

Response – The Construction Management Plan will be updated with contact information regarding earthwork and general contractors when the contractors are brought into this project. At this time, they are unknown.

Comment *– The CMP narrative mentions a Construction Management Plan (sheet C-03) but I do not see that in ePlan. Please provide sheet C-03.*

Response – The Construction Management Plan (C-03) has been uploaded.

Comment *– CMP narrative missing reference noting use of public parking spaces require street occupancy permit. Please see most recent template on City's website: https://www.portlandmaine.gov/DocumentCenter/View/18030/General-Construction-Management-Template*

Response – The Construction Management Narrative has been updated to include the references to public parking spaces. Refer to Section R. Construction Management Report for additional information

Comment *– The Construction Management Plan (sheet C-03) 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.*

Response – We have added several of these items to the plan; however, some of the requested items are at the sole discretion of the Contractor and their means and methods. The logistics can be provided by the Contractor to the City for review once a GC is contracted with.

Comment *– Contractor parking along Atlantic Street is not acceptable. Parking must be provided on site or arrangements for an off-site parking location must be established. Please see the most recent template on the City's website. Parking arrangements should be noted in the CMP narrative and shown on Sheet C-03 if on-site.*

Response – The CM Narrative now prohibits on-street parking for contractors.

Comment *– CMP narrative should include Section L: Dewatering Plans. Please see most recent template on City's website.*

Response – The dewatering section has been added to the Construction Management Narrative. Refer to Section R. Construction Management Report for additional information.

Site Plan:

Comment *– Snow storage not sufficient – will need plan to remove off-site.*

Response – A snow storage area is shown on the site plan. During larger snowstorm events, snow will be required to be removed from the site, typical of small urban sites. Please see General Site Note #7 on Sheet C-10 for snow removal plan.

Comment *– Street / parking signs should be shown on the existing conditions plan and/or the site plan.*

Response – There are no existing standalone street parking signs located along the project's frontage or within the purview of the Site Plan.

Comment *– Elevator sump should connect to oil/water separator.*

Response – The elevator sump has been updated to discharge into the oil water separator prior to entering the sanitary sewer system within Atlantic Street.

Comment *– Will the riprap channel at rear for roof drain continue to edge of focal point system? Does the entire roof discharge to the right rear of the parcel or is some rooftop runoff being directed toward the front of the lot?*

Response – The entire roof will be redirected to the rear of the site and discharge onto the riprap channel. The riprap will not extend to the focal point, but will dissipate the roof drain outlet into a grassed swale with a modest slope that will convey the stormwater to the rain garden.

Comment *– The building's foundation is proposed 5-5.5ft from the eastern property boundary. Structural plans not provided with civil set for Planning review. If footings cross property boundary, site may need an easement for the footings.*

Response – Given the 3-story building, the spread footings are not anticipated to encroach upon the property line.

Plan Details:

Comment *– Pipe trench detail has some inconsistencies from the City's standard detail. Paved areas dimensions are incorrect.*

- *We do not include the rigid insulation in our spec; this will need to be approved by the City engineer and should not alter the other dimensions of the materials.*
- *Please note the required width of crushed stone beside the pipe - shown as dimension "B" in the City's' detail.*

Response – The Pipe Trench detail has been updated to be in conformance with the City of Portland Detail. See Sheet C-44 for additional information.

Comment *– Sewer and Storm Drain Tee / Wye Connection Detail is missing the slope.*
Response – The Sewer and Storm Drain Tee / Wye Connection Detail has been updated to include

the slope. See Sheet C-43 for additional information.

Comment *– Vertical granite curb in the City's ROW must be set in concrete.*

Response – We have revised the detail so the curbing will be set in concrete.

Erosion & Sedimentation Control:

Comment *– Application does not show an erosion & sedimentation control plan, only the details. Please point city staff in the right direction or submit one for review.*

Response – In addition to the narrative and details, erosion control measures are shown on the Construction Management Plan C-03 in the form of a erosion control mix berm and a stabilized construction entrance.

Comment *– Plans for supportive excavation should be provided for review to the Permitting Department with copies and/or notes in the ESC Plan.*

Response – These plans will be submitted as part of the building permit process, which is typical.

Comment *– Stormwater Management Plan and Maintenance Agreement required. Please provide a copy to Jodie Keene and Doug Roncarati for review once submitted.*

Response – An Inspection and Maintenance Plan has been included as part of this submission. Please refer to Section AB for additional information.

Public Safety:

Comment *– Line Safety Office does not see any site issues for Fire for this project.*

Response – Thank you for your review.

City Arborist

Comment *– The City favors saving the street tree in the public right-of-way due to its location and size and wonder can the project be constructed as proposed without damaging or affecting the tree's health? This would include future underground utility trenches and sidewalk reconstruction.*

Response – The project team anticipates the removal of the tree for the following reasons:

- ADA accessibility: Presently the sidewalk is severely warped and out of compliance with the ADA regulations, due to the tree roots force and facilitation of heaving.
- Ground disturbance: given the minimal frontage, subsurface utilities will be relatively congested and will undoubtedly disrupt the root system when trenching. Furthermore, the foundation footings will be less than 10' from the center of the tree with an excavated depth of at least 5', causing more disturbance to the tree roots. Lastly, the granite curb along the sidewalk is currently well below its required 7" reveal. The excavation of these granite slabs and resetting of curb directly adjacent to the tree will cause more disturbance. Lastly, the tree itself is noted on the Tree GIS as having a "root issue".
- De-Limbing: As shown on Google Street View, the tree is required to be de-limbed by utility companies to facilitate overhead electrical and telecom infrastructure. In addition, the proposed construction of the building and ongoing maintenance will require de-limbing of the tree at the property line. As a result, the tree will likely lose much more of its canopy than what's typically recommended at any one time.

In conclusion, while it is not the preference of the project team to remove mature street trees, in this case it is not feasible to preserve this tree which is a function of conformance with federal laws as well as its actual survivability post-construction. In favor of providing infill housing, the tree is proposed to be replaced with a more appropriate street tree species that grows in a more columnar fashion.

Please let us know if you have any additional questions or comments.

Sincerely,

Samuel J Lebel, P.E.
Project Manager
Acorn Engineering, Inc.

Zachary M Stevens, E.I
Design Engineer
Acorn Engineering, Inc.

PC1

Carle Henry <cdhenry3@yahoo.com> Oct 7, 2021, 1:49:41 PM (4 days ago)

to Planning Board

Please see below - thank you!

Carle Henry
207.807.4078 | m
Sent from my iPhone

Begin forwarded message:

From: Carle Henry <cdhenry3@yahoo.com>
Date: October 7, 2021 at 12:25:11 PM EDT
To: City Council <council@portlandmaine.gov>
Subject: MHHD follow up

Council,

Last night, the HPB held a workshop to review a proposed 3 story, 4 condo unit to be built on Atlantic Street.

Comments from the board, staff and the public were interesting & informative.

1. Deb Andrew's stated the design standards in an HD are no different than the MH Conservation Overlay District.

2. A member of the public who worked hard to support the MHHD challenged the scale and size, as well as the design standards.

The public is starting to question what has been gained by an HD.

- zoning is not addressed
- design standards have not changed
- tax breaks for multi rehabs are not available

All 3 of the above items were cited as reasons for the HD. While I knew none of these would be addressed, the public was led to believe differently by misleading staffers and by aggressive proponents.

Additionally, multiple home owners (advocates of the MHHD) have moved forward making changes to their homes without HPB review.

So, I have to ask: what exactly did the City gain?

Home values have also continued to increase so stability has not been achieved (another false rallying cry of the proponents)….more people are excluded from living here.

Councilor Zarro reversed his vote because
1. A study will be done about the effects of HDs (but only if the 12th HD would be approved)

2. A fund could be created to help people pay for the increased cost of maintaining. After the vote, the Mayor came out against this position & this fund has not moved forward by Zarro or anyone

3. The HD ordinance would be reviewed. Nothing happened happened on this front either so 1 person can still initiate an HD anywhere in Portland but an HD can never be removed by citizens

Seriously, what did the city gain from a 12th HD?

Carle Henry
207.807.4078 | m
Sent from my iPhone

PC2

Comments - 30-32 Atlantic Street

Assigned… Subscribe

0 views



Ananda Moor-Jankowski <anandakmj@gmai… Oct 25, 2021, 9:53:04 PM (10 hours ago)

to planningboard@portlandmaine.gov

Dear Members of the Planning Board:

I live with my family at 37 Atlantic Street, across the street and a couple of houses up from 30-32 Atlantic Street. I've reviewed the Major Site Plan application materials available online, attended the virtual neighborhood meeting, and attended the Historic Preservation Board's remote workshop for this property and would like to submit the following comments.

We are greatly distressed by the proposed removal of the existing 32" linden tree. This is arguably the most majestic tree on Atlantic Street, a tree with magnificent presence in a neighborhood of strikingly motley street trees, including many newly planted diminutive specimens. Intensely fragrant and buzzing with bees in early summer, a tower of green late into fall, and a striking silhouette through the winter, this tree is a cherished natural asset in our neighborhood.

Through correspondence with Planner Austen Torres Davis and the remote meetings with the Client team, I understand that this tree is structurally compromised, with a crack in its trunk and central leader. I also realize that saving this tree would severely limit development options for this property. Of course, our preference is to preserve this tree. If this isn't possible, however, we would strongly advocate for the replacement street tree to be "something of real significance," to quote Historic Preservation Board member Rob Whitten. The proposed 2" caliper Regal Prince Oak is an almost comically narrow, columnar tree with fastigiate branching that will certainly never offer the presence or unique seasonal qualities of the existing linden. We request that the City and applicant select a larger caliper tree of a species with a majestic form and stature that offers aesthetic and ecological benefits in all seasons.

In addition to the street tree, we are concerned about the scale, massing, color, and cladding of the proposed building. Atlantic Street has a fairly unique cluster of smaller scale houses just north of 30-32, one of which we live in. The proposed building would be one of the largest, bulkiest buildings on the street, and would not offer a comfortable or appropriate transition between the larger multi-unit buildings to the south and the smaller single-family houses to the north. Furthermore, we find the color and contrasting orientations of the cladding to be incongruous with the surrounding context.

Thank you very much for considering these comments. We look forward to continuing our participation in the review process as it progresses.

Sincerely,

From: kmci <Unknown>
Date: Sunday, November 14, 2021 at 4:23:58 PM UTC-5
Subject: Fwd: 30-32 Atlantic St. Plan
To: planni...@portlandmaine.gov <Unknown>

Hi,
A structure such as seen in the plans doesn't fit into the area. Allowing this to go through will be another nail in the coffin of what used to be an attractive, unassuming yet appealing community.
Can you give me an idea of how many investor-developer proposals have been turned down by the board (of the total submitted) over the past 5 years in the Munjoy Hill area?
Thanks, Kathy

---------- Forwarded message ---------
From: Robert Wiener <rwiener@portlandmaine.gov>
Date: Mon, Nov 8, 2021 at 1:32 PM
Subject: Re: 30-32 Atlantic St. Plan
To: kmci <kmcinern@gmail.com>

Hi Kathy,
Thanks for your interest in the upcoming review of 32 Atlantic Street. The final plans have not been posted yet, for the public hearing on November 17. This will happen this coming Friday afternoon, when the entire packet will be posted at the City's website. I don't have the final version in my hands yet, as the architect is still making final revisions.
By late Friday afternoon, the materials for the 11/17 Historic Preservation Board meeting will be posted here:

https://www.portlandmaine.gov/129/Agendas-Minutes

Please let me know if you have any questions. The plans themselves may be available sooner than Friday, but not yet.
Thank you,
Rob Wiener

On Mon, Nov 8, 2021 at 5:43 AM kmci <kmcinern@gmail.com> wrote:

> Hi, Sorry to bother you - the postcard gave instruction as to how to see the plan. I keyed in the Plan number but saw only notices in the top results.
> Would you be able to send an explicit url for the plan? Thank you, Kathy

--
Robert Wiener
Preservation Compliance Coordinator
City of Portland
(207) 756-8023

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.

30-32 ATLANTIC STREET DEVELOPMENT

KESTREL, LLC.
PORTLAND, MAINE

LEGEND

EXISTING

REFER TO THE EXISTING CONDITIONS PLAN FOR ADDITIONAL INFORMATION

PROPOSED

UNDERDRAIN	
UTILITY PAVEMENT CUTS	
STRIPING	
SEDIMENTATION BARRIER	
EDGE OF EX. PAVEMENT	
CURB	
SIGN	
LAMP OR LIGHT POLE	
UTILITY POLE	
GUY WIRE	
WATER VALVE	
FIRE HYDRANT	
SEWER MANHOLE	
CATCH BASIN	
DRAIN MANHOLE	
UNDERGROUND ELECTRIC LINE	UGE
UNDERGROUND WATER LINE	1"W 1"W
MINOR CONTOURS (1 FT)	64
MAJOR CONTOURS (5 FT)	65
GAS LINE	GAS
STORM DRAIN LINE	> >
SEWER LINE	S S
EXISTING/PROPOSED BUILDING	
OVERHEAD ELECTRICAL/TELEPHONE/CABLE	OHE/T/C
UNDERGROUND ELECTRICAL/TELEPHONE/CABLE	UGETC
PROPERTY LINE	
SETBACKS	
BITUMINOUS PAVEMENT	
BRICK	

INDEX

C-01	COVER SHEET & LEGEND
C-02	GENERAL NOTES
EX	BOUNDARY & TOPOGRAPHIC SURVEY – BY OWEN HASKELL, INC.
C-03	CONSTRUCTION MANAGEMENT PLAN
C-10	SITE & LANDSCAPE PLAN
C-20	UTILITY PLAN
C-30	GRADING & DRAINAGE PLAN
C-40	SITE DETAILS – 1
C-41	SITE DETAILS – 2
C-42	LANDSCAPE DETAILS
C-43	UTILITY DETAILS – 1
C-44	UTILITY DETAILS – 2
C-45	DRAINAGE DETAILS
C-46	FOCAL POINT DETAILS
C-47	EROSION & SEDIMENTATION CONTROL DETAILS & NOTES

CALL BEFORE YOU DIG
1-888-DIG-SAFE
1-888-344-7233

UTILITIES

SEWER:

DEPARTMENT OF PUBLIC WORKS (DPW)
250 CANCO ROAD
PORTLAND, MAINE 04101
CONTACT: KEITH GRAY, P.E.
(207) 874-8834

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PORTLAND WATER DISTRICT
225 DOUGLASS STREET
PO BOX 3553
PORTLAND, MAINE 04104
ATTN: MEANS DIVISION
(207) 774-5961

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CENTRAL MAINE POWER COMPANY (CMP)
162 CANCO ROAD
PORTLAND, MAINE 04103
CONTACT: AUSTEN SANDLER
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45 FOREST AVENUE
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NATURAL GAS:

UNITIL SERVICE CORP
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PORTLAND, ME 04103
CONTACT: BRIDGET HARMON
(207) 541-2536

PROJECT TEAM

DEVELOPER/ARCHITECT:

CORNERSTONE BUILDING & RESTORATION
PORTLAND, MAINE
CONTACT: LAUREN J. REITER, R.A.
(917) 502-2225

SURVEYOR:

OWEN HASKELL, INC.
FALMOUTH, MAINE
CONTACT: RANDY R. LOUBIER, PLS
(207) 774-0424

CIVIL ENGINEER:

ACORN ENGINEERING, INC
PORTLAND, MAINE
CONTACT: SAM LEBEL, PE
(207) 775-2655

ABBREVIATIONS

PARTIAL LIST OF ABBREVIATIONS AND THEIR CORRESPONDING MEANING. PLEASE CONTACT THE ENGINEER FOR ANY CLARIFICATION	
APPROX.	APPROXIMATE
BC	BOTTOM OF CURB
BMP	BEST MANAGEMENT PRACTICE
BOT.	BOTTOM
CAD	COMPUTER AIDED DESIGN
CB	CATCH BASIN
CF	CUBIC FOOT
CIP	CAST IN PLACE
CL	CENTERLINE
CM	CONSTRUCTION MANAGER
CMP	CENTRAL MAINE POWER
CONC.	CONCRETE
CPP	CORRUGATED PLASTIC PIPE
CY	CUBIC YARD
DIP	DUCTILE IRON PIPE
DIA.	DIAMETER
DIM.	DIMENSION
EA.	EACH
ELEC.	ELECTRICAL
ELEV.	ELEVATION
EQUIV.	EQUIVALENT
EST.	ESTIMATE
EX.	EXISTING
FFE	FINISH FLOOR ELEVATION
FT.	FEET
GAL.	GALVANIZED
ID	INNER DIAMETER
IN.	INCH
INV.	INVERT
L	LENGTH
MAX.	MAXIMUM
MDOT	MAINE DEPARTMENT OF TRANSPORTATION
M.E.P	MECHANICAL, ELECTRICAL, PLUMBING DESIGNER
MFG.	MANUFACTURED
MH	MANHOLE
MIN.	MINIMUM
O.C.	ON CENTER
OD	OUTSIDE DIAMETER
OHE/T/C	OVERHEAD ELECTRIC/TELEPHONE/CABLE
OWS	OIL WATER SEPARATOR
PC	PRECAST
PE	PROFESSIONAL ENGINEER
PL	PROPERTY LINE
PLS	PROFESSIONAL LAND SURVEYOR
PROP.	PROPOSED
PSI	POUNDS PER SQUARE INCH
PT	PRESSURE TREATED
PVC	POLYVINYL CHLORIDE
PWD	PORTLAND WATER DISTRICT
R	RADIUS
RD	ROOF DRAIN
RET.	RETAINING
ROW	RIGHT OF WAY
S	SLOPE
SD	STORM DRAIN
SDR	STANDARD DIMENSION RATIO
SF	SQUARE FEET
SIM	SNOW AND ICE MELT
SMH	SEWER MANHOLE
SPEC.	SPECIFICATION
TC	TOP OF CURB
TW	TOP OF WALL
TYP.	TYPICAL
UD	UNDERDRAIN
UGE	UNDERGROUND ELECTRIC

PERMIT LEVEL
NOT ISSUED FOR CONSTRUCTION

ISSUED FOR	BY	DATE
SCHEMATIC DESIGN/ISSUE FOR BUDGET ESTIMATE	SJL	1/8/21
MAJOR SITE PLAN	SJL	9/22/21
COMMENT RESPONSE	SJL	10/22/21
FINAL SITE PLAN	SJL	12/03/21

DRAWING NAME: COVER SHEET & LEGEND
PROJECT NAME/ADDRESS: 30-32 ATLANTIC STREET DEVELOPMENT
CLIENT/OWNER OF RECORD: KESTREL LLC. 72 PINE STREET SUITE #16, PORTLAND, MAINE 04102

ACORN ENGINEERING, INC
THESE PLANS SHALL NOT BE MODIFIED WITHOUT WRITTEN PERMISSION FROM ACORN ENGINEERING, INC. AND SHALL BE AT THE USER'S SOLE RISK AND WITHOUT LIABILITY TO ACORN ENGINEERING, INC.

ACORN ENGINEERING, INC
PO BOX 4337 PORTLAND, MAINE 04101
(207) 775-2655

FILE: 1109.5_DETAILS
JN: 1109.5
SCALE: AS NOTED
DESIGNED BY: SJL
DRAWN BY: ZMS
CHECKED BY: SJL/WHS

STATE OF MAINE
Sam Lebel
SAMUEL J. LEBEL
No. 16505
REGISTERED PROFESSIONAL ENGINEER
12/3/21

DRAWING NO.
C-01

GENERAL NOTES:

1. THE CONTRACTOR SHALL CALL THE APPROPRIATE UTILITY COMPANIES AND DIG SAFE AT LEAST 72 HOURS PRIOR TO ANY EXCAVATION TO REQUEST EXACT FIELD LOCATION FOR UTILITIES. OTHERWISE IT SHALL BE THE CONTRACTOR'S RESPONSIBILITY TO FIELD VERIFY THE LOCATION OF UNDERGROUND UTILITIES AND LOCATE ANY POTENTIAL CONFLICTS WITH THE APPROVED PLANS PRIOR TO CONSTRUCTION.
2. THE CONTRACTOR IS RESPONSIBLE FOR MAINTENANCE OF ALL EROSION CONTROL MEASURES SHOWN ON THE PLAN. IF DEEMED NECESSARY BY THE OWNER OR OWNER'S REPRESENTATIVE (IF APPLICABLE), ADDITIONAL EROSION CONTROL MEASURES SHALL BE INSTALLED AT NO ADDITIONAL COST TO THE OWNER.
3. THE CONTRACTOR SHALL PREPARE THEIR OWN MATERIAL SCHEDULE BASED ON THE PLANS AND FIELD VERIFICATION BY THE CONTRACTOR. ALL MATERIAL SCHEDULES SHOWN WITHIN THE PLAN SET ARE FOR GENERAL INFORMATION ONLY.
4. ALL CONSTRUCTION METHODS, TESTING AND MATERIALS SHALL CONFORM TO THE MAINE DEPARTMENT OF TRANSPORTATION SPECIFICATIONS, THE CITY OF PORTLAND AND SERVICING UTILITY REQUIREMENTS, IF ANY. IN CASES WHERE THESE CONFLICT THE MOST STRINGENT SPECIFICATION SHALL APPLY AT NO ADDITIONAL COST TO THE OWNER.
5. THE SITE CONTRACTOR SHALL MAINTAIN A SET OF PAPER AND CAD DRAWINGS WHICH SHALL RECORD THE ACTUAL LOCATION, DIMENSIONS, ELEVATIONS, MATERIALS OF THEIR WORK, INDICATING THEREON ALL VARIATIONS FROM THE CONTRACT DRAWINGS. THE CONTRACTOR SHALL PROVIDE THE OWNER WITH ONE COMPLETE SET OF REPRODUCIBLE RECORD DRAWINGS, IN .DWG FORMAT AND PAPER, STAMPED ''AS-BUILT''. IF AUTOCAD CAPABILITY IS NOT AVAILABLE, EXCLUDE FROM BID IN WRITING.
6. THE CONTRACTOR WILL REMAIN SOLELY AND COMPLETELY RESPONSIBLE FOR ENFORCEMENT OF AND COMPLIANCE WITH 1) ALL CONTRACT PLANS AND SPECIFICATIONS, 2) APPLICABLE INTERNATIONAL BUILDING CODE REQUIREMENTS, AND 3) ALL SITE WORKING CONDITIONS AND SAFETY REQUIREMENTS, DAY AND NIGHT, FOR BOTH PERSONS AND PROPERTY, IN EACH CASE BOTH BY THE CONTRACTOR AND ITS SUBCONTRACTORS. THESE INCLUDE ALL OSHA, NIOSH, U.S. EPA AND ANY OTHER APPLICABLE GOVERNMENTAL REGULATIONS.
7. EXISTING CONDITIONS, BOUNDARY SURVEY, AND TOPOGRAPHY FROM THE PLAN TITLED EXISTING CONDITIONS SURVEY BY OWEN HASKELL, INC. DATED 12/14/2021.
8. THE CONTRACTOR IS RESPONSIBLE FOR MAINTAINING ACCESS TO THE SITE AT ALL TIMES. THE CONTRACTOR SHALL BE RESPONSIBLE FOR ALL TEMPORARY MARKINGS, SIGNAGE AND INCIDENTALS TO MAINTAIN A SAFE VEHICLE AND PEDESTRIAN ACCESS THOUGH THE LIFE OF THE PROJECT. THE CONTRACTOR SHALL NOTIFY THE PORTLAND PUBLIC SAFETY DIVISION ROUTINELY REGARDING TEMPORARY IMPACTS OR CHANGES TO SITE ACCESS CONDITIONS.
9. CONTRACTOR TO DETERMINE SOIL CLASSIFICATION INDEPENDENTLY FOR TRENCH, SHORING, AND OTHER SIMILAR CONSTRUCTION MEANS AND METHODS APPLICATIONS.
10. NO HOLES, TRENCHES, OR STRUCTURES SHALL BE LEFT OPEN OR UNATTENDED OVERNIGHT IN ANY AREA ACCESSIBLE TO THE PUBLIC OR WITHIN THE PUBLIC RIGHT-OF-WAY.
11. THE CONTRACTOR SHALL CONDUCT A PRE-CONSTRUCTION SURVEY OF INTERIOR SUBGRADE AND ABOVE GRADE ACCESSIBLE WALLS, CEILINGS, FLOORS, ROOF AND VISIBLE EXTERIOR AS VIEWED FROM THE GRADE LEVEL. THIS SHALL BE COMPLETED AT A MINIMUM FOR STRUCTURES DIRECTLY ACROSS THE SITE ALONG ATLANTIC STREET.
12. THE CONTRACTOR SHALL PROVIDE A GPS MODEL OF THE PROPERTY TO PROVIDE TO ACORN ENGINEERING.
13. THE CONTRACTOR SHALL SURVEY ROCK SURFACE PRIOR TO EXCAVATION AND DEVELOP VOLUME CALCULATIONS TO SHARE WITH THE ENGINEER, ACORN ENGINEERING INC. (ACORN), IF ANY.
14. THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE PRESERVATION OF ALL TREES AND SHRUBS ON THE PROJECT WHICH ARE NOT TO BE REMOVED.
15. THE CONTRACTOR SHALL BE RESPONSIBLE FOR REPAIRING ANY TRENCH PAVEMENT THAT HAS EXPERIENCED EXCESSIVE SETTLEMENT, CRACKING, OR OPENING OF JOINTS. REPAIRS MAY INCLUDE OVERLAY, REMOVAL OF WORK MAY BE NECESSARY AFTER THE FINAL ACCEPTANCE OF WORK OR PRIOR TO THE END OF THE WARRANTY PERIOD. THIS WORK SHALL BE DONE AT THE CONTRACTOR'S EXPENSE.

CIVIL SITE NOTES:

1. THE CONTRACTOR SHALL SUBMIT IN WRITING ANY REQUESTS TO ACORN TO MODIFY THE CONTRACT DOCUMENTS.
2. ALL SHOP, ERECTION, AND CONSTRUCTION DRAWINGS SHALL BE CHECKED AND STAMPED BY THE CONTRACTOR PRIOR TO SUBMISSION FOR ACORN'S REVIEW. ANY UNCHECKED OR NON-STAMPED SUBMITTALS WILL BE RETURNED WITHOUT REVIEW.
3. CONTRACTOR SHALL THOROUGHLY INSPECT AND SURVEY EXISTING STRUCTURES AND SITE TO VERIFY CONDITIONS THAT AFFECT THE WORK SHOWN ON THE DRAWINGS. CONTRACTOR TO NOTIFY ACORN OF ANY DISCREPANCIES PRIOR TO PROCEEDING.
4. DETAILS SHOWN APPLY TO ALL SIMILAR CONDITIONS UNLESS OTHERWISE INDICATED.
5. ALTHOUGH ALL DUE DILIGENCE HAS BEEN APPLIED TO MAKE THE DRAWINGS AS COMPLETE AS POSSIBLE, NOT ALL DETAILS ARE ILLUSTRATED, NOR IS EVERY EXCEPTION CONDITION ADDRESSED WITHIN THE CONTRACT DOCUMENTS.
6. ALL PROPRIETARY CONNECTIONS SHALL BE INSTALLED IN ACCORDANCE WITH THE MANUFACTURER'S RECOMMENDATIONS.
7. THE CONTRACTOR IS RESPONSIBLE FOR THE COORDINATION OF ALL WORK, INCLUDING DIMENSION AND LAYOUT VERIFICATION, MATERIALS COORDINATION, SHOP DRAWING REVIEW, AND THE WORK OF ANY SUBCONTRACTORS.
8. UNLESS OTHERWISE SPECIFICALLY INDICATED, THE DRAWINGS DO NOT DESCRIBE OR DIRECT MEANS OR METHODS OF CONSTRUCTION.
9. THE CONTRACTOR, IN THE PROPER SEQUENCE, SHALL PERFORM OR SUPERVISE ALL WORK NECESSARY TO ACHIEVE THE FINAL COMPLETED STRUCTURE, AND TO PROTECT THE STRUCTURE, WORKMEN, AND OTHERS DURING THE CONSTRUCTION. SUCH WORK SHALL INCLUDE, BUT NOT BE LIMITED TO, BRACING, SHORING FOR CONSTRUCTION EQUIPMENT, SHORING FOR EXCAVATION, FORMWORK, SCAFFOLDING, SAFETY DEVICES AND PROGRAMS OF ALL KINDS, SUPPORT AND BRACING FOR CRANES AND OTHER ERECTION EQUIPMENT.
10. DO NOT BACKFILL AGAINST RETAINING WALLS UNTIL SUPPORTING SLABS AND FLOOR FRAMING ARE IN PLACE AND SECURELY ANCHORED, UNLESS ADEQUATE BRACING IS PROVIDED. CONCRETE MAY NEED TO BE CURED FOR 28 DAYS PRIOR TO BACKFILLING AT THE DISCRETION OF THE STRUCTURAL ENGINEER.
11. TEMPORARY BRACING SHALL REMAIN IN PLACE UNTIL ALL FLOORS, WALLS, ROOFS AND OTHER SUPPORTING ELEMENTS ARE IN PLACE, IF APPLICABLE.
12. ALL PAVEMENT JOINTS SHALL BE SAWCUT AND APPLIED WITH TACK COAT PRIOR TO PAVING TO PROVIDE A DURABLE AND UNIFORM JOINT.
13. ACORN BEARS NO RESPONSIBILITY FOR THE ABOVE ITEMS, AND SITE OBSERVATION VISITS DO NOT IN ANY WAY INCLUDE INSPECTION OF THEM.
14. EXCAVATIONS ACCOMPLISHED AS PART OF THIS PROJECT SHALL BE CONSTRUCTED IN ACCORDANCE WITH SUBPART P OF 29 CRF PART 1926.650-.652 (CONSTRUCTION STANDARD FOR EXCAVATIONS).
15. ALL TRENCH PAVEMENT REPAIR SHALL BE COMPLETED WITH THE USE OF A STREET PAVER WITH A SCREED WIDTH CAPABLE OF SPANNING THE FULL WIDTH OF THE TRENCH UNLESS OTHERWISE AUTHORIZED BY THE ENGINEER.

SPECIAL INSPECTION NOTES

1. ALL SITE SOILS-RELATED WORK AND FOOTING EXCAVATIONS PRIOR TO PLACING FORMS SHALL BE REVIEWED BY THE PROJECT GEOTECHNICAL ENGINEER.
2. ALL SITE DRAINAGE-RELATED WORK SHALL BE REVIEWED BY ACORN ENGINEERING. CONTRACTOR TO NOTIFY ACORN ENGINEERING.
3. NORMAL REVIEWS BY LOCAL BUILDING DEPARTMENT. NOTIFY 48 HOURS PRIOR TO REQUIRED REVIEW.
4. REQUIRED SPECIAL INSPECTIONS PER I.B.C. SECTION 1705.6 BY AN APPROVED SPECIAL INSPECTOR RETAINED BY OWNER. CONTRACTOR TO COORDINATE SPECIAL INSPECTIONS.
5. SPECIAL INSPECTOR SHALL BE A QUALIFIED PERSON WHO SHALL DEMONSTRATE COMPETENCE, TO THE SATISFACTION OF THE BUILDING OFFICIAL, FOR INSPECTION OF THE PARTICULAR TYPE OF CONSTRUCTION OR OPERATION REQUIRING SPECIAL INSPECTION.

5.1. DUTIES AND RESPONSIBILITIES OF THE SPECIAL INSPECTOR SHALL BE TO OBSERVE AND/OR TEST THE WORK ASSIGNED AND OUTLINE ABOVE FOR CONFORMANCE WITH THE CONTRACT DOCUMENTS, ALL DISCREPANCIES SHALL BE BROUGHT TO THE IMMEDIATE ATTENTION OF THE CONTRACTOR FOR CORRECTION.

5.2. THE SPECIAL INSPECTOR SHALL FURNISH REGULAR REPORTS TO THE BUILDING OFFICIAL, THE ARCHITECT AND ENGINEER OF RECORD, AND OTHER DESIGNATED PERSONS. PROGRESS REPORTS FOR CONTINUOUS INSPECTION SHALL BE FURNISHED WEEKLY. INDIVIDUAL REPORTS OF PERIODIC INSPECTIONS SHALL BE FURNISHED WITHIN ONE WEEK OF INSPECTION DATES. THE REPORTS SHALL NOTE UNCORRECTED DEFICIENCIES, AND NET CHANGES TO THE APPROVED CONSTRUCTION DOCUMENTS AUTHORIZED BY THE ENGINEER OF RECORD.

5.3. THE SPECIAL INSPECTOR SHALL SUBMIT A FINAL SIGNED REPORT WITHIN TEN DAYS OF THE FINAL INSPECTION STATING WHETHER THE WORK REQUIRING A SPECIAL INSPECTION WAS, TO THE BEST OF THE INSPECTOR'S KNOWLEDGE AND BELIEF, IN CONFORMANCE WITH THE APPROVED CONSTRUCTION DOCUMENTS AND THE APPLICABLE WORKMANSHIP PROVISIONS OF THE INTERNATIONAL BUILDING CODE. WORK NOT IN COMPLIANCE SHALL BE NOTED IN THE REPORT.

5.4. SPECIAL INSPECTOR SHALL BE EMPLOYED BY OWNER AND COORDINATED BY THE CONTRACTOR.

LAYOUT NOTES:

1. MONUMENTS DELINEATING PROPERTY LINES OR RIGHT OF WAYS SHALL NOT BE DISTURBED DURING CONSTRUCTION OPERATIONS. IN THE CASE A MONUMENT IS DISTURBED, AT THE CONTRACTOR'S EXPENSE, THE MONUMENT SHALL BE RESET TO ITS ORIGINAL LOCATION AND ELEVATION BY A LICENSED PROFESSIONAL LAND SURVEYOR.
2. ALL DIMENSIONS ON THE FOLLOWING SHEETS TAKE PRECEDENT OVER SCALED DIMENSIONS. EACH DRAWING WITH A BAR SCALE MEANS THAT THE DRAWING/DETAIL HAS BEEN SCALED AS ACCURATELY AS POSSIBLE, AND THE BAR SCALE IS FOR GENERAL REFERENCE ONLY. IF NO BAR SCALE IS PRESENT, THEN THERE IS NO SCALE TO THAT DRAWING/DETAIL. AT NO TIME SHOULD DRAWINGS BE SCALED FROM. ANY DISCREPANCIES BETWEEN DRAWINGS, DETAILS, SPECIFICATIONS AND THE FIELD CONDITION SHALL BE IMMEDIATELY REPORTED TO ACORN FOR FURTHER DIRECTIONS BEFORE ANY ADDITIONAL WORK PROCEEDS.
3. SIGNAGE, STRIPING, AND PAVEMENT MARKINGS SHALL BE IN ACCORDANCE WITH THE MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES (MUTCD).
4. ALL TRAFFIC CONTROL SIGNS INDICATED ON THE SITE LAYOUT PLAN ARE TO MEET ALL REQUIREMENTS & CONDITIONS OF THE CITY OF PORTLAND, MAINE DEPARTMENT OF TRANSPORTATION AND THE MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES, LATEST EDITION.
5. THE CONTRACTOR SHALL OBTAIN THE SERVICES OF A LICENSED PROFESSIONAL LAND SURVEYOR TO PROVIDE A MINIMUM OF TWO TEMPORARY BENCHMARKS WITHIN THE SITE AND TO LOCATE PROPOSED STRUCTURE CORNERS.
6. CONTRACTOR TO ENSURE THAT ACCESS, INCLUDING BUT NOT LIMITED TO WALKWAYS, DRIVEWAYS, AND MAILBOXES ADJACENT TO THE PROJECT REMAIN FUNCTIONAL AND AVAILABLE FOR USE AT ALL TIMES.

PERMITTING NOTES

1. THIS PROJECT IS SUBJECT TO THE TERMS AND CONDITIONS OF SITE PLAN – MAJOR SITE PLAN AND SUBDIVISION PERMIT FROM THE CITY OF PORTLAND.
2. THE CONTRACTOR SHALL REVIEW THE ABOVE REFERENCED PERMITS PRIOR TO SUBMITTING A BID FOR THIS PROJECT, AND INCLUDE COSTS AS NECESSARY TO COMPLY WITH THE CONDITIONS OF THESE PERMITS.
3. ALL WORK WITHIN THE PUBLIC RIGHT-OF-WAY REQUIRES A STREET OPENING PERMIT FROM THE CITY OF PORTLAND. ADDITIONALLY, COORDINATE WITH THE DEPARTMENT OF PUBLIC WORKS.

GRADING AND DRAINAGE NOTES:

1. TOPSOIL STRIPPED FROM THE SITE THAT IS SUITABLE FOR REUSE AS LOAM (MEETS THE REQUIREMENTS WITHIN SECTION 615 OF THE MDOT STANDARD SPECIFICATIONS, MOST RECENT VERSION AND IS FREE OF TRACEABLE AMOUNTS OF CONTAMINANTS) SHALL BE STOCKPILED WITHIN THE PROPOSED LIMIT OF WORK AREA. THE CONTRACTOR SHALL NOT ASSUME THAT ANY STRIPPED TOPSOIL WILL BE ACCEPTABLE FOR REUSE WITH THEIR ESTIMATE.
2. THE CONTRACTOR SHALL ANTICIPATE THAT GROUNDWATER WILL BE ENCOUNTERED DURING CONSTRUCTION AND SHALL INCLUDE SUFFICIENT COSTS WITHIN THEIR BID TO PROVIDE DEWATERING AS NECESSARY; NO SEPARATE PAYMENT SHALL BE MADE TO THE CONTRACTOR FOR DEWATERING. DEWATERING SHALL INCLUDE TREATMENT OF SILT THROUGH THE USE OF A DIRTBAG BY ACF ENVIRONMENTAL OR APPROVED EQUIVALENT. FLOWS FROM DEWATERING ACTIVITIES SHALL NOT BE DISCHARGED INTO SANITARY SEWERS.
3. THE OWNER SHALL BE RESPONSIBLE FOR OBTAINING ANY EASEMENT OR TEMPORARY CONSTRUCTION RIGHTS AS NECESSARY BY PRIVATE ADJACENT LAND OWNERS. THE CONTRACTOR SHALL NOT DISTURB ANY SOIL BEYOND THE PROPERTY LINE WITHOUT NOTIFYING AND OBTAINING SUCH EASEMENT OR TEMPORARY CONSTRUCTION RIGHT FROM THE ADJACENT LAND OWNERS. PRIOR TO THE CONTRACTOR PRICING THE WORK, THEY SHALL PROVIDE ACORN WITH PROOF OF SUCH EASEMENT OR TEMPORARY RIGHTS. SHOULD EASEMENTS OR TEMPORARY RIGHTS NOT BE AVAILABLE, THE CONTRACTOR SHALL INCLUDE COST FOR BRACING AND SHORING AS NECESSARY.
4. THE CONTRACTOR SHALL PROVIDE A FINISH PAVEMENT SURFACE FREE OF LOW SPOTS AND PONDING AREAS. THE MINIMUM SLOPE SHALL MEET OR EXCEED 0.5% IN ALL CASES. ALL SLOPES SHALL BE AWAY FROM BUILDINGS AND TOP OF PAVEMENT SHALL BE AT OR BELOW EXISTING FINISH FLOOR ELEVATIONS.
5. ALL CONSTRUCTION SHALL BE IN ACCORDANCE WITH THE LATEST GEOTECHNICAL REPORT PREPARED BY THE PROJECT GEOTECHNICAL ENGINEER.
6. NO ADDITIONAL PAYMENT FOR UNSUITABLE MATERIALS.
7. ALL STORM DRAIN PIPE SHALL BE SMOOTH BORE INTERIOR PROVIDING A MANNINGS ROUGHNESS COEFFICIENT OF N=0.012 OR LESS.
8. ADJUST ALL MANHOLES, CATCH BASINS, CURB BOXES, ETC. WITHIN LIMITS OF WORK TO FINISH GRADE.
9. NATIVE SOILS. IT IS THE CONTRACTOR'S RESPONSIBILITY TO LIMIT THE DISTURBANCE TO SUBGRADE SOILS. SHOULD THE SUBGRADE BECOME YIELDING OR DIFFICULT TO WORK, CONTACT ACORN. THE DISTURBED AREAS SHALL BE EXCAVATED AND BACKFILLED WITH COMPACTED SELECT FILL OR CRUSHED STONE AT NO ADDITIONAL EXPENSE TO THE OWNER.
10. ALL SUBGRADE PREPARATION IS SUBJECT TO THE RECOMMENDATIONS OF THE PROJECT GEOTECHNICAL ENGINEER, IF APPLICABLE.

EROSION CONTROL NOTES:

1. DISTURBED AREAS ARE DEFINED AS THOSE SURFACES WHERE EXISTING VEGETATION OR STRUCTURES HAVE BEEN REMOVED, EXPOSING NATIVE SOIL TO THE ELEMENTS.
2. ALL ROUTINE WORK ACTIVITIES SHALL BE CONDUCTED IN SUCH A WAY TO LIMIT THE AMOUNT OF DISTURBED AREA AT ONE TIME TO THE EXTENT PRACTICABLE.
3. PRIOR TO THE START OF ANY CLEARING/LAND DISTURBING ACTIVITIES, THE CONTRACTOR SHALL INSTALL APPLICABLE EROSION CONTROL DEVICES SUCH AS PERIMETER SILT FENCE, AND OTHER APPLICABLE MEASURES. IN THE EVENT THE CONTRACTOR IS NOT SURE A EROSION CONTROL MEASURE SHOULD BE IMPLEMENTED, THE CONTRACTOR SHALL CONTACT THE ENGINEER OF RECORD TO CONFIRM IMPLEMENTATION OF ANY EROSION CONTROL DEVICES.
4. ALL GROUND AREAS GRADED FOR CONSTRUCTION SHALL BE GRADED, LOAMED, SEEDED AND MULCH SHALL BE APPLIED AS SOON AS POSSIBLE WITHIN 7 DAYS FOLLOWING THE COMPLETION OF ANY SOIL DISTURBANCE, AND PRIOR TO ANY STORM EVENT.
5. EROSION AND SEDIMENTATION CONTROL MEASURES SHALL BE INSTALLED TO THE SATISFACTION OF THE CITY. THE CONTRACTOR SHALL REFERENCE THE APPROVED EROSION AND SEDIMENTATION CONTROL REPORT FOR TEMPORARY AND PERMANENT EROSION AND SEDIMENTATION CONTROL DEVICES IN ADDITION TO THE PLAN SET. THE CONTRACTOR SHALL ALSO REFER TO THE MAINE D.E.P.'S PERMIT CONDITIONS, FINDINGS OF FACT AND ORDER (IF ANY), AND THE CURRENT MAINE EROSION AND SEDIMENT CONTROL BMP MANUAL FOR ADDITIONAL INFORMATION.
6. PRIOR TO PAVING, THE CONTRACTOR SHALL REMOVE ALL SEDIMENT FROM STORM DRAINS, CATCH BASINS, AND APPURTENANCES.
7. REFER TO THE EROSION CONTROL DETAILS & NOTES FOR ADDITIONAL INFORMATION.

UTILITY NOTES:

1. THE CONTRACTOR IS SPECIFICALLY CAUTIONED THAT THE LOCATION AND ELEVATION OF THE EXISTING UTILITIES AS SHOWN ON THESE PLANS IS BASED UPON RECORDS OF VARIOUS UTILITY COMPANIES AND, WHERE POSSIBLE, MEASUREMENTS TAKEN IN THE FIELD. THIS INFORMATION IS NOT TO BE RELIED UPON AS BEING EXACT OR COMPLETE. IT SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR TO TEST PIT TO DETERMINE THE EXACT LOCATION AND ELEVATION OF UTILITIES TO COORDINATE WITH THE PROPOSED CONNECTIONS OR CROSSING. ANY DISCREPANCIES SHALL BE IMMEDIATELY REPORTED TO ACORN FOR FURTHER DIRECTIONS BEFORE ANY ADDITIONAL WORK PROCEEDS.
2. CONTRACTOR SHALL, AT NO ADDITIONAL COST TO THE OWNER, CONDUCT EXPLORATORY EXCAVATIONS AT LOCATIONS WHERE PROPOSED EXCAVATION WILL INTERSECT WITH EXISTING UTILITIES, PRIOR TO THE ORDERING OF STRUCTURES.
3. ALL NEW SANITARY MANHOLES SHALL BE VACUUM TESTED BEFORE BACKFILLING. TESTING SHALL BE COMPLETED IN ACCORDANCE WITH TECHNICAL REPORT #16 (TR-16): GUIDES FOR THE DESIGN OF WASTEWATER TREATMENT WORKS, PREPARED BY THE NEW ENGLAND INTERSTATE WATER POLLUTION CONTROL COMMISSION.
4. SEWER MANHOLES SHALL BE 4' ID UNLESS OTHERWISE STATED ON THE PLANS.
5. CONTRACTOR TO PROVIDE 5.5' OF COVER FROM TOP OF PIPE TO FINISH GRADE FOR WATER MAINS.
6. THRUST BLOCKS SHALL BE USED FOR THRUST RESTRAIN ON WATER MAINS. DETAIL AND LIMITS FOR THRUST BLOCKS ARE SHOWN WITHIN THE PLAN SET.
7. WATER INFRASTRUCTURE SHALL BE TESTED IN ACCORDANCE WITH THE PORTLAND WATER DISTRICT DOCUMENT ''WATER AND SEWER CONSTRUCTION SPECIFICATIONS AND PROCEDURE'', MOST RECENT REVISION.
8. ALL REQUIRED FITTINGS FOR THE WATER MAIN ARE NOT SHOWN ON DRAWINGS. CONTRACTOR SHALL FURNISH AND INSTALL ALL NECESSARY FITTINGS REQUIRED TO CONSTRUCT THE WATER MAIN IN ACCORDANCE WITH CITY OF PORTLAND, STATE OF MAINE, AND AMERICAN WATER WORKS ASSOCIATION STANDARDS AND REGULATIONS.
9. CONTRACTOR SHALL COORDINATE WORK REGARDING ANY WATER MAIN CONNECTION AND WATER MAIN SHUTDOWN WITH THE PORTLAND WATER DISTRICT AT LEAST SEVEN (7) DAYS PRIOR TO CONSTRUCTION.
10. ALL WATER PIPE INSTALLATION SHALL CONFORM WITH THE PORTLAND WATER DISTRICT SPECIFICATIONS AND PROCEDURES, MOST RECENT EDITION.
11. IT SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR TO RELOCATE ALL EXISTING UTILITIES WHICH CONFLICT WITH THE PROPOSED IMPROVEMENTS SHOWN ON THE PLANS.
12. SEWER, GAS, TELEPHONE, ELECTRICITY, CABLE, WATER AND ANY OTHER UTILITY CONNECTIONS SHALL BE REVIEWED BY PLUMBING, ELECTRICAL, AND MECHANICAL DESIGNER FOR CONSISTENCY WITH THEIR PLANS PRIOR TO CONSTRUCTION.
13. COORDINATE EXIT POINT FOR SECONDARY UTILITY SERVICES WITH THE ARCHITECT/ELECTRICAL ENGINEER. SECONDARY LINE LOCATIONS NOT PROVIDED BY ACORN WITHIN THE UTILITY PLAN.
14. IT SHALL BE THE CONTRACTOR'S RESPONSIBILITY TO OBTAIN ALL THE NECESSARY PERMITS FOR THE INSTALLATION OF THE UTILITIES AND STORMDRAINS WITHIN THE PUBLIC RIGHT OF WAY. THE CONTRACTOR SHALL SUBMIT A MAINTENANCE OF TRAFFIC PLAN TO THE CITY IN ACCORDANCE WITH THE CITY OF PORTLAND TECHNICAL MANUAL PRIOR TO ANY WORK.
15. THE CONTRACTOR SHALL PROVIDE AND INSTALL ALL BOXES, FITTINGS, CONNECTORS, COVER PLATES AND OTHER MISCELLANEOUS ITEMS NOT NECESSARILY DETAILED ON THE DRAWINGS TO RENDER INSTALLATION OF UTILITIES COMPLETE AND OPERATIONAL AT NO EXTRA EXPENSE TO THE OWNER.
16. ALL PIPE LINES SHALL SLOPE UNIFORMLY BETWEEN ELEVATIONS INDICATED ON THE DRAWINGS. NO CRESTS OR SAGS IN THE PIPING WILL BE PERMITTED. ALL HORIZONTAL AND VERTICAL BENDS IN PRESSURIZED PIPE LINES SHALL BE SUITABLY RESTRAINED WITH THRUST BLOCKS OR RETAINER GLANDS. RETAINER GLANDS ALLOWED FOR DUCTILE IRON PIPE ONLY. PROVIDE ALL BENDS, HORIZONTAL AND VERTICAL, AS REQUIRED TO MEET THE GRADES AND ALIGNMENTS INDICATED ON THE DRAWINGS.
17. ALL WASTEWATER PIPING, EXCLUDING BUILDING DRAINS, AND ALL PRESSURIZED PIPING, TO INCLUDE WATER MAINS, INSTALLED BENEATH STRUCTURES SHALL BE ENCASED IN CONCRETE.
18. WHERE NEW PIPING IS TO BE CONNECTED TO EXISTING PIPING, THE CONTRACTOR SHALL FURNISH AND INSTALL ALL ADAPTERS, FITTINGS AND ADDITIONAL PIPE AS REQUIRED TO ENSURE A COMPLETE AND PROPERLY FUNCTIONING CONNECTION. CONTRACTOR TO VERIFY LOCATION, ELEVATION, ORIENTATION AND MATERIAL OF CONSTRUCTION. ADAPTERS AND FITTINGS ARE INCIDENTAL TO THE PIPE INSTALLATION.
19. WHENEVER POSSIBLE, WATER LINES SHOULD BE INSTALLED OVER WASTEWATER LINES. A MINIMUM SEPARATION OF 18 INCHES BETWEEN THE BOTTOM OF THE WATER LINE AND THE TOP OF THE WASTEWATER LINE SHALL BE MAINTAINED WHERE POSSIBLE. WHERE A WATER LINE CROSSES UNDER THE WASTEWATER LINE, A FULL LENGTH OF WASTEWATER PIPE SHALL BE CENTERED ABOVE THE WATER LINE SO THAT BOTH JOINTS WILL BE AS FAR FROM THE WATER LINE AS POSSIBLE,
20. THE CONTRACTOR SHALL BE ANTICIPATE THAT THE NATIVE SILT AND CLAY SOILS WILL NOT BE SUITABLE FOR PIPE TRENCH BACKFILL IN PAVED AREAS.
21. GROUNDWATER SHALL BE CONTROLLED TO A LEVEL OF AT LEAST ONE FOOT BELOW SUBGRADE OF THE PIPE OR STRUCTURE. THE CONTRACTOR SHALL MAINTAIN THE LOWERED GROUNDWATER LEVEL UNTIL CONSTRUCTION HAS BEEN COMPLETED TO SUCH AN EXTENT THAT THE STRUCTURES OR PIPES WILL NOT BE FLOATED OR OTHERWISE DAMAGED.
22. EXCAVATION TO SUBRADE IN NATIVE SILT AND CLAY SHALL BE COMPLETED WITH A SMOOTH EDGE BUCKET TO MINIMIZE SUBGRADE DISTURBANCE.
23. ALL ADJUSTMENTS TO FINISHED GRADE ARE TO BE COMPLETED BY THE CONTRACTOR. THE CONTRACTOR SHALL CONFIRM STRUCTURES THAT REQUIRE ADJUSTMENT WITH THE ENGINEER OR OWNERS REPRESENTATIVE PRIOR TO ADJUSTING FRAMES.

DEMOLITION NOTES:

1. THE FOLLOWING ITEMS ARE TYPICAL OF MATERIAL WHICH MAY BE ON SITE:
   - ROCK AND CONCRETE FOUNDATIONS
   - CONCRETE SLABS
   - BITUMINOUS ASPHALT PAVEMENT
   - CONCRETE PADS AND BLOCKS
   - FENCE POST AND FENCING
   - UNDERGROUND UTILITY LINES
   - ABOVE AND OR BELOW FUEL OIL AND PROPANE GAS TANKS
   - STORM DRAIN PIPES AND APPURTENANCE STRUCTURES
   - OTHER TRASH & MISCELLANEOUS SOLID WASTES
2. THE CONTRACTOR IS ADVISED TO VISIT THE SITE TO CONFIRM DEMOLITION ITEMS SINCE THE LIST IS NOT INCLUSIVE OF THE SITE CONDITIONS WHICH MAY BE ENCOUNTERED
3. ALL DISPOSAL OF DEMOLITION DEBRIS OR WASTE SHALL BE IN ACCORDANCE WITH ALL LOCAL, STATE, & FEDERAL REGULATIONS. CONTRACTORS SHALL PROVIDE OWNER WITH APPROPRIATE "BILLS OF LADING" DEMONSTRATING PROPER DISPOSAL OF ALL MATERIALS.

PERMIT LEVEL
NOT ISSUED FOR CONSTRUCTION

ISSUED FOR	BY	DATE
SCHEMATIC DESIGN/ISSUE FOR BUDGET ESTIMATE	SJL	11/8/21
MAJOR SITE PLAN	SJL	2/22/22
COMMENT RESPONSE	SJL	10/23/23
FINAL SITE PLAN	SJL	12/03/23

DRAWING NAME: GENERAL NOTES

PROJECT NAME/ADDRESS: 30-32 ATLANTIC STREET DEVELOPMENT

CLIENT/OWNER OF RECORD: KESTREL LLC. 72 PINE STREET SUITE #16, PORTLAND, MAINE 04102

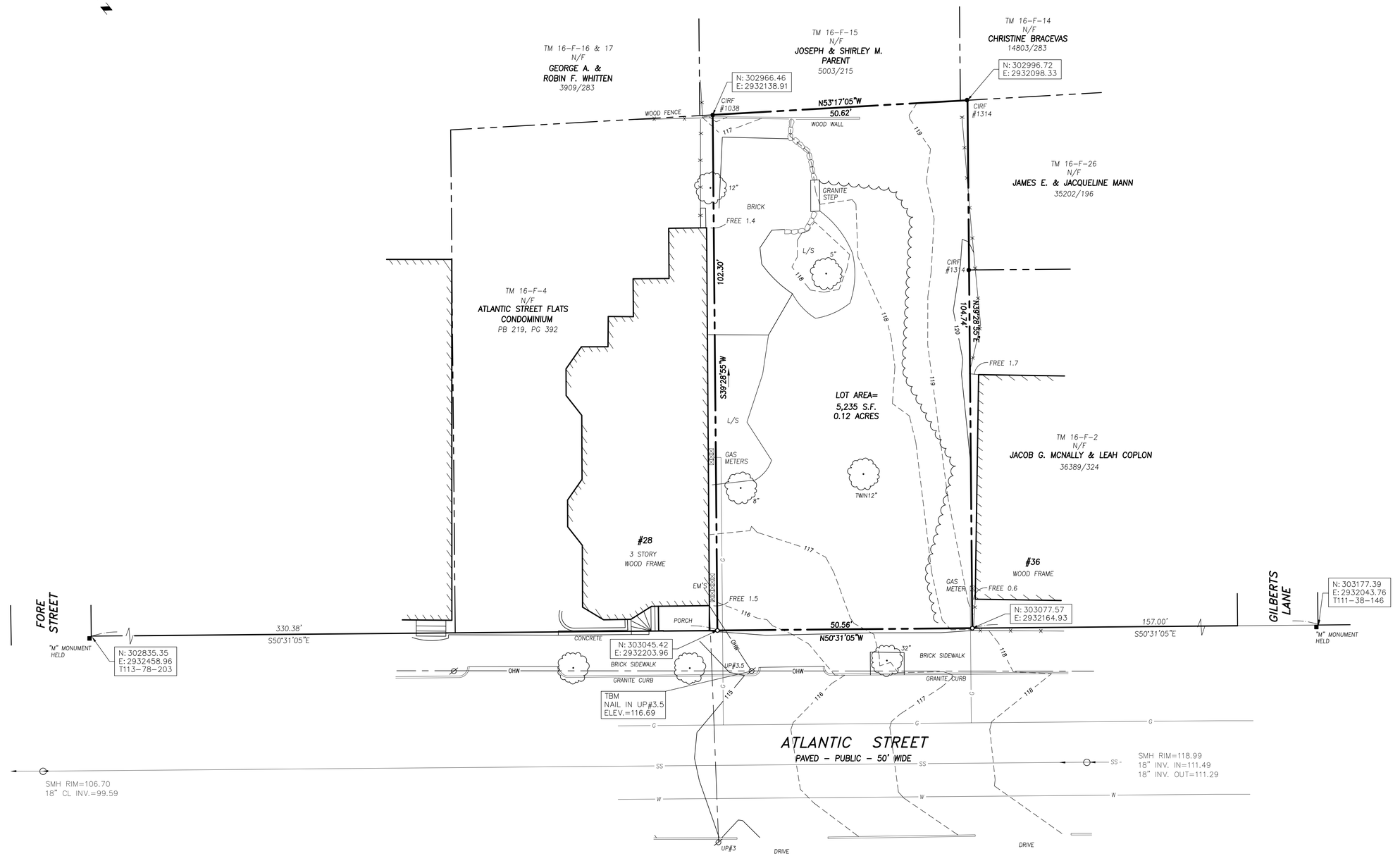
ACORN ENGINEERING, INC.
ENGINEERING, PLANNING, SURVEYING
ACORN ENGINEERING, INC
272 ANDREWS ROAD, FALMOUTH, MAINE 04101
PO BOX 3472 (207) 775-2655

THE ACORN ENGINEERING, INC. DRAWINGS ARE NOT TO BE USED FOR ANY PURPOSE WITHOUT WRITTEN PERMISSION FROM ACORN ENGINEERING, INC. AND SHALL NOT BE ALTERED BY ANY PARTY OTHER THAN ACORN ENGINEERING, INC. OR OTHERWISE, SHALL BE AT THE USER'S SOLE RISK AND WITHOUT LIABILITY TO ACORN ENGINEERING, INC.

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DRAWN BY: ZMS
CHECKED BY: SJL/WHS

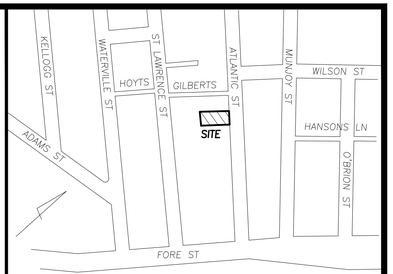
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SAMUEL J. LEBEL
No. 16505
LICENSED PROFESSIONAL ENGINEER
12/3/21

DRAWING NO.
C-02



SCALE : 1" = 10'

0' 5' 10' 20'



LOCATION MAP

N.T.S.

LEGEND

●	IRON PIPE OR ROD FOUND	X—X	FENCE
■	MONUMENT FOUND		STONEWALL
○	CAPPED IRON ROD SET		CURB
	UTILITY POLE	OHW	OVERHEAD WIRES
	MANHOLE	W	WATER LINE
EM/GM	ELECTRIC/GAS METER	G	GAS LINE
	DECIDUOUS TREE	SS	SANITARY SEWER
IPF/IRF	IRON PIPE OR ROD FOUND	100	1' CONTOUR
N/F	NOW OR FORMERLY		
000/000	DEED BOOK / PAGE		
L/S	LANDSCAPE		

PLAN REFERENCES

1. CITY OF PORTLAND CITY BLUE SHEET FOR ATLANTIC STREET.

2. E.C. JORDAN CO. WORKSHEETS FOR FORE STREET AND ATLANTIC STREET.

3. CONDOMINIUM PLAT "ATLANTIC STREET FLATS, A CONDOMINIUM" 28 ATLANTIC STREET, PORTLAND, MAINE MADE FOR OWNER OF RECORD 28 ATLANTIC STREET LLC MAY 3, 2019 BY OWEN HASKELL, INC. RECORDED IN PLAN BOOK 219, PAGE 392.

GENERAL NOTES

1. OWNER OF RECORD: KESTREL, LLC
118 ROWLEY DRIVE, STONINGTON, CT 06378
C.C.R.D. BOOK 37252 PAGE 290

2. LOCUS IS SHOWN AS LOTS 3, 25 ON CITY OF PORTLAND'S ASSESSORS MAP 16 BLOCK F.

3. PROPERTY IS LOCATED IN CITY OF PORTLAND RESIDENTIAL ZONE R6.

4. BEARINGS ARE BASED ON CITY DATUM UTILIZING THE CONTROL POINTS SHOWN.

5. ELEVATIONS ARE BASED ON ELEVATIONS ARE CITY DATUM AS BASED ON CITY MONUMENT T102-69-7 ELEVATION 131.02.

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 SURVEY 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.

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.

RANDY R. LOUBIER, PLS #2407

12/14/2020
DATE

STATE OF MAINE
RANDY R. LOUBIER 2407
PROFESSIONAL LAND SURVEYOR

Boundary & Topographic Survey

At

30-32 Atlantic Street, Portland, Maine

Made for

Kent Parson

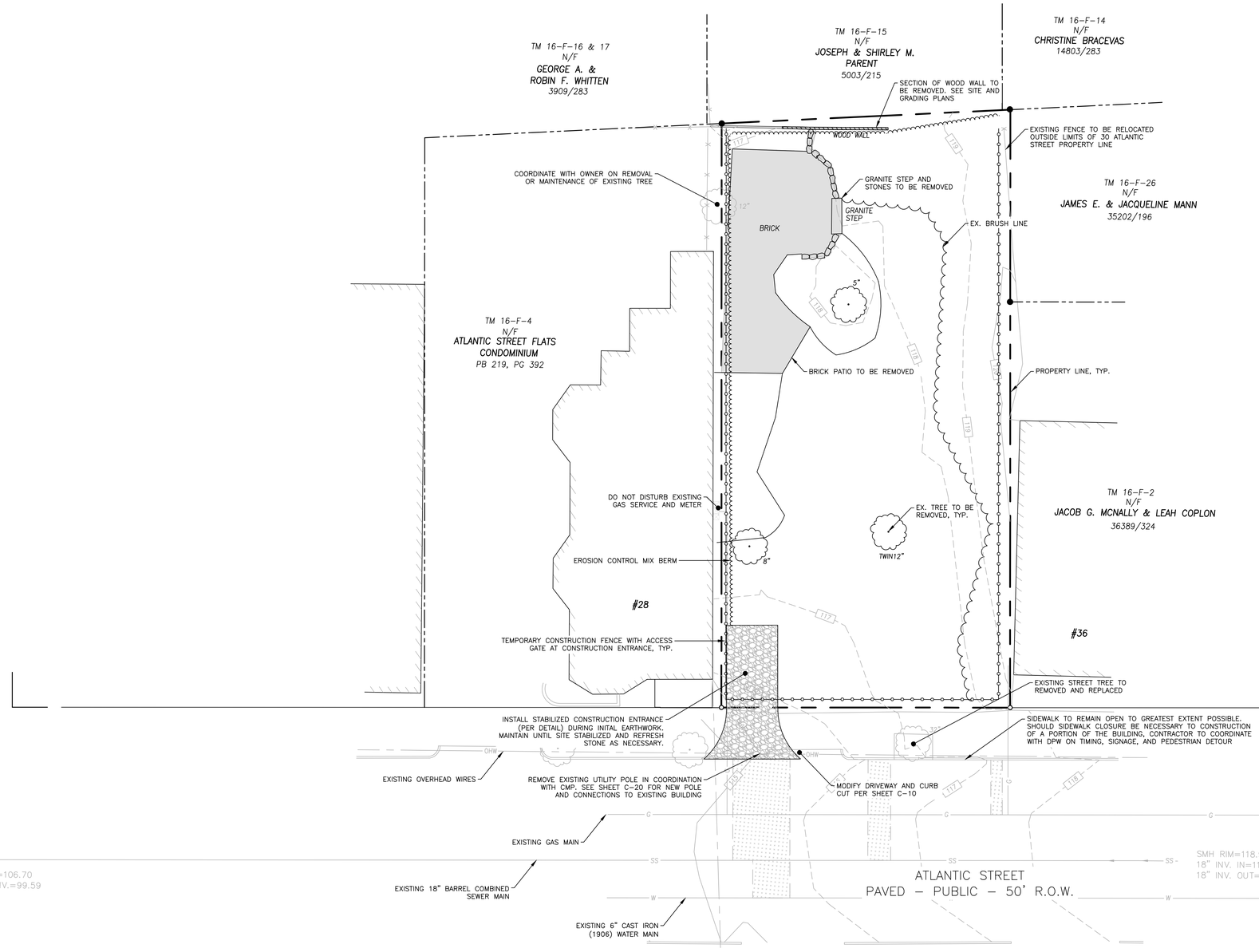
30 Atlantic Street, Portland, Maine

OWEN HASKELL, INC.
PROFESSIONAL LAND SURVEYORS
390 US ROUTE 1, UNIT 10, FALMOUTH, ME 04105 TEL. 207-774-0424

DRAWN BY:	RS / JLW	DATE:	DEC. 14, 2020	JOB NO.	2020-341 P
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GENERAL NOTES:

1. EXISTING ASPHALT TO BE REMOVED SHALL BE STRIPPED AND PROPERLY DISPOSED OF OFFSITE.
2. ALL DISPOSAL OF DEMOLITION DEBRIS OR WASTE SHALL BE IN ACCORDANCE WITH ALL LOCAL, STATE, & FEDERAL REGULATIONS. CONTRACTOR SHALL PROVIDE OWNER WITH APPROPRIATE "BILLS OF LADING" TO DEMONSTRATE PROPER DISPOSAL OF ALL MATERIALS.
3. SITE DEMOLITION SHALL NOT OCCUR UNTIL PROPER ABATEMENT PROCEDURES HAVE OCCURRED. ABATEMENT, IF NECESSARY, SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR.
4. THE CONTRACTOR SHALL CALL THE APPROPRIATE UTILITY COMPANIES AND DIG SAFE AT LEAST 72 HOURS PRIOR TO EXCAVATION TO REQUEST EXACT FIELD LOCATION FOR UTILITIES. OTHERWISE IT SHALL BE THE CONTRACTOR'S RESPONSIBILITY TO FIELD VERIFY THE LOCATION OF UNDERGROUND UTILITIES AND LOCATE POTENTIAL CONFLICT WITH THE APPROVED PLANS PRIOR TO CONSTRUCTION.
5. ALL CONSTRUCTION SIGNAGE IS TEMPORARY AND WILL BE REMOVED AT PROJECT COMPLETION. FINAL SIGNAGE WORDING AND PLACEMENT LOCATION TO BE ACCEPTED BY THE CITY.
6. SEDIMENT BARRIERS TO BE PLACED DIRECTLY ON THE FRONT AND SIDE PROPERTY LINES, DOWN GRADIENT OF THE PROPOSED PROJECT WORK PER DETAIL; FENCES ARE OFFSET OF THE PROPERTY LINES AS SHOWN ON THE PLAN FOR CLARITY PURPOSES AND DO NOT NECESSARILY DEPICT THE PHYSICAL LOCATION.
7. CONTRACTOR SHALL PLACE CATCH BASIN INLET PROTECTION ON CATCH BASINS AND FIELD INLETS DOWN-GRADIENT OF ALL NON-STABILIZED SURFACES, PER DETAIL.
8. DEMOLITION PLAN IS NOT INCLUSIVE OF ALL EXISTING ITEMS TO BE REMOVED AS PART OF SITE CONSTRUCTION INCLUDING BUT NOT LIMITED TO LANDSCAPING, UTILITIES, WORK WITHIN THE ROW, ETC. ALL DEMOLITION WORK SHALL BE IN ACCORDANCE WITH THE CITY OF PORTLAND REGULATIONS.
9. CONTRACTOR TO BE RESPONSIBLE FOR PROVIDING OFF-SITE PARKING TO EMPLOYEES; ON-SITE PARKING WILL NOT BE PROVIDED OR GUARANTEED. CONTRACTOR TO BE RESPONSIBLE FOR OBTAINING THE APPROPRIATE PERMITS FROM THE CITY FOR CLOSING ANY ON-STREET PARKING SPACES DURING THE CONSTRUCTION PERIOD.
10. CONTRACTOR SHALL BE RESPONSIBLE FOR SNOW REMOVAL ALONG CONSTRUCTION FENCE AND GATE.
11. CONTRACTOR TO SUBMIT A DEWATERING PLAN FOR REVIEW AND APPROVAL TO THE DEPARTMENT OF PUBLIC WORKS PRIOR TO THE PRE-CONSTRUCTION MEETING, DURING THE BUILDING PERMIT APPLICATION PROCESS, OR PRIOR TO ADVANCED SITE WORK. CONTACT THE DEPARTMENT OF PUBLIC WORKS FOR ADDITIONAL INFORMATION AND CURRENT REGULATIONS.



10 0 10 20

SCALE: 1" = 10'

PERMIT LEVEL
NOT ISSUED FOR CONSTRUCTION

ISSUED FOR	BY DATE
SCHEMATIC DESIGN/ISSUE FOR BUDGET ESTIMATE	SJL 11/8/21
MAJOR SITE PLAN	SJL 2/22/22
COMMENT RESPONSE	SJL 10/23/23
FINAL SITE PLAN	SJL 12/03/23

DRAWING NAME: CONSTRUCTION MANAGEMENT PLAN

PROJECT NAME/ADDRESS: 30-32 ATLANTIC STREET DEVELOPMENT

CLIENT/OWNER OF RECORD: KESTREL LLC. 72 PINE STREET SUITE #16, PORTLAND, MAINE 04102

ACORN ENGINEERING, INC.

THESE PLANS SHALL NOT BE MODIFIED WITHOUT WRITTEN PERMISSION FROM ACORN ENGINEERING, INC. ANY MODIFICATIONS MADE BY ANYONE OTHER THAN AT THE USER'S SOLE RISK AND WITHOUT LIABILITY TO ACORN ENGINEERING, INC.

ACORN ENGINEERING, INC.
72 PINE STREET
PORTLAND, MAINE 04101
PO BOX 3422
(207) 775-2655

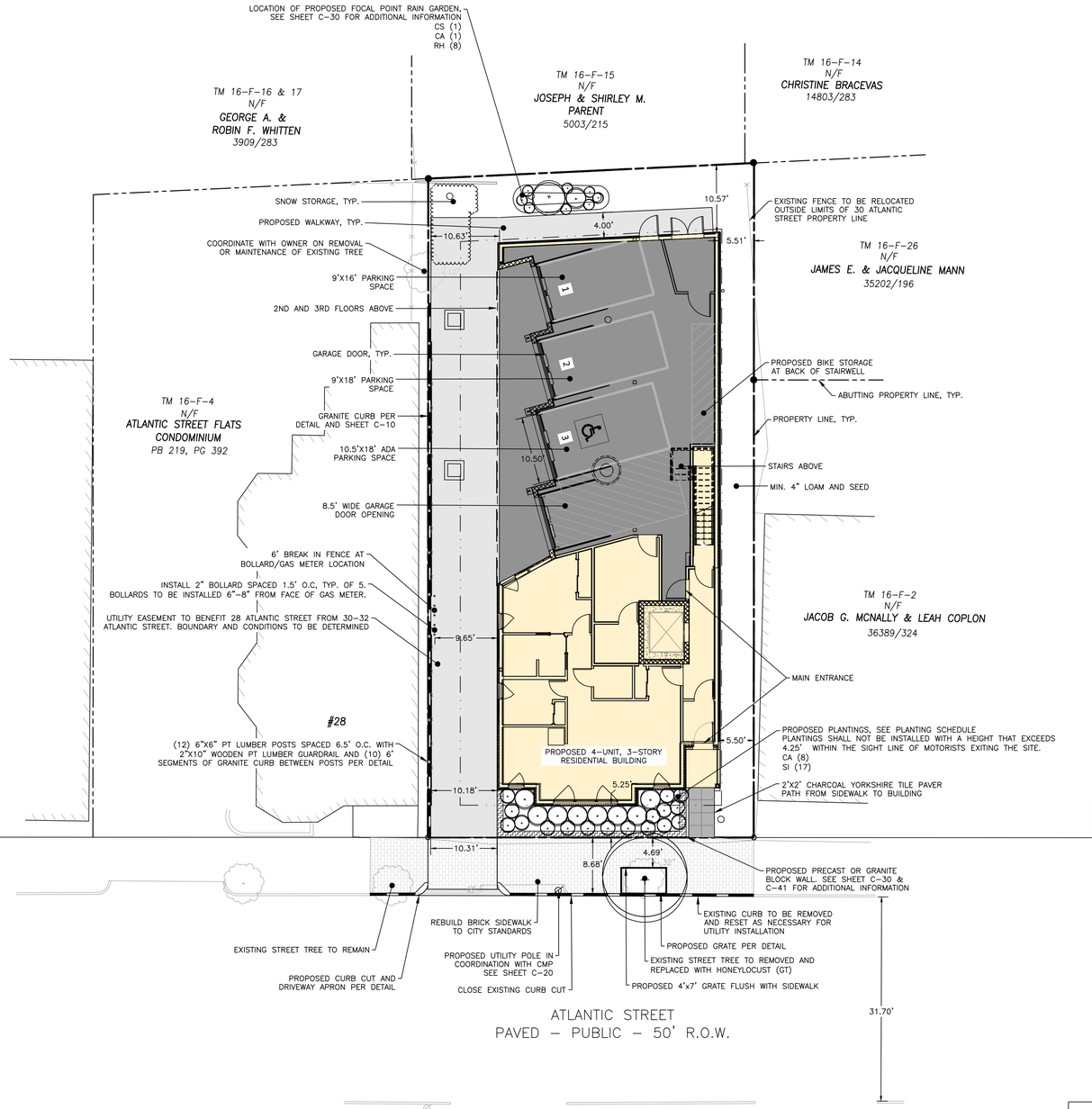
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DRAWN BY: ZMS
CHECKED BY: SJL/WHS

SAMUEL J. LEBEL
No. 16505
LICENSED PROFESSIONAL ENGINEER
12/3/21

DRAWING NO.
C-03

GENERAL NOTES:

1. ALL BRICK SIDEWALK AND VERTICAL GRANITE CURB TO BE REPLACED SHALL BE REBUILT TO CITY OF PORTLAND STANDARD.
2. ALL PAVEMENT STRIPING AND MARKINGS SHALL COMPLY TO CITY OF PORTLAND STANDARDS.
3. ANY ASPHALT TO BE REMOVED SHALL BE STRIPPED AND PROPERLY DISPOSED OF OFFSITE.
4. CURB TO BE REMOVED, STOCKPILED AND RESET IN ACCORDANCE WITH DETAIL. BROKEN CURB SHALL BE PROPERLY DISPOSED OF AND SHALL BE REPLACED AT THE CONTRACTOR'S EXPENSE.
5. ALL RAMPS TO CONFORM TO ADA GUIDELINES. SLOPE SHALL NOT EXCEED 1 INCH PER FOOT.
6. ALL SITE SIGNAGE TO COMPLY WITH MUTCD STANDARDS. CONTRACTOR TO COORDINATE AND INSTALL.
7. FOLLOWING COMPLETION OF CONSTRUCTION, THE OWNER SHALL BE RESPONSIBLE FOR THE MAINTENANCE AND MANAGEMENT OF DRIVEWAYS, SITE LIGHTING, TRASH REMOVAL AND SNOW REMOVAL.
8. PLAN REFERENECES
   8.1. PLAN TITLED "BOUNDARY & TOPOGRAPHIC SURVEY" PREPARED BY OWEN HASKELL, INC. DATED DECEMBER 14TH, 2020
9. SETBACKS SHOWN REPRESENT THE DIMENSIONS BETWEEN THE EDGE OF THE BUILDING'S FOUNDATION WALL AND THE PROPERTY LINE. THE DIMENSIONING ALONG THE PROPOSED DRIVEWAY REPRESENTS THE CLEAR WIDTH BETWEEN THE GUARDRAIL AND THE BUILDING'S SIDING.



SPACE AND BULK STANDARDS		
ZONING: R6 RESIDENTIAL & MUNJOY HILL NEIGHBORHOOD CONSERVATION OVERLAY DISTRICT	REQUIRED	PROPOSED
MINIMUM LOT SIZE	2000 SF	5235 SF
MINIMUM STREET FRONTAGE	20'	51'
MINIMUM FRONT YARD SETBACK	5'	5.25'
MINIMUM SIDE YARD SETBACK	5'	5.50'
MINIMUM REAR YARD SETBACK	10'	10.57'
MAXIMUM LOT COVERAGE	60%	57%
SIDE YARD STEPBACK	10'	N/A
REAR YARD STEPBACK	7.5'	N/A
MINIMUM LOT WIDTH	20'	51'
MAXIMUM BUILDING HEIGHT	35'	34.21'
MINIMUM LANDSCAPED OPEN AREA	20%	20%
MAX IMPERVIOUS AREA	80%	80%
MAXIMUM NUMBER OF DWELLING UNITS	725 SF/UNIT = 7 UNITS	4 UNITS
RESIDENTIAL PARKING	1 SPACE PER UNIT AFTER 3 UNITS = 1 SPACE	3 SPACES
MINIMUM INTERNAL RESIDENT BICYCLE STORAGE SPACES	2 SPACES/5 UNITS = 1.6	2

PARKING SUMMARY	
	# PARKING SPACES
STANDARD (9'X18')	1
COMPACT (9'X16')	1
ADA (10.5'X18')	1
TOTAL PROPOSED SPACES	3

PLANT SCHEDULE				
ID	BOTANICAL NAME	COMMON NAME	QTY	SIZE
TREES				
GT	GLEDITSIA TRIACANTHOS FORM INERMIS	HONEYLOCUST	1	2" CAL.
SHRUBS				
CS	CORNUS SERICEA	RED TWG DOGWOOD	1	3 GAL.
CA	CLETHRA ALNIFOIA	RUBY SPICE SUMMERSWEET	9	3 GAL.
SI	SALIX INTEGRA 'HAKURO NISHIKI'	DAPPLED WILLOW	17	3 GAL.
PERENNIALS				
RH	RUDBECKIA HIRTA	BLACK-EYED SUSAN	8	1 GAL.

PERMISSIBLE VEHICLE SUMMARY			
SPACES	MAX WHEEL BASE	MAX LENGTH	MAX WIDTH
1	9.2'	15.5'	6.3'
2	9.2'	16'	6.3'
3	9.3	16.5	6.5'

10 0 10 20
SCALE: 1" = 10'

PERMIT LEVEL
NOT ISSUED FOR CONSTRUCTION

ISSUED FOR	BY	DATE
SCHEMATIC DESIGN/ISSUE FOR BUDGET ESTIMATE	SJL	11/8/21
MAJOR SITE PLAN	SJL	2/22/22
COMMENT RESPONSE	SJL	10/23/23
FINAL SITE PLAN	SJL	12/03/23

DRAWING NAME: SITE & LANDSCAPE PLAN
PROJECT NAME/ADDRESS: 30-32 ATLANTIC STREET DEVELOPMENT
CLIENT/OWNER OF RECORD: KESTREL LLC. 72 PINE STREET SUITE #16, PORTLAND, MAINE 04102

ACORN ENGINEERING, INC.
ENGINEERING - PLANNING - SURVEYING
ACORN ENGINEERING, INC.
P.O. BOX 4593, PORTLAND, MAINE 04101
(207) 775-2655

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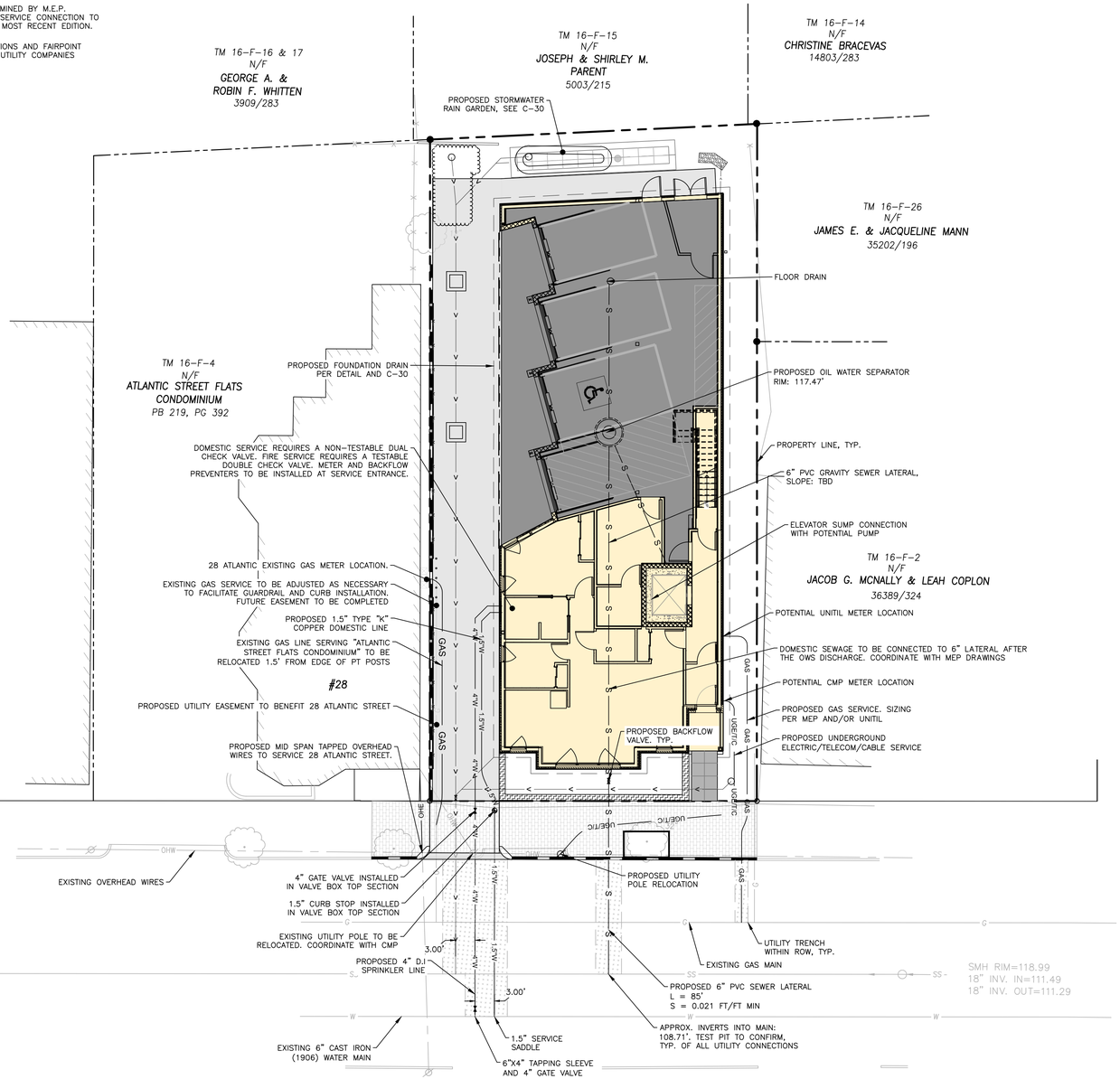
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JN: 1109.5
SCALE: AS NOTED
DESIGNED BY: SJL
DRAWN BY: ZMS
CHECKED BY: SJL/WHS

STATE OF MAINE
SAMUEL J. LEBEL
No. 16505
REGISTERED PROFESSIONAL ENGINEER
12/3/21

DRAWING NO.
C-10

GENERAL NOTES:

1. LOCATION OF PROPOSED CONNECTIONS ARE APPROXIMATE. CONTRACTOR TO CONTACT ENGINEER IF FIELD INFORMATION VARIES FROM INFORMATION ON PLANS.
2. CONTRACTOR IS TO BE CAUTIONED THAT CERTAIN LOCATIONS AND/OR ELEVATIONS OF EXISTING UTILITIES HAVE BEEN PROVIDED THROUGH UTILITY COORDINATION OR OTHER OBSERVATIONS. INFORMATION IS NOT TO BE RELIED UPON AS EXACT OR COMPLETE. CONTRACTOR TO FIELD VERIFY AND COORDINATE WITH UTILITY COMPANY AND DIG SAFE NO LESS THAN 72 HOURS PRIOR TO ANY EXCAVATION TO REQUEST EXACT FIELD LOCATION OF ALL UTILITIES. IT SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR TO RELOCATE ALL EXISTING UTILITIES WHICH CONFLICT WITH THE PROPOSED IMPROVEMENTS INDICATED IN THE CONTRACT DOCUMENTS. CONTRACTOR TO NOTIFY ENGINEER OF ANY DIFFERENTIATIONS FROM EXISTING CONDITIONS, INCLUDING UTILITY INFORMATION, PRIOR TO ANY CHANGES.
3. FOR ALL UTILITIES, ACORN ENGINEERING DESIGN LIMITS END AT EXTERIOR WALL OF BUILDING. METERING OF UTILITIES TO BE COMPLETED BY M.E.P. UNLESS SPECIFIED OTHERWISE.
4. CONTRACTOR TO COORDINATE WITH ARCHITECT ON FINAL UTILITY CONNECTIONS WITHIN THE BUILDING.
5. SEWER UTILITIES: CONTRACTOR TO COORDINATE WITH ARCHITECT FOR FINAL SERVICE CONNECTION. SEWER UTILITIES TO BE CONSTRUCTED IN ACCORDANCE WITH CITY OF PORTLAND TECHNICAL STANDARDS. VALVE FOR BACKFLOW PREVENTION SHALL BE INSTALLED WITHIN THE THE PROPERTY LINES FOR EACH CITY SEWER CONNECTION. CONTACT ENGINEER IF INVERT FIELD CONDITIONS VARY FROM DESIGN.
6. WATER UTILITIES: FINAL PIPE SIZING PROVIDED BY M.E.P. ENGINEER AND FIRE PROTECTION DESIGNER. INTERNAL METERING, BACKFLOW PREVENTION, AND PRESSURE REDUCERS TO BE COMPLETED BY M.E.P. ENGINEER. DOMESTIC WATER PIPE SIZES WILL DETERMINE THE FINAL WATER METERING OPTIONS. METER MAY BE SMALLER THAN PROPOSED WATER MAIN. WATER METERING, PRESSURE REDUCER AND BACKFLOW PREVENTION TO BE IN ACCORDANCE WITH THE PORTLAND WATER DISTRICT STANDARDS. CONTRACTOR TO FOLLOW METERING GUIDELINES OF THE PORTLAND WATER DISTRICT AND CITY OF PORTLAND.
7. GAS UTILITIES: PROJECT GAS LOAD, GAS UTILITY DESIGN, AND FINAL GAS SERVICE LOCATION AND METERS TO BE DEFINED BY M.E.P. AND IN ACCORDANCE WITH UNITIL.
8. ELECTRIC UTILITIES: ELECTRIC DESIGN TO BE FINALIZED BY M.E.P. ENGINEER. ELECTRICAL LOAD TO BE DETERMINED BY M.E.P. ENGINEER. METER LOCATION AND TRANSFORMER SIZE, IF NECESSARY DEFINED BY M.E.P. M.E.P. TO FINALIZE SERVICE CONNECTION TO BUILDING. ALL ELECTRIC CONSTRUCTION SHALL CONFORM TO CMP GUIDEBOOK OF STANDARD REQUIREMENTS, MOST RECENT EDITION. DESIGN SUBJECT TO FINAL APPROVAL FROM CMP.
9. CABLE AND TELEPHONE PULLBOXES AND PEDESTAL LOCATIONS TO BE DETERMINED BY CHARTER COMMUNICATIONS AND FAIRPOINT PRIOR TO CONSTRUCTION. CONTRACTOR TO COORDINATE INSTALLATION OF UNDERGROUND UTILITIES WITH ALL UTILITY COMPANIES INVOLVED.
10. FIRE SUPPRESSION LINE TO BE DESIGNED BY FIRE SUPPRESSION DESIGNER AND/OR MEP.



10 0 10 20

SCALE: 1" = 10'

PERMIT LEVEL
NOT ISSUED FOR CONSTRUCTION

ISSUED FOR	BY	DATE
SCHEMATIC DESIGN/ISSUE FOR BUDGET ESTIMATE	SJL	1/8/21
MAJOR SITE PLAN	SJL	9/22/21
COMMENT RESPONSE	SJL	10/22/21
FINAL SITE PLAN	SJL	12/03/21

DRAWING NAME: UTILITY PLAN

PROJECT NAME/ADDRESS: 30-32 ATLANTIC STREET DEVELOPMENT

CLIENT/OWNER OF RECORD: KESTREL LLC. 72 PINE STREET SUITE #16, PORTLAND, MAINE 04102

ACORN ENGINEERING, INC. — ENGINEERING

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ACORN ENGINEERING, INC.
70 CENTER STREET, PORTLAND, MAINE 04101
PO BOX 11437, PORTLAND, MAINE 04104
(207) 775-2655

FILE:	1109.5_CIVIL
JN:	1109.5
SCALE:	AS NOTED
DESIGNED BY:	SJL
DRAWN BY:	ZMS
CHECKED BY:	SJL/WHS

STATE OF MAINE — SAMUEL J. LEBEL — No. 16505 — PROFESSIONAL ENGINEER — LICENSED — 12/3/21

DRAWING NO.

C-20

GENERAL NOTES:

1. ALL WORK WITHIN THE CITY STREET RIGHT OF WAY SHALL MEET CITY OF PORTLAND TECHNICAL MANUAL STANDARDS.
2. DESIGN OF TEMPORARY SOIL RESTRAINT MEASURES SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR IF NECESSARY FOR CONSTRUCTION.
3. CONTRACTOR SHALL ENSURE THAT UNDERDRAINS ARE CONSTRUCTED WITH POSITIVE OUTLET TO PROPOSED CONNECTIONS.
4. CATCH BASIN INLET PROTECTION TO BE INSTALLED WITHIN ANY STRUCTURES DOWNGRADIENT OF ACTIVE CONSTRUCTION.
5. SEDIMENTATION BARRIERS ARE TO BE INSTALLED DOWNGRADIENT OF ALL ACTIVE CONSTRUCTION WORK PER DETAIL. BARRIERS TO NOT EXTEND PAST PROPERTY LINES; BARRIERS SHOWN OFFSET FROM PROPERTY LINES ON PLANS FOR VISUAL PURPOSES ONLY.

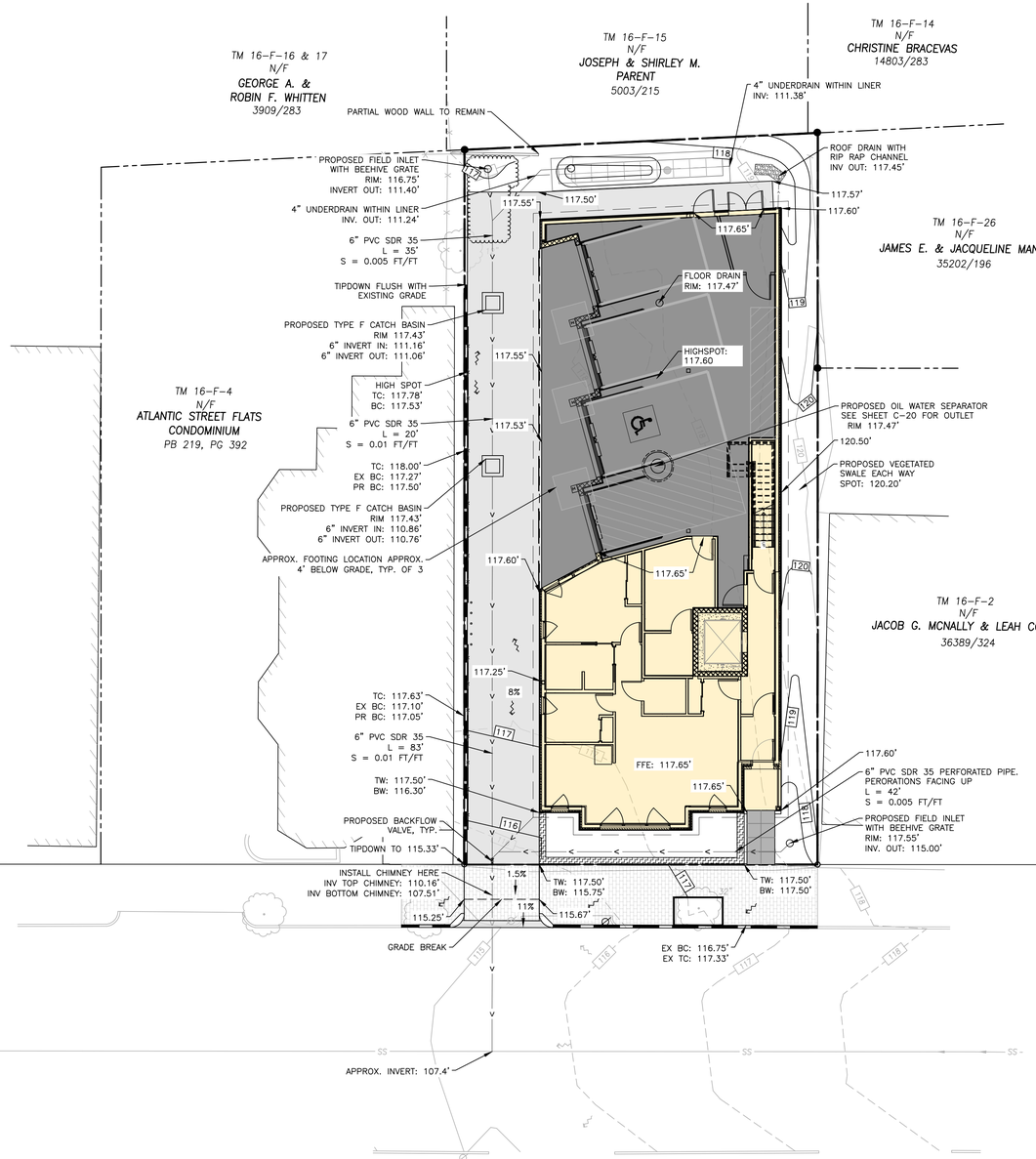
BUILDING ELEVATIONS

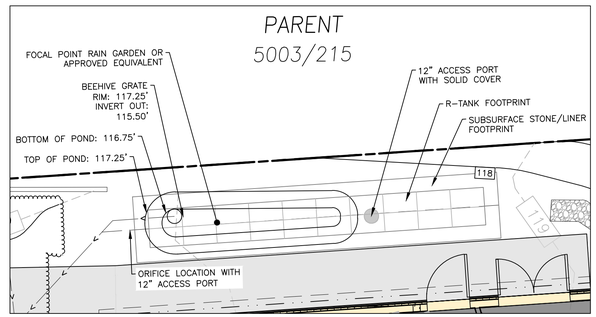
NORTH: 117.60'
EAST: 116.30'
SOUTH: 117.55'
WEST: 117.60'

AVERAGE: 117.26'
TOP OF BUILDING: 151.47'
BUILDING HEIGHT: 34.21'

STAGE STORAGE TABLE

ELEV	AREA (sq. ft.)	DEPTH (ft)	AVG END INC. VOL. (cu. ft.)	AVG END TOTAL VOL. (cu. ft.)	CONIC INC. VOL. (cu. ft.)	CONIC TOTAL VOL. (cu. ft.)
116.75	19.81	N/A	N/A	0.00	N/A	0.00
117.25	56.61	0.50	19.10	19.10	18.32	18.32





FOCAL POINT INSET
1" = 5'

10 0 10 20
SCALE: 1" = 10'

PERMIT LEVEL
NOT ISSUED FOR CONSTRUCTION

ISSUED FOR	BY	DATE
SCHEMATIC DESIGN/ISSUE FOR BUDGET ESTIMATE	SJL	1/8/21
MAJOR SITE PLAN	SJL	2/22/21
COMMENT RESPONSE	SJL	10/23/21
FINAL SITE PLAN	SJL	12/03/21

DRAWING NAME: GRADING & DRAINAGE PLAN
PROJECT NAME/ADDRESS: 30-32 ATLANTIC STREET DEVELOPMENT
CLIENT/OWNER OF RECORD: KESTREL LLC. 72 PINE STREET SUITE #16, PORTLAND, MAINE 04102

ACORN ENGINEERING, INC.

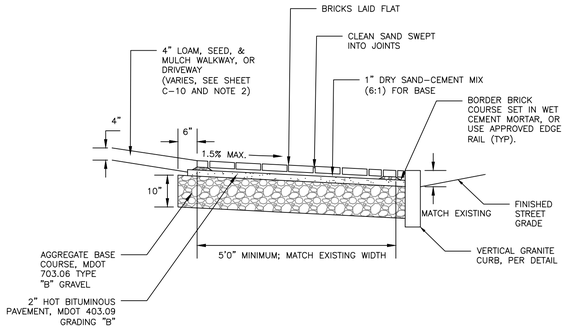
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ACORN ENGINEERING, INC.
70 FORE STREET, PORTLAND, MAINE 04101
PO BOX 3422 (207) 775-2655

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CHECKED BY: SJL/WHS

STATE OF MAINE
SAMUEL J. LEBEL
No. 16505
REGISTERED PROFESSIONAL ENGINEER
12/3/21

DRAWING NO.
C-30



NOTES:

1. 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.

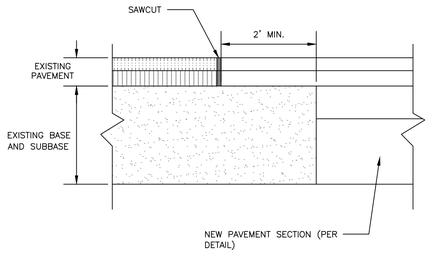
   REPAIR/MAINTENANCE TO EXISTING BRICK SIDEWALKS:
   VERMONT BACKER SUPPLIED BY GAGNE AND SONS SPECIFICATION NUMBER: "VERMONT PAVER BRICK", ITEM NUMBER #VBBB

2. INSTALL BRICK FLUSH UP TO BUILDING, PAVEMENT, STAIRS, CONCRETE SURFACES, CURB OR LANDSCAPED AREAS.

BRICK SIDEWALK WITH BITUMINOUS BASE DETAIL
NOT TO SCALE

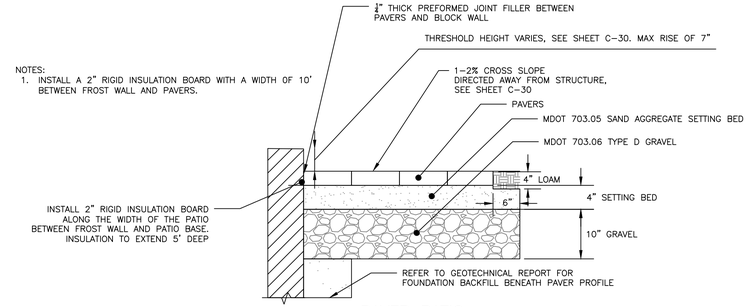
NOTES:

1. SAWCUT EXISTING PAVEMENT AND REMOVE 2' STRIP OF EXISTING PAVEMENT. CREATE UNIFORM AND RIGID BUTT JOINT AND APPLY BITUMINOUS TACK COAT AT AN APPLICATION RATE OF 0.10 TO 0.14 GALLONS PER SQUARE YARD PRIOR TO PLACEMENT OF NEW BITUMINOUS PAVEMENT.
2. THE NEW PAVEMENT SECTION SHALL MEET THE CITY OF **LOCAL** BITUMINOUS PAVEMENT SECTION DETAIL AT A MINIMUM OR THE THE EXISTING PAVEMENT AND AGGREGATE BASE AND SUBBASE DEPTH WHICHEVER IS GREATER.

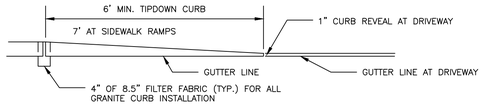


PAVEMENT SAWCUT DETAIL
NOT TO SCALE

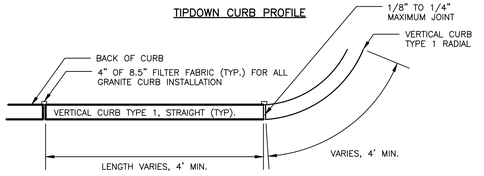
NOTES:
1. INSTALL A 2" RIGID INSULATION BOARD WITH A WIDTH OF 10' BETWEEN FROST WALL AND PAVERS.



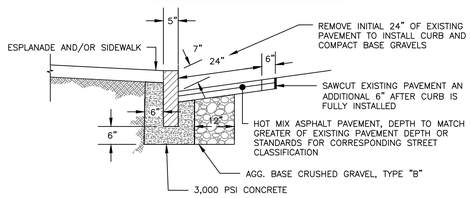
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NOT TO SCALE



TIPDOWN CURB PROFILE



VERTICAL GRANITE CURB PLAN VIEW

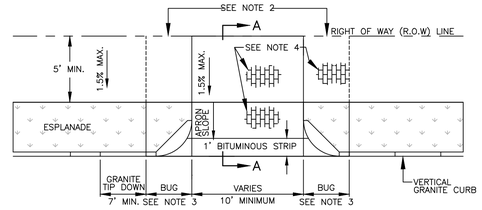


VERTICAL GRANITE CURB CROSS SECTION

NOTES:

1. CURB SHALL BE RESET IN ACCORDANCE WITH MDOT 609.08 WITH THE EXCEPTION OF CURB SPACING TO BE INSTALLED PER DETAIL.
2. INDIVIDUAL PIECES OF CURB SHORTER THAN 4 L.F. ARE NOT ALLOWED, WITH THE EXCEPTION OF RADIAL CURB.
3. THE MINIMUM HEIGHT OF THE CONCRETE BACKING SHALL BE 10 INCHES OR TO THE BOTTOM OF THE HOT MIX ASPHALT PAVEMENT, WHICHEVER IS GREATER, MEASURED FROM THE BOTTOM OF THE CURB.
4. CURBING SHALL BE SET IN A 6-INCH BED OF POURED IN PLACE 3,000 PSI CONCRETE MIX.
5. WOODEN SHIMS MAY BE USED TO SET CURB.

VERTICAL GRANITE CURB AND TIPDOWN INSTALLATION IN EXISTING STREETS DETAIL
NOT TO SCALE



APRON SLOPE TABLE

LAND USE	MAXIMUM RECOMMENDED GRADE CHANGE AT STREET(G)
RESIDENTIAL WITH <9 PARKING SPACES	14%
ALL OTHER DRIVEWAYS	10%

NOTES:

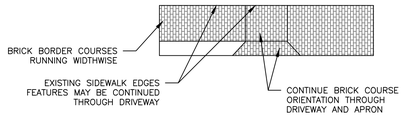
1. MATCH EXISTING GRADE AT R.O.W LINE. WHERE REQUIRED TO MEET A.D.A. AND DRIVEWAY APRON SLOPE REQUIREMENTS, A CONSTRUCTION EASEMENT MAY BE REQUIRED.
2. IF MATCHING THE EXISTING GRADE AT ROW CAUSES APRON SLOPE TO EXCEED RECOMMENDED %, SIDEWALK TRANSITION AREAS MAY BE ADDED, BUT SHALL NOT EXCEED 8.33%.
3. TWO-FOOT RADIUS CORNER GRANITE PIECES ("BUGS") ARE REQUIRED AT LOW-VOLUME DRIVEWAYS UNLESS OTHERWISE DIRECTED BY DPW. AT OTHER DRIVEWAYS, STANDARD FLARE/TIPDOWN TREATMENTS SHALL BE USED.
4. ALL MATERIALS TO COMPLY WITH CITY'S SIDEWALK & DRIVEWAY MATERIAL POLICY. BRICK IN DRIVEWAY APRONS, WHERE APPLICABLE, SHALL BE ORIENTED IN THE SAME WAY AS THE ADJACENT BRICK SIDEWALK.

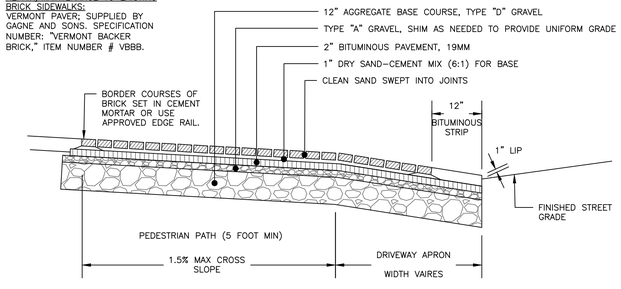
BRICKS TO BE USED:

NEW CONSTRUCTION:
4"X8" PINE HALL PATHWAY PAVER BRICK; MFG. BY PINE HALL BRICK CO., MADISON, NORTH CAROLINA, OR APPROVED EQUAL.
LACHANCE ITEM #193623, PINE HALL PATHWAY PAVER BRICK.

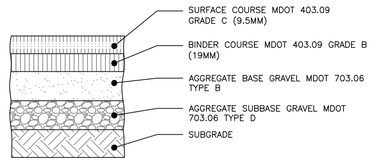
REPAIR/MAINTENANCE TO EXISTING BRICK SIDEWALKS:
VERMONT PAVER; SUPPLIED BY GAGNE AND SONS. SPECIFICATION NUMBER: "VERMONT BACKER BRICK," ITEM NUMBER # VBBB.

BRICK ORIENTATION DETAIL





BRICK DRIVEWAY APRON WITH BITUMINOUS BASE
NOT TO SCALE



NOTES:

1. COMPACT SUBGRADE TO 95% MAXIMUM DRY DENSITY IN ACCORDANCE WITH ASTM D-1557
2. SURFACE AND AGGREGATE MATERIALS SHALL MEET THE CITY OF PORTLAND STANDARDS IN ADDITION TO MDOT STANDARDS.

THICKNESS OF LAYERS

STANDARD	LAYERS
1-1/2"	SURFACE COURSE MDOT 403.09 GRADE C (9.5mm)
2"	BINDER COURSE MDOT 403.09 GRADE B (19mm)
3"	AGGREGATE BASE GRAVEL MDOT 703.06 TYPE B
15"	AGGREGATE SUBBASE GRAVEL MDOT 703.06 TYPE D

BITUMINOUS PAVEMENT PROFILE
NOT TO SCALE

PERMIT LEVEL
NOT ISSUED FOR CONSTRUCTION

ISSUED FOR	BY DATE
SCHEMATIC DESIGN/ISSUE FOR BUDGET ESTIMATE	SJL 11/8/21
MAJOR SITE PLAN	SJL 2/22/22
COMMENT RESPONSE	SJL 10/23/23
FINAL SITE PLAN	SJL 12/03/21

DRAWING NAME: SITE DETAILS - 1
PROJECT NAME/ADDRESS: 30-32 ATLANTIC STREET DEVELOPMENT
CLIENT/OWNER OF RECORD: KESTREL LLC. 72 PINE STREET SUITE #16, PORTLAND, MAINE 04102

ACORN ENGINEERING, INC.

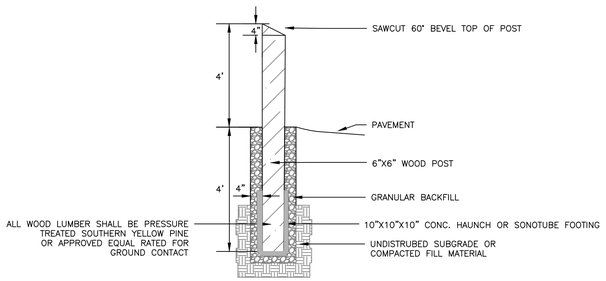
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ACORN ENGINEERING, INC.
70 MILK STREET, SUITE 04101
PO BOX 3472 PORTLAND, MAINE 04101
(207) 775-2655

FILE: 1109.5_DETAILS
JN: 1109.5
SCALE: AS NOTED
DESIGNED BY: SJL
DRAWN BY: ZMS
CHECKED BY: SJL/WHS

SAMUEL J. LEBEL No. 16505 PROFESSIONAL ENGINEER LICENSED 12/3/21

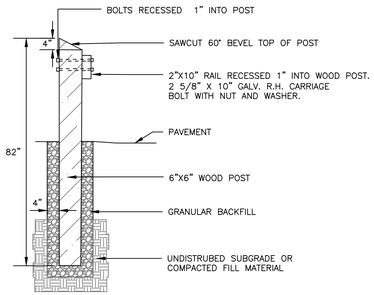
DRAWING NO.
C-40



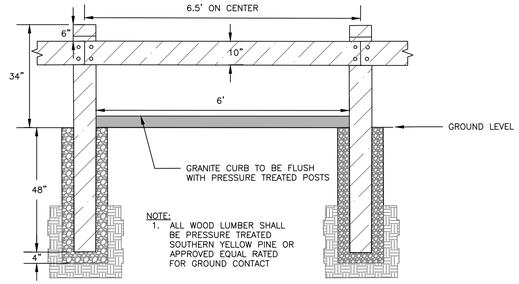
SIDE ELEVATION

WOOD POST DETAIL

NOT TO SCALE



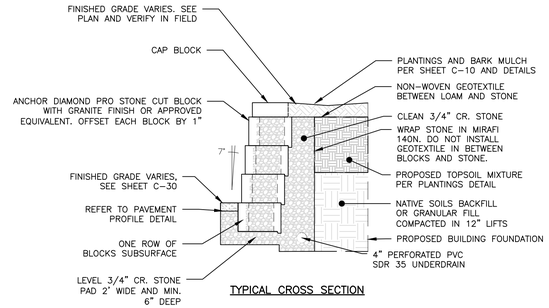
SIDE ELEVATION



FRONT ELEVATION

WOODEN GUARDRAIL DETAIL

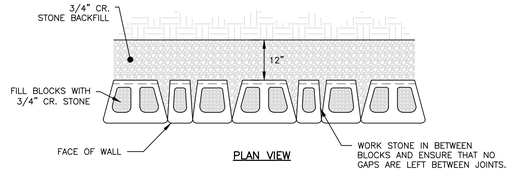
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TYPICAL CROSS SECTION

NOTES:

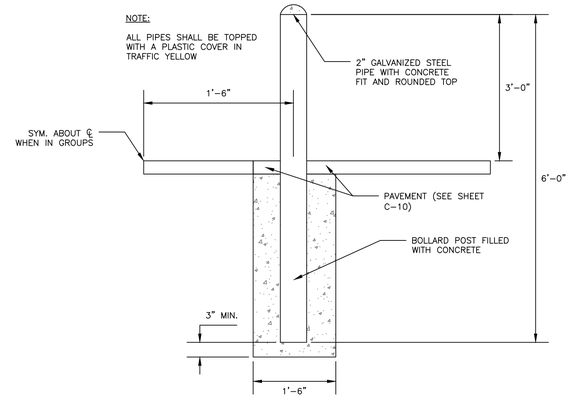
1. CONTRACTOR TO REFER TO AND FOLLOW THE MANUFACTURER'S INSTALLATION INSTRUCTIONS.
2. REFER TO GRADING & DRAINAGE PLAN FOR SITE GRADING AND WALL ELEVATIONS.
3. RETAINING WALL BACKFILL SHALL BE PLACED AND COMPACTED TO A MIN. OF 92% OF ITS MAX. DRY DENSITY IN ACCORDANCE WITH ASTM D1557. MAX. LIFTS SHALL BE 18".



PLAN VIEW

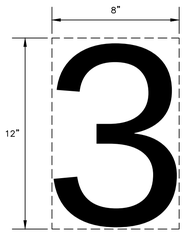
GRAVITY RETAINING WALL DETAIL

NOT TO SCALE



PIPE BOLLARD

NOT TO SCALE

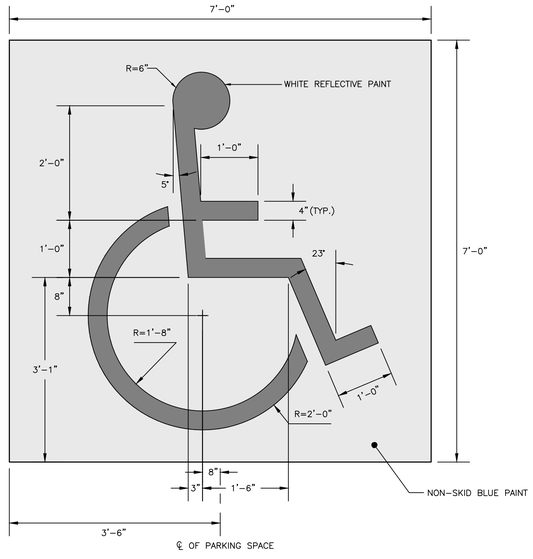


NOTES:

1. NUMBERS TO BE PAINTED AS THE SAME COLOR AS THE CORRESPONDING PARKING SPACE.
2. BOTTOM OF NUMBER TO BE FLUSH WITH THE FRONT OF THE PARKING SPACE.

PARKING STALL NUMBER DETAIL

NOT TO SCALE

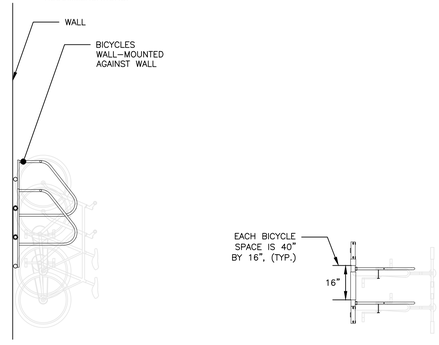


INTERNATIONAL BARRIER FREE SYMBOL

NOT TO SCALE

NOTES:

1. FINAL LOCATION OF INTERIOR BICYCLE RACKS SHALL CONFORM TO ALL ARCHITECTURAL DRAWINGS. CONTRACTOR TO NOTIFY ENGINEER AND ARCHITECT WITH ANY DISCREPANCIES.
2. BICYCLE MOUNT SHALL BE ULTRA SPACE SAVER AS MANUFACTURED BY DERO, OR APPROVED EQUAL.
3. BICYCLES SHALL BE WALL MOUNTED IN ACCORDANCE WITH MANUFACTURERS' RECOMMENDATIONS.



CROSS SECTION VIEW

PLAN VIEW

BICYCLE RACK INTERIOR

NOT TO SCALE

PERMIT LEVEL
NOT ISSUED FOR CONSTRUCTION

ISSUED FOR	BY	DATE
SCHEMATIC DESIGN/ISSUE FOR BUDGET ESTIMATE	SJL	1/8/21
MAJOR SITE PLAN	SJL	2/22/21
COMMENT RESPONSE	SJL	10/23/21
FINAL SITE PLAN	SJL	12/03/21

DRAWING NAME: SITE DETAILS – 2

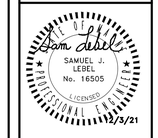
PROJECT NAME/ADDRESS: 30-32 ATLANTIC STREET DEVELOPMENT

CLIENT/OWNER OF RECORD: KESTREL LLC. 72 PINE STREET SUITE #16, PORTLAND, MAINE 04102

ACORN ENGINEERING, INC.
ENGINEERING, INC.
ACORN ENGINEERING, INC.
70 CENTRAL AVENUE, PORTLAND, MAINE 04101
PO BOX 3472 (207) 775-2655

THESE PLANS SHALL NOT BE MODIFIED WITHOUT WRITTEN PERMISSION FROM ACORN ENGINEERING, INC. AND ANY UNAUTHORIZED MODIFICATIONS OR, OTHERWISE, SHALL BE AT THE USER'S SOLE RISK AND WITHOUT LIABILITY TO ACORN ENGINEERING, INC.

FILE:	1109.5_DETAILS
JN:	1109.5
SCALE:	AS NOTED
DESIGNED BY:	SJL
DRAWN BY:	ZMS
CHECKED BY:	SJL/WHS

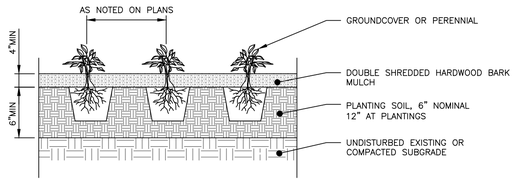


DRAWING NO.

C-41

PLANTING NOTES:

1. ALL PLANT SELECTION AND INSTALLATION SHALL BE IN COMPLIANCE WITH THE CITY OF PORTLAND TECHNICAL MANUAL (SECTION 4).
2. CONTRACTOR TO VERIFY ALL UTILITIES ON PROPERTY AND TO PROTECT ALL UTILITIES DURING EXCAVATION FOR PLANTS.
3. IF THERE IS A DISCREPANCY BETWEEN THE NUMBER OF PLANTS SHOWN ON THE PLAN AND THE NUMBER OF PLANTS SHOWN IN PLANT LIST (IF ANY), THE NUMBER OF PLANTS SHOWN ON PLAN WILL TAKE PRECEDENCE.
4. ALL MATERIAL SHALL COMPLY WITH THE LATEST EDITION OF THE AMERICAN STANDARD FOR NURSERY STOCK, AMERICAN ASSOCIATION OF NURSERYMAN.
5. ALL DISTURBED AREAS NOT TO BE PAVED OR PLANTED SHALL BE LOAMED AND SEEDED AS SHOWN. THE SEED MIX SPECIFICATIONS ARE AS FOLLOWS: LESCO FINE FESCUE LINKS BLEND OF 35% HARD FESCUE, 35% CREEPING RED FESCUE, 20% CHEWINGS FESCUE AND 10% SHEEP FESCUE. ADD 5% LITTLE BLUESTEM AND 5% NORTHEAST WILDFLOWER SEED MIXTURE BY WEIGHT TO THE LINKS BLEND.
6. FOR PRICING PURPOSES, PROVIDE A PER TREE UNIT COST FOR STAKING AND GUYING. IF STAKING AND GUYING IS REQUIRED, REMOVE TREE WRAP, STAKES, AND GUY WIRES AT END OF FIRST GROWING SEASON.
7. FOR TREE PLANTING IN LAWN AREAS, ANY DISTURBED LAWN SHALL BE LOAMED AND SEEDED AS NECESSARY.
8. NEW TREES TO BE INSTALLED WITH A SLOW RELEASE WATERING BAG.
9. CONTRACTOR TO BE HELD RESPONSIBLE FOR THE WATERING AND MAINTENANCE OF ALL PLANT MATERIAL AND LANDSCAPING IMPROVEMENTS FOR AT LEAST 30 DAYS FOLLOWING INSTALLATION. FOLLOWING THIS PERIOD, THE LANDOWNER OR PROPERTY MANAGEMENT SHALL BE RESPONSIBLE FOR CONTINUED WATERING AND MAINTENANCE. CONTRACTOR TO MAINTAIN A ONE YEAR WARRANTY ON ALL PLANTINGS FOLLOWING FINAL INSTALLATION.
10. ALL PROPOSED PLANTS SHALL BE LOCATED AS SHOWN ON THE PLANS. CONTRACTOR TO NOTIFY ENGINEER WHEN PLANTINGS HAVE BEEN MOBILIZED ON SITE. ENGINEER TO INSPECT AND ACCEPT OR REJECT ANY SPECIMENS ON THE BASIS OF APPARENT HEALTH, HARDINESS, AND CONFORMANCE WITH THE PLANTING SCHEDULE. REJECTED SPECIMENS ARE TO BE REPLACED BY THE CONTRACTOR AT NO ADDED COST TO THE OWNER. ACCEPTANCE DOES NOT WAIVE THE REQUIRED ONE YEAR PLANTING WARRANTY.



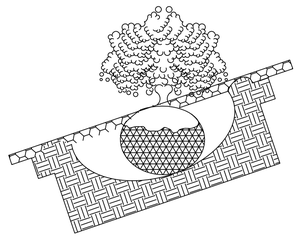
PERENNIAL PLANTING DETAIL
NOT TO SCALE

DIG HOLE AT LEAST 2 TIMES THE DIAMETER OF THE ROOT BALL AND AS DEEP AS THE ROOT BALL (NO DEEPER). SET ROOT BALL CENTERED, WITH THE TOP AT DOWNHILL EDGE OF THE HOLE.

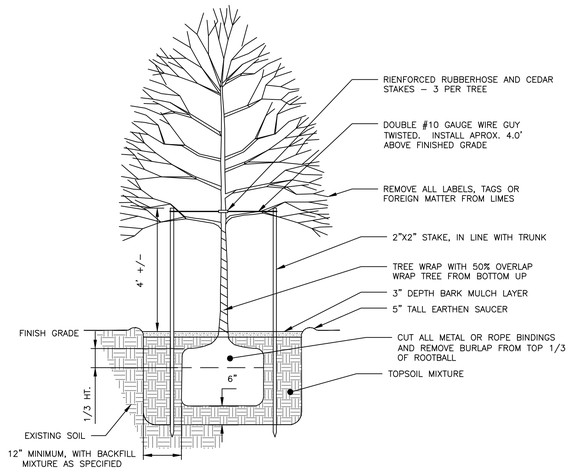
TOPSOIL BACKFILL SHALL BE NATURAL FRIABLE, FERTILE, FINE LOAMY SOIL POSSESSING THE CHARACTERISTICS OF TOPSOIL IN THE VICINITY WHICH PRODUCE A HEAVY GROWTH. TOPSOIL SHALL CONTAIN NOT LESS THAN 6% NOR MORE THAN 20% ORGANIC MATTER. TOP SOIL SHALL HAVE A pH VALUE OF NOT LESS THAN 5.5 NOR MORE THAN 7.0.

CONTAINER GROWN STOCK – REMOVE CONTAINER PROTECTING THE ROOT BALL. GENTLY COMB OUT THE ROOTS. PRUNE DAMAGED ROOTS.

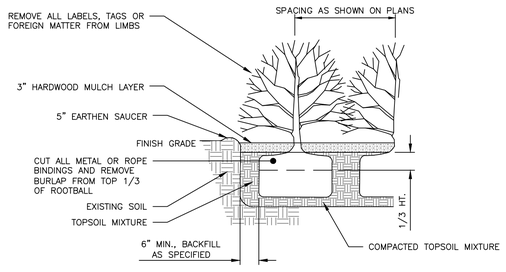
BACKFILL THE HOLE WITH TOPSOIL TO A DEPTH NOT TO EXCEED 8" THEN WATER SUFFICIENTLY TO SETTLE TOPSOIL. REPEAT SOIL BACKFILL, WATER, DRAIN. TOPSOIL SHALL BE TAMPED UNDER EDGES OF THE BALLED PLANTS. BACKFILL TO FINISH GRADE AND CREATE AN EARTHEN SAUCER. SOAK PLANTS TWICE WITHIN THE FIRST TWENTY-FOUR HOURS OF PLANTING.



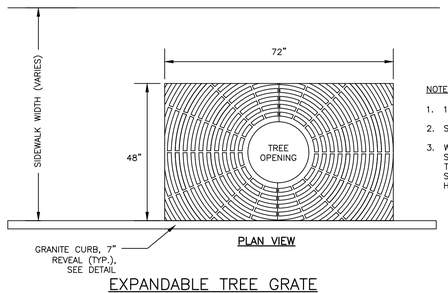
TYPICAL PLANTING
NOT TO SCALE



TREE PLANTING DETAIL
NOT TO SCALE



SHRUB PLANTING DETAIL
NOT TO SCALE

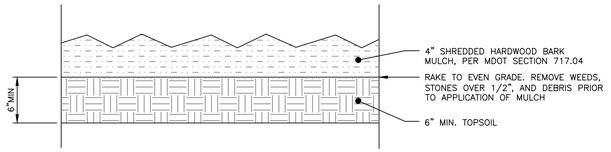


PLAN VIEW

NOTES:

1. 16" EXPANDABLE TREE OPENING; .25" SLOT OPENINGS.
2. SIDEWALK MATERIAL PER CITY SIDEWALK MATERIAL POLICY.
3. WHEN THE TREE GRATE IS INSTALLED IN A CONCRETE SIDEWALK A NOTCH MUST BE INSTALLED ALONG THE EDGE TO HOLD THE GRATE, WHEN INSTALLED IN A BRICK SIDEWALK IT REQUIRES A FRAME TO BE INSTALLED TO HOLD THE GRATE IN PLACE.

EXPANDABLE TREE GRATE
NEENAH MODEL R-8810
NOT TO SCALE



BARK MULCH DETAIL
NOT TO SCALE

PERMIT LEVEL
NOT ISSUED FOR CONSTRUCTION

ISSUED FOR	BY DATE
SCHEMATIC DESIGN/ISSUE FOR BUDGET ESTIMATE	SJL 3/8/21
MAJOR SITE PLAN	SJL 7/22/21

DRAWING NAME: LANDSCAPE DETAILS

PROJECT NAME/ADDRESS: 30-32 ATLANTIC STREET DEVELOPMENT

CLIENT/OWNER OF RECORD: KESTREL LLC. 72 PINE STREET SUITE #16, PORTLAND, MAINE 04102

ACORN ENGINEERING, INC.
ENGINEERING, INC.
PO BOX 3257, PORTLAND, MAINE 04101
(207) 775-2655

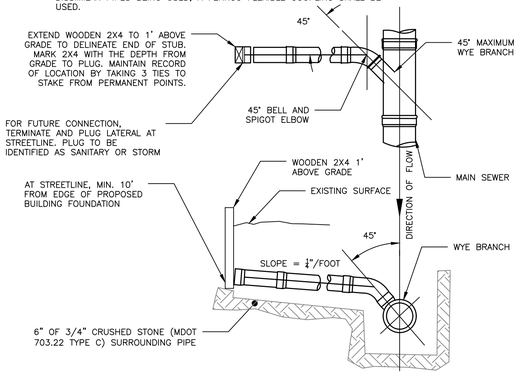
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FILE:	1109.5_DETAILS
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DESIGNED BY:	SJL
DRAWN BY:	ZMS
CHECKED BY:	SJL/WHS

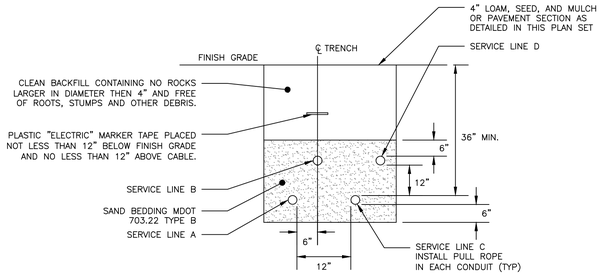
SAMUEL J. LEBEL No. 16505 PROFESSIONAL ENGINEER LICENSED
8/18/21

DRAWING NO.
C-42

NOTES:
1. LOCATION WITH WARNING TAPE SHALL BE INSTALLED OVER CENTERLINE OF PIPE AT A MAXIMUM OF 24 INCHES BELOW FINISH GRADE.
2. SITE CONTRACTOR TO COORDINATE CONNECTION OF SEWER LATERAL TO HOUSEHOLD PLUMBING WITH ARCHITECTURAL CONTRACTOR
3. CONNECTION OF PROPOSED SEWER LATERAL TO HOUSEHOLD PLUMBING SHOULD INCORPORATE USE OF SIMILAR PIPE MATERIALS. IN THE CASE OF DISSIMILAR PIPES BEING USED, A FERNCO FLEXIBLE COUPLING SHALL BE USED.



SEWER AND STORM DRAIN TEE/WYE CONNECTION DETAIL
NOT TO SCALE

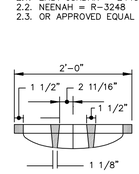


CONDUIT TYPE				
SERVICE	CONDUIT SIZE	GRASS AND PAVED AREAS	UTILITY	REMARKS
A	2–5"	SCHEDULE 40 PVC ELECTRICAL GRADE	PRIMARY POWER	SEE NOTE 1
B	2–4"	SCHEDULE 40 PVC	COMMUNICATION	–
C	2–4"	SCHEDULE 40 PVC ELECTRICAL GRADE	SPARE	IF REQUIRED
D	2–4"	SCHEDULE 40 PVC	CABLE	–

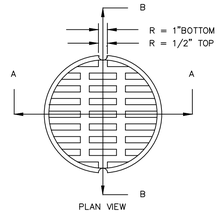
NOTES:
1. ONE CONDUIT CAPPED FOR SPARE, PROVIDE GALVANIZED STEEL LONG SWEEP AT RISER POLE AND EXTEND GALVANIZED CONDUIT TO 10" ABOVE GRADE AT POLE WITH STAND-OFF BRACKETS.
2. MINIMUM SEPARATION OF 24 INCHES BETWEEN PRIMARY CABLE/CONDUIT AND GAS LINES SHALL BE MAINTAINED.
3. CONDUITS WITHIN THE CITY RIGHT-OF-WAY SHALL BE ENCASED IN CONCRETE.

UTILITY TRENCH – PRIMARY AND SECONDARY POWER, TELEPHONE, AND CABLE
NOT TO SCALE

NOTES:
1. APPROVED CATCH BASIN FRAMES:
   1.1. EAST JORDAN = 7375Z
   1.2. NEENAH = R-3248
   1.3. OR APPROVED EQUAL
2. APPROVED CATCH BASIN GRATES
   2.1. EAST JORDAN = 2440M
   2.2. NEENAH = R-3248
   2.3. OR APPROVED EQUAL

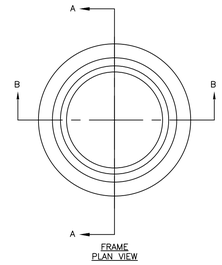


SECTION A–A

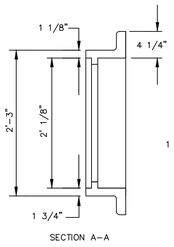


PLAN VIEW

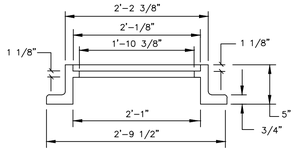
GRATE DETAIL



FRAME PLAN VIEW



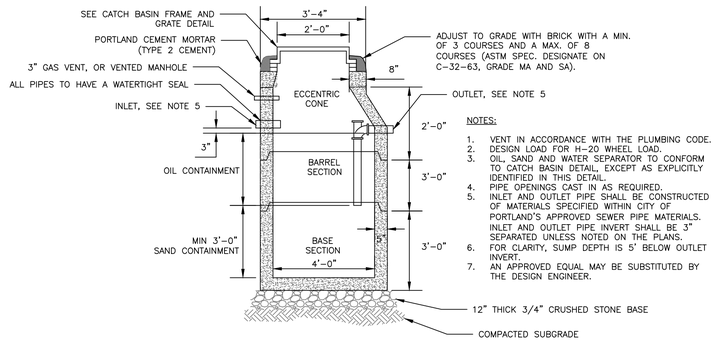
SECTION A–A



SECTION B–B

FRAME DETAIL

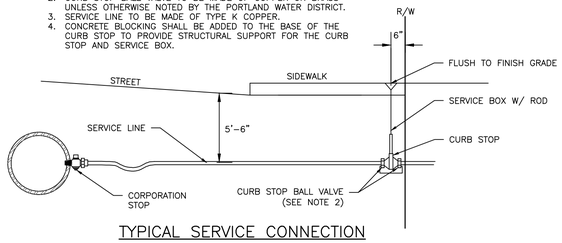
OIL AND WATER SEPARATOR FRAME & GRATE
NOT TO SCALE



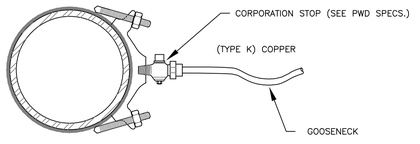
NOTES:
1. VENT IN ACCORDANCE WITH THE PLUMBING CODE.
2. DESIGN LOAD FOR H–20 WHEEL LOAD.
3. OIL, SAND AND WATER SEPARATOR TO CONFORM TO CATCH BASIN DETAIL, EXCEPT AS EXPLICITLY IDENTIFIED IN THIS DETAIL.
4. PIPE OPENINGS CAST IN AS REQUIRED.
5. INLET AND OUTLET PIPE SHALL BE CONSTRUCTED OF MATERIALS SPECIFIED WITHIN CITY OF PORTLAND'S APPROVED SEWER PIPE MATERIALS. INLET AND OUTLET PIPE INVERT SHALL BE 3" SEPARATED UNLESS NOTED ON THE PLANS.
6. FOR CLARITY, SUMP DEPTH IS 5' BELOW OUTLET INVERT.
7. AN APPROVED EQUAL MAY BE SUBSTITUTED BY THE DESIGN ENGINEER.

4'–0" DIAMETER PRECAST OIL AND WATER SEPARATOR
NOT TO SCALE

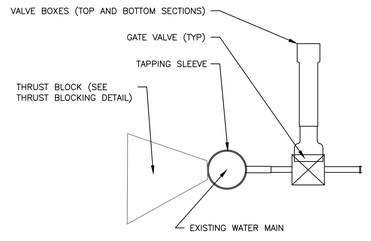
NOTES:
1. ALL MATERIALS AND INSTALLATION PROCEDURES MUST COMPLY WITH THE CITY OF PORTLAND WATER DISTRICT (PWD) SPECIFICATIONS.
2. CURB STOP BALL VALVE TO BE MADE OF COPPER OR BRASS UNLESS OTHERWISE NOTED BY THE PORTLAND WATER DISTRICT.
3. SERVICE LINE TO BE MADE OF TYPE K COPPER.
4. CONCRETE BLOCKING SHALL BE ADDED TO THE BASE OF THE CURB STOP TO PROVIDE STRUCTURAL SUPPORT FOR THE CURB STOP AND SERVICE BOX.



TYPICAL SERVICE CONNECTION
NOT TO SCALE



SERVICE SADDLE: 1–1/2" AND 2" C.C. THREAD
NOT TO SCALE



SIDE VIEW

TAPPING SLEEVE AND VALVE
NOT TO SCALE

PERMIT LEVEL
NOT ISSUED FOR CONSTRUCTION

ISSUED FOR	BY DATE
SCHEMATIC DESIGN/ISSUE FOR BUDGET ESTIMATE	SJL 11/8/21
MAJOR SITE PLAN	SJL 2/22/22
COMMENT RESPONSE	SJL 10/23/23
FINAL SITE PLAN	SJL 12/03/23

DRAWING NAME: UTILITY DETAILS – 1
PROJECT NAME/ADDRESS: 30–32 ATLANTIC STREET DEVELOPMENT
CLIENT/OWNER OF RECORD: KESTREL LLC. 72 PINE STREET SUITE #16, PORTLAND, MAINE 04102

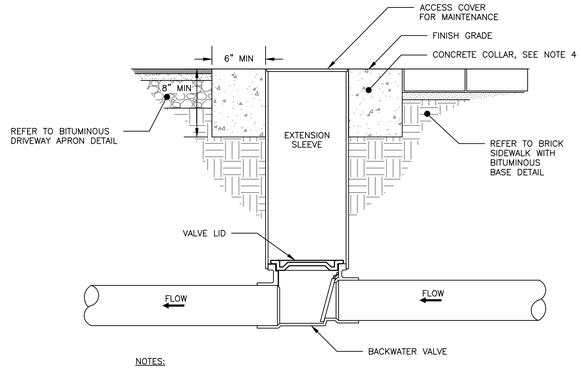
ACORN ENGINEERING, INC.
PO BOX 3437, PORTLAND, MAINE 04101
(207) 775-2655

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FILE:	1109.5_DETAILS
JN:	1109.5
SCALE:	AS NOTED
DESIGNED BY:	SJL
DRAWN BY:	ZMS
CHECKED BY:	SJL/WHS

SAMUEL J. LEBEL No. 16505 LICENSED PROFESSIONAL ENGINEER 12/5/21

DRAWING NO.
C-43

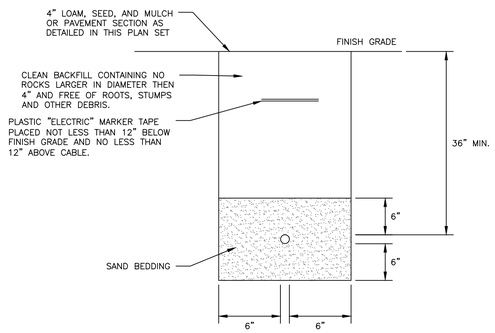


NOTES:

1. BACKFLOW VALVE TO BE PROVIDED BY AGRI DRAIN CORPORATION OR AN APPROVED EQUAL.
2. VALVE TO BE INSTALLED TO MANUFACTURER'S SPECIFICATIONS AND COMPLY WITH RULES AND REGULATIONS AS OUTLINED IN SECTION 2 OF THE CITY OF PORTLAND TECHNICAL MANUAL.
3. VALVE SHALL BE INSTALLED WITH A VALVE BOX AND COVER TO PROVIDE EASY ACCESS AND MAINTENANCE; VALVE COVER SHALL STATE 'SEWER' ON LID FLUSH TO SURFACE. REFER TO VALVE & BOX COVER DETAIL FOR ADDITIONAL INFORMATION.
4. CONCRETE COLLAR AT A MINIMUM 24-HOUR COMPRESSIVE STRENGTH OF 3,000 PSI.

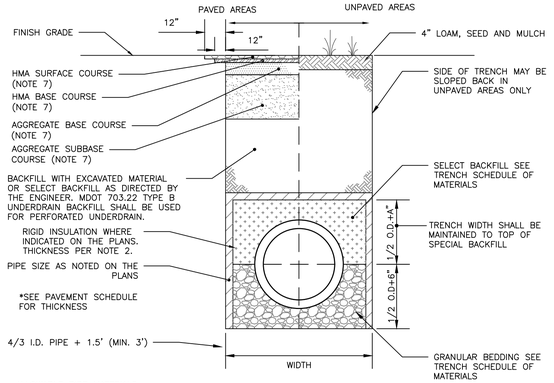
BACKFLOW VALVE ASSEMBLY

NOT TO SCALE



SECONDARY ELECTRICAL TRENCH

NOT TO SCALE



SCHEDULE OF MATERIALS		
TYPE OF PIPE	GRANULAR BEDDING	SELECT BACKFILL
CMP DUCTILE IRON RCP	MDOT 703.22 TYPE B UD BACKFILL	MDOT 703.22 TYPE B UD BACKFILL
PVC/HDPE	MDOT 703.22 TYPE C 3/4" CRUSHED STONE	MDOT 703.22 TYPE B UD BACKFILL
CMP	MDOT 703.22 TYPE C 3/4" CRUSHED STONE	MDOT 703.22 TYPE C 3/4" CRUSHED STONE

NOTES:

1. BRACING AND SHEETING OR OTHER TRENCH PROTECTION TO BE PROVIDED TO MEET APPLICABLE STATE AND O.S.H.A. SAFETY STANDARDS. ALL SUCH TRENCH PROTECTION TO BE THE RESPONSIBILITY OF THE CONTRACTOR.
2. STORM DRAIN COVER BETWEEN 2' AND 3' SHALL INCLUDE 4" OF RIGID INSULATION. COVER BETWEEN 3' AND 4' SHALL INCLUDE 2' RIGID INSULATION. OTHER UTILITIES: ADD 2" OF RIGID INSULATION FOR EACH FOOT ABOVE MINIMUM DEPTH.
3. INSTALL WARNING TAPE DIRECTLY ABOVE UTILITIES AT THE TOP OF SUBGRADE.
4. MINIMUM COVER
   4.1. 2'-0" - STORM DRAIN
   4.2. 5'-0" - SEWER
5. NO TREES SHALL BE PLANTED WITHIN 5' OF A SEWER PIPE OR SERVICE
6. THIS DETAIL SHALL BE APPLIED ONLY TO DRAINAGE PIPE TRENCHES OUTSIDE OF THE CITY OF PORTLAND ROW.
7. THICKNESS AS NOTED BY SURFACE DETAILS

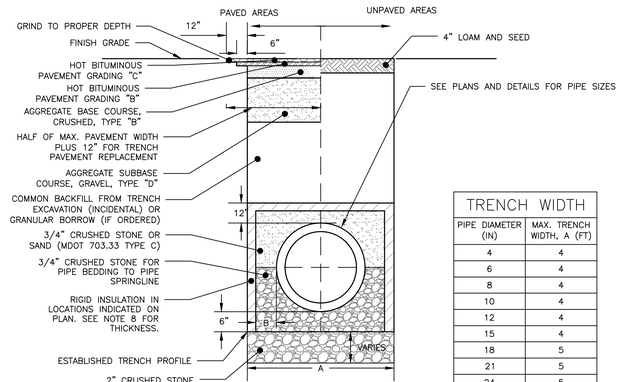
ALLOWABLE PIPE MATERIALS:
- REINFORCED CONCRETE PIPE (RCP) MIN. STRENGTH OF CLASS III
- PVC RING TYPE SEWER (SDR 35) OR EQUIVALENT, MIN PS-46 RATING
- PVC RING TYPE SEWER PIPE MEETING ASTM F 789
- DUCTILE IRON PIPE (DIP)
- ADS N-12 HP TRIPLE-WALL MIN PS-46 RATING
- ADS SANITITE HP MIN. PS-46

INTERNAL STORM DRAIN AND SEWER TYPICAL TRENCH SECTION

NOT TO SCALE

DESIGN NOTES:

1. ANY ALTERNATE TRENCHING METHODS SHALL BE APPROVED IN ADVANCE BY THE CITY.
2. ALL CONSTRUCTION METHODS SHALL CONFORM TO THE CITY OF PORTLAND TECHNICAL STANDARDS FIGURE II-2.
3. BRACING & SHEETING OR OTHER TRENCH PROTECTION TO BE PROVIDED TO MEET APPLICABLE STATE AND O.S.H.A SAFETY STANDARDS. ALL SUCH TRENCH PROTECTION SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR.
4. WHERE APPLICABLE, PERFORATIONS IN STORM DRAIN (PERF. SD) SHALL BE ORIENTED UP.
5. ALL STORM DRAINS SHALL BE PVC SDR 35 MIN PS-46 RATING OR OR IN ACCORDANCE WITH CITY OF PORTLAND TECHNICAL MANUAL , SECTION 2 - SANITARY SEWER AND STORM DRAIN - PART 2.5.2
6. IN PAVED AREAS, DEPTHS OF GRAVEL AND HOT MIX ASPHALT PAVEMENT SHALL MATCH THE GREATER OF EXISTING CONDITIONS OR THE REQUIREMENTS FOR THE CORRESPONDING STREET CLASSIFICATION.
7. THIS DETAIL SHALL BE APPLIED ONLY TO PIPE TRENCHES WITHIN OF THE CITY OF PORTLAND R.O.W.
8. STORM DRAIN COVER BETWEEN 2' AND 3' SHALL INCLUDE 4" OF RIGID INSULATION. COVER BETWEEN 3' AND 4' SHALL INCLUDE 2" RIGID INSULATION. OTHER UTILITIES: ADD 2" OF RIGID INSULATION FOR EACH FOOT ABOVE MINIMUM DEPTH.
9. DEPTH OF BITUMINOUS PAVEMENT AND AGGREGATE COURSES SHALL BE DETERMINED BY STREET CLASSIFICATION.
10. DIMENSION B SHALL BE SUFFICIENT TO ALLOW CRUSHED STONE BEDDING TO BE PLACED AND COMPACTED UNDER THE HAUNCHES OF THE PIPE; BUT IN ALL CASES DIMENSION B SHALL BE AT LEAST 9".
11. DIMENSION A IS THE MAXIMUM WIDTH ALLOWED FOR CALCULATING PAY QUANTITIES UNDER GRANULAR BORROW, CRUSHED STONE, STRUCTURAL EARTH EXCAVATION, AND STRUCTURAL ROCK EXCAVATION. DIMENSION A SHALL BE BASED ON PIPE DIAMETER D, AS SET FORTH IN THE TABLE BELOW.

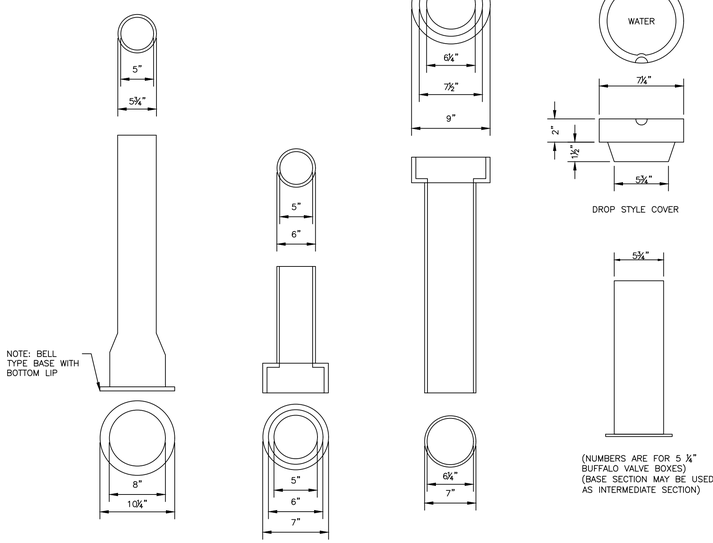


TRENCH WIDTH	
PIPE DIAMETER (IN)	MAX. TRENCH WIDTH, A (FT)
4	4
6	4
8	4
10	4
12	4
15	4
18	5
21	5
24	5
36	7
48	8
54	8
60	9

ALLOWABLE PIPE MATERIALS:
- REINFORCED CONCRETE PIPE (RCP) MIN. STRENGTH OF CLASS III
- PVC RING TYPE SEWER (SDR 35) OR EQUIVALENT, MIN PS-46 RATING
- PVC RING TYPE SEWER PIPE MEETING ASTM F 789
- DUCTILE IRON PIPE (DIP)
- ADS N-12 HP TRIPLE-WALL MIN PS-46 RATING
- ADS SANITITE HP MIN. PS-46

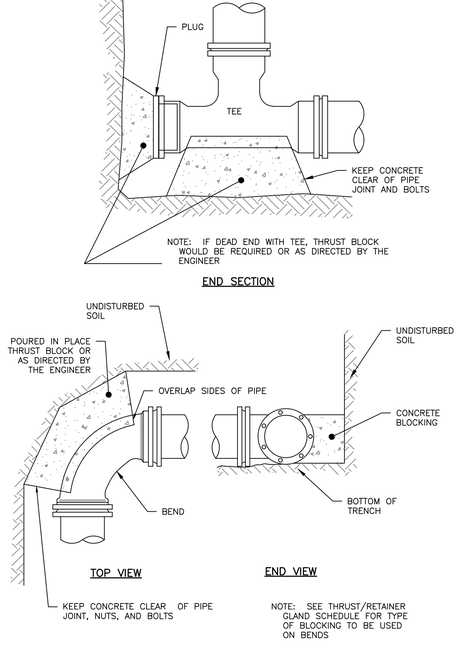
CITY OF PORTLAND TYPICAL PIPE TRENCH DETAIL

NOT TO SCALE



VALVE BOX & COVER

NOT TO SCALE



THRUST BLOCKING

NOT TO SCALE

PERMIT LEVEL
NOT ISSUED FOR CONSTRUCTION

ISSUED FOR	BY	DATE
SCHEMATIC DESIGN/ISSUE FOR BUDGET ESTIMATE	SJL	1/8/21
MAJOR SITE PLAN	SJL	2/22/21
COMMENT RESPONSE	SJL	10/22/21
FINAL SITE PLAN	SJL	12/03/21

DRAWING NAME: UTILITY DETAILS - 2

PROJECT NAME/ADDRESS: 30-32 ATLANTIC STREET DEVELOPMENT

CLIENT/OWNER OF RECORD: KESTREL LLC. 72 PINE STREET SUITE #16, PORTLAND, MAINE 04102

ACORN ENGINEERING, INC. — CIVIL ENGINEERING AND LAND SURVEYING
ACORN ENGINEERING, INC. 04101
PO BOX 11442 PORTLAND, MAINE 04104
(207) 775-2655

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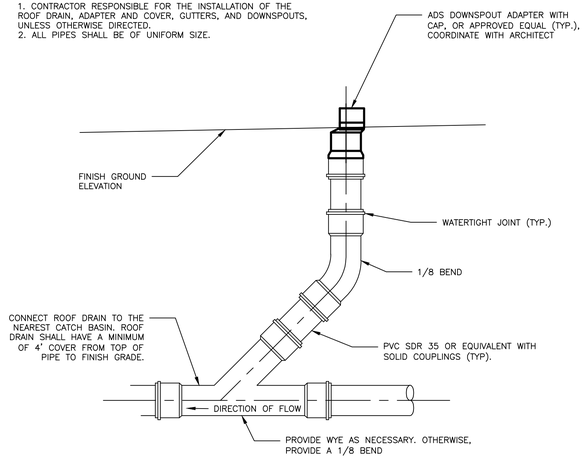
FILE: 1109.5_DETAILS
JN: 1109.5
SCALE: AS NOTED
DESIGNED BY: SJL
DRAWN BY: ZMS
CHECKED BY: SJL/WHS

STATE OF MAINE — SAMUEL J. LEBEL No. 16505 — PROFESSIONAL ENGINEER — LICENSED — 12/3/21

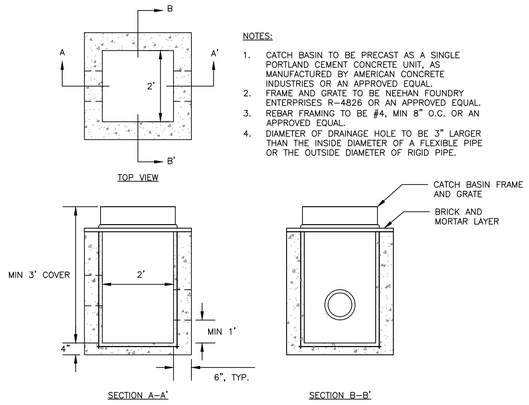
DRAWING NO.
C-44

NOTES:

1. CONTRACTOR RESPONSIBLE FOR THE INSTALLATION OF THE ROOF DRAIN, ADAPTER AND COVER, GUTTERS, AND DOWNSPOUTS, UNLESS OTHERWISE DIRECTED.
2. ALL PIPES SHALL BE OF UNIFORM SIZE.



ROOF DRAIN DETAIL
NOT TO SCALE



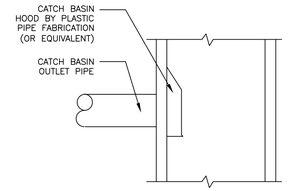
NOTES:

1. CATCH BASIN TO BE PRECAST AS A SINGLE PORTLAND CEMENT CONCRETE UNIT, AS MANUFACTURED BY AMERICAN CONCRETE INDUSTRIES OR AN APPROVED EQUAL.
2. FRAME AND GRATE TO BE NEENAH FOUNDRY ENTERPRISES R–4826 OR AN APPROVED EQUAL.
3. REBAR FRAMING TO BE #4, MIN 8" O.C. OR AN APPROVED EQUAL.
4. DIAMETER OF DRAINAGE HOLE TO BE 3" LARGER THAN THE INSIDE DIAMETER OF A FLEXIBLE PIPE OR THE OUTSIDE DIAMETER OF RIGID PIPE.

'TYPE F' PRECAST CATCH BASIN
NOT TO SCALE

NOTES:

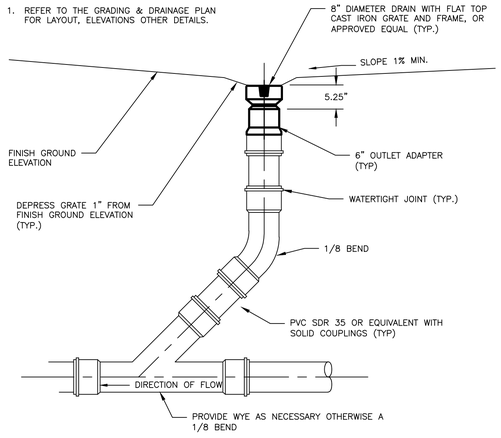
1. INSTALL HOOD ON ALL OUTLETS 24" OR LESS.
2. PREFERRED STYLE DESIGNED TO ELIMINATE CEMENTING OF THE TRAP.
3. REFER TO MANUFACTURER'S RECOMMENDATIONS FOR INSTALLATION REQUIREMENTS



CATCH BASIN HOOD DETAIL
NOT TO SCALE

NOTES:

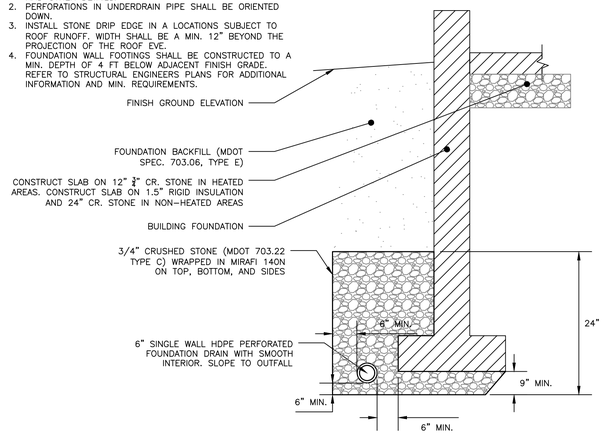
1. REFER TO THE GRADING & DRAINAGE PLAN FOR LAYOUT, ELEVATIONS OTHER DETAILS.



INLINE DRAIN DETAIL WITH FLAT GRATE
NOT TO SCALE

NOTES:

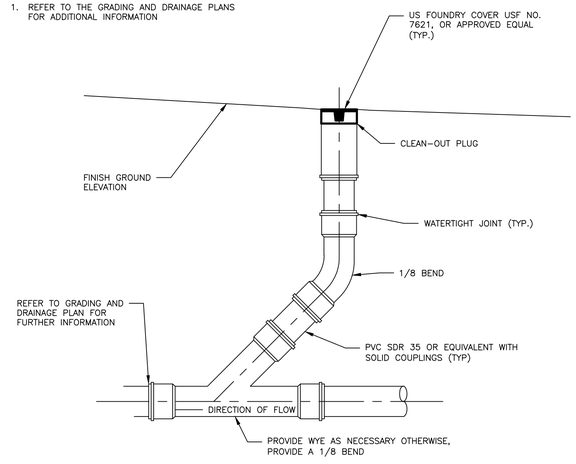
1. REFER TO THE BUILDING ARCHITECTS PLANS FOR THE BUILDING FOUNDATION, BACKFILL, ROOF DRAIN, SIDEWALK AND OTHER DETAILS
2. PERFORATIONS IN UNDERDRAIN PIPE SHALL BE ORIENTED DOWN.
3. INSTALL STONE DRIP EDGE IN A LOCATIONS SUBJECT TO ROOF RUNOFF. WIDTH SHALL BE A MIN. 12" BEYOND THE PROJECTION OF THE ROOF EVE.
4. FOUNDATION WALL FOOTINGS SHALL BE CONSTRUCTED TO A MIN. DEPTH OF 4 FT BELOW ADJACENT FINISH GRADE. REFER TO STRUCTURAL ENGINEERS PLANS FOR ADDITIONAL INFORMATION AND MIN. REQUIREMENTS.



FOUNDATION DRAIN DETAIL
NOT TO SCALE

NOTES:

1. REFER TO THE GRADING AND DRAINAGE PLANS FOR ADDITIONAL INFORMATION



CLEANOUT DETAIL
NOT TO SCALE

PERMIT LEVEL
NOT ISSUED FOR CONSTRUCTION

ISSUED FOR	BY	DATE
SCHEMATIC DESIGN/ISSUE FOR BUDGET ESTIMATE	SJL	1/8/21
MAJOR SITE PLAN	SJL	2/22/21
COMMENT RESPONSE	SJL	10/23/21
FINAL SITE PLAN	SJL	12/03/21

DRAWING NAME: DRAINAGE DETAILS

PROJECT NAME/ADDRESS: 30–32 ATLANTIC STREET DEVELOPMENT

CLIENT/OWNER OF RECORD: KESTREL LLC. 72 PINE STREET SUITE #16, PORTLAND, MAINE 04102

ACORN ENGINEERING, INC.
ENGINEERING, INC.
PO BOX 3422, PORTLAND, MAINE 04101
207 775-2655

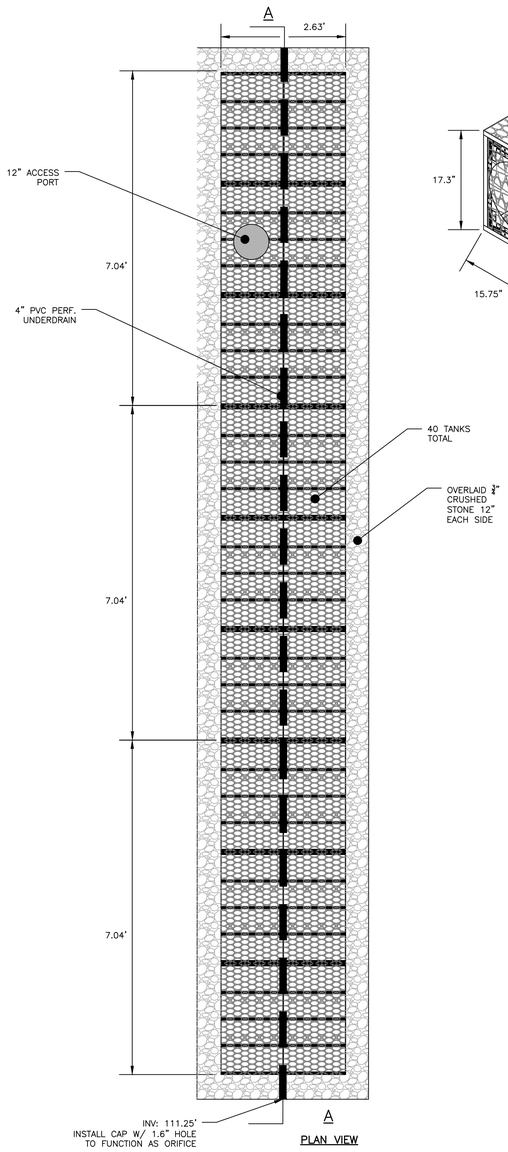
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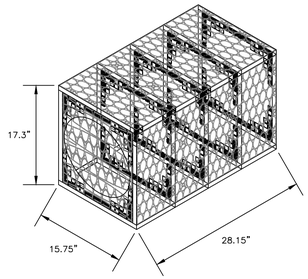


DRAWING NO.

C-45



PLAN VIEW

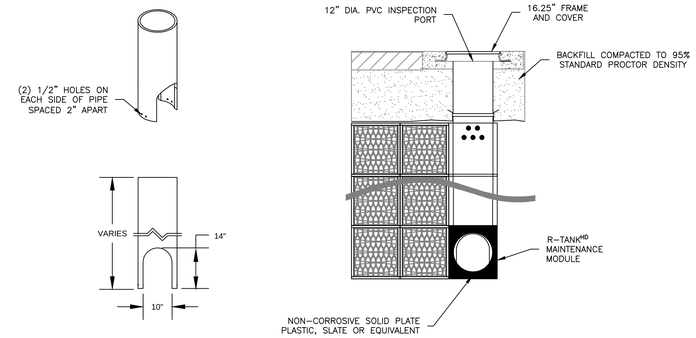


ISOMETRIC VIEW

R–TANK MODULE DETAIL

NOT TO SCALE

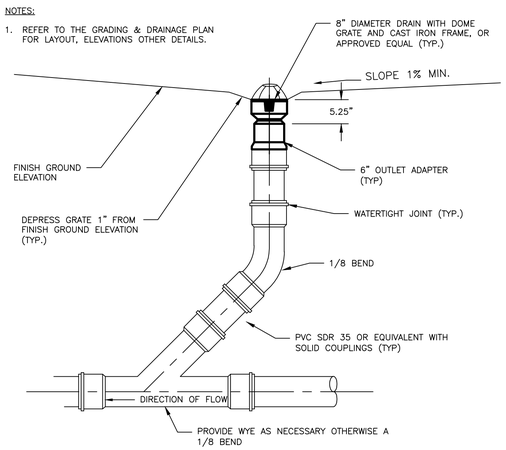
NOTES
1. THE INSPECTION PORT IS USED IN THE MAINTENANCE MODULE TO INSPECT THE LEVEL OF SEDIMENT ACCUMULATION.
2. MINIMUM REQUIRED MAINTENANCE INCLUDES A QUARTERLY INSPECTION DURING THE FIRST YEAR OF OPERATION AND A YEARLY INSPECTION THEREAFTER. FLUSH MAINTENANCE ROW VIA THE ACCESS STRUCTURE FROM EITHER END AS NEEDED.



ACCESS PORT WITH SOLID COVER

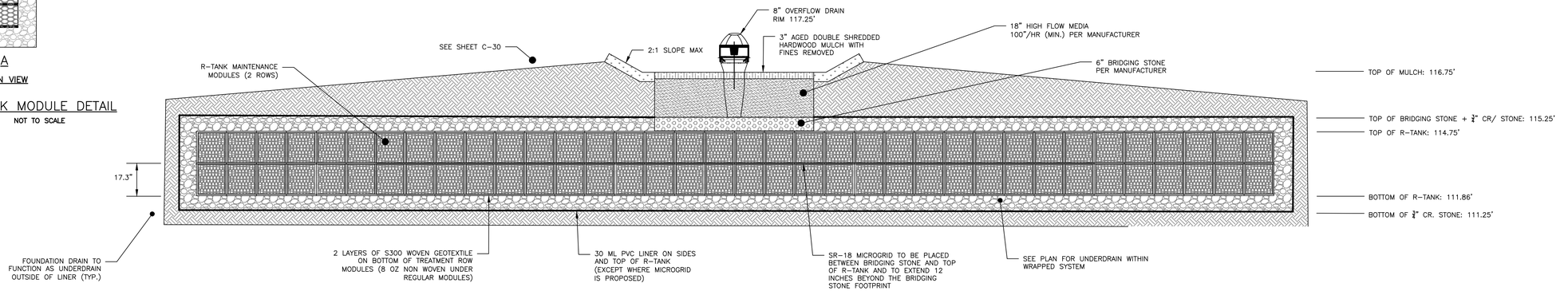
NOT TO SCALE

NOTES:
1. REFER TO THE GRADING & DRAINAGE PLAN FOR LAYOUT, ELEVATIONS OTHER DETAILS.



OVERFLOW BEEHIVE DRAIN

NOT TO SCALE



SECTION A–A

FOCAL POINT RAIN GARDEN WITH R–TANK TREATMENT ROW

NOT TO SCALE

PERMIT LEVEL
NOT ISSUED FOR CONSTRUCTION

ISSUED FOR	BY DATE
SCHEMATIC DESIGN/ISSUE FOR BUDGET ESTIMATE	SJL 1/8/21
MAJOR SITE PLAN	SJL 2/22/21
COMMENT RESPONSE	SJL 10/23/21
FINAL SITE PLAN	SJL 12/03/21

DRAWING NAME: FOCAL POINT DETAIL

PROJECT NAME/ADDRESS: 30–32 ATLANTIC STREET DEVELOPMENT

CLIENT/OWNER OF RECORD: KESTREL LLC. 72 PINE STREET SUITE #16, PORTLAND, MAINE 04102

ACORN ENGINEERING, INC.

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ACORN ENGINEERING, INC.
FREEPORT, MAINE 04101
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(207) 775–2655

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DESIGNED BY:	SJL
DRAWN BY:	ZMS
CHECKED BY:	SJL/WHS

STATE OF MAINE — SAMUEL J. LEBEL — No. 16505 — REGISTERED PROFESSIONAL ENGINEER — LICENSED — 12/3/21

DRAWING NO.

C-46

1.0 EROSION CONTROL MEASURES AND SITE STABILIZATION

AS PART OF THE SITE DEVELOPMENT, THE FOLLOWING TEMPORARY AND PERMANENT EROSION AND SEDIMENTATION CONTROL DEVICES SHALL BE IMPLEMENTED. DEVICES SHALL BE INSTALLED AS DESCRIBED IN THIS REPORT OR WITHIN THE PLAN SET. SEE THE MAINE EROSION AND SEDIMENT CONTROL HANDBOOK FOR CONSTRUCTION: BEST MANAGEMENT PRACTICES FOR FURTHER REFERENCE.

1.1 TEMPORARY EROSION CONTROL MEASURES

THE FOLLOWING TEMPORARY EROSION AND SEDIMENTATION CONTROL MEASURES ARE PLANNED FOR THE PROJECT'S CONSTRUCTION PERIOD:

1.1.1 CRUSHED STONE STABILIZED CONSTRUCTION ENTRANCES SHALL BE PLACED AT ALL ACCESS POINTS TO THE PROJECT SITE WHERE THERE ARE DISTURBED AREAS. THE FOLLOWING SPECIFICATIONS SHALL BE FOLLOWED AT A MINIMUM:
- STONE SIZE SHALL BE 2–3 INCHES, OR RECLAIMED OR RECYCLED CONCRETE EQUIVALENT.
- THE THICKNESS OF THE ENTRANCE STONE LAYER SHALL BE NO LESS THAN 6 INCHES.
- THE ENTRANCE SHALL NOT BE LESS THAN 20 FEET WIDE, HOWEVER NOT LESS THAN THE FULL WIDTH OF POINTS WHERE INGRESS OR EGRESS OCCURS. THE LENGTH SHALL NOT BE LESS THAN 50 FEET IN LENGTH.
- GEOTEXTILE FABRIC (WOVEN OR NON–WOVEN) SHALL BE PLACED OVER THE ENTIRE ENTRANCE AREA.
- THE ENTRANCE/EXIT SHALL BE MAINTAINED TO THE EXTENT THAT IT WILL PREVENT THE TRACKING OF SEDIMENT ONTO PUBLIC ROAD WAYS.

1.1.2 SILTATION FENCE OR EROSION CONTROL BERM SHALL BE INSTALLED DOWN GRADIENT OF ANY DISTURBED AREAS TO TRAP RUNOFF BORNE SEDIMENTS UNTIL PERMANENT STABILIZATION IS ACHIEVED. THE SILT FENCE OR EROSION CONTROL BERM SHALL BE INSTALLED PER THE DETAILS PROVIDED IN THE PLAN SET AND INSPECTED BEFORE AND IMMEDIATELY AFTER EACH RAINFALL AND AT LEAST DAILY DURING PROLONGED RAINFALL. REPAIRS SHALL BE MADE IF THERE ARE ANY SIGNS OF EROSION OR SEDIMENTATION BELOW THE FENCE LINE OR BERM. IF THERE ARE SIGNS OF UNDERCUTTING AT THE CENTER OR THE EDGES, OR IMPOUNDING OF LARGE VOLUMES OF WATER BEHIND THE FENCE OR BERM, THE BARRIER SHALL BE REPLACED WITH A STONE CHECK DAM.

1.1.3 HAY MULCH INCLUDING HYDRO SEEDING IS INTENDED TO PROVIDE COVER FOR DENUDED OR SEEDED AREAS UNTIL REVEGETATION IS ESTABLISHED. MULCH PLACED BETWEEN APRIL 15TH AND NOVEMBER 1ST ON SLOPES OF LESS THAN 15 PERCENT SHALL BE COVERED BY FABRIC NETTING AND ANCHORED WITH STAPLES IN ACCORDANCE WITH THE MANUFACTURER'S RECOMMENDATION. MULCH PLACED BETWEEN NOVEMBER 1ST AND APRIL 15TH ON SLOPES EQUAL TO OR STEEPER THAN 8 PERCENT AND EQUAL TO OR FLATTER THAN 2:1 SHALL USE MATS OR FABRIC NETTING AND ANCHORED WITH STAPLES IN ACCORDANCE WITH THE MANUFACTURER'S RECOMMENDATION.

1.1.4 AT ANY TIME OF THE YEAR, ALL SLOPES GREATER THAN 3:1 SHALL BE STABILIZED WITH DOUBLE NET EROSION CONTROL BLANKET BIONET SC150BN BY NORTH AMERICAN GREEN OR APPROVED EQUAL, OR EROSION CONTROL MIX SLOPE PROTECTION AS DETAILED WITHIN THE PLANS.

1.1.5 ATLANTIC STREET SHALL BE SWEPT TO CONTROL MUD AND DUST FROM THE CONSTRUCTION SITE AS NECESSARY. ADD ADDITIONAL STONE TO THE STABILIZED CONSTRUCTION ENTRANCE TO MINIMIZE THE TRACKING OF MATERIAL OFF THE SITE AND ONTO THE SURROUNDING ROADWAYS.

1.1.6 DURING DEMOLITION, CLEARING AND GRUBBING OPERATIONS, STONE CHECK DAMS SHALL BE INSTALLED AT ANY AREAS OF CONCENTRATED FLOW. THE MAXIMUM HEIGHT OF THE CHECK DAM SHALL NOT EXCEED 2 FEET. THE CENTER OF THE CHECK DAM SHALL BE 6 INCHES BELOW THE OUTER EDGES OF THE DAM. THE CONTRACTOR SHALL MULCH THE SIDE SLOPES AND INSTALL STONE CHECK DAMS FOR ALL NEWLY EXCAVATED DITCH LINES WITHIN 24 HOURS OF THEIR CREATION.

1.1.7 SILT FENCE STAKE SPACING SHALL NOT EXCEED 6 FEET UNLESS THE FENCE IS SUPPORTED WITH 14 GAUGE WIRE IN WHICH CASE THE MAXIMUM SPACING SHALL NOT EXCEED 10 FEET. THE SILT FENCE SHALL BE "TOED" INTO THE GROUND.

1.1.8 STORMDRAIN INLET PROTECTION SHALL BE PROVIDED TO STORMDRAINS THROUGH THE USE OF ANY OF THE FOLLOWING: HAY BALE DROP INLET STRUCTURES, SILT FENCE DROP INLET SEDIMENT FILTER, GRAVEL AND WIRE MESH DROP INLET SEDIMENT FILTER, OR CURB INLET SEDIMENT FILTER. BARRIERS SHALL BE INSPECTED AFTER EVERY RAINFALL EVENT AND REPAIRED AS NECESSARY. SEDIMENTS SHALL BE REMOVED WHEN ACCUMULATION HAS REACHED ½ THE DESIGN HEIGHT.

1.1.9 DUST CONTROL SHALL BE ACCOMPLISHED BY THE USE OF ANY OF THE FOLLOWING: WATER, CALCIUM CHLORIDE, STONE, OR AN APPROVED MDEP PRODUCT. DUST CONTROL SHALL BE APPLIED AS NEEDED TO ACCOMPLISH DUST CONTROL.

1.1.10 TEMPORARY LOAM, SEED, AND MULCHING SHALL BE USED IN AREAS WHERE NO OTHER EROSION CONTROL MEASURE IS USED. APPLICATION RATES FOR SEEDING ARE PROVIDED AT THE END OF THIS REPORT.

1.1.11 STOCKPILES SHALL BE STABILIZED WITHIN 7 DAYS OF FORMATION UNLESS A SCHEDULED RAIN EVENT OCCURS PRIOR TO THE 7 DAY WINDOW, IN WHICH CASE THE STOCKPILE SHALL BE STABILIZED PRIOR TO THE RAIN EVENT. METHODS OF STABILIZATION SHALL BE MULCH, EROSION CONTROL MIX, OR EROSION CONTROL BLANKETS/MATS. SILT FENCE OR A WOOD WASTE COMPOST FILTER BERM SHALL BE PLACED DOWNHILL OF ANY SOIL STOCKPILE LOCATION.

1.1.12 FOR DISTURBANCE BETWEEN NOVEMBER 1 AND APRIL 15, PLEASE REFER TO WINTER STABILIZATION PLAN IN THIS REPORT AND THE MAINE EROSION AND SEDIMENT CONTROL BMP MANUAL FOR FURTHER INFORMATION.

1.1.13 IT IS OF THE UTMOST IMPORTANCE THAT STORMWATER RUNOFF AND POTENTIAL SEDIMENT FROM THE CONSTRUCTION SITE BE DIVERTED AROUND THE PROPOSED UNDERDRAINS UNTIL THE TRENCH IS BACKFILLED.

1.2 PERMANENT EROSION CONTROL MEASURES

THE FOLLOWING PERMANENT EROSION CONTROL MEASURES ARE INTENDED FOR POST DISTURBANCE AREAS OF THE PROJECT.

1.2.1 ALL DISTURBED AREAS DURING CONSTRUCTION, NOT SUBJECT TO OTHER PROPOSED CONDITIONS, SHALL RECEIVE A MINIMUM 4" OF LOAM, LIMED, AND MULCHED. EROSION CONTROL BLANKETS OR MATS SHALL BE PLACED OVER THE MULCH IN AREAS NOTED IN PARAGRAPH 4.1 OF THIS REPORT.

1.2.2 ALL STORMWATER DEVICES SHALL BE INSTALLED AND TRIBUTARY AREAS STABILIZED PRIOR RECEIVING STORMWATER.

1.2.3 REFER TO THE MAINE EROSION AND SEDIMENT CONTROL BMP MANUAL FOR ADDITIONAL INFORMATION.

2.0 EROSION AND SEDIMENTATION CONTROL PLAN

2.1 THE EROSION AND SEDIMENTATION CONTROL PLAN IS INCLUDED WITHIN THE PLAN SET.

3.0 DETAILS AND SPECIFICATIONS

3.1 EROSION CONTROL DETAILS AND SPECIFICATIONS ARE INCLUDED IN THE PLAN SET.

4.0 STABILIZATION PLAN FOR WINTER CONSTRUCTION

WINTER CONSTRUCTION CONSISTS OF EARTHWORK DISTURBANCE BETWEEN THE DATES OF NOVEMBER 1 AND APRIL 15. IF A CONSTRUCTION SITE IS NOT STABILIZED WITH PAVEMENT, A ROAD GRAVEL BASE, 75% MATURE VEGETATION COVER OR RIPRAP BY NOVEMBER 15, THEN THE SITE SHALL BE PROTECTED WITH OVER–WINTER STABILIZATION. ANY AREA NOT STABILIZED WITH PAVEMENT, VEGETATION, MULCHING, EROSION CONTROL MIX, EROSION CONTROL MATS, RIPRAP, OR GRAVEL BASE ON A ROAD SHALL BE CONSIDERED OPEN.

THE CONTRACTOR SHALL LIMIT THE WORK AREA TO AREAS THAT WORK WILL OCCUR IN DURING THE SUBSEQUENT 15 DAYS AND SO THAT IT CAN BE MULCHED ONE DAY PRIOR TO A SNOW EVENT. THE CONTRACTOR SHALL STABILIZE WORK AREAS PRIOR TO OPENING ADDITIONAL WORK AREAS TO MINIMIZE AREAS WITHOUT EROSION CONTROL MEASURES.

THE FOLLOWING MEASURES SHALL BE IMPLEMENTED DURING WINTER CONSTRUCTION PERIODS:

4.1 SEDIMENT BARRIERS

DURING FROZEN CONDITIONS, SEDIMENT BARRIERS MAY CONSIST OF EROSION CONTROL MIX BERMS OR ANY OTHER RECOGNIZED SEDIMENT BARRIERS AS FROZEN SOIL PREVENTS THE PROPER INSTALLATION OF HAY BALES OR SILT FENCES.

4.2 MULCHING

ALL AREAS SHALL BE CONSIDERED TO BE DENUDED UNTIL SEEDED AND MULCHED. HAY AND STRAW MULCH SHALL BE APPLIED AT A RATE OF 150 LB. PER 1,000 SQUARE FEET OR 3 TONS/ACRE (TWICE THE NORMAL ACCEPTED RATE OF 75–LBS./1,000 S.F. OR 1.5 TONS/ACRE) AND SHALL BE PROPERLY ANCHORED. EROSION CONTROL MIX MUST BE APPLIED WITH A MINIMUM 4 INCH THICKNESS. MULCH SHALL NOT BE SPREAD ON TOP OF SNOW. THE SNOW SHALL BE REMOVED DOWN TO A ONE–INCH DEPTH OR LESS PRIOR TO APPLICATION. AFTER EACH DAY OF FINAL GRADING, THE AREA SHALL BE PROPERLY STABILIZED WITH ANCHORED HAY OR STRAW OR EROSION CONTROL MATTING. AN AREA SHALL BE CONSIDERED TO HAVE BEEN STABILIZED WHEN EXPOSED SURFACES HAVE BEEN EITHER MULCHED OR ADEQUATELY ANCHORED SO THAT GROUND SURFACE IS NOT VISIBLE THROUGH THE MULCH. BETWEEN THE DATES OF NOVEMBER 1 AND APRIL 15, ALL MULCH SHALL BE ANCHORED BY EITHER MULCH NETTING, TRACKING OR WOOD CELLULOSE FIBER. THE COVER WILL BE CONSIDERED SUFFICIENT WHEN THE GROUND SURFACE IS NOT VISIBLE THROUGH THE MULCH. AFTER NOVEMBER 1ST, MULCH AND ANCHORING OF ALL EXPOSED SOIL SHALL OCCUR AT THE END OF EACH FINAL GRADING WORKDAY.

4.3 SOIL STOCKPILING

STOCKPILES OF SOIL OR SUBSOIL SHALL BE MULCHED FOR OVER WINTER PROTECTION WITH HAY OR STRAW AT TWICE THE NORMAL RATE OR WITH A FOUR–INCH LAYER OF EROSION CONTROL MIX. THIS SHALL BE DONE WITHIN 24 HOURS OF STOCKING AND RE–ESTABLISHED PRIOR TO ANY RAINFALL OR SNOWFALL.

4.4 SEEDING

BETWEEN THE DATES OF OCTOBER 15TH AND APRIL 1ST, LOAM OR SEED SHALL NOT BE REQUIRED. DURING PERIODS OF ABOVE FREEZING TEMPERATURES FINISHED AREAS SHALL BE FINE GRADED AND EITHER PROTECTED WITH MULCH OR TEMPORARILY SEEDED AND MULCHED UNTIL SUCH TIME AS THE FINAL TREATMENT CAN BE APPLIED. IF THE DATE IS AFTER NOVEMBER 1ST AND IF THE EXPOSED AREA HAS NOT BEEN LOAMED, FINAL GRADING WITH A UNIFORM SURFACE, THEN THE AREA MAY BE DORMANT SEEDED AT A RATE OF 3 TIMES HIGHER THAN SPECIFIED FOR PERMANENT SEED AND THEN MULCHED.

DORMANT SEEDING MAY BE PLACED PRIOR TO THE PLACEMENT OF MULCH OR EROSION CONTROL BLANKETS. IF DORMANT SEEDING IS USED FOR THE SITE, ALL DISTURBED AREAS SHALL RECEIVE 4" OF LOAM AND SEED AT AN APPLICATION RATE OF 5 LBS/1,000 S.F. ALL AREAS SEEDED DURING THE WINTER SHALL BE INSPECTED IN THE SPRING FOR ADEQUATE CATCH. ALL AREAS INSUFFICIENTLY VEGETATED (LESS THAN 75% CATCH) SHALL BE REVEGETATED BY REPLACING LOAM, SEED AND MULCH. IF DORMANT SEEDING IS NOT USED FOR THE SITE, ALL DISTURBED AREAS SHALL BE REVEGETATED IN THE SPRING.

4.5 OVER WINTER STABILIZATION OF DISTURBED SOILS

BY SEPTEMBER 15TH, ALL DISTURBED SOILS ON AREAS HAVING A SLOPE LESS THAN 15% SHALL BE SEEDED AND MULCHED. IF THE DISTURBED AREAS ARE NOT STABILIZED BY THIS DATE, THEN ONE OF THE FOLLOWING ACTIONS SHALL BE TAKEN TO STABILIZE THE SOIL FOR LATE FALL AND WINTER:

- STABILIZE THE SOIL WITH TEMPORARY VEGETATION – BY OCTOBER 1ST, SEED THE DISTURBED SOIL WITH WINTER RYE AT A SEEDING RATE OF 3LBS PER 1,000 S.F., LIGHTLY MULCH THE SEEDED SOIL WITH HAY OR STRAW AT 75 LBS PER 1,000 S.F., AND ANCHOR THE MULCH WITH PLASTIC NETTING. MONITOR GROWTH OF THE RYE OVER THE NEXT 30 DAYS. IF THE RYE FAILS TO GROW AT LEAST THREE INCHES OR FAILS TO COVER AT LEAST 75% OF THE DISTURBED SOIL BEFORE NOVEMBER 1ST, THEN MULCH THE AREA FOR OVER–WINTER PROTECTION.
- STABILIZE THE SOIL WITH SOD – STABILIZE THE DISTURBED SOIL WITH PROPERLY INSTALLED SOD BY OCTOBER 1ST. PROPER INSTALLATION INCLUDES PINNING THE SOD ONTO THE SOIL WITH WIRE PINS, ROLLING THE SOD TO GUARANTEE CONTACT BETWEEN THE SOD AND UNDERLYING SOIL, AND WATERING THE SOD TO PROMOTE ROOT GROWTH INTO THE DISTURBED SOIL.
- STABILIZE THE SOIL WITH MULCH – BY NOVEMBER 15TH, MULCH THE DISTURBED SOIL BY SPREADING HAY OR STRAW AT A RATE OF AT LEAST 150 LBS PER 1,000 S.F. ON THE AREA SO THAT NO SOIL IS VISIBLE THROUGH THE MULCH. IMMEDIATELY AFTER APPLYING THE MULCH, ANCHOR THE MULCH WITH PLASTIC NETTING TO PREVENT WIND FROM MOVING THE MULCH OFF THE DISTURBED SOIL.

4.6 OVER WINTER STABILIZATION OF DISTURBED SLOPES

ALL STONE–COVERED SLOPES SHALL BE CONSTRUCTED AND STABILIZED BY NOVEMBER 15TH. ALL SLOPES TO BE VEGETATED SHALL BE SEEDED AND MULCHED BY SEPTEMBER 1ST. A SLOPE IS CONSIDERED A GRADE GREATER THAN 15%. IF A SLOPE TO BE VEGETATED IS NOT STABILIZED BY SEPTEMBER 1ST, THEN ONE OF THE FOLLOWING ACTION SHALL BE TAKEN TO STABILIZE THE SLOPE FOR LATE FALL AND WINTER:

- STABILIZE THE SOIL WITH TEMPORARY VEGETATION AND EROSION CONTROL MATS – BY OCTOBER 1ST THE DISTURBED SLOPE SHALL BE SEEDED WITH WINTER RYE AT A SEEDING RATE OF 3 LBS PER 1,000 S.F. AND THEN INSTALL EROSION CONTROL MATS OR ANCHORED MULCH OVER THE SEEDING. IF THE RYE FAILS TO GROW AT LEAST THREE INCHES OR FAILS TO COVER AT LEAST 75% F THE SLOPE BY NOVEMBER 1ST, THEN THE CONTRACTOR SHALL COVER THE SLOPE WITH A LAYER OF EROSION CONTROL MIX OR WITH STONE RIPRAP.
- STABILIZE THE SOIL WITH SOD – THE DISTURBED SLOPE SHALL BE STABILIZED WITH PROPERLY INSTALLED SOD BY OCTOBER 1ST. PROPER INSTALLATION INCLUDES THE CONTRACTOR PINNING THE SOD ONTO THE SLOPE WITH WIRE PINS, ROLLING THE SOD TO GUARANTEE CONTACT BETWEEN THE SOD AND UNDERLYING SOIL, AND WATERING THE SOD TO PROMOTE ROOT GROWTH INTO THE DISTURBED SOIL. THE CONTRACTOR SHALL NOT USE LATE–SEASON SOD INSTALLATION TO STABILIZE SLOPES HAVING A GRADE GREATER THAN 3H:1V OR HAVING GROUNDWATER SEEPS ON THE SLOPE FACE.
- STABILIZE THE SOIL WITH EROSION CONTROL MIX – EROSION CONTROL MIX SHALL BE PROPERLY INSTALLED BY NOVEMBER 15TH. THE CONTRACTOR SHALL NOT USE EROSION CONTROL MIX TO STABILIZE SLOPES HAVING GRADES GREATER THAN 2H:1V OR HAVING GROUNDWATER SEEPS ON THE SLOPE FACE.
- STABILIZE THE SOIL WITH STONE RIPRAP – PLACE A LAYER OF STONE RIPRAP ON THE SLOPE BY NOVEMBER 15TH. A REGISTERED PROFESSIONAL ENGINEER SHALL BE HIRED TO DETERMINE THE STONE SIZE NEEDED FOR STABILITY ON THE SLOPE AND TO DESIGN A FILTER LAYER FOR UNDERNEATH THE RIPRAP.

5.0 INSPECTION AND MAINTENANCE

A PERSON WITH KNOWLEDGE OF EROSION AND STORMWATER CONTROL, INCLUDING THE STANDARDS AND CONDITIONS IN THE PERMIT, SHALL CONDUCT PERIODIC VISUAL INSPECTIONS OF INSTALLED EROSION CONTROL MEASURES. THE FREQUENCY OF INSPECTION SHALL OCCUR AT LEAST ONCE EVERY TWO WEEKS, AS WELL AS AFTER A "STORM EVENT". A "STORM EVENT" SHALL CONSIST 0.5 INCHES OF RAIN WITHIN A 24 HOUR PERIOD. THE FOLLOWING EROSION AND SEDIMENT CONTROL – BEST MANAGEMENT PRACTICES (BMP'S) SHALL INSPECTED IN THE MANNER AS DESCRIBED.

5.1 SEDIMENT BARRIERS

HAY BALE BARRIERS, SILT FENCES AND FILTER BERMS SHALL BE INSPECTED AND REPAIRED FOR THE FOLLOWING IF THERE ARE ANY SIGNS OF EROSION OR SEDIMENTATION BELOW THEM. IF THERE ARE SIGNS OF UNDERCUTTING AT THE CENTER OR THE EDGES OF THE BARRIER, OR IMPOUNDING OF LARGE VOLUMES OF WATER BEHIND THEM, SEDIMENT BARRIERS SHALL BE REPLACED WITH A TEMPORARY CHECK DAM. SHOULD THE FABRIC ON A SILT FENCE OR FILTER BARRIER DECOMPOSE OR BECOME INEFFECTIVE PRIOR TO THE END OF THE EXPECTED USABLE LIFE AND THE BARRIER IS STILL NECESSARY, THE FABRIC SHALL BE REPLACED PROMPTLY. SEDIMENT DEPOSITS SHOULD BE REMOVED WHEN DEPOSITS REACH APPROXIMATELY ONE–HALF THE HEIGHT OF THE BARRIER. FILTER BERMS SHOULD BE RESHAPED AS NEEDED. ANY SEDIMENT DEPOSITS REMAINING IN PLACE AFTER THE SILT FENCE OR FILTER BARRIER IS NO LONGER REQUIRED SHOULD BE DRESSED TO CONFORM TO THE EXISTING GRADE, PREPARED AND SEEDED.

5.2 STABILIZED STONE CONSTRUCTION ENTRANCES

THE EXIT SHALL BE MAINTAINED IN A CONDITION THAT WILL PREVENT TRACKING OF SEDIMENT ONTO PUBLIC RIGHTS–OF–WAY. WHEN THE CONTROL PAD BECOMES INEFFECTIVE, THE STONE SHALL BE REMOVED ALONG WITH THE COLLECTED SOIL MATERIAL AND REDISTRIBUTED ON SITE IN A STABLE MANNER. THE ENTRANCE SHOULD THEN BE RECONSTRUCTED. THE CONTRACTOR SHALL SWEEP OR WASH PAVEMENT AT EXITS, WHICH HAVE EXPERIENCED MUD–TRACKING ON TO THE PAVEMENT OR TRAVELED WAY. WHEN WASHING IS REQUIRED, IT SHALL BE DONE ON AN AREA STABILIZED WITH AGGREGATE, WHICH DRAINS INTO AN APPROVED SEDIMENT TRAPPING DEVICE. ALL SEDIMENT SHALL BE PREVENTED FROM ENTERING STORM DRAINS, DITCHES, OR WATERWAYS.

5.3 MULCHED AREAS

ALL MULCHES MUST BE INSPECTED PERIODICALLY, IN PARTICULAR AFTER RAINSTORMS, TO CHECK FOR RILL EROSION. IF LESS THAN 90% OF THE SOIL SURFACE IS COVERED BY MULCH, ADDITIONAL MULCH SHALL BE IMMEDIATELY APPLIED. NETS MUST BE INSPECTED AFTER RAIN EVENTS FOR DISLOCATION OR FAILURE. IF WASHOUTS OR BREAKAGE OCCUR, RE–INSTALL THE NETS AS NECESSARY AFTER REPAIRING DAMAGE TO THE SLOPE. WHERE MULCH IS USED IN CONJUNCTION WITH ORNAMENTAL PLANTINGS, INSPECT PERIODICALLY THROUGHOUT THE YEAR TO DETERMINE IF MULCH IS MAINTAINING COVERAGE OF THE SOIL SURFACE. REPAIR AS NEEDED.

5.4 DUST CONTROL

WHEN TEMPORARY DUST CONTROL MEASURES ARE USED, REPETITIVE TREATMENT SHALL BE APPLIED AS NEEDED TO ACCOMPLISH CONTROL.

5.5 STORMWATER APPURTENANCES

ALL UNDERDRAINS, STORM DRAINS, AND CATCH BASINS NEED TO BE OPERATING EFFECTIVELY AND FREE OF DEBRIS.

5.6 EROSION AND SEDIMENTATION CONTROL INSPECTIONS:

ACORN ENGINEERING HAS PERSONNEL QUALIFIED TO CONDUCT EROSION AND SEDIMENTATION CONTROL INSPECTIONS. FOR FURTHER INFORMATION CONTACT:

CONTACT: WILL SAVAGE, PE
TELEPHONE: (207) 775–2655

QUALIFICATIONS:

Ø MAINE PROFESSIONAL ENGINEERING LICENSE #11419
Ø MAINE DEP – CERTIFIED IN MAINTENANCE & INSPECTION OF STORMWATER BMP'S CERT #14
Ø CERTIFIED EROSION, SEDIMENT AND STORM WATER INSPECTOR (CESSWI) CERT #0293
Ø CERTIFIED PROFESSIONAL IN EROSION AND SEDIMENT CONTROL (CPESC) CERT. #4620

THE CONTRACTOR HAS SOLE RESPONSIBILITY FOR COMPLYING WITH THE EROSION AND SEDIMENTATION REPORT/PLAN, INCLUDING CONTROL OF FUGITIVE DUST. THE CONTRACTOR SHALL BE RESPONSIBLE FOR ANY MONETARY PENALTIES RESULTING FROM FAILURE TO COMPLY WITH THESE STANDARDS.

6.0 IMPLEMENTATION SCHEDULE

THE FOLLOWING IMPLEMENTATION SEQUENCE IS INTENDED TO MAXIMIZE THE EFFECTIVENESS OF THE ABOVE DESCRIBED EROSION CONTROL MEASURES. CONTRACTORS SHOULD AVOID OVEREXPOSING DISTURBED AREAS AND LIMIT THE AMOUNT OF STABILIZATION AREA.

1. INSTALL A STABILIZED CONSTRUCTION ENTRANCE IN ALL LOCATIONS WHERE CONSTRUCTION TRAFFIC WILL ENTER AND EXIT THE SITE.
2. INSTALL PERIMETER SILT FENCE OR EROSION CONTROL BERM.
3. INSTALL ALL OTHER EROSION CONTROL DEVICES AS NECESSARY THROUGHOUT THE REMAINDER OF THIS SCHEDULE.
4. COMMENCE INSTALLATION OF DRAINAGE INFRASTRUCTURE.
5. PRIORITIZE THE DOWNHILL RETAINING AND FOUNDATION WALLS TO CONTAIN RUNOFF WITHIN THE SITE WHILE PROVIDING AN ENGINEERED OUTLET WITH SILTATION BARRIER TO THE MUNICIPAL STORMWATER SYSTEM WITHIN ATLANTIC STREET.
6. COMMENCE EARTHWORK OPERATIONS, WALL AND FOUNDATION INSTALLATION.
7. COMMENCE INSTALLATION OF UTILITIES.
8. CONTINUE EARTHWORK AND GRADING TO SUBGRADE AS NECESSARY FOR CONSTRUCTION.
9. COMPLETE INSTALLATION OF DRAINAGE INFRASTRUCTURE, AS WELL AS OTHER UTILITY WORK.
10. COMPLETE REMAINING EARTHWORK OPERATIONS.
11. INSTALL SUB–BASE AND BASE GRAVELS IN PAVED AREAS.
12. INSTALL PAVING, CURBING AND BRICKWORK.
13. LOAM, LIME, FERTILIZE, SEED AND MULCH DISTURBED AREAS AND COMPLETE ALL LANDSCAPING.
14. ONCE THE SITE IS STABILIZED, 90% CATCH OF GRASS HAS BEEN OBTAINED, OR MULCHING OF LANDSCAPE AREAS IS COMPLETE REMOVE ALL TEMPORARY EROSION CONTROL MEASURES.
15. TOUCH UP AREAS WITHOUT A VIGOROUS CATCH OF GRASS WITH LOAM AND SEED.
16. COMPLETE SITE SIGNAGE AND STRIPING.
17. EXECUTE PROPER MAINTENANCE OF ALL TEMPORARY AND PERMANENT EROSION CONTROL MEASURES THROUGHOUT THE PROJECT.

THE ABOVE IMPLEMENTATION SEQUENCE SHOULD BE GENERALLY FOLLOWED BY THE SITE CONTRACTOR. HOWEVER, THE CONTRACTOR MAY CONSTRUCT SEVERAL ITEMS SIMULTANEOUSLY. THE CONTRACTOR SHALL SUBMIT TO THE OWNER A SCHEDULE OF THE COMPLETION OF THE WORK. IF THE CONTRACTOR IS TO COMMENCE THE CONSTRUCTION OF MORE THAN ONE ITEM ABOVE, THEY SHALL LIMIT THE AMOUNT OF EXPOSED AREAS TO THOSE AREAS IN WHICH WORK IS EXPECTED TO BE UNDERTAKEN DURING THE FOLLOWING 30 DAYS.

THE CONTRACTOR SHALL RE–VEGETATE DISTURBED AREAS AS RAPIDLY AS POSSIBLE. ALL AREAS SHALL BE PERMANENTLY STABILIZED WITHIN 7 DAYS OF FINAL GRADING OR BEFORE A STORM EVENT. THE CONTRACTOR SHALL INCORPORATE PLANNED INLETS AND DRAINAGE SYSTEMS AS EARLY AS POSSIBLE INTO THE CONSTRUCTION PHASE.

7.0 CONCLUSION

THE ABOVE EROSION CONTROL NARRATIVE IS INTENDED TO MINIMIZE THE DEVELOPMENT IMPACT BY IMPLEMENTING TEMPORARY AND PERMANENT EROSION CONTROL MEASURES. THE CONTRACTOR SHALL ALSO REFER TO THE MAINE EROSION AND SEDIMENT CONTROL BMP MANUAL FOR ADDITIONAL INFORMATION.

SEEDING PLAN

SITE PREPARATION

THE SEEDED AREAS SHALL BE FEASIBLY GRADED OUT TO PROVIDE THE USE OF EQUIPMENT FOR SEEDBED PREPARATION, SEEDING, MULCH APPLICATION, AND MULCH ANCHORING. IF NECESSARY, THE SITE MAY REQUIRE ADDITIONAL TEMPORARY EROSION CONTROL MEASURES OUTLINED IN THE EROSION CONTROL REPORT.

SEEDBED PREPARATION

FERTILIZER SHALL BE APPLIED TO THE SITE AT A RATE OF 13.8 POUNDS PER 1,000 SQUARE FEET. THE COMPOSITION OF THE FERTILIZER SHALL BE 10–10–10 (N–P205–K20) OR EQUIVALENT.

LIMESTONE SHALL BE APPLIED TO THE SITE AT A RATE OF 138 POUNDS PER 1,000 SQUARE FEET.

SEEDING

THE COMPOSITION AND AMOUNT OF TEMPORARY SEED APPLIED TO A SITE SHALL BE DETERMINED BY THE FOLLOWING TABLE:

TEMPORARY SEED APPLICATION RATES

SEED	LBS / ACRE	RECOMMENDED SEEDING DATES
WINTER RYE	2.57	8/15 TO 10/1
OATS	1.84	4/1 TO 7/1 8/15 TO 9/15
ANNUAL RYGRASS	0.92	4/1 TO 7/1
SUDANGRASS	0.92	5/15 TO 8/15
PERENNIAL	0.92	8/15 TO 9/15
TOTAL	7.17 LBS/ACRE	

MULCHING

MULCH SHALL BE HARDWOOD AND APPLIED AT A RATE OF 70 LBS – 90 LBS PER 1,000 SQUARE FEET. THE MULCH SHALL BE INSTALLED AT A MINIMUM DEPTH OF 4 INCHES. THE SEEDED AREA SHALL BE MULCHED IMMEDIATELY AFTER SEED IS APPLIED. MULCHING DURING THE WINTER SEASON SHALL BE DOUBLE THE NORMAL AMOUNT. REFER TO DETAIL FOR MORE INFORMATION.

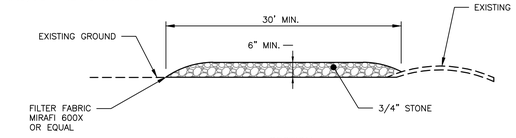
CONCLUSION

PLEASE REFER TO THE MAINE EROSION AND SEDIMENT CONTROL BMP MANUAL FOR ADDITIONAL INFORMATION PERTAINING TO TEMPORARY SEEDING AND MULCHING.

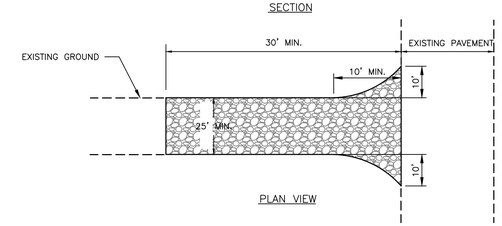
PRELIMINARY
NOT ISSUED FOR
CONSTRUCTION

NOTE:

CONTRACTOR SHALL ADD STONE TO ENTRANCE AS MUD/SILT MATERIAL ACCUMULATES

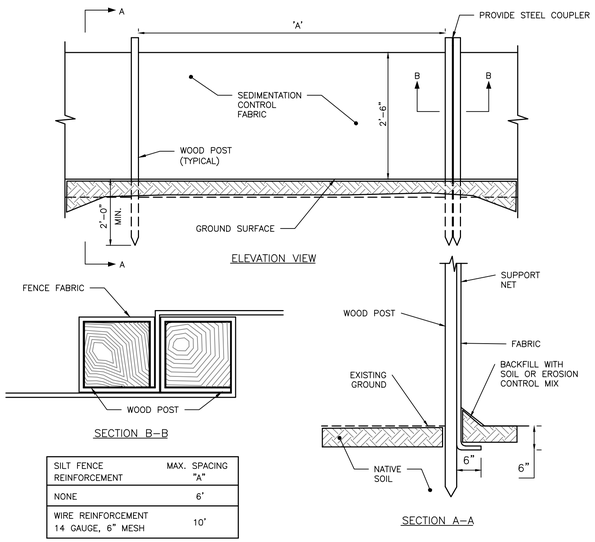


SECTION



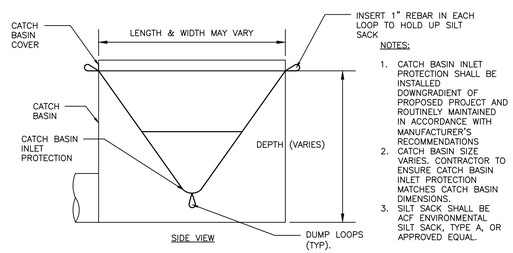
PLAN VIEW

STABILIZED CONSTRUCTION ENTRANCE
NOT TO SCALE



SILT FENCE REINFORCEMENT	MAX. SPACING "A"
NONE	6'
WIRE REINFORCEMENT 14 GAUGE, 6" MESH	10'

SILTATION FENCE DETAIL
NOT TO SCALE



NOTES:
1. CATCH BASIN INLET PROTECTION SHALL BE INSTALLED DOWNGRADIENT OF PROPOSED PROJECT AND ROUTINELY MAINTAINED IN ACCORDANCE WITH MANUFACTURER'S RECOMMENDATIONS
2. CATCH BASIN SIZE VARIES. CONTRACTOR TO ENSURE CATCH BASIN INLET PROTECTION MATCHES CATCH BASIN DIMENSIONS.
3. SILT SACK SHALL BE ACF ENVIRONMENTAL SILT SACK, TYPE A, OR APPROVED EQUAL.

CATCH BASIN INLET PROTECTION
NOT TO SCALE

ISSUED FOR	BY	DATE
SCHEMATIC DESIGN/ISSUE FOR BUDGET ESTIMATE	SJL	3/8/21
MAJOR SITE PLAN	SJL	9/23/21

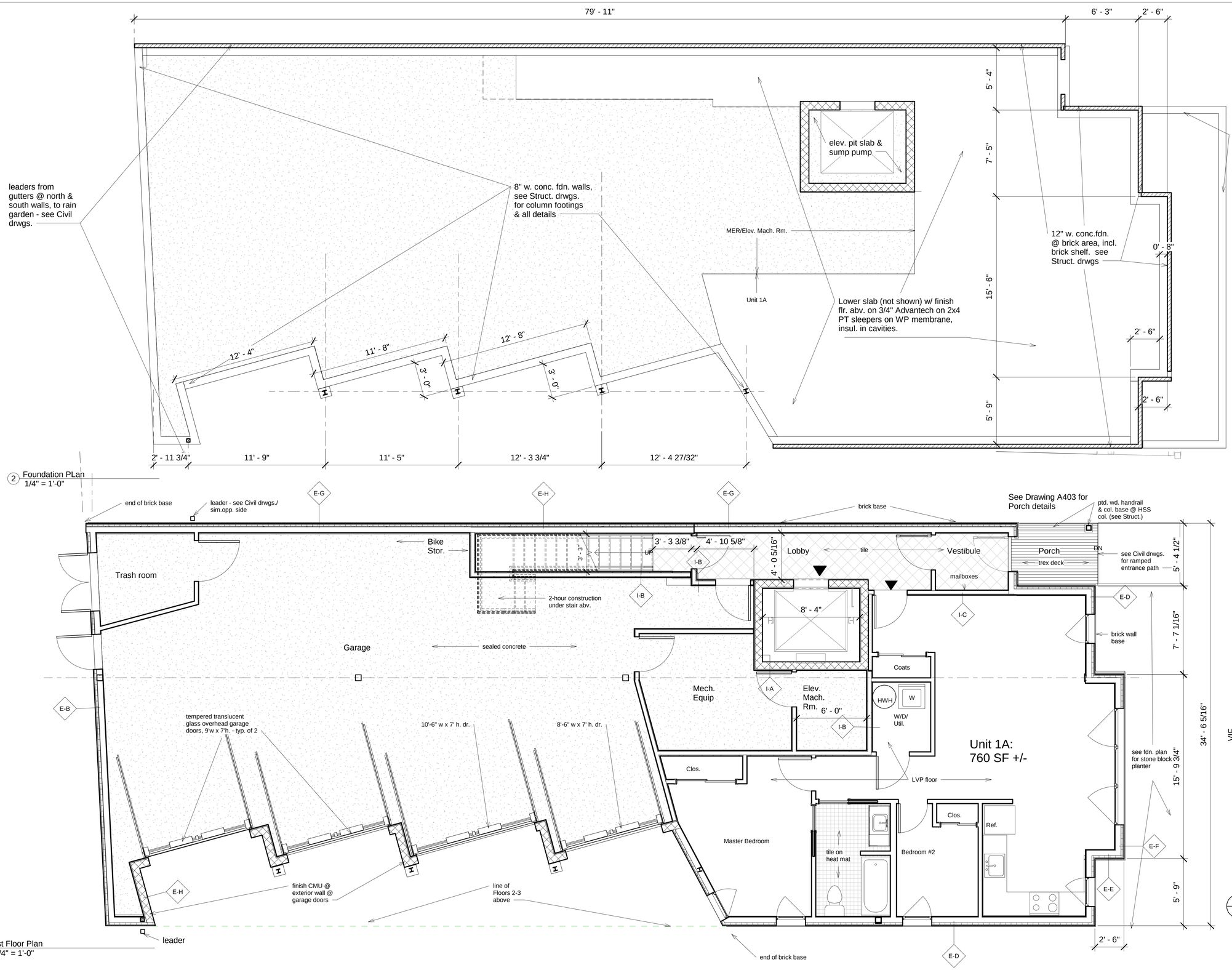
DRAWING NAME: EROSION & SEDIMENTATION CONTROL DETAILS & NOTES
PROJECT NAME/ADDRESS: 30–32 ATLANTIC STREET DEVELOPMENT
CLIENT/OWNER OF RECORD: KESTREL LLC. 72 PINE STREET SUITE #16, PORTLAND, MAINE 04102

ACORN ENGINEERING, INC.
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ACORN ENGINEERING, INC.
70 LAFAYETTE STREET, YARMOUTH, MAINE 04101
PO BOX 447 (207) 775–2655

STATE OF MAINE
SAMUEL J. LEBEL
No. 16505
LICENSED
PROFESSIONAL ENGINEER
9/18/21

FILE:	1109.5_DETAILS
JN:	1109.5
SCALE:	AS NOTED
DESIGNED BY:	SJL
DRAWN BY:	ZMS
CHECKED BY:	SJL/WHS

DRAWING NO.
C-47



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Attn: Will Savage, Sam Lebel

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Revision Schedule

Revision Number	Revision Description	Revision Date

Issued for Major Site Plan Application
May 15, 2020

Revised in response to Planning Board & Historic Preserervation Comments
Oct. 25, 2021

Issued Nov. 12, 2021 for Historic Preservation Public Hearing

Issued Dec. 03, 2021 for Final Site Plan

Kestral LLC

30-32 Atlantic Apartments

30-32 Atlantic Street

Portland, ME 04101

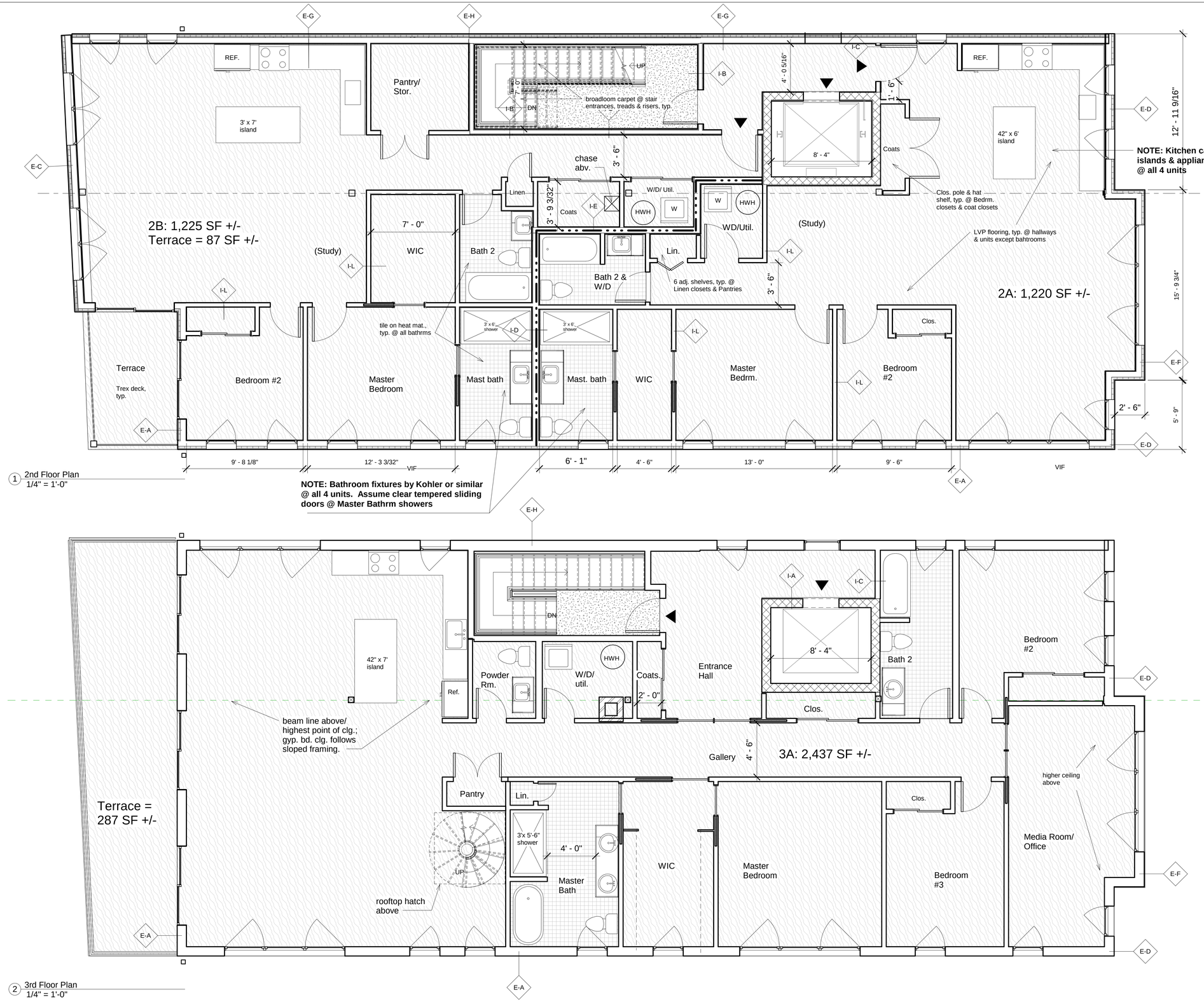
Foundation & First Floor Plans

Project number	Portland, ME 04101
Date	Issue Date
Drawn by	Author
Checked by	Checker

A201

Scale	1/4" = 1'-0"

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1 2nd Floor Plan
1/4" = 1'-0"

NOTE: Bathroom fixtures by Kohler or similar @ all 4 units. Assume clear tempered sliding doors @ Master Bathrm showers

2 3rd Floor Plan
1/4" = 1'-0"

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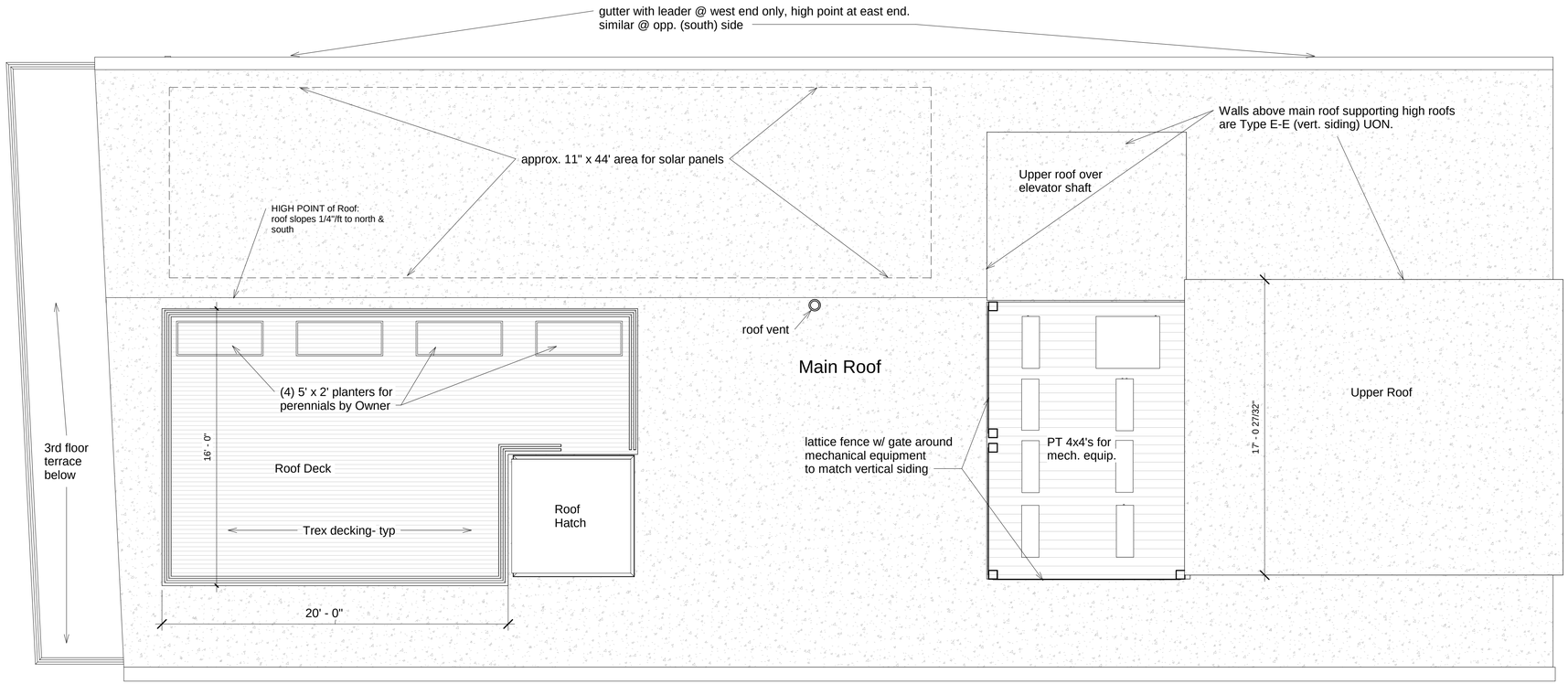
Second & Third Floor Plans

Project number	Portland, ME 04101
Date	Issue Date
Drawn by	Author
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A202

Scale 1/4" = 1'-0"

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1 Roof Plan
1/4" = 1'-0"

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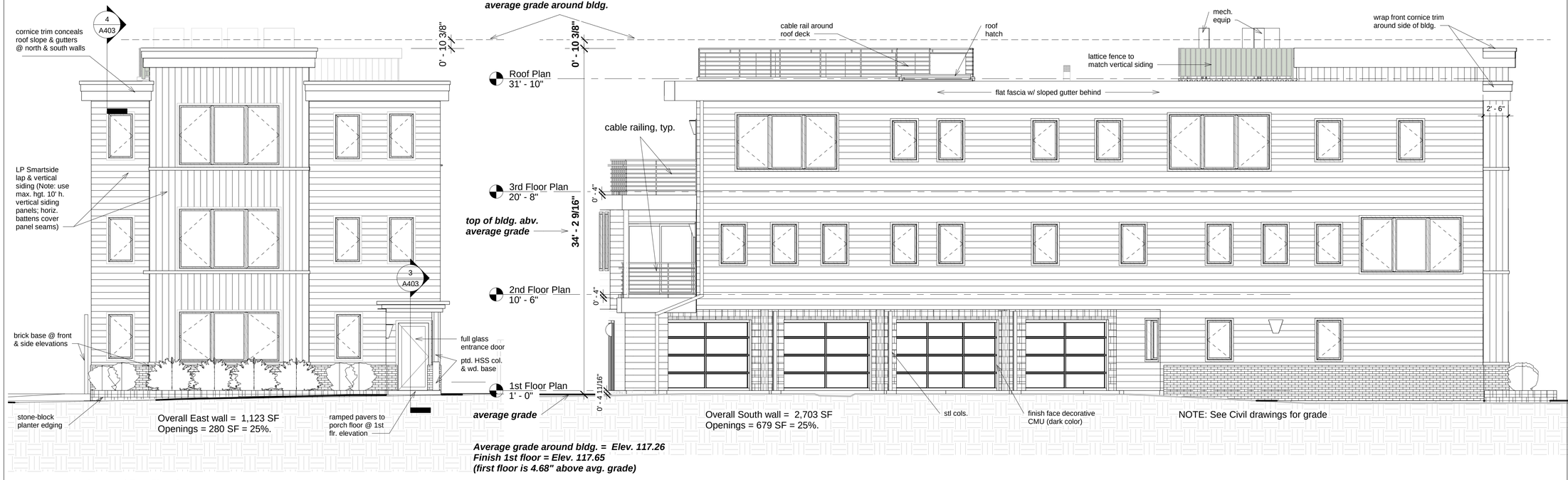
Roof Plan

Project number	Portland, ME 04101
Date	Issue Date
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30-32 Atlantic Street

Portland, ME 04101

Exterior Elevations

Project number	Portland, ME 04101
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Drawn by	Author
Checked by	Checker

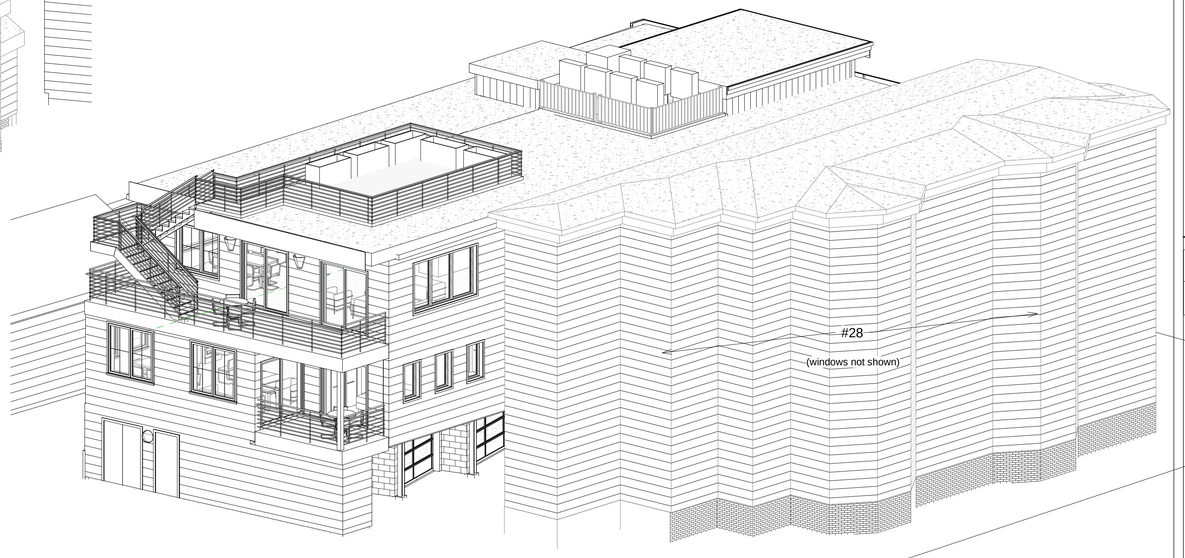
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1 3D Proposed from North_East



2 3D Proposed from South-West Copy 1

3 3D Proposed from South-East

4 3D View from "Up the Street"

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K. PARSON

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3D Views

Project number	Portland, ME 04101
Date	Issue Date
Drawn by	Author
Checked by	Checker

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SPACE AND BULK STANDARDS		
ZONING: R6 RESIDENTIAL & MUNJOY HILL NEIGHBORHOOD CONSERVATION OVERLAY DISTRICT	REQUIRED	PROPOSED
MINIMUM LOT SIZE	2000 SF	5235 SF
MINIMUM STREET FRONTAGE	20'	51'
MINIMUM FRONT YARD SETBACK	5'	5.25'
MINIMUM SIDE YARD SETBACK	5'	5.50'
MINIMUM REAR YARD SETBACK	10'	10.57'
MAXIMUM LOT COVERAGE	60%	57%
SIDE YARD STEPBACK	10'	N/A
REAR YARD STEPBACK	7.5'	N/A
MINIMUM LOT WIDTH	20'	51'
MAXIMUM BUILDING HEIGHT	35'	34.21'
MINIMUM LANDSCAPED OPEN AREA	20%	20%
MAX IMPERVIOUS AREA	80%	80%
MAXIMUM NUMBER OF DWELLING UNITS	725 SF/UNIT = 7 UNITS	4 UNITS
RESIDENTIAL PARKING	1 SPACE PER UNIT AFTER 3 UNITS = 1 SPACE	3 SPACES
MINIMUM INTERNAL RESIDENT BICYCLE STORAGE SPACES	2 SPACES/5 UNITS = 1.6	2

DEVELOPER/ARCHITECT:

CORNERSTONE BUILDING & RESTORATION
PORTLAND, MAINE
CONTACT: LAUREN J. REITER, R.A.
(917) 502-2225

SURVEYOR:

OWEN HASKELL, INC.
FALMOUTH, MAINE
CONTACT: RANDY R. LOUBIER, PLS
(207) 774-0424

CIVIL ENGINEER:

ACORN ENGINEERING, INC
PORTLAND, MAINE
CONTACT: SAM LEBEL, PE
(207) 775-2655

PROPERTY LINE
SETBACK
PROPOSED BUILDING
PROPOSED PAVEMENT
BRICK
SNOW STORAGE
CURB
STRIPING
CAST IRON ROD FOUND/SET

PARKING SUMMARY	
	# PARKING SPACES
STANDARD (9'X18')	1
COMPACT (9'X16')	1
ADA (10.5'X18')	1
TOTAL PROPOSED SPACES	3

RECORDING INFORMATION
STATE OF MAINE, CUMBERLAND
COUNTY REGISTRY OF DEEDS

RECEIVED: _____

RECORDED IN: _____

ATTEST: _____

REGISTRAR

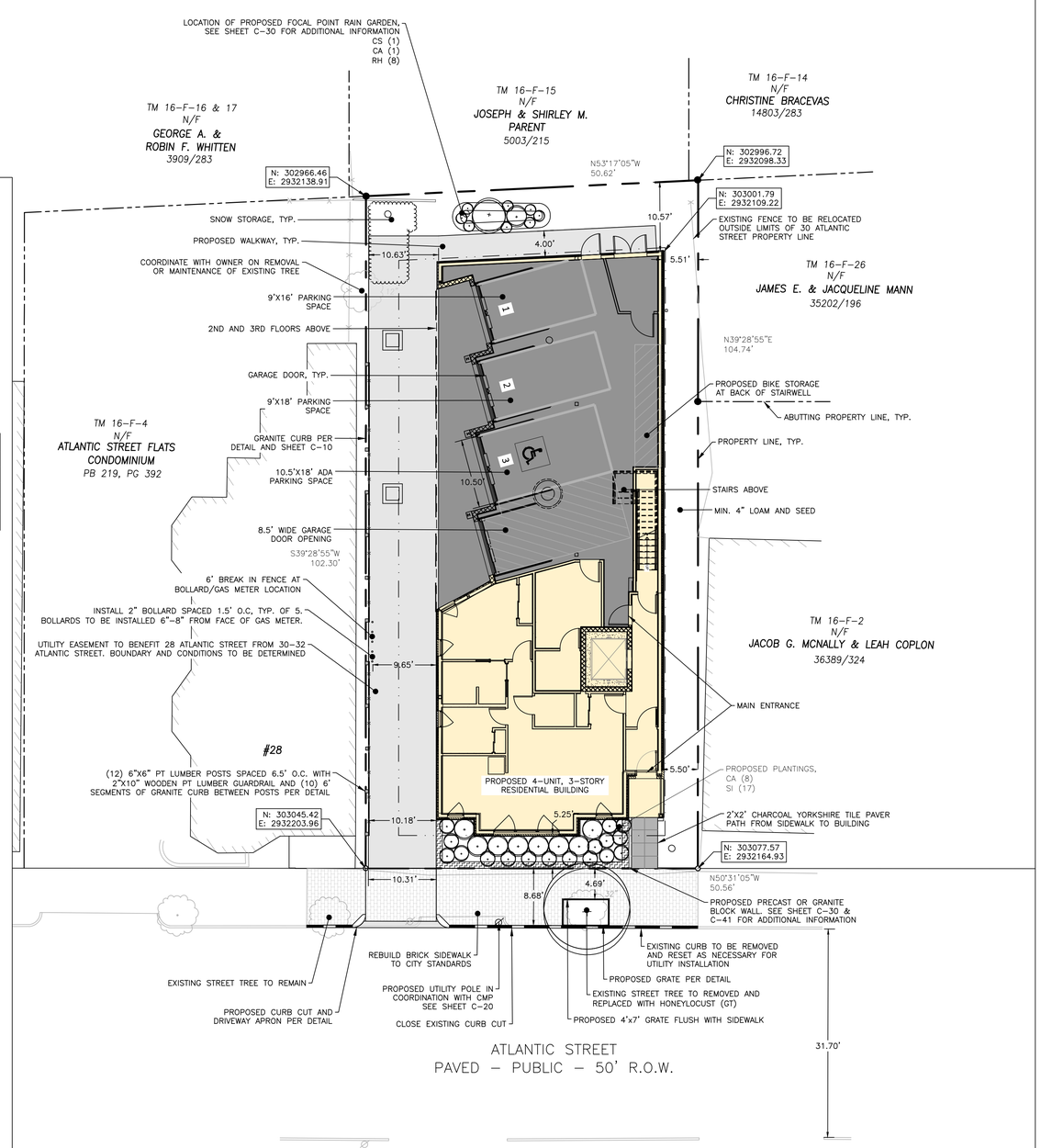
UNIT TABULATION	
UNIT NUMBER	SIZE (SF)*
1A	760
2A	1,220
2B	1,225
3A	2,437

APPROVED: PORTLAND PLANNING BOARD

CHAIRPERSON: DATE:



VICINITY MAP
NOT TO SCALE



GENERAL NOTES:

1. FOR INFORMATION REGARDING THE PROPOSED SITE, REFER TO THE SITE PLAN, C-10, MOST RECENT VERSION.
2. FOR INFORMATION REGARDING PROPOSED UTILITIES, REFER TO THE UTILITY PLAN, SHEET C-20, MOST RECENT VERSION.
3. FOR INFORMATION REGARDING PROPOSED GRADING AND STORMWATER, REFER TO THE GRADING & DRAINAGE PLAN, SHEET C-30, MOST RECENT VERSION.
4. UNIT TABULATION PROVIDED BY CORNERSTONE BUILDING & RESTORATION; REFER TO ARCHITECTURAL PLANS FOR FLOOR PLANS AND BUILDING HEIGHTS.
5. PROPERTY PINS WERE SET BY PROFESSIONAL LAND SURVEYOR.
6. AS OF 7/20/2021, THE SITE IS BOUNDED BY THE R-6 ZONE & MUNJOY HILL NEIGHBORHOOD CONSERVATION OVERLAY DISTRICT ON EAST, WEST, SOUTH, AND NORTH SIDES PER THE CITY OF PORTLAND GIS WEBSITE.
7. PARCEL IS SHOWN ON THE CITY OF PORTLAND ASSESSOR'S MAP 16, BLOCK F, LOTS 3 & 25.
8. PARCEL DOES NOT FALL IN A SPECIAL FLOOD HAZARD AREA PER FEMA FLOOD INSURANCE RATE MAP COMMUNITY-PANEL NUMBER 2300510014B, DATED 7/17/1986.
9. ALL BUILDING CORNER OFFSETS TO BOUNDARY LINES ARE FROM THE BUILDING FOUNDATION, UNLESS OTHERWISE NOTED.
10. THIS SHEET IS THE SUBDIVISION PLAT FOR THE CREATION OF UP TO FOUR (4) DWELLING UNITS ON THE EXISTING SUBJECT PROPERTY.
11. FOLLOWING COMPLETION OF CONSTRUCTION, THE OWNER SHALL BE RESPONSIBLE FOR THE MAINTENANCE AND MANAGEMENT OF DRIVEWAYS, SITE LIGHTING, TRASH REMOVAL AND SNOW REMOVAL.
12. PLAN REFERENECES
    12.1. PLAN TITLED "BOUNDARY & TOPOGRAPHIC SURVEY" PREPARED BY OWEN HASKELL, INC. DATED DECEMBER 14TH, 2020

SURVEY NOTES:

1. OWNER OF RECORD: KESTREL, LLC, 118 ROWLEY DRIVE, STONINGTON, CT 06378, C.C.R.D. BOOK 37252 PAGE 290
2. LOCUS IS SHOWN AS LOTS 3, 25 ON CITY OF PORTLAND'S ASSESSORS MAP 16 BLOCK F.
3. PROPERTY IS LOCATED IN CITY OF PORTLAND RESIDENTIAL ZONE R6.
4. BEARINGS ARE BASED ON CITY DATUM UTILIZING THE CONTROL POINTS SHOWN.
5. ELEVATIONS ARE BASED ON ELEVATIONS ARE CITY DATUM AS BASED ON CITY MONUMENT T102-69-7 ELEVATION 131.02.

EASEMENTS:

THERE ARE NO EXISTING EASEMENTS AS IDENTIFIED BY PLAN TITLED BOUNDARY & TOPOGRAPHIC SURVEY BY OWEN HASKELL, INC. DATED DECEMBER 14TH 2020.

PROPOSED EASEMENTS:
1. UTILITY EASEMENT TO BENEFIT 28 ATLANTIC STREET FROM 30-32 ATLANTIC STREET.

WAIVERS & CONDITIONS OF APPROVAL:

TBD.

THIS SURVEY CONFORMS TO THE CURRENT STANDARDS OF PRACTICE SET FORTH BY THE MAINE STATE BOARD OF LICENSURE FOR LAND SURVEYORS.

RANDY R. LOUBIER, MAINE P.L.S. #2407 DATE:
OWEN HASKELL, INC.

10 0 10 20
SCALE: 1" = 10'

DRAFT
NOT FOR RECORDING
AT REGISTRY OF DEEDS

ISSUED FOR	BY	DATE
MAJOR SITE PLAN	SJL	8/24/21
COMMENT RESPONSE	SJL	10/22/21
COMMENT RESPONSE II	SJL	11/19/21

DRAWING NAME: SUBDIVISION PLAT

PROJECT NAME/ADDRESS: 30-32 ATLANTIC STREET DEVELOPMENT

CLIENT/OWNER OF RECORD: KESTREL LLC.
72 PINE STREET SUITE #16, PORTLAND, MAINE 04102

ACORN ENGINEERING, INC.
ENGINEERING, INC.
PO BOX 3294 PORTLAND, MAINE 04101
(207) 775-2655

USE OF THESE PLANS SHALL NOT BE MODIFIED WITHOUT WRITTEN PERMISSION FROM ACORN ENGINEERING, INC. ANY MODIFICATIONS MADE TO THESE PLANS SHALL BE AT THE USER'S SOLE RISK AND WITHOUT LIABILITY TO ACORN ENGINEERING, INC.

FILE:	1109.5_CIVIL
JN:	1109.5
SCALE:	AS NOTED
DESIGNED BY:	SJL
DRAWN BY:	ZMS
CHECKED BY:	SJL/WHS

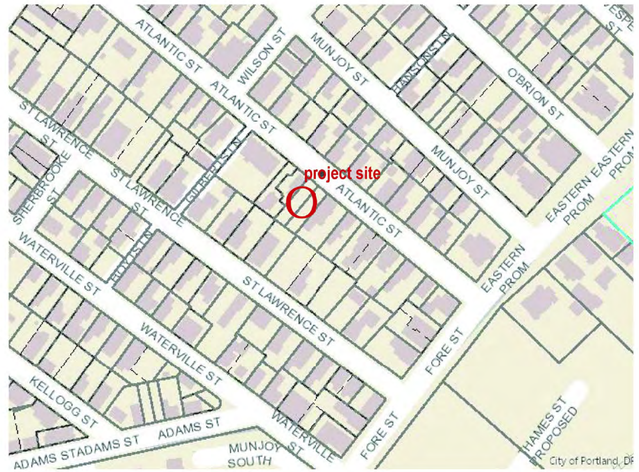
STATE OF MAINE
SAMUEL J. LEBEL
No. 16505
REGISTERED PROFESSIONAL ENGINEER
12/3/21

DRAWING NO.

PLAT



1 3D view from SouthEast



30-32 Atlantic Street / CBL 016 F003001 & 016 F025001 / Zoning: R6

DRAWING LIST

A100 Cover Sheet
A105 General Notes
A201 Foundation & First Floor Plans
A202 Second & Third Floor Plans
A203 Roof Plan
A204 Wall Types
A205 Furniture Plans (for information only)
A301 Exterior Elevations
A301(R) Rendered Elevations
A301(C) Comparative Elevations
A302 3D Views
A303 Window & Door Schedules
A401 Building Sections
A402 Detail Exterior Wall Sections
A403 Entrance Lobby, Cornice & Gutter Details
A501 First Floor RCP & Fixture Schedule
A502 Second & Third Floor RCPs
C-01 Cover Sheet & Legend
C-02 General Notes
Ex Boundary & Topographic Survey
C-10 Site & Landscape Plan
C-20 Utility Plan
C-30 Grading & Drainage Plan
C-40 Site Details -1
C-41 Site Details -2
C-42 Landscape Details
C-43 Utility Details -1
C-44 Utility Details -2
C-45 Drainage Details
C-46 Focal Point Details
C-47 Erosion & Sedimentation Control Details
S0.0 Structural Notes
S1.1 Foundation Plan
S1.2 Second Floor Framing Plan
S1.3 Third Floor Framing Plan
S1.4 Roof Floor Framing Plan
M101 First Floor Mechanical Plan
M102 Second & Third Floor Mechanical Plan
M103 Roof Mechanical Plan
M201 Underside & First Floor Plumbing Plans
M202 Second & Third Floor Plumbing Plans
M203 Roof Plumbing Plan
E0.00 Electrical Cover Sheet
E1.00 Power Plans Site & First Floor
E1.01 Power Plans Second & Third Floors
E1.02 Power Plan Roof

Cornerstone Building & Restoration / Lauren J. Reiter Architect
72 Pine St., Portland, ME 04102
tel. 917-502-2225
email: lreiter@cornerstonebr.com

Consultants

Structural Engineer
Trillium Engineering
189 Main St., Yarmouth ME 04096
207-227-3479
Attn: Tony Dumais

Civil Engineer
Acorn Engineering
PO Box 3372, Portland, ME 04104
207-775-7655
Attn: Will Savage, Sam Lebel

Mechanical Engineer
Bennett Engineering
7 Bennett Rd., Freeport ME 04032
207-865-9475
Attn. Will Bennett

Revision Schedule

Revision Number	Revision Description	Revision Date

Issued for Major Site Plan Application
May 15, 2020
NOTE: Selected drawings area included with this submission (not all drawings listed)

Revised in response to Planning Board & Historic Presererervation Comments
Oct. 25, 2021

Issued Nov. 12, 2021 for Historic Preservation Public Hearing
NOTE: Selected drawings area included with this submission (not all drawings listed)

Issued Dec. 03, 2021 for Final Site Plan

Kestral LLC

30-32 Atlantic Apartments

30-32 Atlantic Street

Portland, ME 04101

Cover Sheet

Project number	Portland, ME 04101
Date	Issue Date
Drawn by	Author
Checked by	Checker

A100

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First Presentation to Historic Preservation - June 2021 (Workshop review October 6, 2021)

- Proposed Stair Bulkhead higher than 35' alowable height.
- Front Bay windows increase height with ascending level (4'-6"h. @ 1st Flr; 5'-6"h. @ 2nd Flr; 6'-6"h. @ 3rd Flr).
- Brick wall base is approximately 18" high.
- Planter is brick & approximately 1' high .
- Rooftop planters have tall coniferous shrubs/trees.
- Banding at vertical siding at bay is aligned with top of bay windows.
- Mechanical equipment is exposed at side views.
- Horizontal banding at bay is aligned with top of windows.

Second Presentation to Historic Preservation - November 17, 2021

- Stair Bulkhead has been removed; access to roof now via low roof hatch bulkhead.
- Front Bay window heights revised (1st Flr. is now 5' h.; 2nd & 3rd flrs are 6' h.). Other front windows increased in height from 4' to 4'-6" h. Overall impact is increase from 265 SF of window/door area to 280 SF = 9% additional window area.
- Brick wall base raised to be approximately 30" - 34" high (grade changes; top of brick is 30" above entrance porch floors).
- Planter is lower and revised to be granite-like block and is approximately 6" high (grade changes slightly over length).
- Front rooftop planters have been eliminated; remaining planters have low perennials or herbs (not visible).
- Mechanical units on roof are now screened with lattice wall similar to vertical siding.
- Banding at vertical siding at bay is now aligned with bottom of bay windows and added below first floor windows. (Please note that banding covers horizontal joints between max. height 10' vertical siding panels.)
- Front Porch cornice and other elements have been better defined (see Drawing A403).

Cornerstone Building & Restoration / Lauren J. Reiter Architect
72 Pine St., Portland, ME 04102
tel. 917-502-2225
email: lreiter@cornerstonebr.com

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Attn. Will Bennett

Revision Schedule		
Revision Number	Revision Description	Revision Date

Issued Nov. 12, 2021 for Historic Preservation Public Hearing

Issued Dec. 03, 2021 for Final Site Plan

Kestral LLC

30-32 Atlantic Apartments

30-32 Atlantic Street

Portland, ME 04101

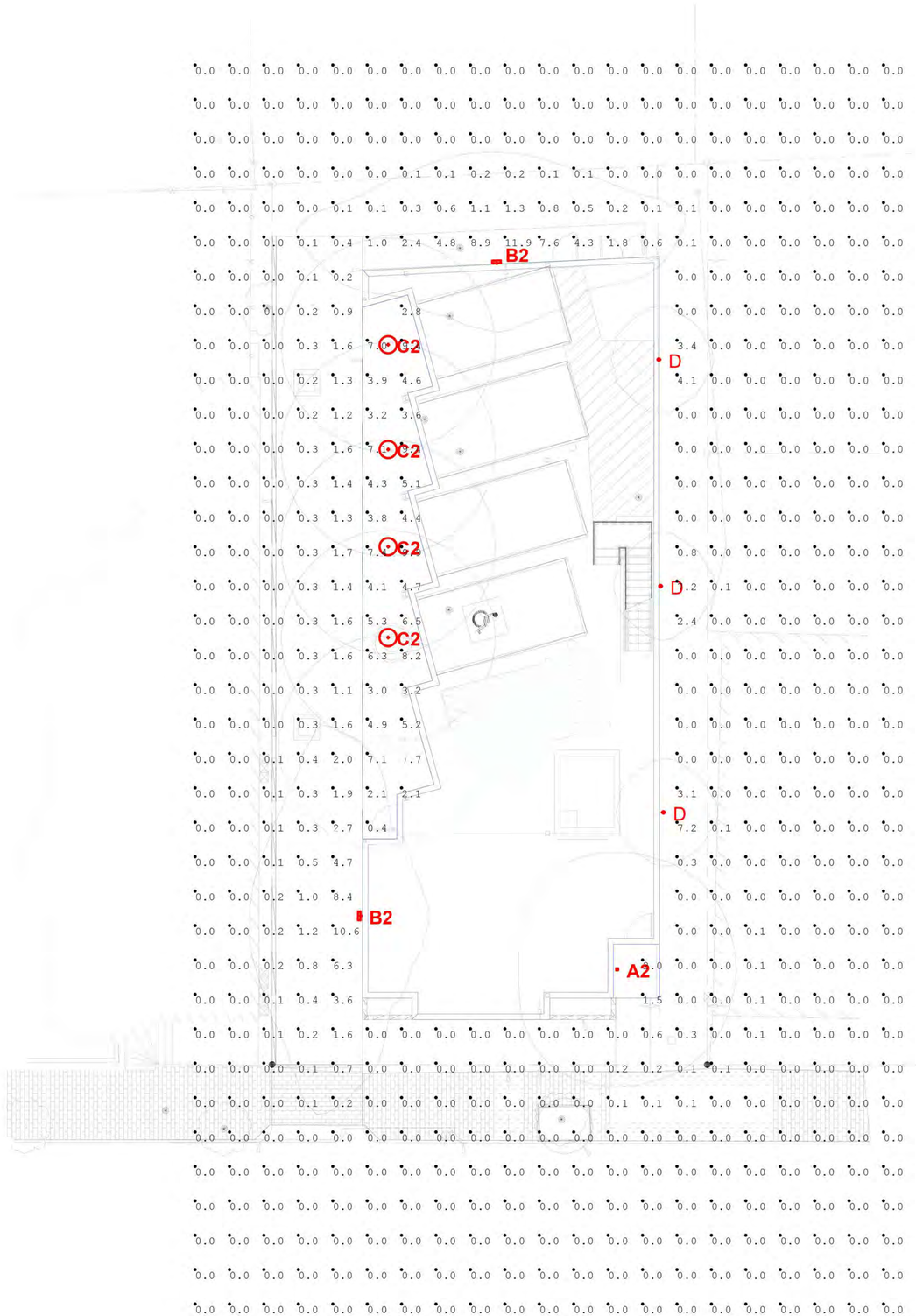
Comparative Elevations (1st to 2nd presentations)

Project number	Portland, ME 04101
Date	Issue Date
Drawn by	Author
Checked by	Checker

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Luminaire Schedule

Symbol	Qty	Label	Tag	Description
	1	A2	Kichler	49687BK/7W LED LAMP MAX
	2	B2	Compass	CUSO XX
	4	C2	HALO	ML5606930-692SC
	3	D	BEGA	33 580 K3 XX

CHARRON BRIGHTER.

Charron, Inc.
P.603-624-4827
C.207-907-9786

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PLANNING BOARD REPORT
PORTLAND, MAINE

19 Willis Street (formerly 33 Montreal Street)
Level III Site Plan and Subdivision
37 Montreal Street LLC, Applicant
PL-000807-2019 CBL: 015 B022

Submitted to: Portland Planning Board **Public Hearing Date:** December 14, 2021	**Prepared by:** Austen Torres Davis, Planner **Date:** December 10, 2021



Figure 1: Parcel Outline in Neighborhood Context - Source: CONNECTexplorer

I. INTRODUCTION

37 Montreal Street LLC., has submitted a Level III Site Plan, Subdivision and Inclusionary Zoning application for the development of a four story, twelve-unit residential building of 23,400 square feet in size at 19 Willis Street. The subject property is a 10,804 square foot parcel located at the corner of Montreal Street and Willis Street. Since the application was first submitted the address was updated to 19 Willis Street, as confirmed by the Portland Fire Department.

The subject property is zoned R-6 Residential, is within the Munjoy Hill Neighborhood Conservation Overlay District (MHNCOD), and seeks to utilize the provisions within Sec. 14-140.5 of the Legacy Land Use Code to

allow for an additional ten feet of building height via the provision of a workforce housing unit onsite for projects located within the MHNCOD.

The Planning Board held a public workshop for this application on September 24, 2019. At that meeting, the project was presented to the Board by the Planner, Urban Designer, and the applicant team, which was followed by Board questions. Public testimony was then provided, primarily focusing on issues of scale, massing, and neighborhood compatibility. Board deliberation concurred with staff's assessment that the neighborhood scale is transitionary, which affords greater interpretation in the building's mass and form. The Board appreciated the efforts made to conceal the garage entrance while preserving first floor privacy. One area of concern was the building entrance along Willis Street. The Board requested that the applicant explore ways to humanize the space, which the applicant has since accomplished in their updated plans. Following the workshop, the project experienced a delay and period of dormancy while the applicant explored ways to incorporate the required workforce housing unit into the building in a manner that comports with the City's minimum square footage requirements for workforce units while meeting their development objectives.

As this project was filed and received its initial Planning Board workshop prior to the December 1, 2020 adoption of the current Land Use Code, it is subject to the previous code, and all code citations within this report have been made accordingly.

A total of 208 notices were sent to property owners within 500 feet of the site and a legal notice ran in the December 3rd & December 4th 2021 editions of the *Portland Press Herald*.

Applicant: 37 Montreal Street LLC

Consultants:

- Richard Lo, AIA (Kaplan Thompson Architecture)
- Dustin Roma, P.E. (DM Roma Consulting Engineers)
- John Swan, Surveyor (Owen Haskell Inc.)

II. REQUIRED REVIEWS

Review	*Applicable Standards*
Site Plan	*Section 14-527*
Subdivision	*Section 14-496*
Inclusionary Zoning | multi-family >10 units	*Section 14-487*

III. PROJECT DATA

Existing Zoning	R-6 Residential; Munjoy Hill Neighborhood Conservation Overlay District
Existing Use	Two single-family homes
Proposed Use	12-unit multi-family building
Bedroom Mix	8 three-bedroom units, 2 two-bedroom units, 2 two-bedroom units

Parcel Size	10,804 sf

	Existing	*Proposed*	*Net Change*
Building Footprint	2,240 sf	5,800 sf	+ 3,560 sf
Building Floor Area	3,775 sf	29,200 sf	+ 25,425 sf
Impervious Surface Area	4,724 sf	8,000 sf	+ 3,276 sf
Parking Spaces	4	13	+ 9
Bicycle Parking Spaces	0	14	+ 14



Figure 2: Existing Axonometric Perspective - Source: CONNECTexplorer

IV. BACKGROUND & EXISTING CONDITION

The development site is located on the northern corner of Montreal and Willis streets in Portland's Munjoy Hill neighborhood and is developed with two existing single-family homes. All of the existing buildings are currently vacant. The site is bordered by the MacArthur Gardens Apartment complex to the northeast, with single-family homes to the east, south, and west. Additionally, the 14-story Promenade East Condominiums Tower is located approximately 200 feet to the north, across Walnut Street, which neighbors the Island View Apartment complex. Both are large-scale residential developments. The sidewalks along both Montreal and Willis streets are in need of repair. There are four street trees along Montreal and Willis

streets; these include Sweet Gum, Honey Locust, and Sugar Maple varieties. The nearest open space is the Eastern Promenade, an approximately three-minute walk down Montreal Street. Fort Sumner Park is an approximately four-minute walk to the southwest. There are two community gardens: the Casco Bay Community Garden, located to the northeast, and the North Street Community Garden to the west; both are an approximately five-minute walk from the development site. METRO Bus Route 1 has stops along North Street and the Eastern Promenade roughly two blocks west and one block north of the development site, respectively.



Figure 3: Conceptual Renderings - Source: Kaplan Thompson Architects

V. PROPOSED DEVELOPMENT

The proposed development is a four-story, 12-unit residential building approximately 23,400 square feet in size. To facilitate this development, two existing vacant single-family structures would be demolished. The new building would include a basement-level structured parking garage of approximately 5,800 square feet in size, and would contain 13 parking spaces, storage, mechanical rooms, trash room, and bike storage. The garage would be accessed via a new driveway off Montreal Street, located at the rear of the building. The ground floor is proposed to include three two-bedroom units, one three-bedroom unit, an entrance lobby, and package room. Floor two is proposed to have one one-bedroom unit, one two-bedroom unit, and two three-bedroom units. Floors three and four are each proposed to include two three-bedroom units. A series of terraced planters are proposed to address the grade change on site. A landscape plan illustrates the planting pallet to be incorporated with the terraces.

The proposed project seeks to takes advantage of a 10-foot height bonus from 35 feet up to 45 feet. This bonus is pursuant to Land Use Code Section 14-140.5(c), *Munjoy Hill Neighborhood Conservation Overlay District*, which includes a provision for eligible projects of three units or more that include at least one "workforce housing unit for rent." The unit intended to qualify as rental workforce housing is Unit 14, a two-bedroom unit.

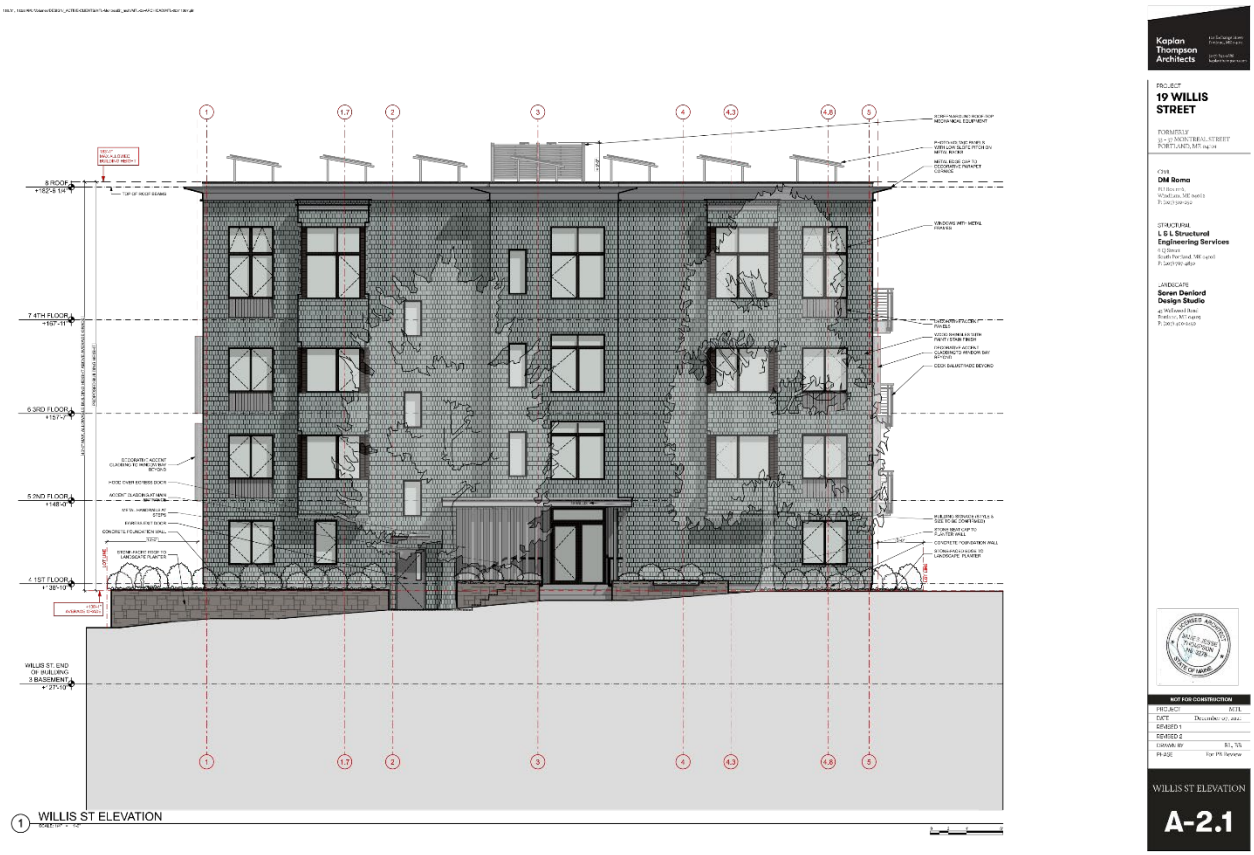


Figure 4: Proposed Elevation - Front Façade – Source: Kaplan Thompson Architects

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

The owner of the property is 37 Montreal Street, LLC. The applicant has provided a copy of the warranty deed, recorded at the Cumberland County Registry of Deeds (Book 8708, Page 61), which demonstrates their right, title and interest in the property.

As evidence to demonstrate sufficient financial and technical capacity, the applicant has provided a letter from Camden National Bank indicating that between the applicant's funds and bank financing, the applicant has sufficient financial capacity to complete the proposed project. Similarly, information has been provided on the development team demonstrating the capacity to design and construct the project.

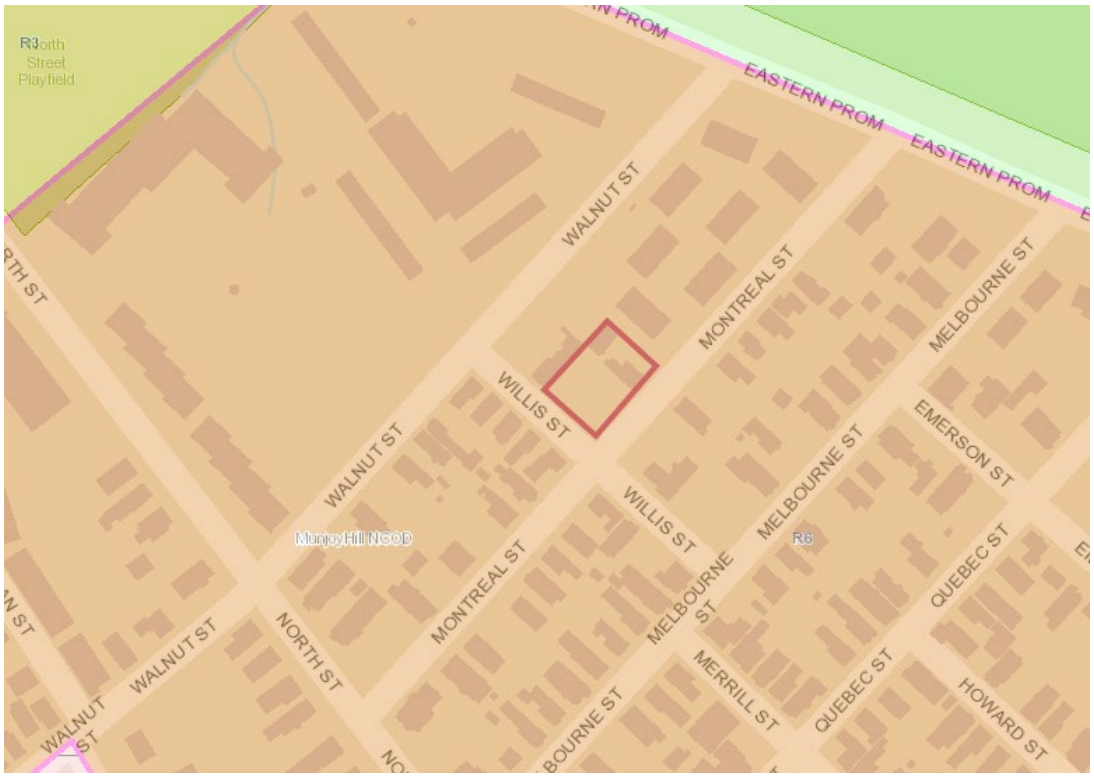


Figure 5: Site in MHNCOD and R-6 Zone Context - Source: City's Internal Map Viewer

VII. ZONING ANALYSIS

The property lies within the R-6 Residential zone and within the Munjoy Hill Neighborhood Conservation Overlay District. The following dimensional and parking requirements apply to the R-6 zone:

R-6 Summary of Dimensional and Parking Requirements Applied to 19 Willis St		
	Required	Proposed
Minimum Lot Size	2,000 sf	10,800 sf
Area Per Dwelling Unit	725 sf	900 sf
Minimum Street Frontage	20 ft	90 ft (Willis St)
Front Yard Minimum	5 ft	5 ft
Rear Yard Minimum	15 ft	30 ft
Yard Left Minimum	10 ft	10 ft
Side Street Setback	5 ft (>35 height)	5 ft/ 3 ft
Step Back	15 ft rear/ 10 ft side	>30 ft rear/ 10 ft side
Maximum Lot Coverage	60%	53%
Maximum Height[1]	45 ft above avg. grade	45 ft
Landscape Open Space	20%	26%
Off-Street Parking	1 space per unit	1.1 per unit

[1] Maximum height: 45 feet for developments of 3 units or more on lots over 2,000 sf. that include at least one workforce housing unit. Workforce units shall be no smaller than 50% of the average size of the other units in the development.

VIII. MHNCOD & WORKFORCE HOUSING REQUIREMENTS

The applicant proposes the creation of twelve residential units within the Munjoy Hill Neighborhood Conservation Overlay District. The height of the building will be greater than 35 feet. Subsequently, the project triggers Land Use Code Section 14-140.5 (c), *Maximum Height*, and is required to include one workforce housing unit for rent or sale on-site. The workforce unit shall be no smaller than 50% of the average size of the other units in the development and shall be deed restricted for affordability for the longest term possible under state and federal law. For this project, a minimum workforce unit size of 854 square feet is needed to meet City standards. The applicant proposes to provide a 1,059 sf two-bedroom unit within the building, Unit 14, as their deed-restricted workforce housing unit, meeting the workforce housing requirements. Staff recommend as a condition of approval that the applicant and the city enter into an Affordable Housing Agreement (AHA for unit 14 located at 19 Willis Street) before a building permit may be issued. The Affordable Housing Agreement will outline the details of the affordability restrictions placed on the workforce units and will be filed as a covenant to the 19 Willis Street property deed with the Cumberland County Registry of Deed before certificate of occupancy may be issued. A memorandum from the Housing Program Manager with additional details has been included within the report attachments.



Figure 6: Proposed Elevation - Northeast (Downhill) - Source: Kaplan Thompson Architects

IX. INCLUSIONARY ZONING

Division 30, Section 14-487, Ensuring Workforce Housing, requires at least ten percent (10%) of the dwelling units in the development shall meet the definition of Workforce Housing units for sale or for

rent. The number of units required is rounded down to a whole number whether the Workforce Units are provided on or off-site. A fractional fee-in-lieu would result when the calculation of a project's inclusionary obligation results in a fractional unit. The fractional unit obligation will be provided in the form of a proportional fee-in-lieu. The ordinance under Section 14-487 e 4 also requires the number of bedrooms in the Workforce units shall be at least 10% of the total number of bedrooms made available as part of the development.
As an alternative to providing workforce housing units, developers shall pay a fee-in-lieu of some or all of the units. The fee for affordable units not provided shall be $100,000 per unit, adjusted annually in the same way as the fee under Division 29 for Housing Replacement.

The project located at 19 Willis Street (formerly 33 Montreal Street) proposes the creation of 12 dwelling units. The applicant has chosen to fulfill the inclusionary zoning requirements by paying a fee-in-lieu. The proposed project would thus be required to pay a total fee of $132,586.80 (1.2 X $110,489) into the City's Housing Trust Fund in-lieu of creation of actual housing units for workforce households. As such, the project has met the minimum requirements set forth in Section 14-487.

Staff recommends the agreed upon fee-in-lieu of $132,586.80 be paid into the City's Housing Trust Fund prior to issuance of the certificate of occupancy for 19 Willis Street. Should at a later date any change in total unit count be considered, a revised proportional fee-in-lieu payment will also be required.

X. 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. 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 two years of a Planning Board decision.

B. SUBDIVISION (Section 14-496)

The proposed development has been reviewed by staff for conformance with the relevant review standards of Portland's Subdivision Ordinance and applicable regulations. Staff comments are listed below.

1. *Will Not Result in Undue Water and Air Pollution (Section 14-497 (a) 1), and Will Not Result in Undue Soil Erosion (Section 14-497 (a) 4)*

   The existing site is approximately 44% developed and slopes from the south side of the property (Willis Street) to the north side of the property (MacArthur Gardens Apartments). Stormwater runoff from the project site drains either to the northeast along the curb line in Montreal Street or to the north to the abutting property. The existing site contains approximately 4,724 square feet of impervious surface, with three separate roof lines. Redevelopment of the project site

would result in an increase of approximately 3,276 square feet of impervious area and a total impervious surface of 8,000 square feet.

The stormwater management plan includes the construction of an underground storage and treatment system that consists of a Stormtech Chamber System designed to infiltrate the required water quality volume. The system has been designed to effectively collect, infiltrate and provide treatment of approximately 97% of the total new impervious area and approximately 88% of the total new developed area, exceeding the requirement as indicated in the General Standards of MDEP Chapter 500.

Lauren Swett, P.E. of Woodard and Curran Engineering, Third-Party Reviewer, has reviewed the erosion and sediment control plans and details, as well as the proposed stormwater inspection and maintenance measures, and found the updated plans to be in conformance with the Land Use Code.

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

   An ability to serve letter from the Portland Water District has been received and provided.

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

   The proposed development is not adding significant vehicular traffic to the streets surrounding the development site and a traffic analysis is not required.

4. *Will Provide for Adequate Sanitary Sewer and Stormwater Disposal (Section 14-497 (a) 6), and Will Not Cause an Unreasonable Burden on Municipal Solid Waste and Sewage (Section 14-497 (a) 7)*

   The applicant is proposing to utilize the existing combined storm sewer main lines in both Montreal and Willis streets. If the services are to be combined, this should be done within the right of way. This will allow for future separation within the street. The applicant has designed these connections accordingly. The applicant has provided a Wastewater Capacity Authorization Letter.

5. *Will not have an undue adverse effect on the scenic or natural beauty of the area, aesthetics, historic sites, significant wildlife habitat identified by the Department of Inland Fisheries and Wildlife or by the City, rare and irreplaceable natural areas, or any public rights for physical or visual access to the shoreline (Section 14-497(a)(8))*

   The site is proximate to the Munjoy Hill historic district. Development on the subject property, which is a previously-developed infill site within an urban neighborhood context located upland from the water's edge, will not adversely affect any significant wildlife habitat, rare or irreplaceable natural areas, or any public access to the shoreline.

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

The proposed project supports a number of goals identified in *Portland's Plan 2030,* particularly in the Housing section. Those goals include the Plan's stated desire to increase the overall supply of housing city-wide to meet the needs, preferences and financial capabilities of all Portland residents, to encourage contextually appropriate housing density proximate to neighborhood centers, concentrations of services and transit nodes and corridors, and to enable people who work in Portland to have the option to live in Portland. The Plan also highlights the importance of the City's growth in order to sustain our community, infrastructure, and economy, ensuring growth respects and seeks to preserve of our natural resources, and sensitivity to neighborhood context, which emphasizes the uniqueness of neighborhoods in the Vision Statement (pg. 6). The Comprehensive Plan also outlines goals to ensure an appropriate balance of continuity and change as Portland grows and evolves.



Figure 7. Vision Statement from Portland's Plan 2030

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

ADA compliance is provided at all door locations. The parking will be accessed from Montreal Street by a driveway between the proposed building and the adjacent property. The residential lobby for the proposed building will be located at the ground level on the southern side and would be accessed from the Willis Street sidewalk.

b. Public Transit Access

All residential developments consisting of 20 or more dwelling units shall provide a transit shelter adjacent to or within the public right-of-way along its frontage. The proposed project provides twelve dwelling units and therefore this standard is not applicable.

c. Parking

Per ordinance requirements in the R-6 zone, the proposed project is required to have a total of 12 parking spaces. The applicant is proposing to include 13 internal parking spaces within the garage, thus meeting the requirement.

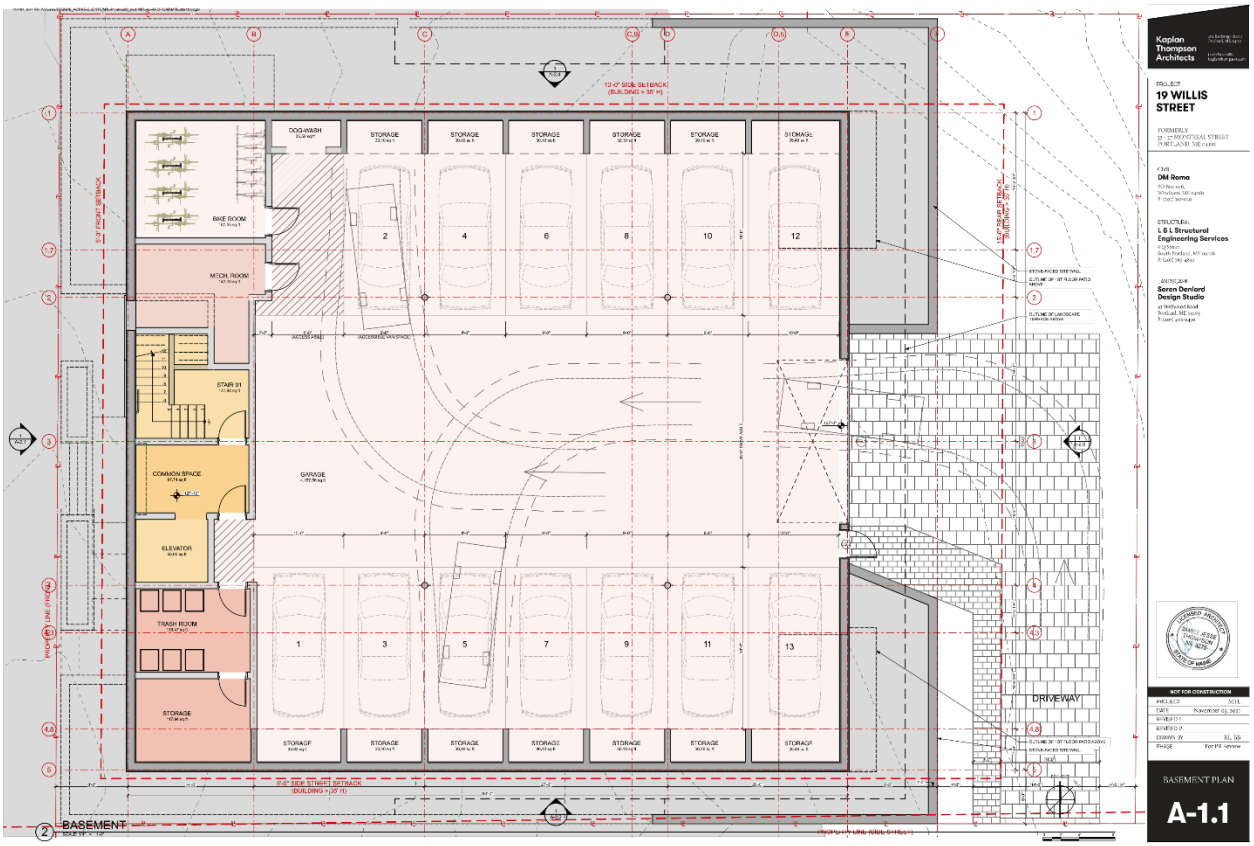


Figure 8: Basement Parking Plan - Source: Kaplan Thompson Architects

d. Bicycle Parking

Basement Plan A-1.1 shows 14 bicycle parking spaces are proposed for the project, meeting the minimum requirement of 4.8 spaces.

e. Snow Storage

The project design and layout provides an area of approximately 300 square feet located adjacent to the proposed driveway near the northwesterly corner of the site. Snow storage will not conflict with pedestrian access or parking requirements. Snow melt runoff will be treated with the subsurface chamber system. Staff finds this standard to have been met.

2. Environmental Quality Standards

a. Preservation of Significant Natural Features

The site was formerly development with residential buildings and there are no known significant natural features on the site. There are no anticipated impacts.

b. Landscaping and Landscape Preservation

A landscaping plan was submitted as part of the application. The plan shows a variety of trees, shrubs, and perennials, all listed in the City of Portland Recommended Tree List.



Figure 9. Existing Street Trees – Source: Austen Torres Davis

There are four established street trees along Montreal and Willis Streets. The applicant has not proposed the removal of street trees, though if the need to do so arises the applicant will work with the City Arborist to explore ways to mitigate the impact of construction and utility connections and preserve trees where possible.

City Arborist Jeff Tarling has commented that, if removal of trees for site access is necessary, removing the smallest tree near the existing driveway on Willis Street would give the applicant adequate construction access. This option would be preferable as the remaining three trees are mature and in good condition. Staff are in favor of preserving these three mature street trees.

Based upon the City's street tree requirements, a total of eight trees are required. The applicant intends to preserve the existing four street trees and will contribute $3,200 ($400/tree x eight trees) to the City's Street Tree Fund to address the eight additional required trees that will not be planted.

c. Water Quality, Storm Water Management and Erosion Control

The stormwater management plan includes the construction of an underground storage and treatment system that consists of a Stormtech Chamber System designed to infiltrate the required water quality volume. The system has been designed to effectively collect, infiltrate and provide treatment of approximately 97% of the total new impervious area and approximately 88% of the total new developed area, exceeding the requirement as indicated in the General Standards of MDEP Chapter 500.

Lauren Swett, P.E., Consulting Peer Reviewer, and staff have reviewed the applicant's plans and project details. Both find that the proposed stormwater management measures meet the applicable standards of the Land Use Code and Technical Manual.

3. Public Infrastructure and Community Safety Standards

a. Public Safety and Fire Prevention

Mike Thompson, former Division Chief of the Fire Prevention and Community Outreach Division, reviewed the submitted plans and found them to be acceptable, noting the following points (Attachment 1):

- *The correct address for this property shall be determined by the City E-911 Addressing Officer.* Since this comment was received, the applicant has received the correct address for this property (19 Willis St).
- *The street address shall be marked at the main building entrance.*

b. Availability and Adequate Capacity of Public Utilities

The project will be served by Central Maine Power, the Portland Water District, and City Department of Public Works. Evidence of utility capacity has been provided by the applicant.

4. Site Design Standards

a. Snow and Ice Loading

The project design and layout provides an area of approximately 300 square feet located adjacent to the proposed driveway near the northwesterly corner of the site. Snow storage will not conflict with pedestrian access. Snow melt runoff will be treated with the subsurface chamber system. Staff finds this standard to have been met.

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. This standard does not apply.

c. Historic Resources



Previous iterations of this application went to the Historic Preservation Board as the applicant sought to demolish a building classified as *preferably preserved*, within the Munjoy Hill Neighborhood Conservation Overlay District. The Historic Preservation Board's review at that time helped inform the evolution of the building's design and informed Historic Preservation staff during their advisory review.

Demolition was halted by a temporary stay that applicants attempted to have lifted by the Historic Preservation Board. Upon conclusion by the Historic Preservation Board that the

proposed project conformed to the new construction standards of the historic preservation ordinance the structure was demolished.

The property is within 100 feet of the Munjoy Hill Historic District, and underwent an historic preservation advisory review. Historic Preservation Program Manager, along with the City's Urban Designer, and lead project Planner reviewed the proposal against the *Multiple-Family Standards (City of Portland Design Manual).*

d. Exterior Lighting

The applicant has submitted a lighting and photometric plan which was reviewed by staff and found to be in conformance with the lighting standards.

e. Noise and Vibration

The HVAC system will meet the applicable state and federal emissions requirements and will also be screened and directed away from abutters.

f. Signage and Wayfinding

All street and wayfinding signage shall meet the requirements of the Manual on Uniform Traffic Devices (MUTCD) and Division 22 of the City Code. Staff has reviewed the proposed signage and finds it to be in conformance with the standards.

g. Zoning Related Design Standards

A design review for the proposed new construction of a multi-family project at 19 Willis Street was performed by Planning and Urban Development staff including the City's Urban Designer, Historic Preservation Program Manager, and lead Planner. Because the lot is greater than 10,000 sf in size, the project was reviewed against the *Multiple-Family* Standards (City of Portland Design Manual). The original design review found that a number of the principles and standards had not been met by the proposed design and that the applicant needed to amend the plans accordingly. A second round of design review comments were provided to the applicant following the submission of updated architectural drawings. The applicant responded to staff comments, and at this time, the project is found to conform to the relevant design guidelines. Potential modifications were suggested by staff for consideration (listed below). These suggested modifications were addressed by the applicant (in Italics).

- **Bays:** Staff request more information about the accent material used on the bays – ideally, this material would have the same character and finish as the shingle but with a different texture, orientation and/or scale.
  Applicant Response: The bays are to be clad in material that matches the decorative accent panels below the windows, to provide continuity and a visual connection between the accent elements. At an earlier Planning Board workshop the team presented samples of possible textured metal for the accent panels. Material samples can be presented at the Planning Board hearing.

- **Planters/Terraces:** Staff request more information about the stone proposed for the planters/terraces.
  Applicant Response: Exterior landscape materials are to be as follows:
  Stone Veneer Retaining Walls: Regionally quarried fieldstone / granite (gray tones)
  Wood Clad Exterior Retaining Walls: Weathered cedar (or equal)
  Entry Masonry Walkway and Steps: Regionally quarried monolithic saw-cut granite slab steps and dimensional pavers (gray tones)
  Drive Aisle Paving: Concrete unit paver (Techo-bloc 80 ml. or equal)

In addition, the project was reviewed for compliance with the additional design standards for buildings located in the Munjoy Hill Conservation Overlay District Section 14-140.5.a(d) and was found to meet the standards.

Section 14-140.5(d)(a): All buildings shall use simple, traditional roof forms as illustrated in Diagrams 14-140.5.c-f., except that flat roofs are permitted in buildings of 3 or more units.

- Staff Comment: The proposed project is a 12 unit apartment building. Flat roofs are permitted in buildings of three or more units. This standard is adequately addressed.

Section 14-140.5(d)(b): The first floor shall contain active living space, such as a living room or bedroom, with windows for at least 50% of the width of the front façade in total.

- Staff Comment: The proposed building's first floor contains active living space for greater than 50% of the building façade, this standard is considered adequately met.

Please see Attachment 3, Design Review, for the full urban design memorandum. Please see attachment 4, Response to Design Review, for the applicant's responses to the suggested modifications above.

h. Construction Management Plan

The applicant has submitted a construction management plan which was reviewed by staff and found to meet the applicable standards.

XI. PUBLIC COMMENT AND NEIGHBORHOOD MEETING

A total of 208 notices were sent to property owners within 500 feet of the site and a legal notice ran in the December 3rd & December 4th 2021 editions of the *Portland Press Herald*.

The required neighborhood meeting was held on Friday, September 13, 2019 from 5:30-6:45 pm at the East End Community School. Thirteen members of the public were in attendance along with Tim Wells, representing the applicant, and Jesse Thompson and Richard Lo from Kaplan Thompson Architects. The majority of comments received were in response to the proposed building's design, scale and neighborhood context.

In advance of this Public Hearing, staff has received 16 written comments from the public, mostly in opposition and expressing concerns about building height and mass.

XII. STAFF RECOMMENDATION

Subject to the proposed motions and conditions of approval listed below, Planning and Urban Development Department staff recommend that the Planning Board approve the proposed development at 19 Willis Street.

XIII. MOTIONS FOR THE BOARD TO CONSIDER

A. INCLUSIONARY ZONING CONDITIONAL USE

On the basis of the application, plans, reports and other information submitted by the applicant, findings and recommendations contained in the Planning Board Report for the public hearing on December 14, 2021 for application #PL-000807-2019 relevant to Portland's Inclusionary Zoning Conditional Use Standards and other regulations, and the testimony presented at the Planning Board hearing, the Planning Board [finds/does not find] the proposed conditional use for workforce housing meets the standards of Land Use Code Section 14-487 with the following condition(s):

PRIOR TO ISSUANCE OF A BUILDING PERMIT

1. The Applicant and the City shall enter into an agreed upon Affordable Housing Agreement (AHA) for one workforce unit integrated with the development, or as an alternative to providing the workforce housing unit, the applicant may pay a fee-in-lieu for the required unit.

PRIOR TO ISSUANCE OF A CERTIFICATE OF OCCUPANCY

2. An Affordable Housing Agreement will be filed as a covenant to the property's deed with the Cumberland County Registry of Deeds.

B. SUBDIVISION REVIEW

On the basis of the application, plans, reports and other information submitted by the applicant, findings and recommendations contained in the Planning Board Report for the public hearing on December 14, 2021 for application #PL-000807-2019 relevant to the subdivision regulations, and the testimony presented at the Planning Board hearing, the Planning Board [finds/does not find] that the plan is in conformance with the subdivision standards of the Land Use Code subject to the following conditions of approval:

PRIOR TO THE SUBMISSION OF THE PLAT FOR PLANNING BOARD SIGNATURE

1. The subdivision plat shall be finalized to the satisfaction of the Planning Authority, Corporation Counsel and Department of Public Works and include clear descriptions of the number, location, type and size of all subdivided units, along with relevant notes and conditions.

PRIOR TO ISSUANCE OF A BUILDING PERMIT

2. The signed subdivision plat shall be recorded at the Cumberland County Registry of Deeds.

C. SITE PLAN REVIEW

On the basis of the application, plans, reports and other information submitted by the applicant; findings and recommendations contained in the Planning Board Report for the public hearing on December 14, 2021, for application #PL-000807-2019, relevant to the site plan regulations; and the testimony presented at the Planning Board hearing, the Planning Board [**finds/does not find**] that the plan is in conformance with the site plan standards of the Land Use Code, subject to the following condition of approval:

PRIOR TO ISSUANCE OF A BUILDING PERMIT

1. A financial contribution totaling $3,200, to be paid into the City's street tree fund, shall be provided for the required eight street trees not provided on-site. The applicant may also choose to pursue a street tree alternative as listed in the City's site plan ordinance, Sec. 14-526.

XIV. ATTACHMENTS

PLANNING BOARD REPORT ATTACHMENTS

1. Design Review Memo (Final)
2. Applicant Response to Design Review
3. Housing Program Manager Memorandum
4. Grade Calculations
5. September 24, 2019 Workshop – Memo Attachments

APPLICANT'S SUBMITTALS

A. Application Checklist
B. Project Description
C. Right, Title and Interest
D. Financial and Technical Capability
E. Zoning Assessment
F. Transportation
G. Stormwater
H. Utilities
I. Solid Waste
J. Public Infrastructure and Safety
K. Design Review - Site Design
L. Design Review - R-6 Design Principles
M. Ability to Serve Determination
N. Wastewater Capacity Authorization
O. Verification of Posted Public Meeting Notice

PLANS

Plan 1. Boundary Survey
Plan 2. Design Review Context
Plan 3. Neighborhood Context
Plan 4. Architectural Drawings
Plan 5. Architectural Renderings
Plan 6. Revised Civil Drawings
Plan 7. Landscape Plan
Plan 8. Construction Management Plan

PUBLIC COMMENT

PC1. Barbara vestal

PC2. Carol Connor
PC3. Carol Connor
PC4. Carol Connor
PC5. Erna Koch
PC6. Karen Snyder
PC7. Mike Hoover
PC8. Peter Murray
PC9. Wayne Valzania
PC10. Wayne Valzania
PC11. Wayne Valzania
PC12. Barbara Vestal
PC13. Peter Murray
PC14. Jean McManamy and Others
PC15. Carolyn Swartz
PC16. Karen Snyder

Planning and Urban Development Department
Planning Division

Subject: Multi-family Design Review – 33 Montreal Street

Written by: Caitlin Cameron, Urban Designer

Date of Review: Tuesday, May 18, 2021

A design review for the proposed new construction of a multi-family project at 33 Montreal Street was performed by Caitlin Cameron, Urban Designer, Andrew Tufts, Planner, and Deb Andrews, Historic Preservation Program Manager. The project, because the lot is over 10,000 sf, was reviewed against the *Multiple-Family* Standards (City of Portland Design Manual).

The design review authority is with the Planning Board as part of the Level III Site Plan process with an advisory Historic Preservation review (within 100' of a historic district).

Design Review takes into consideration:

- Compatibility with surrounding buildings and general character of the established neighborhood
- Building type and use
- Unique characteristics of the site

The proposal is on a transitional site between a more recent context of Promenade Towers and MacArthur Gardens – two large/mid-scale apartment complexes –compared with the predominant, traditional fabric found a block away.

The predominant, character-defining elements of residential architecture in the neighborhood context include vertical proportion massing, simple roof forms, vertical windows with local symmetry, two or three-bay façade composition, and simple material palettes – predominantly clapboard with masonry foundation.

Design Review Comments *(red text denotes principles or standards that are not met, request for more information or questions):*

Please provide the following information:

- Neighborhood context plan that shows the footprint of this building compared with those in the surrounding blocks
- Renderings showing the building in context with adjacent buildings
- Material samples or examples

Multiple-Family Design Standards

1) *The exterior design . . . shall be designed to complement and enhance the nearest residential neighborhood. The design of exterior facades shall provide positive visual interest by incorporating appropriate architectural elements.*

The project exemplifies a single design expression in its massing, form, material application, and fenestration and articulation elements.

The overall massing and form of the building is a simple box with flat roof consistent with the simple forms and massing found in neighborhood multi-family buildings. The building has a clear primary and secondary façade – also a predominant characteristic of corner buildings in this context. Scale and visual interest are created through contemporary versions of bays and balconies and articulation elements such as a strong cornice line, window panel details, and balcony railings. These design elements are consistent with and complement the nearest residential neighborhood by referencing common patterns and elements while remaining a contemporary expression.

The roof form is a simple, consistent flat roof – typical of multi-family buildings and not complex. The rooftop appurtenances are centralized, set back from the roof edge and screened. The grade and location of the site is such that views to the roof are unlikely from the street or long views.

The project uses a simple material palette of shingle and panel applied consistently throughout the building creating a simple, cohesive design. This is typical of the context and staff agree this contributes to complementing and enhancing the neighborhood. The fine grain of the material is appropriate for a residential building and is compatible with the materials in this context. Staff request more information about the accent material used on the bays – ideally, this material would have the same character and finish as the shingle but with a different texture, orientation and/or scale.

Staff would also like more information about the stone proposed for the planters/terraces.

The façades generally relate to the context through the regular pattern/rhythm of windows; the window types are limited and placed in a regular rhythm consistent with the traditional residential buildings. The window patterns also help to distinguish the front and side facades; as the project turns the corner, the façade composition is appropriately treated as a more secondary façade. The introduction of bays on the front and side add massing variation, articulation, and scale in a way that is appropriate for residential character in this context and that creates balance in the facades.

The entrance should have an approachable, residential character. The entryway is oriented to the street and was revised to provide emphasis as well as a transitional porch-like space. The steps from the sidewalk creates a relationship of the entrance to the sidewalk similar to a residential stoop or porch. The canopy was revised to be more substantial than the bay window overhang and posts add to a residential porch character.

Stacked balconies typically are aligned with the façade plane. The balconies extend beyond the roofline and façade plane and exacerbate the scale on the downhill side of the building. Staff recommend that the balconies be pulled in closer to the building or aligned with the façade plane on the side façade to mitigate the scale impact of the building and create relationships similar to those found in the context. This is also important to not conflict with the angled bays now located on the side elevations. The Planning Board and public also commented on the looming aspect of the side/rear of the building which is exacerbated by the over-extended porches.

2) *The proposed development shall respect the existing relationship of buildings to public streets. New development shall be integrated with the existing city fabric and streetscape including building placement, landscaping, lawn areas, porch and entrance areas, fencing, and other streetscape elements.*

   The building placement is consistent with residential structures in the neighborhood – placed near the street with a small setback with planted edge. The garage is set back from the street and accessible from a side drive minimizing the impacts of parking on the streetscape.

   The building's primary frontage is oriented to Willis Street with Montreal Street treated as a clearly secondary façade. It is typical for the secondary façade to be the longer façade, on the sloping street, and without access points.

   The landscape buffer between the building and the sidewalk is appropriate to provide privacy and transition between the public and private realms. The grade change on Montreal Street is challenging and steps/ramp with a retaining wall and planter areas.

   The building interface was modified on Willis to create a more approachable and residential character to the relationship between the building and sidewalk. The configuration of planters, steps, and ramp help provide a sense of privacy and transition without feeling institutional.

3) *Open Space*

   Open space is provided primarily through balcony and terrace spaces for each unit.

4) *Ample light and air*

   Adequately met

5) *Parking shall be arranged and landscaped to properly screen vehicles from adjacent properties and streets.*

   Parking for this project is structured below the building and accessed by a side driveway. This driveway is visually screened from the neighboring property with a retaining wall.

6) *Multi-family dwellings shall not be converted to lodging houses.*

   Not applicable

102 Exchange Street Portland, ME 04101 | (207) 842-2888 | kaplanthompson.com

June 11 2021

Att. 2

RE: 33-37 MONTREAL STREET, PORTLAND

Attention: Andrew Tufts
Planner: Planning and Urban Development Department
City of Portland: 389 Congress Street 4th Floor, Portland, ME 04101

We have reviewed the City Staff comments of May 18, 2021, regarding our application for Multi-family Design Review for the above project.

Staff requests for information are noted below in italics. Project team responses are provided as follows.

Design Review Comments:

• *Please provide the following information:*
- *Neighborhood context plan that shows the footprint of this building compared with those in the surrounding blocks*
- *Renderings showing the building in context with adjacent buildings*
- *Material samples or examples*
- *Smaller file sizes for easier navigation*

- A context plan with the building footprint and a rendering-in-context were provided earlier for the previous building configuration. We are preparing revised versions with the current configuration for presentation at the next Planning Board hearing.
- Material samples can be presented at the Planning Board hearing.
- Smaller file sizes will be provided.

Multiple-Family Design Standards:

• *Staff request more information about the accent material used on the bays – ideally, this material would have the same character and finish as the shingle but with a different texture, orientation and/or scale.*

- The bays are to be clad in material that matches the decorative accent panels below the windows, to provide continuity and a visual connection between the accent elements.
- At an earlier Planning Board work shop the team presented samples of possible textured metal for the accent panels.
- Material samples can be presented at the Planning Board hearing.

• *Staff would also like more information about the stone proposed for the planters/terraces.*

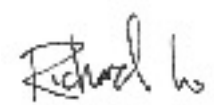
- **Exterior landscape materials are to be as follows:**
- **Stone Veneer Retaining Walls:** Regionally quarried fieldstone / granite (gray tones)
- **Wood Clad Exterior Retaining Walls:** Weathered cedar (or equal)
- **Entry Masonry Walkway and Steps:** Regionally quarried monolithic saw-cut granite slab steps and dimensional pavers (gray tones)
- **Drive Aisle Paving:** Concrete unit paver (Techo-bloc 80 ml. or equal)

Kaplan Thompson Architects

• *The balconies extend beyond the roofline and facade plane and exacerbate the scale on the downhill side of the building.*

- The outer extent of the balconies generally follows the line of the roof cornice above. The projection beyond the cornice is less than 12" on the north-east side (facing the Eastern Promenade), & less than 4" on the Montreal Street side.
- The apartments are designed as multi-bedroom family homes with balconies providing much needed exterior space for outdoor living by family groups, including family dining around a table, as well as more informal settings. Recent experience over the last 14 months has underscored how important it is to provide comfortable, well ventilated outdoor spaces for in-town apartment homes.

We trust that this information is helpful to the City Staff & Planning board members and look forward to an opportunity to present the revised project to the Planning Board.



Richard Lo
ASSOCIATE

Kaplan Thompson Architects
102 Exchange Street, Portland, ME 04101
office: (207) 842-2888 x206
kaplanthompson.com

Housing and Economic Development Department

Housing and Community Development Division

To: James Rather, Development Review Manager, Planning & Urban Development Department

From: Victoria Volent, Housing Program Manager, Housing & Community Development Division

Date: November 30, 2021

Subject: 33 Montreal Street– Inclusionary Zoning and Munjoy Hill Neighborhood Conservation Overlay District

---

Please note, 33 Montreal Street is entitled to consideration under Division 30 regulations in effect as of the date of the September 24, 2019 Planning Board Workshop further defined as follows.

All developments of ten (10) units or more are conditional uses subject to Planning Board review on the condition that they comply with the requirements set forth in Division 30, Section 14-487 of the Zoning Ordinance.

Division 30, Section 14-487: Inclusionary Zoning

Division 30, Section 14-487, Ensuring Workforce Housing, requires at least ten percent (10%) of the dwelling units in the development shall meet the definition of Workforce Housing units for sale or for rent. The number of units required is rounded down to a whole number whether the Workforce Units are provided on or off-site. A fractional fee-in-lieu would result when the calculation of a project's inclusionary obligation results in a fractional unit. The fractional unit obligation will be provided in the form of a proportional fee-in-lieu. The ordinance under Section 14-487 e 4 also requires the number of bedrooms in the Workforce units shall be at least 10% of the total number of bedrooms made available as part of the development.

As an alternative to providing workforce housing units, developers shall pay a fee-in-lieu of some or all of the units. The fee for affordable units not provided shall be $100,000 per unit, adjusted annually in the same way as the fee under Division 29 for Housing Replacement.
The project located at 33 Montreal Street proposes the creation of 12 dwelling units. The applicant has chosen to fulfill the inclusionary zoning requirements by paying a fee-in-lieu. The proposed project

would thus be required to pay a total fee of $132,586.80 (1.2 X $110,489) into the City's Housing Trust Fund in-lieu of creation of actual housing units for workforce households. As such, the project has met the minimum requirements set forth in Section 14-487.

Staff Recommendation

Staff recommends the agreed upon fee-in-lieu of $132,586.80 be paid into the City's Housing Trust Fund prior to issuance of the certificate of occupancy for 33 Montreal Street. Should at a later date any change in total unit count be considered, a revised proportional fee-in-lieu payment will also be required.

Section 8.7

Section 8.7 Munjoy Hill Neighborhood Conservation Overlay District- height bonus, requires developments of three or more units on lots over 2000 sf, with a building height of greater than 35' to a maximum of 45' in height, include at least one workforce housing unit for rent or for sale. The Workforce unit shall be no smaller than 50% of the average size of the other units in the development and only be sold or rented to a household at or below the applicable income levels. The workforce unit shall be deed restricted for affordability for the longest term possible under state and federal law.

The development at 33 Montreal Street proposes the creation of a building that triggers the maximum height requirement within the Munjoy Hill Neighborhood Conservation Overlay District. Based on the requirements outlined in Section 8.7 the applicant is required to create a housing unit that is no smaller than 50% of the average size of the other units (or 853.96 sf). The Applicant has elected to provide Unit 14, a two-bedroom unit that is 1059.27 sf. As such, the project has met the minimum requirements set forth in Section 8.7.

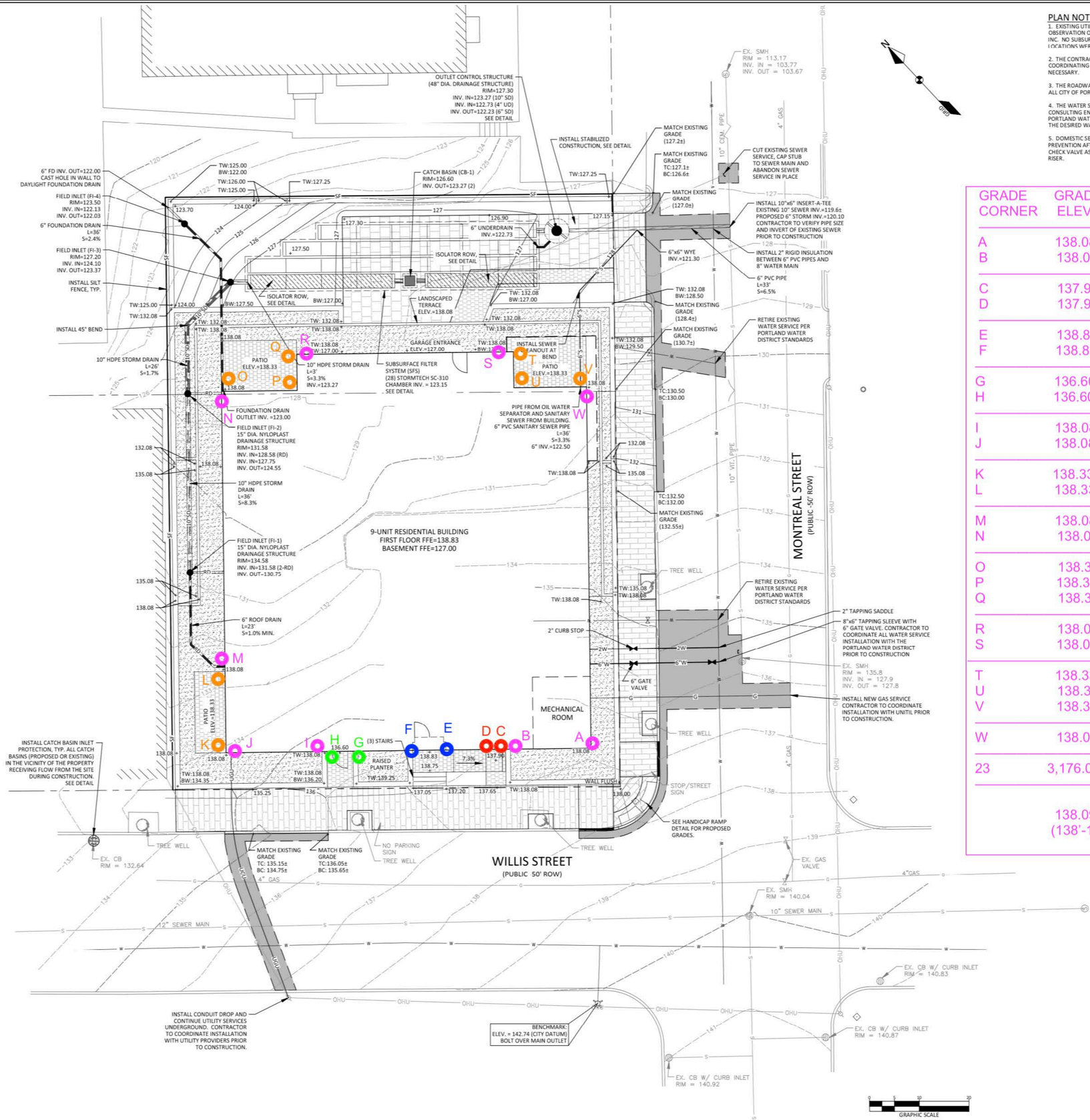
Staff Recommendation

Staff recommends, should the Board Approve the Munjoy Hill Neighborhood Conservation Overlay District height density bonus, the Board require the Applicant and the City to enter into an Affordable Housing Agreement (AHA) for unit 14 located at 33 Montreal Street before a building permit may be issued.

The Affordable Housing Agreement will outline the details of the affordability restrictions placed on the workforce unit and will be filed as a covenant to the 33 Montreal Street property deed with the Cumberland County Registry of Deeds before a certificate of occupancy may be issued.

Sincerely,

Victoria Volent
Housing Program Manager



PLAN NOTES:

1. EXISTING UTILITY LOCATION SHOWN HEREON IS BASED SOLELY ON FIELD OBSERVATION OF PAINTED UTILITY MARKINGS ON THE GROUND SURFACE BY SURVEY INC. NO SUBSURFACE EXPLORATION OR DETAILED FIELD SURVEY OF UTILITY LOCATIONS WERE PERFORMED.
2. THE CONTRACTOR AND OWNER ARE RESPONSIBLE FOR NOTIFYING DIG SAFE AND COORDINATING ALL EXISTING UTILITY RELOCATION AND REPAIR THAT MAY BE NECESSARY.
3. THE ROADWAY AND SIDEWALK REPAIRS SHALL BE DONE IN ACCORDANCE WITH ALL CITY OF PORTLAND REQUIREMENTS AND SPECIFICATIONS.
4. THE WATER SERVICE SIZE WAS NOT DESIGNED OR ANALYZED BY DM ROMA CONSULTING ENGINEERS. THE OWNER IS RESPONSIBLE FOR COORDINATING WITH PORTLAND WATER DISTRICT AND OTHER DESIGN PROFESSIONALS TO DETERMINE THE DESIRED WATER SERVICE SIZE TO SERVE THE SPECIFIC NEEDS OF THE PROJECT.
5. DOMESTIC SERVICE WILL REQUIRE NON-TESTABLE DUAL CHECK BACKFLOW PREVENTION AFTER THE METER. FIRE SERVICE WILL REQUIRE TESTABLE DOUBLE CHECK VALVE ASSEMBLY FOR BACKFLOW PREVENTION PRIOR TO FIRE SPRINKLER RISER.

GRADE CORNER	GRADE ELEV.	
A	138.08	TYP. GRADE
B	138.08	
C	137.90	LANDING
D	137.90	
E	138.83	ENTRY
F	138.83	
G	136.60	EGRESS DOOR
H	136.60	
I	138.08	TYP. GRADE
J	138.08	
K	138.33	PATIO
L	138.33	
M	138.08	TYP. GRADE
N	138.08	
O	138.33	PATIO
P	138.33	
Q	138.33	
R	138.08	TYP. GRADE
S	138.08	
T	138.33	PATIO
U	138.33	
V	138.33	
W	138.08	TYP. GRADE
23	3,176.02 = TOTAL	

138.09 = AVERAGE GRADE (138'-1")

LEGEND

EXISTING	PROPOSED
PROPERTY LINE/R.O.W.	
ABUTTER PROPERTY LINE	
TIE LINE	
SETBACK	
EASEMENT LINE	
GRANITE MONUMENT	■
IRON PIN/DRILL HOLE	●
CENTERLINE	
BUILDING	
EDGE OF PAVEMENT/CURB	
EDGE OF GRAVEL	
EDGE OF CONCRETE	
EDGE OF WETLANDS	
CENTERLINE OF STREAM	
CONTOUR LINE 200 201	200 201
TREELINE	
CATCHBASIN	■
DRAINAGE MANHOLE	●
CULVERT/STORMDRAIN	
UNDERDRAIN	UD
SEWER MANHOLE	●
SANITARY SEWER PIPE	S
FORCE MAIN	FM
WATER MAIN	W
WATER VALVE	⋈
HYDRANT	
UTILITY POLE	
LIGHT POLE	
OVERHEAD UTILITIES	OHU
UNDERGROUND UTILITIES	UGU
TRANSFORMER PAD	T
GAS MAIN	G
GAS VALVE	⋈
RIPRAP	
SILT FENCE	SF

STATE OF MAINE — JAYSON R. HASKELL No. 13002 — REGISTERED PROFESSIONAL ENGINEER — 10-22-19

DM ROMA
CONSULTING ENGINEERS
P.O. BOX 1116
WINDHAM, ME 04062
(207) 310 - 0506

REV	DATE	BY	DESCRIPTION
A	8-12-19	DMR	ISSUED FOR PERMITTING
B	10-11-19	DMR	REVISED PER CITY REVIEW
C	10-22-19	DMR	REVISED PER CITY REVIEW

GRADING AND UTILITY PLAN

37 MONTREAL STREET
PORTLAND, MAINE

FOR APPLICANT:
37 MONTREAL, LLC.
33 MONTREAL STREET
PORTLAND, ME, 04101

18053	JOB NUMBER:
1" = 10'	SCALE:
10-22-2019	DATE:
--	
C2.0	

CITY OF PORTLAND
Planning & Urban Development Department

Att. A

LEVEL II and LEVEL III SITE PLAN
GENERAL DOCUMENT AND DRAWINGS CHECKLIST
Please submit each document as a separate PDF file
Please confirm by electronically checking the boxes to the left

** PLEASE FILL OUT AND UPLOAD SEPARATELY THE ZONING TABLE AND WAIVER TABLE AS NOTED BELOW **

1

GENERAL APPLICATION DOCUMENTS

Yes	NA	
☑	☐	**Project Description** • Cover Letter with detailed project description
☑	☐	**Completed Checklist – Level I: Site Alteration** (this document)
☑	☐	**Right, Title and Interest** • Deeds, leases, or purchase and sales agreements
☐	☑	**Evidence of State or Federal Approvals** • Permits or letters of non-jurisdiction, if applicable
☑	☐	**Zoning Assessment** • Table listing required and proposed uses and dimensional standards Zoning Assessment Table
☐	☑	**Existing and/or Proposed Easements or Covenants, applicable.** • Evidence of existing easements and any proposed easements
☐	☑	**Waiver Requests** • Written request for waiver describing request and reason Waiver Table
☑	☐	**Financial Capability** • Letter or evidence from a financial institution or third party verifying financial capacity to undertake project
☑	☐	**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
Please Submit each document as a separate PDF file

2

TRANSPORTATION

Yes ☑ NA ☐	**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 ☐	**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 ☑	**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 ☐	**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 ☑	**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 ☑	**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 ☐	**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 ☐	**Snow Storage (14-526 (a) 4 d)** • Management plan for snow removal and locate snow storage areas on plan
Yes ☐ NA ☑	**Traffic Demand Management (TDM) (14-526 (a) 5), if applicable** • Develop TDM with Trip Reduction Targets and Strategies

3

ENVIRONMENTAL AND LANDSCAPE FEATURES	
Yes ☐ NA ☑	**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 ☐	**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 ☐	**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 ☑	**Parking Lot Landscaping (14-526 (b) 2 b ii), if applicable** • Landscaped islands within parking areas (Technical Manual, Section 4)
Yes ☑ NA ☐	**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

4

ENVIRONMENTAL AND STORMWATER	
Yes ☑ NA ☐	**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

5	PUBLIC INFRASTRUCTURE AND SAFETY	
	Yes ☑ NA ☐	**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 ☐	**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 ☐	**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
6	SITE DESIGN	
	Yes ☑ NA ☐	**Massing, Ventilations and Wind Impact (14-526 (d) 1)** NA • Wind and ventilation impacts on adjoining structures and/or adjacent public spaces. Wind study, if applicable NA • Bulk, location or height impacts on adjoining structures • Identify and locate HVAC equipment and venting away from public spaces and residential properties NA • Identify screening and manufacturing specifications for noise, if applicable
	Yes ☐ NA ☑	**Shadows (14-526 (d) 2), if applicable** • Shadow analysis of impacts on publicly accessible open space (Technical Manual, Section 11)
	Yes ☑ NA ☐	**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 ☑	**View Corridors (14-526 (d) 4), if applicable** • Protection of designated view corridors (Portland Design Manual, Appen. 1)

Yes ☐ NA ☑	**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 ☑	**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 ☑	**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 ☑	**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 ☐	**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
7	**Construction Management Plan**	
Yes ☑ NA ☐	**Construction Management Plan** • Construction Management Document and Plan	

LEVEL II AND LEVEL III SITE PLAN DRAWINGS CHECKLIST

Please upload the following DRAWINGS with the listed details into e-Plan as separate pdfs

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

- [x] Must be in compliance with Technical Manual, Section 13

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

Existing Conditions

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

Proposed Site Plan

- [x] Ground floor area, and grade elevations for all buildings

Access, Circulation, and Parking

- [x] Streets and intersections adjacent to site, any proposed geometric modifications
- [x] Location, dimensions and materials of all existing and proposed driveways, vehicle, bicycle, & pedestrian access ways with corresponding curb lines
- [x] 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
- [x] Location of fire hydrants
- [ ] Location of solid waste management facilities

10 **UTILITY PLAN including:**

- [x] Existing utilities on site and within public streets
- [x] 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
- [x] Electric utility infrastructure

11 **GRADING AND DRAINAGE PLAN including:**

- [x] Existing grades and drainage
- [x] Proposed grades
- [x] Proposed stormwater management meeting Technical Manual (Section 5), standards
- [ ] Location and proposed alteration of a water course
- [ ] Preservation or alteration of wetlands

12 **EROSION CONTROL**

- [x] Must be in compliance with Technical Manual, Section 5

13 **LANDSCAPE PLAN including:**

- [x] Existing vegetation to be preserved and preservation measures
- [x] Proposed landscaping and buffers
- [x] Planting schedule

14 RECORDING PLAT, if applicable

- [x] If Subdivision, must be in compliance with requirements of Section 14-496 (b)

15 ARCHITECTURAL PLANS AND RENDERINGS including:

- [x] Exterior building elevations, color renderings, illustrations of all sides
- [x] Location and dimensions of all existing and proposed HVAC and mechanical equipment, all proposed screening
- [x] Provide context drawings, if applicable (Design Manual, page 1)
- [x] Floor plans

August 12, 2019 – Revised November 03, 2021

Att. B

19 WILLIS STREET, PORTLAND

(FORMERLY 33-37 MONTREAL STREET)

The following outlines how the proposed project has been designed to meet the applicable standards of the City of Portland associated with Level III: Residential Site Plan and Subdivision review.

GENERAL DOCUMENTS - PROJECT DESCRIPTION

The project site is located at the corner of Willis Street and Montreal Street, Munjoy Hill, on land that combines the two existing lots at 33 and 37 Montreal Street.
(CBL 015 B015001 and CBL 015 B022001).

The new project address will become 19 Willis Street, as confirmed per Portland Fire Department E911 protocols in August 2021.

The new building will contain (12) twelve residential apartments, with a total enclosed gross area of approximately 22,900 square feet on four stories above grade for apartments and common spaces.

The residences will include the following unit mix:

1st floor: (4) units, comprising
(1) 1 Bedroom unit
(1) 2 Bedroom units
(2) 3 Bedroom units

2nd floor: (4) units, comprising
(1) 1 Bedroom unit
(1) 2 Bedroom units
(2) 3 Bedroom units

3rd floor: (2) 3 Bedroom units

4th floor: (2) 3 Bedroom units

A basement level of approximately 5,800 gross square feet will contain a parking garage with (13) car parking spaces, owner's storage areas, mechanical rooms, and common spaces.

The building will contain a commercial elevator and will be protected by an NFPA 13R sprinkler system.

Kaplan Thompson Architects

Return to:

Saint John's Valley, LLC
33 Montreal Street
Portland, ME 04101

WARRANTY DEED

KNOW ALL MEN BY THESE PRESENTS: That I, **Russell A. Winslow**, of 33 Montreal Street, Portland, ME 04101, for consideration paid, grant to **Saint John's Valley, LLC**, of 8 Drew Road, South Portland, ME 04106, with WARRANTY COVENANTS:

SEE ATTACHED EXHIBIT A.

MEANING and INTENDING to describe and convey the same premises conveyed to the grantor herein by deed of Russell A. Winslow. Personal Representative of The Estate of Frances B, Winslow dated 9/13/2005 and recorded at Book 23150, Page 95 in the Cumberland County Registry of Deeds.

Executed this 7 day of October, 2016

Russell A. Winslow

State of Maine
County of Cumberland 10/7/2016

Then personally appeared before me the said Russell A. Winslow and acknowledged the foregoing to be his voluntary act and deed.

Notary Public/Attorney at Law
Commission expiration:

Jane Barriault Attorney at Law TCW

EXHIBIT A

A certain lot or parcel of land, with the buildings thereon, situated on the northerly side of Montreal Street, in Portland, County of Cumberland and State of Maine, bounded and described as follows:

Beginning at a point in said northerly sideline of Montreal Street, distant eighty (80) feet northeasterly from the easterly side of Willis Street, and running northwesterly, parallel with said Willis Street, ninety (90) feet; thence northeasterly, parallel with said Montreal Street, forty (40) feet; thence southeasterly, parallel with the first line, ninety (90) feet to Montreal Street; thence southwesterly on Montreal Street, forty (40) feet to the starting point; being lot numbered fifty-four (54) on A. P. Marshall's Plan, recorded in the Cumberland County Registry of Deeds, Plan Book 1, Page 41.

BAS 10/7/16
TLW

WARRANTY DEED

Maine Statutory Short Form

MAINE REAL ESTATE TAX PAID

KNOW ALL MEN BY THESE PRESENTS, That **Anne-Marie O'Rourke** of Portland, in the County of Cumberland, and State of Maine, for consideration paid, grant(s) to **Kevin James Carter,** whose mailing address is 7029 Denison Road, Summerfield, NC 27358, with **WARRANTY COVENANTS**, the real property situated in **Portland**, County of **Cumberland**, and **State of Maine**, more particularly described in Exhibit A attached hereto and incorporated herein by reference.

IN WITNESS WHEREOF, this instrument has been executed this 31st day of August, 2017.

Witness to all

Anne-Marie O'Rourke

State of Maine
County of Cumberland, ss. August 31, 2017

Personally appeared before me the above named **Anne-Marie O'Rourke** and acknowledged the foregoing instrument to be her free act and deed.

Notary Public/Attorney at Law

CYNTHIA CHADWICK-GRANGER
MY COMMISSION EXPIRES JAN. 22, 2018
NOTARY PUBLIC
MAINE

File Number 2017-656

EXHIBIT A
(DEED)

A certain lot or parcel of land, situated in the City of Portland, County of Cumberland, and State of Maine, with the buildings and improvements thereon, and situated on the northerly corner of Montreal Street and Willis Street and bounded and described as follows:

Beginning at said corner formed by the northwesterly side of Montreal Street and the northeasterly side of Willis Street;

thence northeasterly by Montreal Street eighty (80) feet to a point and land now or formerly of Daniel K. Reed;

thence northwesterly by said Reed land ninety (90) feet and to lot numbered thirty-one (31) as shown on A. P. Marshall's Plan of Lots;

thence southwesterly by said lot numbered thirty-one (31) eighty (80) feet to Willis Street;

thence southeasterly by Willis Street ninety (90) feet to the point of beginning.

For title, reference may be had to a deed recorded in the Cumberland Registry of Deeds in Book 8708, Page 61. Mary C. O'Rourke deceased on September 21, 2012, leaving Anne-Marie O'Rourke as surviving joint tenant.

Received
Recorded Register of Deeds
Sep 01,2017 10:56:24A
Cumberland County
Nancy A. Lane

BANK OF AMERICA

PRIVATE BANK

380 Knollwood Street, Suite 201
Winston Salem, NC 27103
T 336.714.4880 F 980.233.7201 M 336.690.8812
Kyle.j.quinlivan@bofa.com

December 3rd, 2021

To Whom It May Concern:

I am writing this letter on behalf of 37 Montreal, LLC in reference to the upcoming development of 12 condominiums located on Montreal St in Portland, Maine.

Bank of America, N.A. has an ongoing lending and wealth relationship with several of the principals in 37 Montreal, LLC. Bank of America, N.A. is currently the lender of the property located at 37 Montreal St. To date, the principals of 37 Montreal, LLC have proven to be highly qualified, effective and professional team.

We are aware of the new development located at 33-37 Montreal St and would be pleased to entertain financing requests from 37 Montreal, LLC for this project and other projects in the future.

Should you have any questions, please feel free to contact me at 336-714-4880.

Sincerely,

Kyle Quinlivan

Kyle J. Quinlivan
Senior Vice President, Private Client Manager

Bank of America Private Bank is a division of Bank of America, N.A., Member FDIC, and a Wholly owned subsidiaries of Bank of America Corporation.
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Camden NATIONAL BANK

MARK V. STASIUM
SENIOR VICE PRESIDENT
Direct Dial: 207.699.3392
mstasium@camdennational.com

July 22, 2019

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

Re: 37 Montreal Street LLC

Dear Planning Board Members:

I am writing regarding the proposed residential building being proposed by 37 Montreal Street LLC located at Montreal and Willis Street in Portland.

I have known the principal member of the LLC for 20+ years and have financed a number of real estate investments for the individual. The principal member is an experienced developer and commercial real estate owner and manager and exhibits strong financial capacity. We provide financing for a number of the individual's properties, and all loan obligations and deposit accounts with Camden have been handled in a fully satisfactory manner.

We have reviewed the preliminary information for the proposed project, and based on our review, Camden is highly interested in providing financing for the project. Our interest remains subject to full credit underwriting by Camden's credit department, approval from Camden's senior loan officers, and receipt of all municipal permits by the developer.

Please do not hesitate to contact me if you have further questions.

Very Truly Yours,

Mark V. Stasium
Senior Vice President

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

Planning & Urban Development Department

19 WILLIS ST
(FORMERLY 33-37 MONTREAL ST)
Aug. 12, 2019
Revised Nov.03, 2021

ZONING ANALYSIS Relevant Zone(s) R6

Munjoy Hill Neighborhood Conservation District Overlay

All Projects:

	Required	Proposed
Lot Size	2,000 sf min.	10,800 sf
Area Per Dwelling Unit	725 sf min.	900 sf
Minimum Street Frontage	20' min.	90' Willis St
Front Yard Minimum	5'-0"	5'-0"
Front Yard Maximum		
Rear Yard	15'-0" (>35' ht.)	>30'-0"
Yard Right		
Yard Left	10'-0" (>35' ht.)	10'-0"
Side Street Setback	5'-0" (>35' ht.)	5'-0" / 3'-0"
Step Back	15' rear / 10' side	>30' rear/10' side
Maximum Lot Coverage	60% max.	53%
Minimum Lot Coverage		
Maximum Height	45' above ave. gr.	45'-0"
Open Space	20% min.	26%
Maximum Impervious Area		
Pavement Setback		
Floor Area Ratio		
Off Street Parking Spaces	1 space per unit	1.1 per unit
Loading Bays		
Other 1		
Other 2		
Other 3		

Planned Residential Unit Developments (PRUD) Requirements

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

Affordable Housing Density Bonuses (if applicable)

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

DM ROMA
CONSULTING ENGINEERS

TRANSPORTATION

The following outlines how the proposed project at 33/37 Montreal Street has been designed to meet the applicable standards of the City of Portland associated with Level III: Residential Site Plan and Subdivision review.

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

The proposed project design and layout considered traffic impact and integrated provisions for traffic improvements through the design. The project site proposes to eliminate the existing curb cut for the driveway at 37 Montreal Street, and will utilize the existing curb cut with proposed driveway improvements at the same location of the existing curb cut for the driveway at 33 Montreal Street. The decision to abandon and eliminate the curb cut at 37 Montreal Street will effectively move the traffic egress and ingress for the site to the north approximately 108 linear feet north of the intersection at Willis Street & Montreal Street. Additionally, the curb cut in Willis Street, serving 37 Montreal Street will also be abandoned and sidewalk and curb will be installed in place.

The project design includes the improvements of a new 14-foot wide driveway, leading to underground parking areas. It is anticipated that the proposed driveway will provide adequate access to the site from Montreal Street and during peak traffic hours the project design should allow for traffic to exit from Montreal Street freely, as the proposed parking area and driveway will provide ample queuing such that Montreal Street will not be congested when vehicles try and enter the site. For vehicles leaving the site, the project layout and design will provide ample queuing on-site during peak traffic times with multiple vehicles trying to exact, and therefore should not impact traffic flow in Montreal Street. Additionally, with the proposed access to the site more than 100-ft from the intersection of Willis Street and Montreal Street, there will be less potential for conflicting turning movements with vehicles exiting the site and vehicles negotiating the four-way intersection.

Section 14-526 (a) (2) (c) – Sidewalks

The existing project site currently has existing sidewalk (brick with granite curbing) along the Willis Street and Montreal Street frontage. The existing sidewalk will be protected in place where possible and any disturbance due to improvements (driveways, site improvements, utility connections, etc.) will be conditioned to re-lay or re-construct the sidewalk in accordance with Section 14-498 and 14-499 of the City of Portland Code.

Additionally, on-site provisions for pedestrian access include extending sidewalk from Montreal Street at the proposed driveway location into the site and to the proposed lower level building entries and parking garage. Along Willis Street, the project proposes to construct the building

main entrance. Improvements along Willis Street include a main building entry stairway and integrated access ramp leading to the first level foyer, an entry/exit to the building's proposed stairwell, elimination of an existing curb cut, and construction of sidewalk to connect proposed improvements to existing sidewalk.

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

Snow storage for the project site appears adequate, and the project design and layout provide an area of approximately 300 sq. ft. located adjacent to the proposed driveway within the proposed flat yard area near the northwesterly corner of the site. The snow storage will not conflict with the project site access or pedestrian walkways. The snow storage area will be located of lawn/landscaped ground cover and will drain to the proposed catch basin, and will effectively treat any snow melt runoff with the subsurface chamber system (proposed StormTech SC-310 chamber system) prior to discharging from the site.

DM ROMA
CONSULTING ENGINEERS

ENVIRONMENTAL AND STORMWATER

The following outlines how the proposed project at 33/37 Montreal Street has been designed to meet the applicable standards of the City of Portland associated with Level III: Residential Site Plan and Subdivision review.

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

Watershed – The project site drains either to the northeast along the curbline in Montreal Street or to the north to the abutting property. To our knowledge this is a combined sewer and storm drain system. The project site is not tributary to an Urban Impaired Stream as defined by Maine DEP Chapter 502.

Sewage Disposal – The building will be connected to the public sewer in Montreal Street.

Soil Conditions – A Medium Intensity Soils Map is included as Attachment D. The soils are classified by the US Department of Agriculture Natural Resources Conservation Service as a Hinckley Loamy Sand, which has a Hydrologic Soil Rating of "A". A geotechnical investigation was performed by Summit Geoengineering Services for the project site and is contained in Attachment C.

Flooding Standards - The project has been designed to incorporate a formal catch basin and storm drain collection system for stormwater management, which will flow into a Stormtech Chamber System and will retain the 1" storm event allowing the runoff to infiltrate into the ground slowly providing both stormwater treatment and quantity control. The flow generated by the larger storm events will spill over a concrete weir panel within the outlet control structure and will be conveyed in a relatively small storm drain, connecting into the existing sewer system which we believe is a combined system. The existing 10" sewer main should have the capacity to convey this flow due to the relatively steep slope and since it located at the beginning of the sewer main run.

An analysis was prepared to determine if there were any increases in overland peak rates of runoff onto abutting properties. There are two distinct locations of stormwater discharge from the property. Study Point 1 represents the discharge point at the north of the property. Study Point 2 is located along the gutter line of Montreal Street, just downstream of the projects proposed driveway location. As a result of the infiltration of the stormwater collection system and the overflow pipe of this system connecting into the combined sewer system, the peak rates of runoff have effectively been maintained or reduced from the pre-developed condition. The output data from the HydroCAD model has been included in Attachment A and the pre- and post-development watershed maps have been included in the design plan set.

Basic Standards – The plan set includes erosion control measures to be implemented temporarily during construction and permanently upon completion of the project. The erosion control plan was prepared based on the methodology outlined in the Maine Department of Environmental Protection publication titled "Maine Erosion and Sediment Control Best Management Practices Manual for Designers and Engineers" dated October 2016.

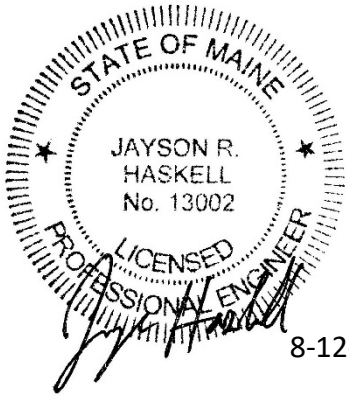
General Standards- The stormwater management plan includes the construction of an underground stormwater storage and treatment system that consists of a Stormtech Chamber System designed to infiltrate the required water quality volume. The system has been designed to effectively collect, infiltrate and provide treatment of approximately 97% of the total new impervious area and approximately 88% of the total new developed area, exceeding the requirement as indicated in the General Standards of MDEP Chapter 500. Calculations for the sizing of the stormwater components are included as Attachment B. Test pit analysis of the subsurface soils in the vicinity of the proposed Stormtech Chamber System is included as Attachment C. An Inspection, Maintenance and Housekeeping Plan has also been prepared for the project and has been included in this report as Attachment E.

Prepared by:

DM Roma Consulting Engineers



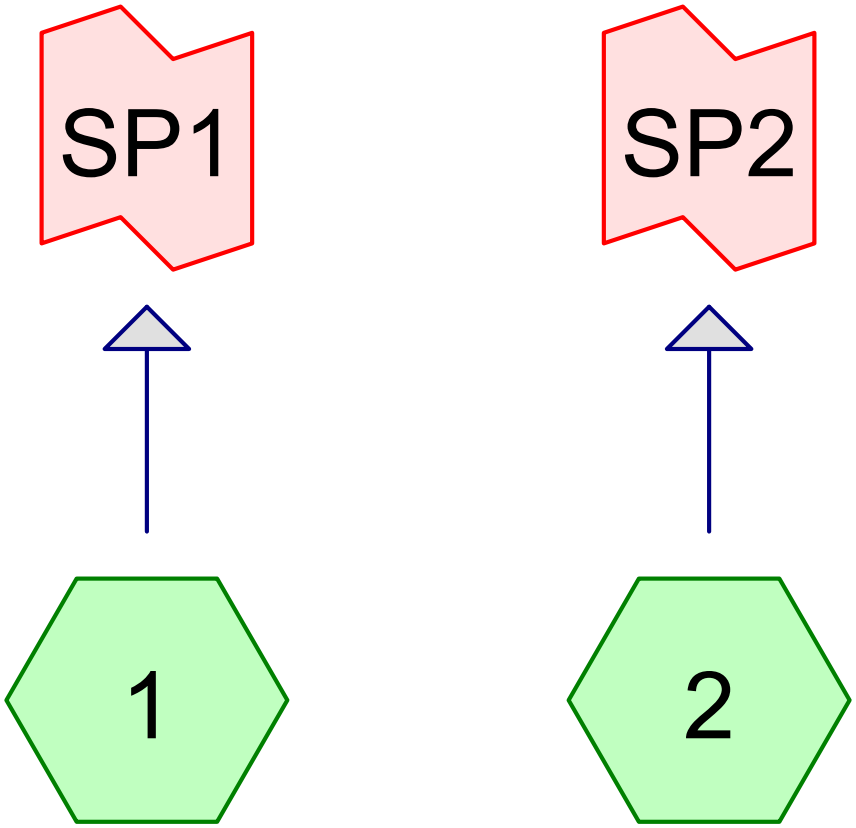
Jayson R. Haskell, P.E.
Southern Maine Regional Manager



8-12-19

ATTACHMENT A

HYDROCAD MODEL OUTPUT



Subcat Reach Pond Link

Routing Diagram for 18053-PRE
Prepared by DM Roma Consulting Engineers, Printed 8/12/2019
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Time span=0.00-48.00 hrs, dt=0.05 hrs, 961 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment 1: Runoff Area=11,310 sf 49.04% Impervious Runoff Depth=2.47"
Flow Length=129' Tc=6.0 min CN=68 Runoff=0.73 cfs 2,326 cf

Subcatchment 2: Runoff Area=3,595 sf 92.16% Impervious Runoff Depth=4.99"
Flow Length=151' Tc=6.0 min CN=93 Runoff=0.44 cfs 1,494 cf

Link SP1: Inflow=0.73 cfs 2,326 cf
Primary=0.73 cfs 2,326 cf

Link SP2: Inflow=0.44 cfs 1,494 cf
Primary=0.44 cfs 1,494 cf

Summary for Subcatchment 1:

Runoff = 0.73 cfs @ 12.10 hrs, Volume= 2,326 cf, Depth= 2.47"

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-Year Rainfall=5.80"

	Area (sf)	CN	Description
*	3,540	98	Ex. roofs,
*	366	98	Ex. paved roads & sidewalk
*	1,640	98	Ex. paved driveways
	5,764	39	>75% Grass cover, Good, HSG A
	11,310	68	Weighted Average
	5,764		50.96% Pervious Area
	5,546		49.04% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
3.4	40	0.1215	0.20		**Sheet Flow, Seg A to Seg B** Grass: Dense n= 0.240 P2= 3.10"
0.2	52	0.0991	5.07		**Shallow Concentrated Flow, Seg B to Seg C** Unpaved Kv= 16.1 fps
0.3	26	0.0068	1.67		**Shallow Concentrated Flow, Seg C to Seg D** Paved Kv= 20.3 fps
0.0	11	0.2052	7.29		**Shallow Concentrated Flow, Seg D to Seg E** Unpaved Kv= 16.1 fps
3.9	129	Total, Increased to minimum Tc = 6.0 min			

Summary for Subcatchment 2:

Runoff = 0.44 cfs @ 12.09 hrs, Volume= 1,494 cf, Depth= 4.99"

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-Year Rainfall=5.80"

	Area (sf)	CN	Description
*	0	98	Ex. roofs,
*	3,313	98	Ex. paved roads & sidewalk
*	0	98	Ex. paved driveways
	282	39	>75% Grass cover, Good, HSG A
	3,595	93	Weighted Average
	282		7.84% Pervious Area
	3,313		92.16% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.4	47	0.0731	1.96		**Sheet Flow, Seg A to Seg B** Smooth surfaces n= 0.011 P2= 3.10"
0.1	62	0.0896	13.28	45.66	**Trap/Vee/Rect Channel Flow, Seg B to Seg C** Bot.W=0.00' D=0.50' Z= 0.1 & 27.4 '/' Top.W=13.75' n= 0.013 Asphalt, smooth
0.0	21	0.0950	13.97	68.79	**Trap/Vee/Rect Channel Flow, Seg C to Seg D** Bot.W=0.00' D=0.50' Z= 13.0 & 26.4 '/' Top.W=19.70' n= 0.013 Asphalt, smooth
0.0	21	0.0892	13.24	43.86	**Trap/Vee/Rect Channel Flow, Seg D to Seg E** Bot.W=0.00' D=0.50' Z= 0.1 & 26.4 '/' Top.W=13.25' n= 0.013 Asphalt, smooth
0.5	151	Total, Increased to minimum Tc = 6.0 min			

Summary for Link SP1:

Inflow Area = 11,310 sf, 49.04% Impervious, Inflow Depth = 2.47" for 25-Year event
Inflow = 0.73 cfs @ 12.10 hrs, Volume= 2,326 cf
Primary = 0.73 cfs @ 12.10 hrs, Volume= 2,326 cf, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs

Summary for Link SP2:

Inflow Area = 3,595 sf, 92.16% Impervious, Inflow Depth = 4.99" for 25-Year event
Inflow = 0.44 cfs @ 12.09 hrs, Volume= 1,494 cf
Primary = 0.44 cfs @ 12.09 hrs, Volume= 1,494 cf, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs

Time span=0.00-48.00 hrs, dt=0.05 hrs, 961 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment 1: Runoff Area=11,310 sf 49.04% Impervious Runoff Depth=0.68"
Flow Length=129' Tc=6.0 min CN=68 Runoff=0.17 cfs 640 cf

Subcatchment 2: Runoff Area=3,595 sf 92.16% Impervious Runoff Depth=2.35"
Flow Length=151' Tc=6.0 min CN=93 Runoff=0.22 cfs 704 cf

Link SP1: Inflow=0.17 cfs 640 cf
Primary=0.17 cfs 640 cf

Link SP2: Inflow=0.22 cfs 704 cf
Primary=0.22 cfs 704 cf

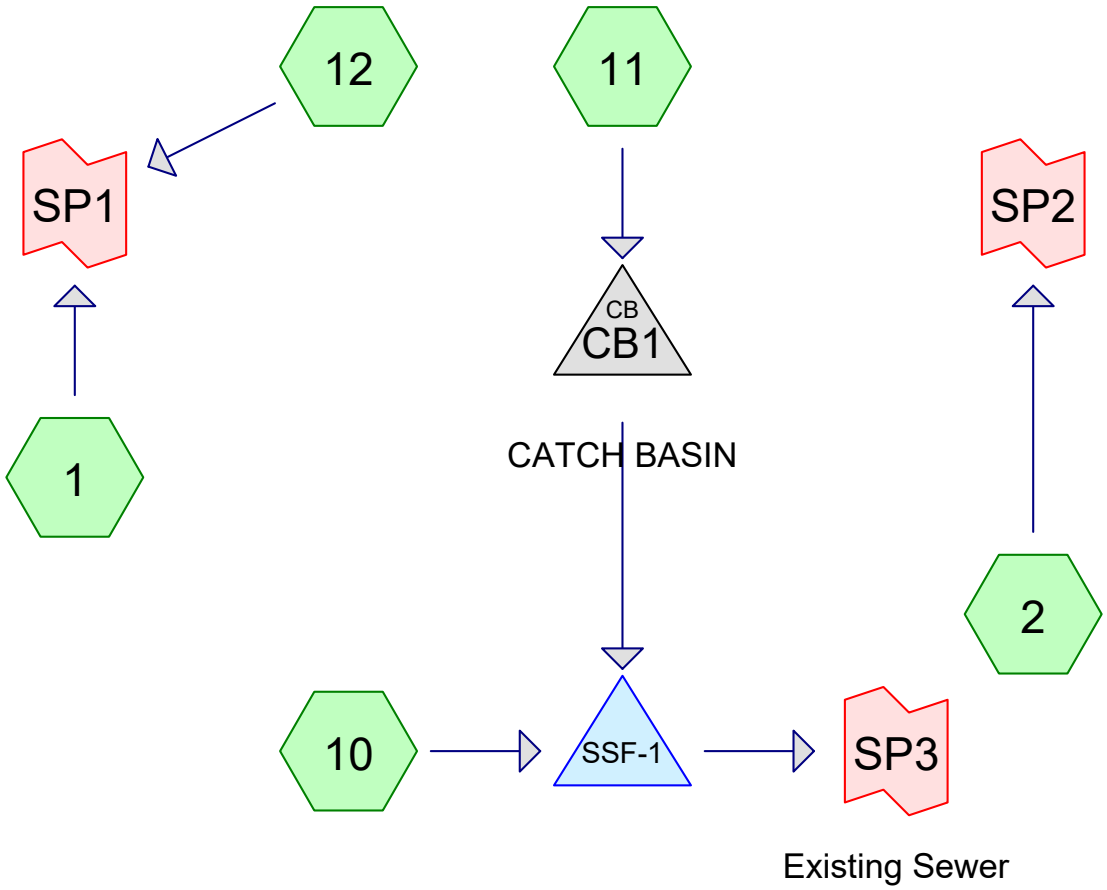
Time span=0.00-48.00 hrs, dt=0.05 hrs, 961 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment 1: Runoff Area=11,310 sf 49.04% Impervious Runoff Depth=1.60"
Flow Length=129' Tc=6.0 min CN=68 Runoff=0.46 cfs 1,508 cf

Subcatchment 2: Runoff Area=3,595 sf 92.16% Impervious Runoff Depth=3.81"
Flow Length=151' Tc=6.0 min CN=93 Runoff=0.34 cfs 1,140 cf

Link SP1: Inflow=0.46 cfs 1,508 cf
Primary=0.46 cfs 1,508 cf

Link SP2: Inflow=0.34 cfs 1,140 cf
Primary=0.34 cfs 1,140 cf



Subcat Reach Pond Link

Routing Diagram for 18053-POST
Prepared by DM Roma Consulting Engineers, Printed 8/12/2019
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Time span=0.00-96.00 hrs, dt=0.05 hrs, 1921 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment 1: Runoff Area=570 sf 56.32% Impervious Runoff Depth=2.83"
Flow Length=83' Tc=6.0 min CN=72 Runoff=0.04 cfs 134 cf

Subcatchment 2: Runoff Area=3,470 sf 95.48% Impervious Runoff Depth=5.21"
Flow Length=151' Tc=6.0 min CN=95 Runoff=0.43 cfs 1,507 cf

Subcatchment 10: Runoff Area=8,015 sf 81.78% Impervious Runoff Depth=4.33"
Flow Length=72' Tc=6.0 min CN=87 Runoff=0.89 cfs 2,889 cf

Subcatchment 11: Runoff Area=1,598 sf 72.72% Impervious Runoff Depth=3.80"
Flow Length=45' Tc=6.0 min CN=82 Runoff=0.16 cfs 507 cf

Subcatchment 12: Runoff Area=716 sf 5.31% Impervious Runoff Depth=0.55"
Flow Length=23' Tc=6.0 min CN=42 Runoff=0.00 cfs 33 cf

Pond CB1: CATCH BASIN Peak Elev=123.41' Inflow=0.16 cfs 507 cf
10.0" Round Culvert x 2.00 n=0.013 L=1.6' S=0.0437 '/' Outflow=0.16 cfs 507 cf

Pond SSF-1: Peak Elev=124.93' Storage=938 cf Inflow=1.05 cfs 3,396 cf
Discarded=0.00 cfs 956 cf Primary=0.92 cfs 2,439 cf Outflow=0.92 cfs 3,396 cf

Link SP1: Inflow=0.05 cfs 167 cf
Primary=0.05 cfs 167 cf

Link SP2: Inflow=0.43 cfs 1,507 cf
Primary=0.43 cfs 1,507 cf

Link SP3: Existing Sewer Inflow=0.92 cfs 2,439 cf
Primary=0.92 cfs 2,439 cf

Summary for Subcatchment 1:

Runoff = 0.04 cfs @ 12.09 hrs, Volume= 134 cf, Depth= 2.83"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-96.00 hrs, dt= 0.05 hrs
Type III 24-hr 25-Year Rainfall=5.80"

	Area (sf)	CN	Description
*	95	98	Existing Pavement
*	226	98	Proposed Concrete
*	179	39	Proposed Landscape A
*	70	39	Existing Landscape
	570	72	Weighted Average
	249		43.68% Pervious Area
	321		56.32% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
3.2	15	0.0199	0.08		**Sheet Flow, Seg A to Seg B** Grass: Dense n= 0.240 P2= 3.10"
0.6	68	0.0516	1.83		**Sheet Flow, Seg B to Seg C** Smooth surfaces n= 0.011 P2= 3.10"
3.8	83	Total, Increased to minimum Tc = 6.0 min			

Summary for Subcatchment 2:

Runoff = 0.43 cfs @ 12.09 hrs, Volume= 1,507 cf, Depth= 5.21"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-96.00 hrs, dt= 0.05 hrs
Type III 24-hr 25-Year Rainfall=5.80"

	Area (sf)	CN	Description
*	3,313	98	Existing Pavement
*	157	39	Proposed Landscape A
	3,470	95	Weighted Average
	157		4.52% Pervious Area
	3,313		95.48% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.4	47	0.0731	1.96		**Sheet Flow, Seg A to Seg B** Smooth surfaces n= 0.011 P2= 3.10"
0.1	62	0.0896	13.28	45.66	**Trap/Vee/Rect Channel Flow, Seg B to Seg C** Bot.W=0.00' D=0.50' Z= 0.1 & 27.4 '/' Top.W=13.75' n= 0.013 Asphalt, smooth
0.0	21	0.0950	13.97	68.79	**Trap/Vee/Rect Channel Flow, Seg C to Seg D** Bot.W=0.00' D=0.50' Z= 13.0 & 26.4 '/' Top.W=19.70' n= 0.013 Asphalt, smooth
0.0	21	0.0892	13.24	43.86	**Trap/Vee/Rect Channel Flow, Seg D to Seg E** Bot.W=0.00' D=0.50' Z= 0.1 & 26.4 '/' Top.W=13.25' n= 0.013 Asphalt, smooth

0.5 151 Total, Increased to minimum Tc = 6.0 min

Summary for Subcatchment 10:

Runoff = 0.89 cfs @ 12.09 hrs, Volume= 2,889 cf, Depth= 4.33"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-96.00 hrs, dt= 0.05 hrs
Type III 24-hr 25-Year Rainfall=5.80"

	Area (sf)	CN	Description
*	5,688	98	Proposed Rooftop
*	867	98	Proposed Concrete
*	1,460	39	Proposed Landscape A
	8,015	87	Weighted Average
	1,460		18.22% Pervious Area
	6,555		81.78% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.0	7	0.0100	2.86	0.56	**Pipe Channel, Seg A to Seg B** 6.0" Round Area= 0.2 sf Perim= 1.6' r= 0.13' n= 0.013
0.1	36	0.0833	11.59	6.32	**Pipe Channel, Seg B to Seg C** 10.0" Round Area= 0.5 sf Perim= 2.6' r= 0.21' n= 0.013 Corrugated PE, smooth interior
0.1	26	0.0170	5.24	2.86	**Pipe Channel, Seg C to Seg D** 10.0" Round Area= 0.5 sf Perim= 2.6' r= 0.21' n= 0.013 Corrugated PE, smooth interior
0.0	3	0.0300	6.96	3.79	**Pipe Channel, Seg D to Seg E** 10.0" Round Area= 0.5 sf Perim= 2.6' r= 0.21' n= 0.013 Corrugated PE, smooth interior
0.2	72	Total, Increased to minimum Tc = 6.0 min			

Summary for Subcatchment 11:

Runoff = 0.16 cfs @ 12.09 hrs, Volume= 507 cf, Depth= 3.80"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-96.00 hrs, dt= 0.05 hrs
Type III 24-hr 25-Year Rainfall=5.80"

	Area (sf)	CN	Description
*	1,033	98	Proposed Pavement
*	129	98	Proposed Concrete
*	436	39	Proposed Landscape A
	1,598	82	Weighted Average
	436		27.28% Pervious Area
	1,162		72.72% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.9	5	0.0566	0.10		**Sheet Flow, Seg A to Seg B** Grass: Dense n= 0.240 P2= 3.10"
0.1	40	0.0600	4.97		**Shallow Concentrated Flow, Seg B to Seg C** Paved Kv= 20.3 fps
1.0	45	Total, Increased to minimum Tc = 6.0 min			

Summary for Subcatchment 12:

Runoff = 0.00 cfs @ 12.29 hrs, Volume= 33 cf, Depth= 0.55"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-96.00 hrs, dt= 0.05 hrs
Type III 24-hr 25-Year Rainfall=5.80"

	Area (sf)	CN	Description
*	678	39	Proposed Landscape A
*	38	98	Proposed Concrete
	716	42	Weighted Average
	678		94.69% Pervious Area
	38		5.31% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.6	11	0.3300	0.33		**Sheet Flow, Seg A to Seg B** Grass: Short n= 0.150 P2= 3.10"
1.8	12	0.0200	0.11		**Sheet Flow, Seg B to Seg C** Grass: Short n= 0.150 P2= 3.10"
2.4	23	Total, Increased to minimum Tc = 6.0 min			

Summary for Pond CB1: CATCH BASIN

Inflow Area = 1,598 sf, 72.72% Impervious, Inflow Depth = 3.80" for 25-Year event
Inflow = 0.16 cfs @ 12.09 hrs, Volume= 507 cf
Outflow = 0.16 cfs @ 12.09 hrs, Volume= 507 cf, Atten= 0%, Lag= 0.0 min
Primary = 0.16 cfs @ 12.09 hrs, Volume= 507 cf

Routing by Stor-Ind method, Time Span= 0.00-96.00 hrs, dt= 0.05 hrs
Peak Elev= 123.41' @ 12.09 hrs
Flood Elev= 126.60'

Device	Routing	Invert	Outlet Devices
#1	Primary	123.27'	**10.0" Round Culvert X 2.00** L= 1.6' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 123.27' / 123.20' S= 0.0437 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.55 sf

Primary OutFlow Max=0.16 cfs @ 12.09 hrs HW=123.41' (Free Discharge)
1=Culvert (Inlet Controls 0.16 cfs @ 1.28 fps)

Summary for Pond SSF-1:

Inflow Area = 9,613 sf, 80.28% Impervious, Inflow Depth = 4.24" for 25-Year event
Inflow = 1.05 cfs @ 12.09 hrs, Volume= 3,396 cf
Outflow = 0.92 cfs @ 12.13 hrs, Volume= 3,396 cf, Atten= 12%, Lag= 2.5 min
Discarded = 0.00 cfs @ 7.20 hrs, Volume= 956 cf
Primary = 0.92 cfs @ 12.13 hrs, Volume= 2,439 cf

Routing by Stor-Ind method, Time Span= 0.00-96.00 hrs, dt= 0.05 hrs / 2
Peak Elev= 124.93' @ 12.13 hrs Surf.Area= 796 sf Storage= 938 cf

Plug-Flow detention time= 520.5 min calculated for 3,396 cf (100% of inflow)
Center-of-Mass det. time= 520.2 min (1,318.2 - 798.0)

Volume	Invert	Avail.Storage	Storage Description
#1A	122.65'	146 cf	**4.83'W x 38.80'L x 2.33'H Field A** 438 cf Overall - 74 cf Embedded = 364 cf x 40.0% Voids
#2A	123.15'	74 cf	**ADS_StormTech SC-310 +Cap** x 5 Inside #1 Effective Size= 28.9"W x 16.0"H => 2.07 sf x 7.12'L = 14.7 cf Overall Size= 34.0"W x 16.0"H x 7.56'L with 0.44' Overlap
#3B	122.65'	86 cf	**2.83'W x 45.92'L x 2.33'H Field B** 304 cf Overall - 88 cf Embedded = 215 cf x 40.0% Voids
#4B	123.15'	88 cf	**ADS_StormTech SC-310 +Cap** x 6 Inside #3 Effective Size= 28.9"W x 16.0"H => 2.07 sf x 7.12'L = 14.7 cf Overall Size= 34.0"W x 16.0"H x 7.56'L with 0.44' Overlap
#5C	122.65'	198 cf	**4.83'W x 53.04'L x 2.33'H Field C** 598 cf Overall - 103 cf Embedded = 495 cf x 40.0% Voids
#6C	123.15'	103 cf	**ADS_StormTech SC-310 +Cap** x 7 Inside #5 Effective Size= 28.9"W x 16.0"H => 2.07 sf x 7.12'L = 14.7 cf Overall Size= 34.0"W x 16.0"H x 7.56'L with 0.44' Overlap
#7D	122.65'	172 cf	**4.83'W x 45.92'L x 2.33'H Field D** 518 cf Overall - 88 cf Embedded = 429 cf x 40.0% Voids
#8D	123.15'	88 cf	**ADS_StormTech SC-310 +Cap** x 6 Inside #7 Effective Size= 28.9"W x 16.0"H => 2.07 sf x 7.12'L = 14.7 cf Overall Size= 34.0"W x 16.0"H x 7.56'L with 0.44' Overlap
		955 cf	Total Available Storage

Storage Group A created with Chamber Wizard
Storage Group B created with Chamber Wizard
Storage Group C created with Chamber Wizard
Storage Group D created with Chamber Wizard

Device	Routing	Invert	Outlet Devices
#1	Discarded	122.65'	**0.200 in/hr Exfiltration over Surface area**
#2	Primary	122.23'	**6.0" Round Culvert-6" OCS outlet** L= 33.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 122.23' / 120.10' S= 0.0645 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.20 sf
#3	Device 2	124.25'	**Custom Weir/Orifice, Cv= 2.62 (C= 3.28)** Head (feet) 0.00 1.00 1.00 1.97 Width (feet) 0.50 0.50 4.00 4.00
#4	Device 3	122.73'	**4.0" Vert. 4" Underdrain** C= 0.600

#5 Device 3 123.27' **10.0" Vert. 10" Overflow Pipe From Chamber** C= 0.600

Discarded OutFlow Max=0.00 cfs @ 7.20 hrs HW=122.69' (Free Discharge)
└**1=Exfiltration** (Exfiltration Controls 0.00 cfs)

Primary OutFlow Max=0.90 cfs @ 12.13 hrs HW=124.92' (Free Discharge)
└**2=Culvert-6" OCS outlet** (Passes 0.90 cfs of 1.17 cfs potential flow)
└**3=Custom Weir/Orifice** (Weir Controls 0.90 cfs @ 2.68 fps)
├**4=4" Underdrain** (Passes < 0.34 cfs potential flow)
└**5=10" Overflow Pipe From Chamber** (Passes < 2.15 cfs potential flow)

Summary for Link SP1:

Inflow Area = 1,286 sf, 27.92% Impervious, Inflow Depth = 1.56" for 25-Year event
Inflow = 0.05 cfs @ 12.10 hrs, Volume= 167 cf
Primary = 0.05 cfs @ 12.10 hrs, Volume= 167 cf, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-96.00 hrs, dt= 0.05 hrs

Summary for Link SP2:

Inflow Area = 3,470 sf, 95.48% Impervious, Inflow Depth = 5.21" for 25-Year event
Inflow = 0.43 cfs @ 12.09 hrs, Volume= 1,507 cf
Primary = 0.43 cfs @ 12.09 hrs, Volume= 1,507 cf, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-96.00 hrs, dt= 0.05 hrs

Summary for Link SP3: Existing Sewer

Inflow Area = 9,613 sf, 80.28% Impervious, Inflow Depth = 3.05" for 25-Year event
Inflow = 0.92 cfs @ 12.13 hrs, Volume= 2,439 cf
Primary = 0.92 cfs @ 12.13 hrs, Volume= 2,439 cf, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-96.00 hrs, dt= 0.05 hrs

Time span=0.00-96.00 hrs, dt=0.05 hrs, 1921 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment 1: Runoff Area=570 sf 56.32% Impervious Runoff Depth=0.87"
Flow Length=83' Tc=6.0 min CN=72 Runoff=0.01 cfs 41 cf

Subcatchment 2: Runoff Area=3,470 sf 95.48% Impervious Runoff Depth=2.55"
Flow Length=151' Tc=6.0 min CN=95 Runoff=0.22 cfs 737 cf

Subcatchment 10: Runoff Area=8,015 sf 81.78% Impervious Runoff Depth=1.83"
Flow Length=72' Tc=6.0 min CN=87 Runoff=0.39 cfs 1,220 cf

Subcatchment 11: Runoff Area=1,598 sf 72.72% Impervious Runoff Depth=1.46"
Flow Length=45' Tc=6.0 min CN=82 Runoff=0.06 cfs 194 cf

Subcatchment 12: Runoff Area=716 sf 5.31% Impervious Runoff Depth=0.01"
Flow Length=23' Tc=6.0 min CN=42 Runoff=0.00 cfs 0 cf

Pond CB1: CATCH BASIN Peak Elev=123.36' Inflow=0.06 cfs 194 cf
10.0" Round Culvert x 2.00 n=0.013 L=1.6' S=0.0437 '/' Outflow=0.06 cfs 194 cf

Pond SSF-1: Peak Elev=124.35' Storage=751 cf Inflow=0.45 cfs 1,414 cf
Discarded=0.00 cfs 919 cf Primary=0.05 cfs 496 cf Outflow=0.06 cfs 1,414 cf

Link SP1: Inflow=0.01 cfs 42 cf
Primary=0.01 cfs 42 cf

Link SP2: Inflow=0.22 cfs 737 cf
Primary=0.22 cfs 737 cf

Link SP3: Existing Sewer Inflow=0.05 cfs 496 cf
Primary=0.05 cfs 496 cf

Time span=0.00-96.00 hrs, dt=0.05 hrs, 1921 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment 1: Runoff Area=570 sf 56.32% Impervious Runoff Depth=1.89"
Flow Length=83' Tc=6.0 min CN=72 Runoff=0.03 cfs 90 cf

Subcatchment 2: Runoff Area=3,470 sf 95.48% Impervious Runoff Depth=4.02"
Flow Length=151' Tc=6.0 min CN=95 Runoff=0.34 cfs 1,163 cf

Subcatchment 10: Runoff Area=8,015 sf 81.78% Impervious Runoff Depth=3.19"
Flow Length=72' Tc=6.0 min CN=87 Runoff=0.66 cfs 2,132 cf

Subcatchment 11: Runoff Area=1,598 sf 72.72% Impervious Runoff Depth=2.72"
Flow Length=45' Tc=6.0 min CN=82 Runoff=0.11 cfs 363 cf

Subcatchment 12: Runoff Area=716 sf 5.31% Impervious Runoff Depth=0.22"
Flow Length=23' Tc=6.0 min CN=42 Runoff=0.00 cfs 13 cf

Pond CB1: CATCH BASIN Peak Elev=123.39' Inflow=0.11 cfs 363 cf
10.0" Round Culvert x 2.00 n=0.013 L=1.6' S=0.0437 '/' Outflow=0.11 cfs 363 cf

Pond SSF-1: Peak Elev=124.72' Storage=872 cf Inflow=0.78 cfs 2,495 cf
Discarded=0.00 cfs 942 cf Primary=0.53 cfs 1,552 cf Outflow=0.54 cfs 2,494 cf

Link SP1: Inflow=0.03 cfs 103 cf
Primary=0.03 cfs 103 cf

Link SP2: Inflow=0.34 cfs 1,163 cf
Primary=0.34 cfs 1,163 cf

Link SP3: Existing Sewer Inflow=0.53 cfs 1,552 cf
Primary=0.53 cfs 1,552 cf

ATTACHMENT B

STORMWATER TREATMENT CALCULATIONS

Stormwater Treatment Table

33/37 Montreal Street

	Total Watershed Area (SF)	New Driveway and Road Impervious Area (SF)	New Landscaped Area (SF)	Existing/Offsite Impervious Area (SF)	Existing/Offsite Landscaped Area (SF)	Existing Undeveloped Area (SF)	Treatment Provided	New Impervious Area Treated In Treatment Device (SF)	New Landscaped Area Treated In Treatment Device (SF)	Treatment Device
WS-1	570	226	179	95	70	0	No	0	0	None
WS-10	8,015	6,555	1,460	0	0	0	Yes	6,555	1,460	Chamber Syst.
WS-11	1,598	1,162	436	0	0	0	Yes	1,162	436	Chamber Syst.
WS-12	716	38	678	0	0	0	No	0	0	None
WS-2	3,470	0	157	3,313	0	0	No	0	0	None
Total		**7,981**	**2,910**					**7,717**	**1,896**	

New Impervious Area =	7,981	sf
Impervious Area Requiring Treatment (95%) =	7,582	sf
Impervious Area Treatment Provided =	7,717	sf
	97%	New Impervious Area Treated
New Developed Area =	10,891	sf
Developed Area Requiring Treatment (80%) =	8,713	sf
Developed Area Treatment Provided =	9,613	sf
	88%	New Developed Area Treated

Subsurface Storage - 1

Tributary Impervious Area=	7,717	sf	(WS-10 & WS-11 Impervious Area)
Tributary Landscaped Area=	1,896	sf	(WS-10 & WS-11 Landscaped Area)

Water Quality Volume (WQV) Calculation

WQV (Required) = 1.0"xImpervious Area + 0.4"xLandscaped Area

WQV (Required) = 706 cf

Chamber Size = SC-310

WQV (Provided)= 715 cf >Required

(See HydroCAD Stage Storage Calculation)

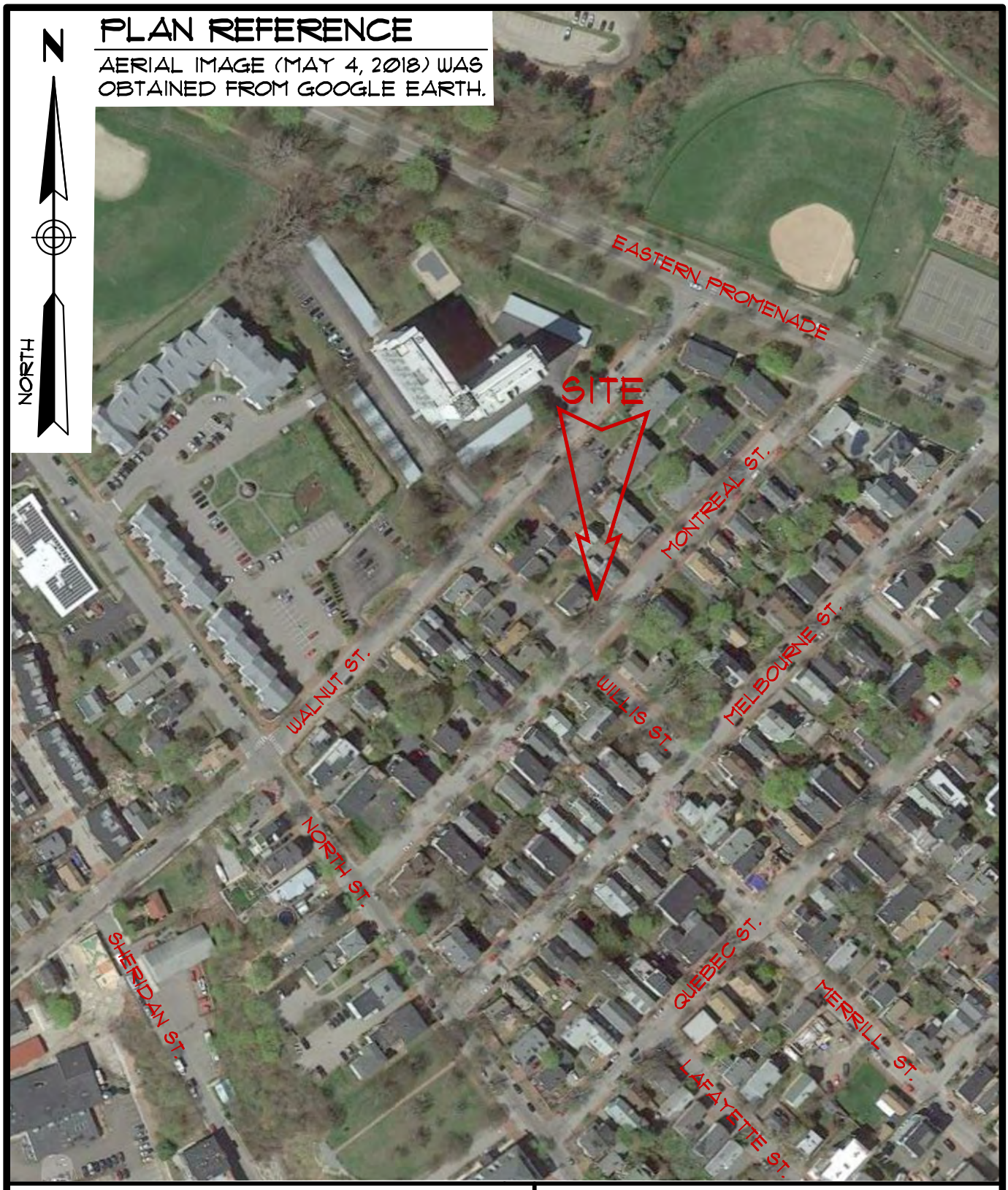
Stage-Area-Storage for Pond SSF-1:

Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)
122.65	**796**	0
122.70	796	16
122.75	796	32
122.80	796	48
122.85	796	64
122.90	796	80
122.95	796	96
123.00	796	111
123.05	796	127
123.10	796	143
123.15	796	159
123.20	796	187
123.25	796	216
123.30	796	244
123.35	796	271
123.40	796	299
123.45	796	327
123.50	796	354
123.55	796	381
123.60	796	407
123.65	796	434
123.70	796	460
123.75	796	485
123.80	796	511
123.85	796	536
123.90	796	560
123.95	796	584
124.00	796	608
124.05	796	631
124.10	796	653
124.15	796	675
124.20	796	696
124.25	796	715
124.30	796	734
124.35	796	752
124.40	796	769
124.45	796	785
124.50	796	801
124.55	796	817
124.60	796	833
124.65	796	849
124.70	796	865
124.75	796	881
124.80	796	897
124.85	796	913
124.90	796	929
124.95	796	**945**
125.00	796	**955**
125.05	796	955
125.10	796	955
125.15	796	955
125.20	796	955
125.25	796	955
125.30	796	955
125.35	796	955
125.40	796	955
125.45	796	955
125.50	796	955
125.55	796	955
125.60	796	955
125.65	796	955
125.70	796	955
125.75	796	955
125.80	796	955
125.85	796	955
125.90	796	955
125.95	796	955
126.00	796	955
126.05	796	955
126.10	796	955
126.15	796	955
126.20	796	955

Water Quality Volume Required = 706 cf
Provided Water Quality Volume = 715 cf

ATTACHMENT C

SOILS TEST PIT LOGS AND MAPS



LOCATION MAP
NEW RESIDENTIAL BUILDING

33 MONTREAL STREET - PORTLAND, MAINE

PREPARED FOR

TIM WELLS

DATE: 4-15-2019	DRAWN BY: KRF	CHECKED BY: ELS
JOB: 17164	SCALE: 1" = 200'	FILE: 17164 BOR

145 LISBON ST. - SUITE 701
LEWISTON, ME 04240
Tel.: (207) 576-3313

173 PLEASANT STREET
ROCKLAND, ME 04841
Tel.: (207) 318-7761

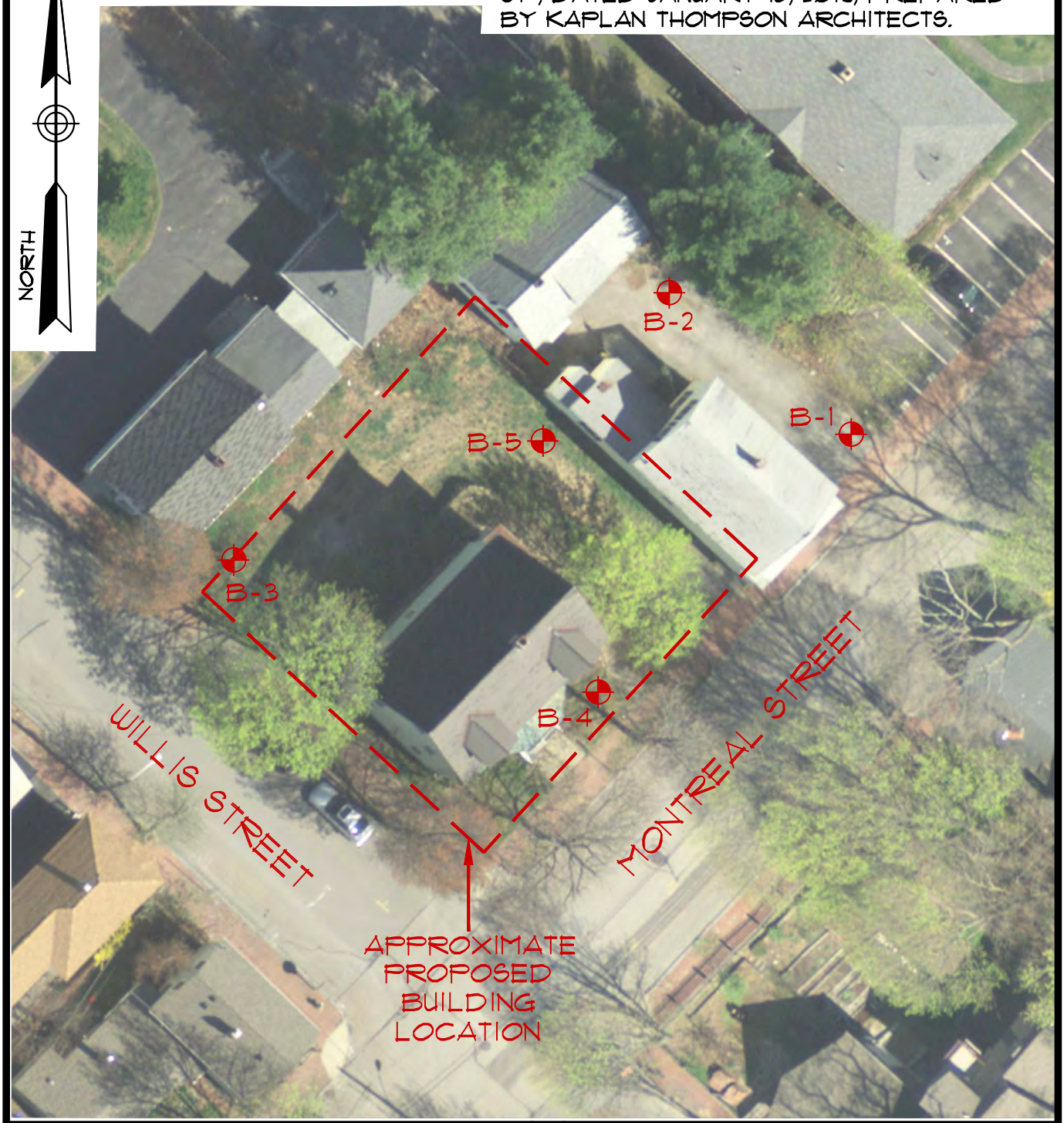
SUMMIT
GEOENGINEERING SERVICES
www.summitgeoeng.com

LEGEND

B-1 SUMMIT TEST BORING (APRIL 5, 2019)

PLAN REFERENCE

PROPOSED BUILDING LOCATION WAS TAKEN FROM A PLAN SET ENTITLED "MONTREAL ST", DATED JANUARY 15, 2019, PREPARED BY KAPLAN THOMPSON ARCHITECTS.



EXPLORATION LOCATION PLAN
NEW RESIDENTIAL BUILDING

33 MONTREAL STREET - PORTLAND, MAINE

PREPARED FOR

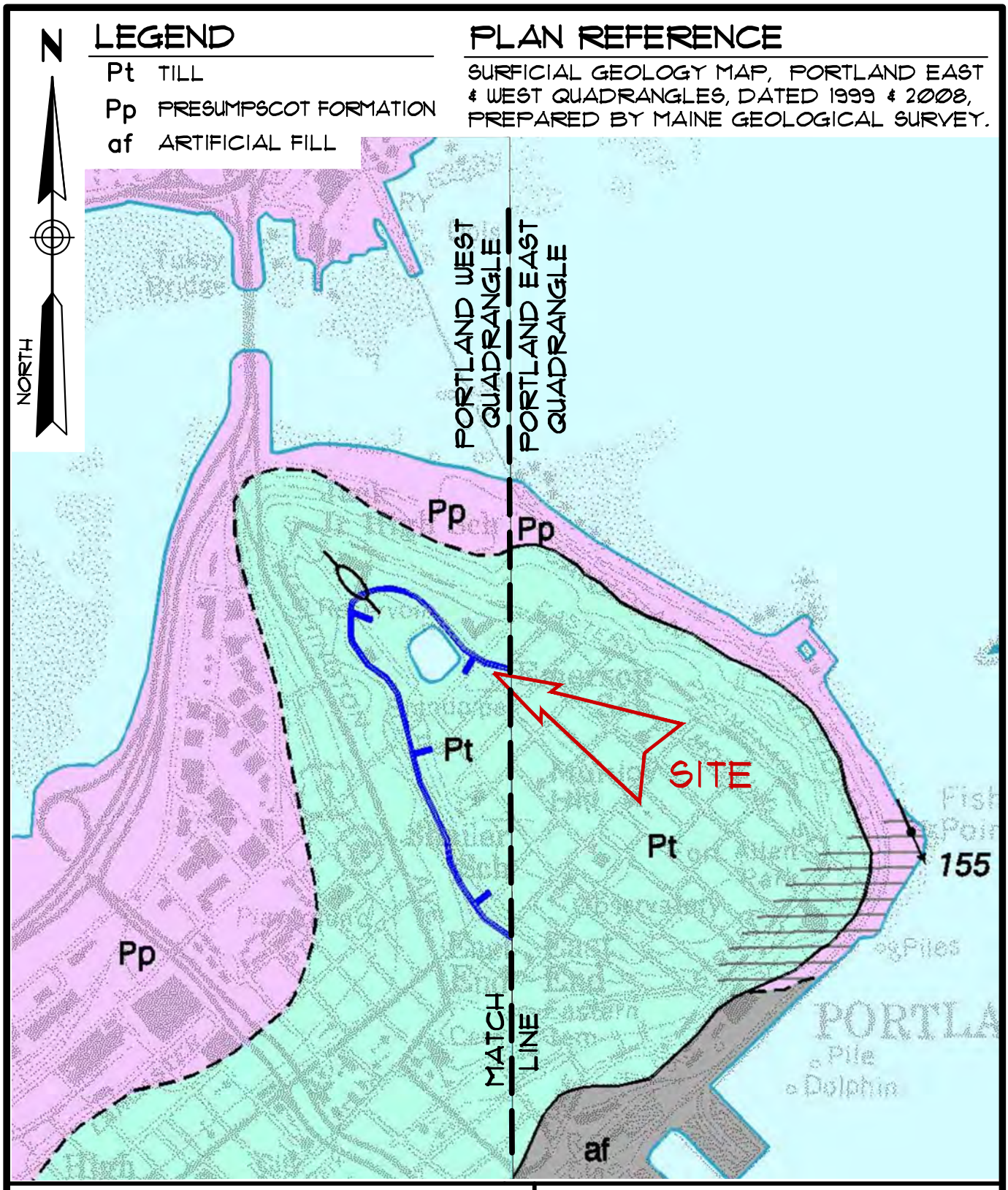
TIM WELLS

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JOB: 17164	SCALE: 1" = 30'	FILE: 17164 BOR

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Tel.: (207) 576-3313

173 PLEASANT STREET
ROCKLAND, ME 04841
Tel.: (207) 318-7761

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SURFICIAL GEOLOGY MAP
NEW RESIDENTIAL BUILDING

33 MONTREAL STREET - PORTLAND, MAINE

PREPARED FOR

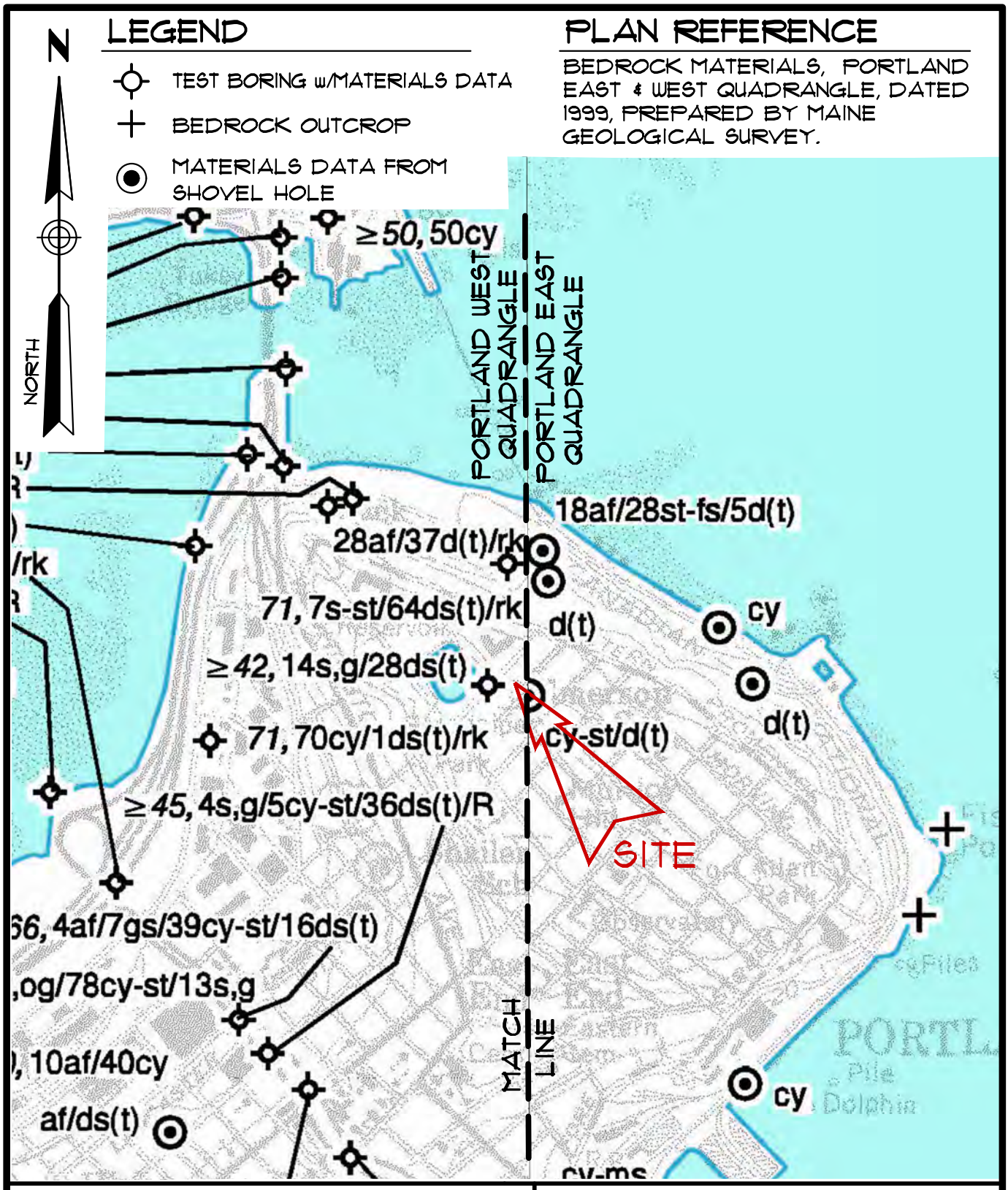
TIM WELLS

DATE: 4-15-2019	DRAWN BY: KRF	CHECKED BY: ELS
JOB: 17164	SCALE: 1" = 1000'	FILE: 17164 BOR

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SURFICIAL MATERIALS
NEW RESIDENTIAL BUILDING

33 MONTREAL STREET - PORTLAND, MAINE
PREPARED FOR
TIM WELLS

DATE: 4-15-2019	DRAWN BY: KRF	CHECKED BY: ELS
JOB: 17164	SCALE: 1" = 1000'	FILE: 17164 BOR

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LEWISTON, ME 04240
Tel.: (207) 576-3313

173 PLEASANT STREET
ROCKLAND, ME 04841
Tel.: (207) 318-7761

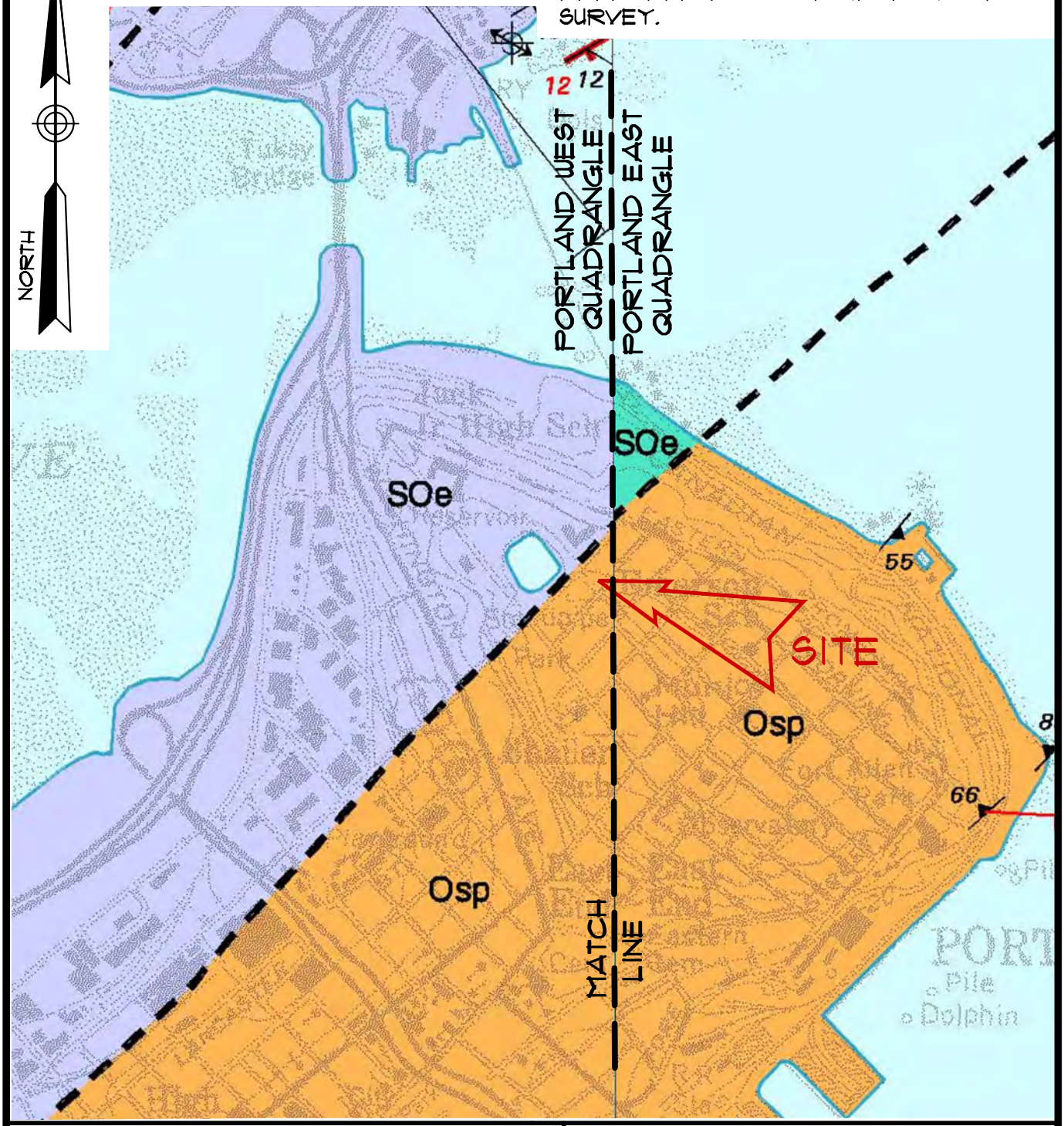
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LEGEND

Osp	SPRING POINT FORMATION
Soe	ELLIOT FORMATION

PLAN REFERENCE

BEDROCK GEOLOGY, PORTLAND EAST & WEST QUADRANGLE, DATED 2003, PREPARED BY MAINE GEOLOGICAL SURVEY.



BEDROCK GEOLOGY MAP
NEW RESIDENTIAL BUILDING

33 MONTREAL STREET - PORTLAND, MAINE

PREPARED FOR

TIM WELLS

DATE: 4-15-2019	DRAWN BY: KRF	CHECKED BY: ELS
JOB: 17164	SCALE: 1" = 1000'	FILE: 17164 BOR

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LEWISTON, ME 04240
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173 PLEASANT STREET
ROCKLAND, ME 04841
Tel.: (207) 318-7761

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EXPLORATION COVER SHEET

The exploration logs are prepared by the geotechnical engineer from both field and laboratory data. Soil descriptions are based upon the Unified Soil Classification System (USCS) per ASTM D2487 and/or ASTM D2488 as applicable. Supplemental descriptive terms for estimated particle percentage, color, density, moisture condition, and bedrock may also be included to further describe conditions.

Drilling and Sampling Symbols:

S = Split Spoon Sample
UT = Thin Wall Shelby Tube
SSA = Solid Stem Auger
HSA = Hollow Stem Auger
RW = Rotary Wash
SV = Lab Shear Vane (Torvane)
PP = Pocket Penetrometer
C = Rock Core Sample
FV = Field Vane Shear Test
SP = Concrete Punch Sample
Hyd = Hydraulic Advancement of Drilling Rods
Push = Direct Push of Drilling Rods
WOH = Weight of Hammer
WOR = Weight of Rod
PI = Plasticity Index
LL = Liquid Limit
MC = Natural Moisture Content
USCS = Unified Soil Classification System
Su = Undrained Shear Strength
Su(r) = Remolded Shear Strength

Water Level Measurements:

Water levels indicated on the boring logs are the levels measured in the boring at the times indicated. In pervious soils, the indicated elevations are considered reliable groundwater levels. In impervious soils, the accurate determination of groundwater elevations may not be possible, even after several days of observations. Groundwater monitoring wells may be required to record accurate depths and fluctuation.

Gradation Description and Terminology:

Boulders:	Over 12 inches	Trace:	Less than 5%
Cobbles:	12 inches to 3 inches	Little:	5% to 15%
Gravel:	3 inches to No.4 sieve	Some:	15% to 30%
Sand:	No.4 to No. 200 sieve	Silty, Sandy, etc.:	Greater than 30%
Silt:	No. 200 sieve to 0.005 mm		
Clay:	less than 0.005 mm		

Density of Granular Soils and Consistency of Cohesive Soils:

CONSISTENCY OF COHESIVE SOILS		DENSITY OF GRANULAR SOILS	
SPT N-value blows/ft	**Consistency**	**SPT N-value blows/ft**	**Relative Density**
0 to 2	Very Soft	0 to 4	Very Loose
2 to 4	Soft	5 to 10	Loose
5 to 8	Firm	11 to 30	Compact
9 to 15	Stiff	31 to 50	Dense
16 to 30	Very Stiff	>50	Very Dense
>30	Hard		

SUMMIT GEOENGINEERING SERVICES

SOIL BORING LOG

Project:	New Residential Building	Boring #:	**B-1**
Location:	33 Montreal Street	Project #:	17164
City, State:	Portland, Maine	Sheet:	1 of 1
		Chkd by:	WMP

Drilling Co:	Summit Geoengineering Services, Inc.	Boring Elevation:	Unknown
Driller:	C. Coolidge, P.E.	Reference:	N/A
Summit Staff:	E. Stewart, P.E.	Date started:	4/5/2019 Date Completed: 4/5/2019

DRILLING METHOD		SAMPLER	
Vehicle:	AMS	Length:	24" SS
Model:	9500 VTR	Diameter:	2"OD/1.5"ID
Method:	2¼-inch HSA	Hammer:	140 lb
Hammer Style:	Auto	Method:	ASTM D1586

ESTIMATED GROUND WATER DEPTH

Date	Depth	Elevation	Reference
4/5/2019	NE	N/A	None observed

Depth (ft.)	No.	Pen/Rec (in)	Depth (ft)	blows/6"	Elev. (ft.)	SAMPLE DESCRIPTION	Geological/ Test Data	Geological Stratum
	S-1	24/12	0 - 2	3		Dark brown SILT, little Sand & organics, loose, damp, ML		TOPSOIL
1				3		Dark brown to brown Gravelly SAND, little Silt, loose,		0.2'
				3		damp, SP-SM		FILL
2				3				
	S-2	24/8	2 - 4	2		Same as above, loose, damp, SP-SM		
3				2		Dark brown to mottled brown Clayey SILT, little		2.5'+/-
				9		Sand, Gravel, and organics, soft, damp, ML		FORMER TOPSOIL
4				6		Brown to olive brown and mottled Gravelly SAND, little		3'+/-
						Silt, compact, damp, SM to SP-SM		MARINE NEARSHORE
5								DEPOSIT
	S-3	24/24	5 - 7	7		Same as above, compact, damp, SM to SP-SM		
6				17		(1" mottled sand seam at interface)		
				10		Olive brown SILT, some Sand and Gravel, very stiff,		6'+/-
7				8		damp, ML		GLACIAL TILL
8								
9								
10								
	S-4	24/24	10 - 12	12		Olive brown SILT-CLAY, some Sand and Gravel,	PP > 9,000 psf	
11				13		very stiff, damp, ML		
				15				
12				15				
13								
14								
15								
	S-5	24/24	15 - 17	12		Gray SILT, some to little Sand, Gravel, and Clay,	PP > 9,000 psf	
16				13		very stiff to hard, moist, ML		
				16				
17				15				
18								
19								
20								
	S-6	24/24	20 - 22	8		Gray SILT-CLAY, some to little Sand and Gravel,	PP = 8,000 psf	
21				13		very stiff to hard, moist, ML-CL		
				16				
22				21				
						End of Exploration at 22', No Refusal		22'

Granular Soils		Cohesive Soils		% Composition
Blows/ft.	Density	Blows/ft.	Consistency	ASTM D2487
0-4	V. Loose	<2	V. soft	
5-10	Loose	2-4	Soft	< 5% Trace
11-30	Compact	5-8	Firm	5-15% Little
31-50	Dense	9-15	Stiff	15-30% Some
>50	V. Dense	16-30	V. Stiff	> 30% With
		>30	Hard	

NOTES: PP = Pocket Penetrometer, MC = Moisture Content
S = Split spoon sample, LL = Liquid Limit, PI = Plasticity Index

Boulders = diameter > 12 inches, Cobbles = diameter < 12 inches and > 3 inches
Gravel = < 3 inch and > No 4, Sand = < No 4 and >No 200, Silt/Clay = < No 200

Soil Moisture Condition
Dry: S = 0%
Humid: S = 1 to 25%
Damp: S = 26 to 50%
Moist: S = 51 to 75%
Wet: S = 76 to 99%
Saturated: S = 100%

SUMMIT GEOENGINEERING SERVICES

SOIL BORING LOG

Boring #: **B-2**

Project:	New Residential Building	Project #:	17164
Location:	33 Montreal Street	Sheet:	1 of 1
City, State:	Portland, Maine	Chkd by:	WMP

Drilling Co:	Summit Geoengineering Services, Inc.	Boring Elevation:	Unknown
Driller:	C. Coolidge, P.E.	Reference:	N/A
Summit Staff:	E. Stewart, P.E.	Date started: 4/5/2019	Date Completed: 4/5/2019

DRILLING METHOD		SAMPLER	
Vehicle:	AMS	Length:	24" SS
Model:	9500 VTR	Diameter:	2"OD/1.5"ID
Method:	2¼-inch HSA	Hammer:	140 lb
Hammer Style:	Auto	Method:	ASTM D1586

ESTIMATED GROUND WATER DEPTH

Date	Depth	Elevation	Reference
4/5/2019	NE	N/A	None observed

Depth (ft.)	No.	Pen/Rec (in)	Depth (ft)	blows/6"	Elev. (ft.)	SAMPLE DESCRIPTION	Geological/ Test Data	Geological Stratum
	S-1	24/10	0 - 2	1		1" Bituminous Pavement		PAVEMENT
1				2		Dark brown SAND, some Silt and Gravel, loose, damp,		0.1'
				3		SM		FILL
2				5				
	S-2	24/10	2 - 4	2		Brown Gravelly SAND, little Silt, loose, damp, SM		
3				2				
				3				
4				2				
						Dark brown to mottled brown medium-fine SAND, some		4'+/-
5						to little Silt and Gravel, trace organics at surface, loose,		MARINE NEARSHORE
	S-3	24/18	5 - 7	4		damp, SM		DEPOSIT
6				3				
				2		Light olive brown to tan fine SAND-SILT, little to trace		6'+/-
7				5		Gravel, stiff, moist, SM-ML		GLACIAL TILL
8								
9								
10								
	S-4	24/24	10 - 12	8		Olive brown SILT, some Sand, little Gravel and Clay,	PP > 9,000 psf	
11				9		very stiff, damp, ML		
				11				
12				12				
13								
14								
15								
	S-5	24/8	15 - 17	6		Same as above, very stiff, damp to moist, ML	PP > 9,000 psf	
16				11		(Pushed cobble, low recovery. Cobble fragments in		
				15		spoon tip.)		
17				24				
18								
19								
20								
	S-6	24/24	20 - 22	12		Olive gray to gray SILT, some to little Sand, Gravel, and		
21				17		Clay, occasional cobbles, hard, moist, ML		
				19		(3" cobble at 20.5')		
22				20				
						End of Exploration at 22', No Refusal		22'

Granular Soils		Cohesive Soils		% Composition
Blows/ft.	Density	Blows/ft.	Consistency	ASTM D2487
0-4	V. Loose	<2	V. soft	
5-10	Loose	2-4	Soft	< 5% Trace
11-30	Compact	5-8	Firm	5-15% Little
31-50	Dense	9-15	Stiff	15-30% Some
>50	V. Dense	16-30	V. Stiff	> 30% With
		>30	Hard	

NOTES: PP = Pocket Penetrometer, MC = Moisture Content
S = Split spoon sample, LL = Liquid Limit, PI = Plasticity Index

Boulders = diameter > 12 inches, Cobbles = diameter < 12 inches and > 3 inches
Gravel = < 3 inch and > No 4, Sand = < No 4 and >No 200, Silt/Clay = < No 200

Soil Moisture Condition
Dry: S = 0%
Humid: S = 1 to 25%
Damp: S = 26 to 50%
Moist: S = 51 to 75%
Wet: S = 76 to 99%
Saturated: S = 100%

SUMMIT
GEOENGINEERING SERVICES

SOIL BORING LOG

Project:	New Residential Building	Boring #:	B-3
Location:	33 Montreal Street	Project #:	17164
City, State:	Portland, Maine	Sheet:	1 of 1
		Chkd by:	WMP

Drilling Co:	Summit Geoengineering Services, Inc.	Boring Elevation:	Unknown
Driller:	C. Coolidge, P.E.	Reference:	N/A
Summit Staff:	E. Stewart, P.E.	Date started:	4/5/2019 Date Completed: 4/5/2019

DRILLING METHOD		SAMPLER	
Vehicle:	AMS	Length:	24" SS
Model:	9500 VTR	Diameter:	2"OD/1.5"ID
Method:	2¼-inch HSA	Hammer:	140 lb
Hammer Style:	Auto	Method:	ASTM D1586

ESTIMATED GROUND WATER DEPTH

Date	Depth	Elevation	Reference
4/5/2019	NE	N/A	None observed

Depth (ft.)	No.	Pen/Rec (in)	Depth (ft)	blows/6"	Elev. (ft.)	SAMPLE DESCRIPTION	Geological/ Test Data	Geological Stratum
	S-1	24/12	0 - 2	1		Dark brown SILT, little Sand, rootlets, loose, damp, ML		PAVEMENT
1				2		Light brown SAND, trace Silt, loose, damp, SP		0.1'
				6		Brown SAND, some Silt, little Gravel, reclaim pavement,		FILL
2				6		loose, damp, SM		
	S-2	24/6	2 - 4	3				
3				4		Dark brown SILT, some organics, trace Sand, firm,		2.5'
				5		moist, ML		FORMER TOPSOIL
4				4				3.5'+/-
								GLACIAL TILL
5								
	S-3	24/24	5 - 7	12		Olive brown Sandy SILT, some Gravel, hard/dense,	PP = 6,000 to	
6				21		damp, ML	7,000 psf	
				21		(Sandy lense/pocket at spoon tip)		
7				21				
8								
9								
10								
	S-4	24/24	10 - 12	10		Olive to olive brown SILT, some Sand and Gravel, little	PP > 9,000 psf	
11				18		Clay, occasional cobbles, hard/dense, damp, ML		
				20				
12				30				
13								
14								
15								
	S-5	24/24	15 - 17	20		Olive gray SILT, some Sand and Gravel, little Clay,	PP > 9,000 psf	
16				24		hard, damp, ML		
				25				
17				41				
						End of Exploration at 18', Auger Refusal in dense		18'
18						glacial till.		
19								
20								
21								
22								

Granular Soils		Cohesive Soils		% Composition
Blows/ft.	Density	Blows/ft.	Consistency	ASTM D2487
0-4	V. Loose	<2	V. soft	
5-10	Loose	2-4	Soft	< 5% Trace
11-30	Compact	5-8	Firm	5-15% Little
31-50	Dense	9-15	Stiff	15-30% Some
>50	V. Dense	16-30	V. Stiff	> 30% With
		>30	Hard	

NOTES: PP = Pocket Penetrometer, MC = Moisture Content
S = Split spoon sample, LL = Liquid Limit, PI = Plasticity Index

Boulders = diameter > 12 inches, Cobbles = diameter < 12 inches and > 3 inches
Gravel = < 3 inch and > No 4, Sand = < No 4 and >No 200, Silt/Clay = < No 200

Soil Moisture Condition
Dry: S = 0%
Humid: S = 1 to 25%
Damp: S = 26 to 50%
Moist: S = 51 to 75%
Wet: S = 76 to 99%
Saturated: S = 100%

SUMMIT GEOENGINEERING SERVICES

SOIL BORING LOG

Project:	New Residential Building	Boring #:	**B-4**
Location:	33 Montreal Street	Project #:	17164
City, State:	Portland, Maine	Sheet:	1 of 1
		Chkd by:	WMP

Drilling Co:	Summit Geoengineering Services, Inc.	Boring Elevation:	Unknown
Driller:	C. Coolidge, P.E.	Reference:	N/A
Summit Staff:	E. Stewart, P.E.	Date started:	4/5/2019 Date Completed: 4/5/2019

DRILLING METHOD		SAMPLER	
Vehicle:	AMS	Length:	24" SS
Model:	9500 VTR	Diameter:	2"OD/1.5"ID
Method:	2¼-inch HSA	Hammer:	140 lb
Hammer Style:	Auto	Method:	ASTM D1586

ESTIMATED GROUND WATER DEPTH

Date	Depth	Elevation	Reference
4/5/2019	NE	N/A	None observed

Depth (ft.)	No.	Pen/Rec (in)	Depth (ft)	blows/6"	Elev. (ft.)	SAMPLE DESCRIPTION	Geological/ Test Data	Geological Stratum
	S-1	24/18	0 - 2	2		Dark brown SILT, little Sand, rootlets, soft, damp, ML		TOPSOIL
1				6		Brown Silty SAND, some Gravel, trace reclaim, slate,		0.5'
				4		and ash, loose, frozen to damp, SM		FILL
2				3				
	S-2	24/12	2 - 4	2		Same as above, trace brick, loose, damp, SM		
3				3				
				3		Brown fine SAND-SILT, trace Clay, loose, damp, SM-ML		3'+/-
4				5				
						Auger refusal on cobble or obstruction at 4.5', offset		
5						boring.		
	S-3	24/24	5 - 7	5		Olive brown and mottled Sandy SILT, some Gravel,		5'+/-
6				9		occasional Sandy lenses/pockets, very stiff, damp, ML		GLACIAL TILL
				13		(Cobble fragments in spoon tip; pushed cobble.)		
7				25				
8								
9								
10								
	S-4	24/3	10 - 12	12		Olive brown Silty SAND to Sandy SILT, some Gravel,		
11				35		hard/dense, damp, SM to ML		
				37		(Cobble in spoon tip; pushed cobble.)		
12				32				
13								
14								
15								
	S-5	24/24	15 - 17	9		Olive brown to olive gray SILT, some Sand and Gravel,	PP > 9,000 psf	
16				13		little Clay, hard, damp, ML		
				17				
17				22				
18								
19								
20								
	S-6	24/24	20 - 22	11		Gray SILT, some Sand and Gravel, little Clay, hard,		
21				16		damp, ML		
				15				
22				21				
						End of Exploration at 22', No Refusal		22'

Granular Soils		Cohesive Soils		% Composition
Blows/ft.	Density	Blows/ft.	Consistency	ASTM D2487
0-4	V. Loose	<2	V. soft	
5-10	Loose	2-4	Soft	< 5% Trace
11-30	Compact	5-8	Firm	5-15% Little
31-50	Dense	9-15	Stiff	15-30% Some
>50	V. Dense	16-30	V. Stiff	> 30% With
		>30	Hard	

NOTES: PP = Pocket Penetrometer, MC = Moisture Content
S = Split spoon sample, LL = Liquid Limit, PI = Plasticity Index

Boulders = diameter > 12 inches, Cobbles = diameter < 12 inches and > 3 inches
Gravel = < 3 inch and > No 4, Sand = < No 4 and >No 200, Silt/Clay = < No 200

Soil Moisture Condition
Dry: S = 0%
Humid: S = 1 to 25%
Damp: S = 26 to 50%
Moist: S = 51 to 75%
Wet: S = 76 to 99%
Saturated: S = 100%

SUMMIT GEOENGINEERING SERVICES

SOIL BORING LOG

Boring #: **B-5**

Project:	New Residential Building	Project #:	17164
Location:	33 Montreal Street	Sheet:	1 of 1
City, State:	Portland, Maine	Chkd by:	WMP

Drilling Co:	Summit Geoengineering Services, Inc.	Boring Elevation:	Unknown
Driller:	C. Coolidge, P.E.	Reference:	N/A
Summit Staff:	E. Stewart, P.E.	Date started: 4/5/2019	Date Completed: 4/5/2019

DRILLING METHOD		SAMPLER	
Vehicle:	AMS	Length:	24" SS
Model:	9500 VTR	Diameter:	2"OD/1.5"ID
Method:	2¼-inch HSA	Hammer:	140 lb
Hammer Style:	Auto	Method:	ASTM D1586

ESTIMATED GROUND WATER DEPTH

Date	Depth	Elevation	Reference
4/5/2019	NE	N/A	None observed

Depth (ft.)	No.	Pen/Rec (in)	Depth (ft)	blows/6"	Elev. (ft.)	SAMPLE DESCRIPTION	Geological/ Test Data	Geological Stratum
	S-1	24/12	0 - 2	3		Dark brown SILT, little Sand, rootlets, soft, damp, ML		TOPSOIL
1				5		Brown SAND, some Gravel, little Silt, compact, SP-SM		0.5'
				7		Dark brown SILT, little Sand, Gravel, and organics,		FILL
2				4		firm/compact, damp, ML		(Portions Reworked
								Native)
3								
						Brown medium-fine SAND, little Silt, loose, damp,		3'+/-
4						SP to SP-SM		
5								
	S-2	24/24	5 - 7	6		Olive SILT, some Sand, little Gravel and Clay, very stiff,	PP = 7,000 to	5'+/-
6				9		damp, ML	9,000 psf	GLACIAL TILL
				13				
7				18				
8								
9								
10								
	S-3	24/24	10 - 12	10		Olive brown SILT, some Sand and Gravel, little Clay,	PP > 9,000 psf	
11				16		occasional small cobbles, hard, damp, ML		
				20				
12				24				
13						(Cobble at 12.5'+/-)		
14								
15								
	S-4	24/24	15 - 17	15		Olive gray SILT, some Sand and Gravel, little Clay,	PP > 9,000 psf	
16				19		hard, damp, ML		
				20				
17				26				
18								
19								
20								
	S-5	24/24	20 - 22	10		Gray SILT-CLAY, some Sand and Gravel, very stiff,	PP > 9,000 psf	
21				11		damp to moist, ML		
				13				
22				18				
						End of Exploration at 22', No Refusal		22'

Granular Soils		Cohesive Soils		% Composition
Blows/ft.	Density	Blows/ft.	Consistency	ASTM D2487
0-4	V. Loose	<2	V. soft	
5-10	Loose	2-4	Soft	< 5% Trace
11-30	Compact	5-8	Firm	5-15% Little
31-50	Dense	9-15	Stiff	15-30% Some
>50	V. Dense	16-30	V. Stiff	> 30% With
		>30	Hard	

NOTES: PP = Pocket Penetrometer, MC = Moisture Content
S = Split spoon sample, LL = Liquid Limit, PI = Plasticity Index

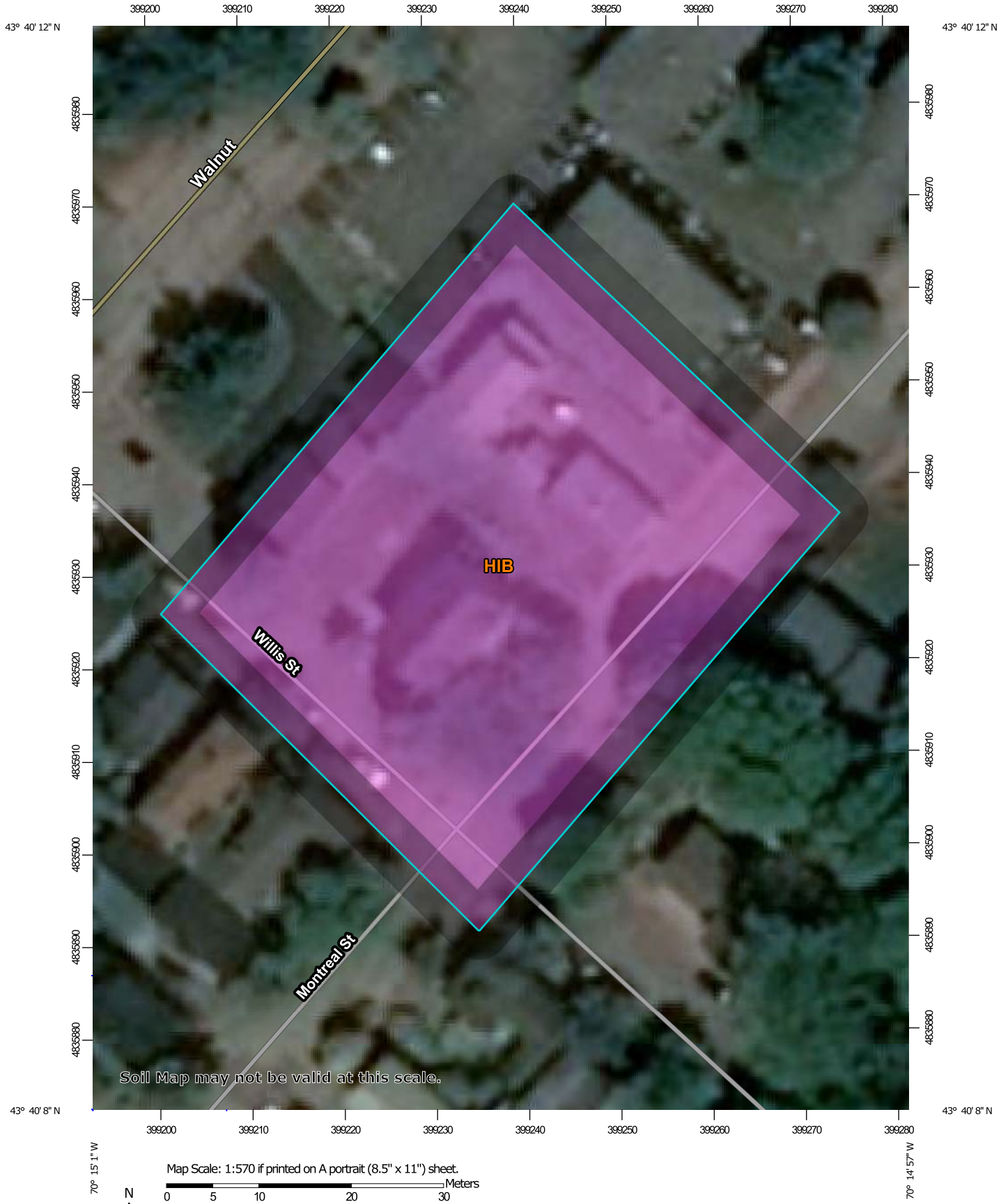
Boulders = diameter > 12 inches, Cobbles = diameter < 12 inches and > 3 inches
Gravel = < 3 inch and > No 4, Sand = < No 4 and >No 200, Silt/Clay = < No 200

Soil Moisture Condition
Dry: S = 0%
Humid: S = 1 to 25%
Damp: S = 26 to 50%
Moist: S = 51 to 75%
Wet: S = 76 to 99%
Saturated: S = 100%

ATTACHMENT D

MEDIUM INTENSITY SOILS MAP

Hydrologic Soil Group—Cumberland County and Part of Oxford County, Maine
(37 MONTREAL ST.)



Map Scale: 1:570 if printed on A portrait (8.5" x 11") sheet.

N

Meters
0 5 10 20 30

Feet
0 25 50 100 150

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 Rating Polygons
- A
- A/D
- B
- B/D
- C
- C/D
- D
- Not rated or not available

Soil Rating Lines
- A
- A/D
- B
- B/D
- C
- C/D
- D
- Not rated or not available

Soil Rating Points
- A
- A/D
- B
- B/D
- C
- C/D
- D
- Not rated or not available

Water Features
- Streams and Canals

Transportation
- Rails
- Interstate Highways
- US Routes
- Major Roads
- Local Roads

Background
- Aerial Photography

MAP INFORMATION

The soil surveys that comprise your AOI were mapped at 1:24,000.

Warning: Soil Map may not be valid at this scale.

Enlargement of maps beyond the scale of mapping can cause misunderstanding of the detail of mapping and accuracy of soil line placement. The maps do not show the small areas of contrasting soils that could have been shown at a more detailed scale.

Please rely on the bar scale on each map sheet for map measurements.

Source of Map: Natural Resources Conservation Service
Web Soil Survey URL:
Coordinate System: Web Mercator (EPSG:3857)

Maps from the Web Soil Survey are based on the Web Mercator projection, which preserves direction and shape but distorts distance and area. A projection that preserves area, such as the Albers equal-area conic projection, should be used if more accurate calculations of distance or area are required.

This product is generated from the USDA-NRCS certified data as of the version date(s) listed below.

Soil Survey Area: Cumberland County and Part of Oxford County, Maine
Survey Area Data: Version 15, Sep 6, 2018

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.

Hydrologic Soil Group

Map unit symbol	Map unit name	Rating	Acres in AOI	Percent of AOI
HIB	Hinckley loamy sand, 3 to 8 percent slopes	A	0.7	100.0%
Totals for Area of Interest			**0.7**	**100.0%**

Description

Hydrologic soil groups are based on estimates of runoff potential. Soils are assigned to one of four groups according to the rate of water infiltration when the soils are not protected by vegetation, are thoroughly wet, and receive precipitation from long-duration storms.

The soils in the United States are assigned to four groups (A, B, C, and D) and three dual classes (A/D, B/D, and C/D). The groups are defined as follows:

Group A. Soils having a high infiltration rate (low runoff potential) when thoroughly wet. These consist mainly of deep, well drained to excessively drained sands or gravelly sands. These soils have a high rate of water transmission.

Group B. Soils having a moderate infiltration rate when thoroughly wet. These consist chiefly of moderately deep or deep, moderately well drained or well drained soils that have moderately fine texture to moderately coarse texture. These soils have a moderate rate of water transmission.

Group C. Soils having a slow infiltration rate when thoroughly wet. These consist chiefly of soils having a layer that impedes the downward movement of water or soils of moderately fine texture or fine texture. These soils have a slow rate of water transmission.

Group D. Soils having a very slow infiltration rate (high runoff potential) when thoroughly wet. These consist chiefly of clays that have a high shrink-swell potential, soils that have a high water table, soils that have a claypan or clay layer at or near the surface, and soils that are shallow over nearly impervious material. These soils have a very slow rate of water transmission.

If a soil is assigned to a dual hydrologic group (A/D, B/D, or C/D), the first letter is for drained areas and the second is for undrained areas. Only the soils that in their natural condition are in group D are assigned to dual classes.

Rating Options

Aggregation Method: Dominant Condition

Component Percent Cutoff: None Specified

ATTACHMENT E

INSPECTION, MAINTENANCE AND HOUSEKEEPING PLAN

DM ROMA
CONSULTING ENGINEERS

INSPECTION, MAINTENANCE, AND HOUSEKEEPING PLAN

33/37 MONTREAL STREET DEVELOPMENT
PORTLAND, MAINE

Responsible Party

Owner: McTigue Construction
184 Mountain Road
Falmouth, Maine 04105

The owner is responsible for the maintenance of all stormwater management structures and related site components and the keeping of a maintenance log book with service records. Records of all inspections and maintenance work performed must be kept on file with the owner and retained for a minimum of five years. The maintenance log will be made available to the City upon request. At a minimum, the maintenance of stormwater management systems will be performed on the prescribed schedule.

The procedures outlined in this plan are provided as a general overview of the anticipated practices to be utilized on this site. In some instances, additional measures may be required due to unexpected conditions. *The Maine Erosion and Sedimentation Control BMP* and *Stormwater Management for Maine: Best Management Practices* Manuals published by the Maine Department of Environmental Protection (MDEP) should be referenced for additional information.

During Construction

1. **Inspection and Corrective Action:** It is the contractor's responsibility to comply with the inspection and maintenance procedures outlined in this section. Inspection shall occur on all disturbed and impervious areas, erosion control measures, material 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 24 hours 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 the permit, shall conduct the inspections.

2. **Maintenance:** Erosion controls shall be maintained in effective operating condition until areas are permanently stabilized. 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 BMPs need to be maintained or modified, additional

BMPs are necessary, or other corrective action is needed, implementation must be completed within seven calendar days and prior to any rainfall event.

3. **Documentation:** A report 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 the major observations about the operation and maintenance of erosion and sedimentation controls, materials storage areas, and vehicle 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 City Staff, and a copy must be provided upon request. The owner shall retain a copy of the log for a period of at least three years from the completion of permanent stabilization.

Housekeeping

1. **Spill prevention:** Controls must be used to prevent pollutants from construction and waste materials 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.

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. **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.

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.

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.

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:
   (a) Discharges from firefighting activity;
   (b) Fire hydrant flushings;
   (c) Vehicle washwater if detergents are not used and washing is limited to the exterior of vehicles (engine, undercarriage and transmission washing is prohibited);
   (d) Dust control runoff in accordance with permit conditions and Appendix (C)(3);
   (e) Routine external building washdown, not including surface paint removal, that does not involve detergents;
   (f) 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;
   (g) Uncontaminated air conditioning or compressor condensate;
   (h) Uncontaminated groundwater or spring water;
   (i) Foundation or footer drain-water where flows are not contaminated;
   (j) Uncontaminated excavation dewatering (see requirements in Appendix C(5));
   (k) Potable water sources including waterline flushings; and
   (l) Landscape irrigation.

7. **Unauthorized non-stormwater discharges:** Approval from the City does not authorize a discharge that is mixed with a source of non-stormwater, other than those discharges in compliance with Section 6 above. Specifically, the City's approval does not authorize discharges of the following:

(a) Wastewater from the washout or cleanout of concrete, stucco, paint, form release oils, curing compounds or other construction materials;
(b) Fuels, oils or other pollutants used in vehicle and equipment operation and maintenance;
(c) Soaps, solvents, or detergents used in vehicle and equipment washing; and
(d) Toxic or hazardous substances from a spill or other release.

Post construction

1. **Inspection and Corrective Action:** All measures must be maintained by the owner in effective operating condition. A qualified third-party inspector hired by the owner shall at least annually inspect the stormwater management facilities. This person should have knowledge of erosion and stormwater control including the standards and conditions of the site's approvals. The inspector shall be certified through the City to inspect the stormwater infrastructure. 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.

   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 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. **Culverts:** Inspect culverts in the spring, 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.

   C. **Catch Basins/Outlet Control Structure:** 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 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).

   D. **Subsurface Chamber System:** The manufacturer recommends that at a minimum the that an annual inspection is conducted. Initially the system shall be inspected every 6 months for the first year of operation. If inspection indicates that sediment has accumulated, a measurement to determine the depth of sediment shall be performed. When an average depth of 3 inches is exceeded then clean-out shall be performed. The system should drain within 48 hours following a one-inch storm and if a larger storm fills the system to overflow, it shall drain within 72 hours.

E. Regular Maintenance: Clear accumulations of winter sand along roadway once a year, preferably in the spring. Accumulations on pavement may be removed by pavement sweeping. Accumulations of sand along pavement shoulders may be removed by grading excess sand to the pavement edge and removing it manually or by a front-end loader.

F. 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 City staff 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. Attached is a sample log.

Re-certification

In order to receive Stormwater Credit toward the City of Portland Stormwater Service Charge, the owner must submit an annual inspection report by June 30 of each year in accordance with Chapter 32, Article III and Chapter 24, Article V of the City of Portland's Code of Ordinances. A qualified 3rd party post-construction inspector must conduct an inspection of the stormwater control system, including all BMPs and associated features, and complete Form 4. If the credit holder does not submit a completed annual inspection report by June 30, or submits a failing inspection report, credits will be suspended.

Duration of Maintenance

Perform maintenance as described.

STORMWATER MAINTENANCE LOG

33/37 MONTREAL STREET DEVELOPMENT
PORTLAND, MAINE

The following stormwater management and erosion control items shall be inspected and maintained as prescribed in the Maintenance Plan with recommended frequencies as identified below. The owner is responsible for keeping this maintenance log on file for a minimum of five years and shall provide a copy to the City upon request. Inspections are to be performed by a qualified third-party inspector and all corrective actions shall be performed by personnel familiar with stormwater management systems and erosion controls.

Maintenance Item	Maintenance Event	Date Performed	Responsible Personnel	Comments
Vegetated Areas	Inspect slopes and embankments early in Spring.			
Culverts	Inspect semiannually and after major rainfall.			
	Repair erosion at inlet or outlet of pipe.			
	Repair displaced riprap.			
	Clean accumulated sediment in culverts when >20% full.			
Catch Basins and Outlet Structure	Inspect to ensure that structure is properly draining.			
	Remove accumulated sediment semiannually.			
	Inspect grates/inlets and remove debris as needed.			
StormTech SC-310 Chambers	Inspect every six months and after major rain events to ensure that pond drains within 60 hours			
	Inspect annually for erosion or sediment accumulation and repair as needed.			
Regular Maintenance	Clear accumulation of winter sand in paved areas annually.			

UTILITIES – Ability to Serve letters are currently in process. From current services available in the area the project team does not foresee any issues with the service of any utilities.

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 Montreal, Willis and Walnut Streets. The proposed locations of the new utility services are shown on the Utility Plan (Sheet C-5.0).

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 Montreal Street.

The Portland Water District Ability to Serve letter, dated August 14, 2019 is included as part of this application package. This letter was provided by PWD in response to an Ability to Serve application for the earlier 9 unit project. The PWD has confirmed that the change to a 12 unit project will not affect either the service size or meter size, and that the Ability to Serve letter is still valid (PWD email dated July 20, 2021).

WASTEWATER DISPOSAL The proposed project will be connected to the Portland Water District's and City of Portland's wastewater collection and conveyance systems.

Total Project Water Usage. The total average daily water demand for the proposed project, based on design flows published in the most recent edition of the State of Maine Subsurface Wastewater Disposal Rules is as follows.

2 x 1 Bedroom Residential Units at 120 gpd/unit	=	240 gpd
2 x 2 Bedroom Residential Units at 180 gpd/unit	=	360 gpd
8 x 3 Bedroom Residential Units at 270 gpd/unit	=	2,160 gpd
Total	=	2,760 gpd

The anticipated daily design flow represents an increase of 1,770 gpd above the existing daily design flow to be removed due to the demolition of the existing structures on the property. The existing sewer system in the area has adequate downstream capacity to handle the anticipated projected flow amounts.

The City of Portland Wastewater Capacity Authorization, dated August 9, 2021 is provided as part of this application package.

ELECTRICITY SUPPLY CMP currently maintains overhead and underground utilities in the area including 3 phase power along Walnut Street that currently serves Promenade Towers.

SOLID WASTE

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:

• 147 cubic yards of construction debris related to the new building construction activities (excluding volume of recycled materials).

• 306 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 7.95 tons of recyclable waste and 7.95 tons of nonrecyclable waste per year.

SOLID WASTE GENERATED DURING THE BUILDING CONSTRUCTION

Approximately 147 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 83 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.

SOLID WASTE GENERATED FROM THE OPERATION OF THE DEVELOPMENT

Approximately 306 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.

ATTACHMENTS Attachment 12-A – Computations of Types and Volumes of Solid Wastes for Construction Project.

ATTACHMENT

SOLID WASTES COMPUTATIONS AND DISPOSAL

A. NEW BUILDING CONSTRUCTION:

Basis of Estimate: 10 c.y./1,500 s.f. of finished space

Area: Approximately 22,000 square feet of finished space

Solid Waste: Approximately 147 c.y.

Other Wastes Associated with Other Site Construction: Cardboard from packaging etc.: Limited Quantity

Total: 147 c.y. before recycling

Net: 30 c.y. if 80% of the material is recycled

Disposition: Assume 10 percent is concrete and brick 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 30 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: 18

Solid Waste: Approximately 306 pounds/week

DM ROMA
CONSULTING ENGINEERS

PUBLIC INFRASTRUCTURE AND SAFETY

The following outlines how the proposed project at 33/37 Montreal Street has been designed to meet the applicable standards of the City of Portland associated with Level III: Residential Site Plan and Subdivision review.

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

The project design and building architecture will provide view corridors along Montreal Street, Willis Street, between the proposed building and the existing residential building at 23 Willis Street, and along the northerly property limits looking through the site to the northwest (towards Walnut Street).

Site access will be limited to the proposed entry/exit doorways on Willis Street and the proposed driveway and parking garage. Site will be improved with landscaped terraces along Montreal Street, which are intended to serve as community areas for the residents and guests which will have access from the existing sidewalk. Along the westerly side of the building, residents and guests will have access to a built-up hardscape patio and additional landscaped terraces that will be accessed from the inside of the building.

The site design layout and landscaping will provide a visual break from the public ROW and the exclusive/community elements of the proposed project. Exclusive use areas will likely be established and will likely provide an opportunity for residents to customize their exclusive use areas, and promote a sense of ownership.

Emergency access to the site will be provided by the existing road frontage along Willis Street and Montreal, as well as via the proposed driveway. The 14-ft wide driveway may not be capable of providing access to larger emergency apparatus but the proposed driveway design (vertical and horizontal) should be adequate to most service level emergency apparatus and vehicles.

Existing facilities such as fire hydrants and water supply also are adequate, with the nearest existing fire hydrant located at the southwesterly corner of the intersection at Willis Street and Montreal.

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

The project site location and existing public utility facilities, are available; with existing combined storm sewer main lines (2 separate) in both Montreal Street and Willis Street in the direct vicinity of the project site. Water mains are also located in both Montreal Street and Willis Street and the project will coordinate with the Portland Water District to ensure that the project will be

provided adequate domestic potable water service as well as any fire safety water services. Additionally, underground gas, and overhead electric/telephone/data services are available, and the project will provide new service connections for water, sewer, gas, and overhead electric/telephone/data services.

The project design does not utilize a connection to the existing storm drain system and the existing facilities (in consideration with the proposed storm water facilities on-site) appear adequate based on hydrologic/hydraulic modeling of the project site.

The project proposes less than 20 units and therefore no trash and recycling storage or dumpster areas are proposed. However, the proposed project site has several opportunities to include trash storage areas for the residents either within the proposed underground parking area on adjacent to the proposed driveway within a screened, secure dumpster enclosure.

August 12, 2019

Att. K

33-37 MONTREAL STREET, PORTLAND

The following outlines how the proposed project has been designed to meet the applicable standards of the City of Portland associated with Level III: Residential Site Plan and Subdivision review.

SITE DESIGN

Massing, Ventilation and Wind Impact - Section 14-526 (d) (1):
The bulk, location and height of the proposed building will comply with the minimum allowable setbacks and maximum allowable building height for the zone.

The proposed building will be > 10' away from the nearest existing adjacent structure (23 Willis Street), and > 50' away from the next nearest existing adjacent structure (MacArthur Gardens, on Montreal Street).

The proposed structure is not expected to cause a reduction in ventilation to abutting structures or unsafe wind conditions for users of the site or adjacent public spaces.

Exterior HVAC mechanical equipment will be located on the roof within a screened enclosure, as shown on the Roof Plan. The enclosure will be in the center of the roof to maximize the distance from adjacent properties and minimize the visibility from adjacent properties and public spaces.

The base of the equipment will be supported and raised up above the low-slope roof membrane on racks to minimize performance disruption & maintenance issues caused by winter conditions. A screened enclosure will be provided around the roof-top HVAC equipment, with adequate space around the equipment to allow for air movement.

A decorative parapet/cornice around the perimeter of the building will provide further visual screening from footpath level.

HVAC venting on the exterior of the proposed building will direct exhaust away from public spaces and adjacent residential properties.

Snow and Ice – Section 14-526 (d) (4):
The proposed building has a low slope roof, with internal roof drains. The outer perimeter edge of the roof includes a decorative parapet/cornice to direct snow and ice away from the adjacent properties and public ways.

Kaplan Thompson Architects

Zone Related Design Standards – Section 14-526 (d) (5):
A previous version of the project was reviewed by the Historic Preservation Board, as part of the Alternative Design Review process under the Munjoy Hill Neighborhood Conservation Overlay District. That project design received approval from the Board, in December 2018, after a number of public hearings and related design revisions.

While the current project proposal is significantly smaller and less complex than the previous version (ie smaller foot print/lot coverage/overall square foot area, with fewer residential units), the following notes describe how the project addresses the relevant design standards in the MHNCO District.

Roof Forms and Active Living Space - Section 14-140.5 (d) 1:
The proposed building has a low-pitch "flat roof", as is permitted for buildings with more than 3 units.

The first floor contains active living space with windows comprising 50.0% of the overall façade, and satisfies the minimum requirement for this standard. This active living space does not include common circulation (ie. elevator, entry foyer, or stairs), or storage space within the residential units (eg closets).

R6 Design Principles and Standards:
Refer to separate attachment: R6 Design Standards.

19 Willis Street Apartments

R6 Design Principles and Standards

New Residential construction within the R6 zone are to relate to the predominant character of the neighborhood. Projects are reviewed for consistency with the R6 Infill Development Design Principles and Standards, which apply to the front façade, and those portions of the building that are readily visible from a public way.

The Review Authority may approve a design not meeting one or more of the individual standards provided that all 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 stablished 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.

The following notes describe how the proposed building meets these criteria:

Neighborhood context - Two Block Radius Diagram



Principle A - Overall Context

The proposed multifamily residence at Montreal and Willis Streets is uniquely situated in one of the most architecturally and use diverse area on Munjoy Hill. Within a two block radius are three-family homes, single family residences, three major housing developments (including high-rise condos), numerous four story apartment buildings, a senior housing facility, the East End School and community garden, a ball field, parking lot, and the Portland Water District Treatment Facility. In order to understand how a building can act like a stitch between such different areas, while also reflecting the unique culture and architectural character of Munjoy Hill, we have considered the immediate community as well as other residential buildings located in similarly transitional areas in our analysis.

Standard A-1 Scale + Form

Within a two block radius of the site is a wide variety of housing scale including single-family, three-family, and larger-scale housing developments (like the MacArthur Gardens Apartments adjacent to the proposed building and which occupy the other half of the block, and the nearby 14-story Promenade Towers).

The proposed building is a 12-apartment residence at the corner of Willis and Montreal Streets, which will provide an alternative housing option for Munjoy Hill families, within a more intimate mid-scale community model.

The scale of the project is within that of other similarly-sized multifamily buildings within a two block radius such as:

80 North Street	9 Homes	
58 North Street	22 homes	Shailer School affordable housing
101 North Street	5 Homes	
158 North Street	60 units	Bayview Heights affordable senior housing
63 Emerson Street	5 Homes	
135 Sheridan Street	20 homes	

In addition the Munjoy Hill district includes other properties such as:

49 Morning Street	8 homes	
55 Morning Street	8 homes	
63 Morning Street	8 homes	
119 Morning Street	30 units	
13 Emerson Street	22 homes	Munjoy Commons affordable housing

The form of the proposed building has vertically proportioned massing, a simple roof form, vertical windows with local symmetry, a three-bay front facade composition, and simple material palette. This character is similar to the existing “three-decker” multi-family buildings within the two block radius context area (and the “four-deckers” in the wider Munjoy Hill District).

The building has shingled exterior walls capped by a low-pitch “flat roof” with a continuous parapet/cornice at the outer perimeter edges. Exposed concrete foundation walls provide a visual base to the building. Exterior space is provided to all units, with patios to 3 units on the first floor, and decks at the rear of the building for 6 units of the upper floor units.

Standard A-2 Composition of Principal Facades

Willis Street

The primary composition has an overall symmetrical appearance balanced with minor asymmetrical features. The main entrance to the building is prominently located in the center of the façade, using a traditional composition in the neighborhood context. A short flight of steps leads directly from the sidewalk and a ramp provides an ADA accessible route that meets the natural slope of grade. Projecting bay windows emphasize Willis Street as the front face of the building, with Montreal Street as the side-street elevation.

Montreal Street

Elements of the Willis Street facade are repeated as the building turns the corner and extends down Montreal Street. The repeated window rhythm and relative simplicity of the façade identifies it as the secondary face of the building. Exterior decks are located at the rear of the building, similar to the arrangement of the familiar three and four decker multifamily buildings in the district.

Standard A-3 Relationship to the Street

The Willis Street façade is set back enough to provide easy and direct access to the building via either a short flight of steps or a simple ramp arrangement. The steps follow a common arrangement for main entry paths in the neighborhood, being directly aligned between the sidewalk and the entry door. The steps rise approximately 21" in total, enough elevation rise to indicate a clear property threshold, while also being low enough to offer a welcoming entrance to the street.

The first floor has active living spaces with windows from living and bedroom spaces facing both Willis and Montreal streets.

The landscape design includes planted areas around all sides of the building. Street lot lines are defined by stone-faced site walls, with a simple arrangement of terraces in the intermediate space between the sidewalk and the building. The face of the intermediate terraces has a slatted wood lattice treatment that combines with the planted areas to form a continuous landscaped zone between the building and the property boundary.

Principle B - Massing

Standard B-1 Massing
The proposed building massing reflects the traditional character of the neighborhood and takes it's cues from the traditional multi-family buildings in the context area.

The narrow end of the building is clearly expressed as the front face, on Willis Street, using a three-bay composition. A central bay provides overhead weather protection above a slightly recessed main entrance. The primary central bay extends from second floor level up to roof level, while the secondary side bays stop short of the roof. All are vertically proportioned.

Exterior decks are located at the rear of the building and occupy an "eroded" corner of the building in a vertical arrangement, in common of the familiar multi-decker typology.

Standard B-2 Roof Forms
The building has a low pitch "flat" roof capped by a decorative parapet/cornice that follows the perimeter of the building, similar to other flat-roofed multi-family buildings in the context area.

Standard B-3 Main Roofs and Subsidiary Roofs
The building has a clear main roof form, without subsidiary roofs.

Standard B-4 Roof Pitch
NA

Standard B-5 Façade Articulation
The Standard requires the front façade and other potions of the building that are readily visible from the public way to use at least two architectural elements from a list provided. The proposed building employs more than two of the listed features including:

1) Balconies
2) Recessed entries
3) Covered porches
4) Bay windows

Standard B-6 Garages
Access to the basement garage is provided via a driveway off Montreal Street to a garage door and a pass door discretely located away from the street facade. The garage door is set back more than 30' from the street lot line, is recessed between flanking site walls, and is turned 90 degrees so it does not directly face a public way.

Principle C – Orientation to the street

Standard C-1 Entrances
The main entrance to the building is clearly articulated in the center of the principal façade and faces the street directly. Architectural features such as a covered and recessed entry, plus accent cladding material, are used to highlight the entry point and provide a welcoming and protected transition area between the exterior public realm and the interior private space.

Standard C-2 Visual Privacy
Building occupants are offered a sense of privacy by elevating the first floor at least 24" above the sidewalk elevation, and elevating the first floor window sills at least 48" above the sidewalk grade (the only exception to this is at the corner of Willis and Montreal streets where the first floor is 12" above the sidewalk and one window is 36" above the sidewalk due to the local slope of grade).

A planted buffer zone fills the intermediate space between the building and the sidewalk. A stone-faced landscape wall on the street lot line provides a clear definition of public space close to the building.

Standard C-3 Transition Spaces
Transition spaces are articulated between the sidewalk and the front door through use of architectural and landscaping elements.

Architectural features include a short flight of steps and a ramp, each with approximately 21" total rise to the front door.

Landscaping features include planted areas alongside the steps and ramp. In addition a low wall along the Willis Street lot line defines the edge of the entry ramp and offers an informal seating opportunity for a neighborly conversations.

Principle D - Proportion and Scale

Standard D-1 Windows
All windows are rectangular and vertically proportioned, to reflect the scale and aesthetics of the surrounding neighborhood homes. The majority of windows along both facades are proportionate to commonly used vertically oriented windows, typically measuring approximately 2'-8" wide x 5'-0" high.

Standard D-2 Fenestration
The fenestration in general has a similar proportion to the overall building massing as other neighborhood buildings.

Consistent with the R6 Design Standards, the total area of fenestration of each street-facing facades along Montreal and Willis Streets is greater than 12% of the relevant total facade area.

Standard D-3 Porches
The horizontal extent of the covered entry porch on Willis Street is approximately 28% of the overall façade width. The minimum depth is approximately 5'-2", with an area 120 sf.

All balconies have a depth of at least 6', and an area of at least 48 square feet.

Principle E - Balance

Standard E-1 Window and Door Height
The majority of doors and windows on all facades have a head height with a common horizontal datum line, including all primary window and doors.

Standard E-2 Window and Door Alignment
The majority of windows and doors are stacked with centerlines in vertical alignment.

Standard E-3 Symmetricality
Primary windows are composed with vertical symmetry around a discernable local centerline within each façade. The dominant window type is a pair of vertically orientated symmetrical window sashes, arranged symmetrically about a common centerline.

Principle F - Articulation

Standard F-1 Articulation
Primary surface articulation is provided with projecting bay windows on the Willis Street and Montreal Street façades, plus recessed exterior balconies on the Montreal Street façade. Secondary articulation and shadow lines are provided by the decorative parapet/cornice, and changes in material texture at accent panels.

Standard F-2 Window Types
The building uses consistent window types throughout with a minimum of variation. There are two window types:

1) Rectangular operable casement sashes.
2) Rectangular fixed sashes.

The dominant window arrangement is a symmetrical pair of vertically proportioned operable casement sashes, with a number of casement sashes arranged in groups of three on the water facing north-east façade. A relatively small number of fixed transom sashes are used on the top floor and the central bay above the main entrance. The egress stair also has a number of fixed sashes.

Standard F-3 Visual Cohesion
The material choices help to further define the primary masses of the structure:

1) Wood shingles for the predominant material.
2) Accent cladding at the main entrance.
3) Accent spandrel panels below some of the windows as part of the overall articulation of the building facades.

Standard F-4 Delineation between Floors
Floors are articulated primarily through fenestration patterns and balconies.

Standard F-5 Porches, etc.
Exterior spaces and balconies are incorporated in to the overall design and building massing. Balustrade railings are provide articulation and add shadow lines to the façade.

Standard F-6 Main Entries
The main entry is emphasized by the arrangement of steps, the composition of projecting window bays and recessed entry alcove, plus some local material articulation.

Standard F-8 Articulation
Architectural articulation features include:

1) Projecting bays with an offset depth of approximately 2'-0"
2) Recessed balconies with a typical offset depth of approximately 8'-0"
3) A decorative parapet/cornice with a projecting depth of between 1'-6" and 2'-0".

Principle G Materials

Standard G-1 Materials
Materials for the exterior walls are similar to those found in the context area of the neighborhood.

The proposed building includes:

1) Concrete foundation wall.
2) Wood shingles with a paint color.
3) Aluminum clad windows with a charcoal grey color.

Standard G-2 Material and Façade Design
The selection of façade materials is consistent with the façade design, with concrete for the foundation wall and visually lighter wood shingle cladding for the upper stories.

Standard G-3 Chimneys
N/A

Standard G-4 Window Types
The building uses consistent window types throughout with a minimum of variation. There are two window types:

1) Rectangular operable casement sashes.
2) Rectangular fixed sashes.

Window detailing will be consistent throughout.

Standard G-5 Patios and Plazas
The first floor patios will be constructed of masonry unit pavers.

Portland Water District
FROM SEBAGO LAKE TO CASCO BAY

August 14, 2019

Jayson Haskell, P.E.
DM ROMA
P.O. Box 1116
Windham, ME 04062

Re: 33 Montreal Street, PO
Ability to Serve with PWD Water

Dear Mr. Haskell:

The Portland Water District has received your request for an Ability to Serve Determination for the noted site submitted on November 3, 2017. Based on the information provided per plans last revised August 12, 2019, 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 2-inch domestic service with a 1.5-inch meter may be installed from the water main in Montreal Street. The service should enter through the properties frontage on Montreal Street at least 10-feet from any side property lines. An approved backflow prevention device must be installed on the service line directly after the meter prior to service activation. 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.
- A new 6-inch fire service may be installed from the water main in Montreal Street. The service should enter through the properties frontage on Montreal Street at least 10-feet from any side property lines. An approved backflow prevention device must be installed on the service line directly after the service enters the building prior to service activation.
- The existing buildings area currently served with a 3/4-inch domestic water services. These services must be terminated by shutting the corporation valve and cutting the pipe from the water main.
- The Portland Water District does not have record of any other existing infrastructure in public roads and recommends a survey and test pitting be performed by the development team prior to construction. Any conflicts that arise during construction are at the risk of the developer and may result in job shutdown until new plans are submitted by the developer and reviewed and approved by PWD.

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 currently has two existing water services. Two 3/4-inch diameter copper domestic service lines provide 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 8-inch diameter cast iron water main in Montreal Street and a public fire hydrant located approximately 100 feet from the site. The most recent static pressure reading was 45 psi on August 5, 2019.

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

CITY OF PORTLAND
Department of Public Works
Christopher C. Branch, P.E., Director

Date: August 9, 2021 Revised

Re: Wastewater Capacity Authorization

Address: 37 Montreal Street
Applicant: Tim Wells

Planner: Caitlan Cameron

Anticipated Wastewater Flow:

Estimate of Anticipated Design Flows				
Development	Unit Size	Number of Units	Gallons per Day per Unit	Total Gallons per Day
Existing flow to be removed				
Single Family Dwelling Units	3-Bedroom	2	270	(540)
Single Family Dwelling Units	5-Bedroom	1	450	(450)
Proposed flow				
Multiple Family Dwelling Units	1-Bedroom	2	120	240
Multiple Family Dwelling Units	2-Bedroom	2	180	360
Multiple Family Dwelling Units	3-Bedroom	8	270	2160
			Net Change	**+ 1770**
*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.

The property has three existing buildings which will require that their individual sewer laterals be abandoned in accordance with City ordinance. This will require either: 1. Digging the lateral from the property line to the sewer main and capping the lateral at the main. Or 2. Using a plug inserted into the lateral and pushed to the interface

with the sewer main and then filling the sewer lateral with flowable fill. Either is acceptable.

If the City can be of further assistance, please contact me at all 874-8840 or brad@portlandmaine.gov

Sincerely,



Bradley A. Roland, P.E.
Senior Project Engineer

Notice of Public Meeting Certification

I, Tim Wells, hereby certify that a notice of neighborhood meeting sign was posted from 7 December to 15 December prior to the Planning Board hearing held on 14 December 2021 for the proposed project PL 000817-2019 located at 19 Willis Street.



Note that it is the applicant's responsibility to remove the notice of public meeting sign within three days following the date of the meeting.

Tim Wells

8 December 2021

Barbara Vestal <vestal@chesterandvestal.com>
to me

I got the message that Jennifer is out, so forwarding for your attention.

---------- Forwarded message ---------
From: **Barbara Vestal** <vestal@chesterandvestal.com>
Date: Mon, Jul 12, 2021, 7:59 AM
Subject: Fwd: 33-37 Montreal Street
To: Jennifer Dorr <jmy@portlandmaine.gov>, <planningboard@portlandmaine.gov>

My letter, forwarded below, was not included in the public comment on this proposal. Please advise.

Regards,
Barbara Vestal

---------- Forwarded message ---------
From: **Barbara Vestal** <vestal@chesterandvestal.com>
Date: Fri, Jul 9, 2021, 11:11 AM
Subject: 33-37 Montreal Street
To: <planningboard@portlandmaine.gov>, <atufts@portlandmaine.gov>, Christine Grimando <CDG@portlandmaine.gov>, Caitlin Cameron <CCameron@portlandmaine.gov>

Dear Planning Board Chair and Members:

I want to add my voice to that of Peter Murray as expressed in his letter to you dated July 8, 2021 in opposition to approval of the project at 33-37 Montreal Street as proposed. I agree with Atty. Murray's detailed and accurate analysis.

The most egregious elements of this proposal are its height and massing, which are completely out of scale with the surrounding neighborhood. In seeking approvals, it is asking the Planning Board to disregard two critical aspects of the height limits.

First, the maximum height per zoning is 35' in the Munjoy Hill Neighborhood Conservation Overlay District. There is an option for the Planning Board to allow up to 45' of additional height if one or more units of workforce housing are included. This is not intended to be an automatic 10 foot bonus for one unit of workforce housing. As explained by Planning Director Jeff Levine at the time the affordable housing bonus was enacted as part of the Overlay District, the Board is supposed to engage in an assessment of all of the factors, including the amount of workforce housing proposed, the degree to which it was adequately assured to be workforce housing in perpetuity, and the impact of the additional height upon the compatibility of the building to determine how much, if any, of the additional 10' foot allowance it should approve. The resulting building needs to not just meet the maximums allowed by zoning. It also needs to satisfy the design standards.

It does not seem like the applicant has offered the specific assurances which would be required for the Board to entertain this height bonus. I have not seen details about the specifics of the single proposed workforce housing unit. Nor does it seem like it is appropriate for the Planning Board to approve the full 10' bonus on this sloped site, where the building would effectively be perceived as a massive 5 story building in a neighborhood of 2 to 2.5 story buildings on small lots. The combination of the consolidation of lots, the sloped site, and the possible granting of a 10' height bonus produce a building that is completely incompatible with the surrounding neighborhood. Even if it meets the technical standards of the zoning, it clearly fails to meet the design standards. Both sets of standards need to be met before this proposal can be approved.

Second, the calculation of height on the site fails to meet even a straight face test. As far as I can tell, they are not proposing to raise the overall level of the site by trucking in massive amounts of fill (which would itself be an objectionable, but a more conventional, ploy). Instead it looks like they have constructed what seem to be elevated planters applied to the exterior of the building, put dirt in the planters and then said that dirt is where one should measure average grade for those corners of the lot. While both techniques result in an artificial measurement, it seems like their planter scheme has to be a bridge too far. There is nothing about the planters that is supporting any structure above them. The dirt is not weight-bearing. There is no dirt extending from the planters down into the ground.

The relevant points for measuring height should be the location where the weight-bearing foundation of the building intersects with the supporting ground. They should not be allowed to get around that by applying planters to the exterior of the building, which hang many feet above the ground and somehow claim that is the relevant dirt one one should reference for calculating heights. This makes a mockery of the regulations and invites others to manipulate height calculations in the same way. If these applicants are allowed to skirt Portland's height regulations in this manner, it opens the floodgates for every other developer to manipulate and disregard height limits as well. Please do not allow this project to establish the precedent that completely guts already too lax height limits.

Regards,

Barbara Vestal

--
Barbara A. Vestal, Esq.
Chester & Vestal, PA
107 Congress Street
Portland, Maine 04101
(207) 772-7426 - phone
(207) 761-5822 - facsimile

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37-33 Montreal Street Level 3 Site Plan
1 view
Subscribe
Carol Connor's profile photo
Carol Connor,
Jul 13, 2021, 10:23:22 AM (7 days ago)
to planni...@portlandmaine.gov

Dear Chair and Members of the Portland City Planning Board,

RE: 33-37 Montreal Street Level 3 Site Plan
July 13. 2021



What a joy it is living on Munjoy Hill in my humble family home that is now an official Portland Landmark. The James B and Almira E. Newell House at 12 Montreal Street is a working class home built in 1855. It holds the memories of all the people who ever lived here including Portland Co and railroad workers, long shore men, painters, teachers, joiners, craftsmen and more.
A lot has changed on the hill, but the simple joy of stepping out of one's yard and onto the sidewalk to meet friends and neighbors is still a wonderful part of community life here. There are many neighbors, visitors and past residents who value this unique part of Portland and wish to see development that does not destroy its unique character and appeal.

Please consider the negative impact that has already occurred related to this project and the unfortunate potential results of approving this plan.

37 Montreal, a preferably preserved home already demolished

Out of scale mass and height will overpower existing homes

Erosion of Munjoy Hill's architectural landscape

Built up grade and retaining wall will create visual and air flow impediments

Out of context with neighborhood homes and nearby Historic District (100ft. rule)

I respectfully request that you consider rejecting this project in its current iteration. The proposed building has changed minimally throughout the many planning and meeting stages in spite of specific suggestions by the board. An in-context, appropriately sized, well designed project could be an asset to the neighborhood and the owner.

Sincerely,
Carol M. Connor
12 Montreal Street
Portland, ME 04101

Level 3 site plan 37-33 Montreal st

0 views

Subscribe



Carol Connor
unread,
Jul 18, 2021, 7:42:41 AM (2 days ago)

to planni...@portlandmaine.gov, Carol Connor

Dear Chair and City of Portland Planning Board members,

Please accept my comments as part of your record. I am resending this because of a technical glitch that interfered with transmission last week.

Carol Connor
12 Montreal St
Portland, ME 04101

Dear Chair and Members of the Portland City Planning Board,

RE: 33-37 Montreal Street Level 3 Site Plan
July 13. 2021





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Out of context with neighborhood homes and nearby Historic District (100ft. rule)

I respectfully request that you consider rejecting this project in its current iteration. The proposed building has changed minimally throughout the many planning and meeting stages in spite of specific suggestions by the board. An in-context, appropriately sized, well designed project could be an asset to the neighborhood and the owner.

Sincerely,
Carol M. Connor
12 Montreal Street
Portland, ME 04101

Carol Connor <balsamique@live.com> 1:29 PM (3 hours ago)
to Portland planning Board

December 8, 2021

To: Chair and Members of the City of Portland Planning Board
RE: Level 3 Site Plan for 19 Willis Street

The 19 Willis Street Proposal (formerly 33-37 Montreal Street), has plagued the Munjoy Hill neighborhood for the past 3 plus years. Though the plans have been studied, assessed, discussed, workshopped and tweaked, the overall impact of the design remains outsized for its context, institutional in appearance, and architecturally out of place.
Through the many meetings, workshops and neighborhood discussions, an overwhelming number of people have written and/or spoken out against the project.

The building site is located just across the street, approximately 50 feet away from a row of vintage homes that are within the recently established Munjoy Hill Historic District. These structures are roughly one tenth the size of the proposed condo building, and average 20-25 feet in height as compared to the 4 story plus project. A portion of the planned building is within 100 feet of the historic district. Its proximity brings to mind the 100 foot rule which should come into play as the structure is inconsistent within the context of existing neighborhood homes.

In light of the fact that the site plan has changed, and the Munjoy Hill Historic District has been established, It would be beneficial for the planning board to ask for the historic preservation staff to revisit the proposal and deliver a current and updated memo to the board. I request that you do this before making any decision regarding the plans.

As it relates to historic preservation, the City of Portland's zoning code 14.6.4(E)(2 states ….. *such development shall be generally compatible with the major character-defining elements of the landmark or shall be defined as design which respects the established building patterns and visual characteristics that exist in a given setting and, at the same time, is a distinct product of its own time. To aid the review authority in its deliberations, Historic Preservation staff shall provide a written analysis of the proposed development's immediate context, identifying the major character- defining elements and any established building patterns that characterize the context.*

I respectfully request that you reject the level 3 site plan for 19 Willis Street.

1. It disrespects the character of the neighborhood by its out-sized scale and massing.
2. Its institutional design is out of place in this residential setting.
3. It lacks the character defining features and building patterns characterizing its context.
4. It would overshadow and diminish the historic importance of the vintage homes in the Munjoy Hill Historic District.

Sincerely,
Carol M. Connor
12 Montreal Street
Portland, Maine 04101
balsamique@live.com

Ejkoch Gmail 9:03 AM (4 hours ago)

to Planning Board, jmy

Dear Planning Board Members,

The 33-37 Montreal development project is not in compliance with the R6 Design Standards and R6 Zoning. There are good reasons for these design standards, and I am grievously upset that the Planning Board has ignored them in the past, and I hope they will change that now.

The character of Munjoy Hill is one of the things that attract people to it, as a visitor, or as a resident. We have been destroying that piece by piece by ignoring the requirements of our zoning and the comprehensive plan that new buildings conform to the neighborhood in scale, massing, and design.

According to the developers plans, it appears they add approximately 14 feet of height to the downhill slope - because of the "average grade" trick the developers use to increase their building height. There is No language in R-6 zoning that “average” grade is to be used.

This proposal continues to ignore that the R-6 design standards are to be interpreted at the same level of enforcement as zoning. This proposal essentially ignores the R -6 Design Standard basic design principles of neighborhood context, scale and massing - which specifically provide that new construction be compatible with buildings in a 2 block radius, with close attention to surrounding buildings.

As K. Snyder asks, “**How is the institutional looking building which is 12 times the massing and twice as high as any surrounding houses compatible” with the surrounding neighborhood in any regard?**

My question as well. I would like the city of Portland Planning Board to work on behalf of the people of the city of Portland, following its enacted design standards as well as the spirit of the standards, and of the comprehensive plan.

Erna koch

Meow, and the world meows with you.

Hiss and you hiss alone.

7/13/2021 33-37 Montreal PB Meeting

Assigne... Subscribe

0 views

Karen Snyder 7:29 AM (6 hours ago)

to Planning Board, jmy

Dear Planning Board Chair and Members,

33-37 Montreal project is not in compliance with the R6 Design Standards and R6 Zoning for the following reasons.

1) It is not clear on the drawings but it appears approximately 14 feet to the height is added to downhill slope of this proposal because of the "average grade" trick the developers continue to use to increase their building height since there is NO language in R-6 zoning actually states that average grade is to be used.

2) This proposal continues to ignore that the R-6 design standards are to be held at the same level of enforcement as zoning. As such, this proposal glaringly goes against R-6 Design Standard basic design principles of neighborhood context, scale and massing which state specifically that houses should be compatible with buildings in a 2 block radius and to pay close attention to surrounding buildings.

Below are some houses across the street on Montreal.
How is the institutionalized looking building which is 12 times the massing and twice as high as any surrounding houses anywhere compatible?
Proof of this is with the scale and massing analysis provided below.

Ultimately, as long term residents of Munjoy Hill realize, the Planning Board will continue to ignore R-6 Design standards in order to continue to commoditize the housing on Munjoy Hill as much as possible in order for the wealthy to live part-time. R6 and specifically Munjoy Hill continues to be targeted by the City and the systems in place and has made Munjoy Hill unsustainable for long term residents to live. These actions go against the Portland Comprehensive Plan.



EXISTING CONTEXT: MONTREAL



How is 33 and 37 Montreal proposal compatible to Houses Across Montreal Street?

Scale and Massing Analysis of 33 and 37 Montreal to Surrounding Buildings on Willis and Montreal

Street_Address	Land Use	Stories	Stories Height (ft)	Building Width (ft)	Building Length (ft)	Building Mass (Volume) LxWxStories Height
23 Willis	Single family	1.5	20	22	75	33,000
26 Willis	Single family	1.5	20	20	43	17,200 est
24 Willis	Single family	1.5	20	20	43	17,200
22 Willis	Single family	1.5	20	22	32	14,080
20 Willis	Two family	2	25	15	48	18,000
41 Montreal	Single family	2	25	22	51	28,050
42 Montreal	Single family	1.5	20	22	55	24,200
10 Willis	Two family	2.5	30	22	51	33,660
9 Willis	Two family	2.5	30	23	58	40,020
32 Montreal	Single family	1.5	20	22	56	24,640
24 Montreal	Single family	2	25	22	45	24,750
27 Montreal	Multi Unit	2	25	32	64	51,200 est
19 Montreal	Multi Unit	2	25	32	64	51,200 est
13 Montreal	Multi Unit	2	25	32	64	51,200 est
22 Montreal	Single family	1.5	20	18	34	12,240
16 Montreal	Single family	1.5	20	25	30	15,000
12 Montreal	Single family	1.5	20	18	36	12,960
Surrounding Bui	Average	2	Stories			27,565 cubic fi
	vs					vs
33/37 Montreal	14 Unit	4	Stories			378,000 cubic fi
	(Building Scale)					(Building Massing)



Assumptions: Column headings starting with "City", building length and width was gathered from...
Calculations: 1) I assumed 10 feet per story but if it is gabled or half story, I rounded up to next story.
2) Massing is considered volume which the formula Volume = Length X Width x Height

Conclusion: 1) 33 and 37 Montreal Proposal is Greater than 12 x SCALE and MASSING of surrounding properties
2) 33 and 37 Montreal Proposal is Two (2) x (basicaly double) the HEIGHT of surrounding properties.

1271.32% Average Scale and Massing Increase

The Various Other Iterations of 33 and 37 Montreal Proposals

VERSION 1 - HPB Workshop: 8/15/2018



VERSION 2 - HPB Workshop: 9/05/2018



VERSION 3 - HPB Workshop: 10/17/2018



VERSION 4 - HPB Workshop: 12/19/2018



VERSION 5 - PB



Regards,
Karen Snyder
Munjoy Hill Resident

33-37 Montreal Street – Level 3 Site Plan Application 7/13/21

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Mike Hoover

to planni...@portlandmaine.gov

4:45 AM (3 hours ago)

Dear Chair and Members of the Portland Planning Board:

As a resident of Munjoy Hill living on Melbourne Street, one block from the proposed development, I am writing to state my objection to the approval of this application due to its current status of not meeting standards required by the R-6 Zone and Munjoy Hill Overlay. This site plan application is simply not in compliance with the height requirements of R-6 Zone and the Conservation Overlay on Munjoy Hill and is also not in compliance with the applicable Design Standards. Given these deficiencies, the Site Plan Application should not be approved.

1. The height of the structure exceeds the current maximum height required by the R-6 Zoning standards. The declaration of an artificial grade by the development 14 FEET above existing grade makes a mockery of this standard, and as such clearly exceeds the R-6 standard.

2. The surrounding neighborhood consists predominantly of 19th century wood frame 1 and 2 family houses approximately 18-25 feet wide on small lots with side yards, and are 1½ - 2½ stories in height. The sides of the proposed building facing Willis and Montreal Streets, each approximately 50 feet by 90 feet simply dwarfs every surrounding structure. There is absolutely no compatibility of any possible aspect of this building to the existing neighborhood. It would ruin the fabric of the existing neighborhood.

The applicant has also not prepared the necessary documentation to address this concern. Firstly, staff's memo is factually incorrect (Section IX.B.4, page 8) by stating that the site is not in proximity of a Historic District. The current Munjoy Hill Historic District encompasses the homes on Willis Street immediately adjacent to the site. Proper analysis of this impact must be completed prior to the evaluation of this resource for this application. Secondly, staff has requested an analysis to include "*Neighborhood context plan that shows the footprint of this building compared with, those in the surrounding blocks, renderings showing the building in context with adjacent buildings" Neither* analysis has been included in this submission, and as such is incomplete.

This site plan application proposed a structure which does not meet current R-6 zoning criteria for building height, and shows absolutely no compatibility with the existing structures in the immediate vicinity of the site. For these reasons, the Planning Board must vote to reject this application for its failure to comply with specific the existing height and compatibility standards

Michael Hoover

Melbourne St

Portland ME 04101

33-37 Montral Street - Planning Board Meeting 7/13

0 views

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Peter Murray - GWI
unread,
Jul 8, 2021, 9:34:25 AM (yesterday)

to planni...@portlandmaine.gov, Peter L. Murray, Andrew Tufts, Barbara Vestal, Carol Connor, Wayne Valzania

Dear Planning Board -

Attached please find my written comments concerning the project scheduled for a public hearing on July 13, 2021. The proposed project makes a travesty of height regulation in the R-6 zone and should not be approved based on the plans submitted.

Can you please send me the link for the virtual meeting so that I can participate?

Thank you for considering these matters.

Sincerely,

PLM

104 North Street
Portland, Me 04101

July 8, 2021

Portland Planning Board
City Hall
Portland, ME 04101

Re: 33-37 Montreal Street – Level 3 Site Plan Proceedings

Dear Chair and Members of the Portland Planning Board:

This is in anticipation of your July 13 Public Hearing on the above project. The undersigned, who lives approximately one block away from the project site, has participated both through written submissions and oral presentations at prior Workshops and other proceedings with respect to this project. For the reasons set forth below, it is submitted that the project is not in compliance with the requirements of R-6 Zone and the Conservation Overlay on Munjoy Hill and is also not in compliance with the applicable Design Standards and the Site Plan Application and should not be approved.

The concerns set forth herein were brought up at the September 24, 2019 Workshop on this project. The relatively minor and cosmetic changes represented by the current revised submissions do not effectively meet these objections or the other objections raised by concerned residents at prior proceedings.

1. The Height of the Proposed Project Exceeds the Maximum Height Permitted by the Portland Zoning Ordinance.

The R-6 Zone and the Munjoy Hill Overlay require that any structure built in the Zone have a "height" of no more than 45 feet. (In the Munjoy Hill Overlay Zone the 45-foot height is available only to structures having at least two dwelling units, of which one must be a "workforce" housing unit – otherwise the maximum height is 35 feet). The Project is proposed to have one "workforce" unit and therefore claims the 45-foot height limitation.

The question raised by this proposal is, "From where the 45-foot height is to be measured?" The version of the Portland Zoning Ordinance in effect at the time the Site Plan Application was filed (and which therefore governs this Application) contains no specific mention of how or from where a building's height is to be determined. As of that time the practice of the Portland Code Enforcement Officer was to measure a building's height from the average land grade at the four corners of the structure (or at a number of

points along its perimeter at the developer's option). On the Portland islands, it was understood that the measurement was to be made from the grade levels that existed before the site had been disturbed by development activity. On the mainland, apparently measurements could be made from the grade of the site as improved by the project. This practice permitted mainland developers to fill or adjust site grades to some degree before determining the average grade from which their structures would be measured.[1]

The project is proposed to be sited on a sloping site with existing land grades at the four corners of the proposed structure as follows:[2]

Northern Corner: 124.0'
Eastern Corner: 128.5'
Southern Corner: 137.9'
Western Corner: 134.0'

The average of the existing grades at the corners of the proposed condo block is 131 feet above datum. Based on the existing grades on the ground, the structure should extend no higher than 176.1 feet above datum.

The developer, however, claims a new artificial "average grade" around the entire building by heaping a fringe of earth around the entire structure and retaining it with retaining walls creating flower and landscaping boxes to a height of 138 feet above datum on all sides of the structure. This new "average grade" is above the existing natural grade at all four corners of the building. The increase ranges from less than a foot at the southern corner, to 4 feet at the western corner, to 9 ½ feet at the eastern corner and to *14 feet* at the northern corner. The developer proposes to show its neighbor to the northwest a new artificial retaining wall extending from 4 to 14 feet above the grade of his immediately adjacent land. The new landscaping or flowerboxes would extend from 2 - 9.5 feet above the sidewalk on Montreal Street. It should be noted that the dirt in the flowerboxes is no part of the support of the building, but is a narrow strip added outside the foundation after construction in order to claim a fictitious grade that is totally out of synch with the land contours in the surrounding neighborhood. In fact, the "average grade" flowerboxes would be installed above the door to the garage and some 12 feet above the real ground in that area. All of this is shown rather clearly in the elevations most recently filed by the Applicant.

---

[1] This practice was codified in the Phase 1 Recode of the Portland Zoning Ordinance adopted by the City Council on November 9, 2020. The Phase 1 Recode was intended to reorganize and rationalize the structure of the ordinance without making substantive changes, which were reserved to Phase 2. The question of how grade should be determined for project height purposes is on the agenda for debate in the currently pending Phase 2 proceedings. One proposal is that throughout the City, building height should be measured from pre-construction grade as it is on the islands and in other municipalities such as Bangor and Boston.

[2] See measurements and contour lines on "Grading and Utility Plan" dated 9/24/19 as filed by the Applicant.

By measuring from this fake "average grade" the developer proposes to build to a height of 183 feet above datum, or nearly 7 feet above what the real grade would give it.

While the recent practice of the Portland Code Enforcement Officer to measure from post-construction grades may permit developers some modest filling and grade alterations, this is an egregious abuse of the practice to permit the developer to add, in effect, an additional story to its project thus increasing and compounding its overweening dissonance with the surrounding neighborhood as discussed below.

While the apparent current practice of measuring from post-construction grade is vague and inexact, it certainly does not permit something like this, where the developer seeks to take unfair advantage of this ambiguity to make a mockery of height restriction in the R-6 and the Munjoy Hill Overlay.

2. The Overall Size and Bulk of the Proposed 9-Condominium Block Does Not Comply With the Design Standards in the Context of its Surroundings.

The Montreal-Willis Street neighborhood is a relatively intact Munjoy Hill residential neighborhood consisting of 19th century wood frame 1 and 2 family houses on small lots. This building stock bespeaks the Hill's history as a working- and middle-class residential quarter in 19th century Portland. Most of the houses are 1½ - 2½ stories in height.

The proposed project would combine two lots to make one large lot on which the developers propose to erect a 4½ story condominium block with 9 upscale dwelling units over a parking deck that would cover most of the combined lots. This structure would dwarf all of the nearby buildings and dominate the entire Montreal-Willis area. It would destroy the harmonious rhythm of the buildings on the streets.

The Level 3 Site Plan Application should be rejected because the building does not comply with the basic Design Standards requiring the height, size and mass of a new building relate positively to the surrounding building stock. This building is simply too big, too long, too institutional to fit on the corner where it is sited.

The proposed site is the northern corner of the intersection of Willis and Montreal Streets. On the other corners are 1) on the southern corner, a 1½ story small 19th century mansard cottage, recently restored to approximate its original appearance; 2) on the western corner a small 1½ story 19th century house recently improved with a long dormer in the ell; 3) on the eastern corner, a 2½ story 19th century frame house similar in size and type to the house that had stood on the proposed project site near the northern corner of the intersection, but which the developer recently demolished. There is no way that this full four story 9-unit condo block with parking underneath can reasonably resonate with housing stock of this kind.

The problem is exacerbated because the developer is not proposing to build on a single Munjoy Hill lot, which would by its small size tend to keep the project in relative

proportion with the buildings on the neighboring small lots. Here the developer has combined two existing lots to make a large lot, which will physically accommodate a much larger structure than either of its constituent parts. This physically permits a building of much greater scale than any of its surrounding structures.

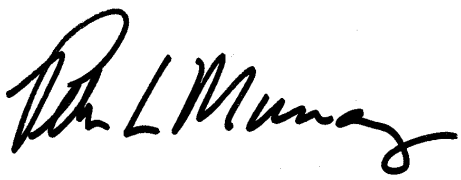
Promenade East, cited by the developer as a comparable structure, is not a part of this neighborhood, but is off on a campus of its own where formerly the Munjoy Hill Reservoir was located. The buildings on Montreal and Willis do not in any way relate to this distant structure.

It is time to say "No." The existing R-6 zone, even with the Munjoy Hill Overlay, affords developers great dimensional latitude in permitting buildings extending up to 45 feet above a real average grade. However multi-unit residential buildings must also comply the Design Standards, which require that new construction "be compatible with the predominant character defining architectural features of the neighborhood." In some areas of the Hill a building of this height can "fit in" and resonate positively with the surrounding housing stock. Not on the corner of Montreal and Willis. In this part of the neighborhood the Design Standards require that new construction adhere more closely to the relative size and scale of the existing residential structures on all sides.

If this block is permitted to be built it will be one of those buildings of which people will say for years to come, "How did they let that be built!"

It is submitted that the application must be denied.

Sincerely,



Peter L. Murray

PC9

w.valzania@munjoyhill.org <w.valzania@munjoyhill.o... Dec 8, 2021, 4:51:19 PM (15 hours ago)
to planningboard@portlandmaine.gov, Christine Grimando, austentd@portlandmaine.gov, Wayne Valzania, Barbara Vestal, Peter Murray

Chair Brandon Mazer and Planning Board Members

City of Portland

389 Congress Street

Portland, Maine 04101

Re: 19 Willis Street (f/k/a 33-37 Montreal Street)

Dear Chair Mazer and Planning Board Members:

The Board of the Munjoy Hill Neighborhood Organization has requested me to urge you on behalf of the Organization not to approve the 19 Willis Street development as proposed. This massive, luxury project is the opposite of development that would be appropriate for Munjoy Hill and specifically for the proposed location on Willis Street. It deviates from the existing regulatory framework in important regards, specifically:

1) It calculates allowable height using an artificial elevation that is contrary to the zoning ordinance. If permitted, due to the lot aggregation and sloped site, the improper height calculation would result in a building that is completely out of scale with the neighborhood. The use of applied building features (planters) to establish elevation is an egregious misinterpretation of the zoning ordinance and would set a dangerous precedent for future project proposals. The result is to claim a building height that is over 6 feet higher than would be allowed under a proper measurement of average grade of the site.

2) The scale and mass of the proposed building is completely out of context with the existing neighborhood and it does not meet R-6 design standards or site plan standards (14.6.4.E (2)). At least a portion of the proposed development is within 100' of the Munjoy Hill Historic District. It is far from compatible with the major character-defining elements of the portion of the Munjoy Hill Historic District in the immediate vicinity. As designed, it is 4 stories tall, and appears as 5 stories from the downhill perspective. As it is proposed to be built on two combined lots, it is a massive structure and would loom over the adjacent small-scale, mostly 1 and 1.5 story homes. From uphill, above this proposed project, the rooftop appurtenances, which are required to be hidden by roof edge setback and aesthetically pleasing barriers, will be in full view becoming a major component of the downhill landscape.

3) The combination of the proposed demolition of 3 housing units and the proposed inclusion of one "workforce" housing unit results in a net loss of affordable housing, setting yet another baseline upon which other proposals will use as a "prior built" rationale. If this project is allowed to go forward and the Planning Board is prepared to grant the full height bonus, to mitigate the impact to the extent possible, the conditions of approval should clearly require that the "workforce" housing unit actually be provided on site, that its sale or rental involve arms-length transactions, and that the unit be deed restricted for affordability for the longest term possible under State and Federal law.

Attached is a set of "Guiding Principles for Real Estate Redevelopment on Munjoy Hill", adopted by the Munjoy Hill Neighborhood Organization Board of Directors on February 4, 2020. These have provided the context for our

analysis of this proposed project. We feel compelled to raise our concerns about this proposed project because it involves potentially precedent-setting issues

Most of the land on Munjoy Hill involves sloped sites. The interpretation of height and application of height calculations are important benchmarks to see that in-fill development is respectful of its neighbors. The applicant should not be allowed to employ this tortured interpretation in calculating height.

The proposed development is completely out of scale with the immediate neighborhood, both under general R-6 design standards and under the site plan standard for development adjacent to a historic district. It is not sufficient for the proposed development to meet maximum dimensional standards pursuant to zoning. The proposal also has to be able to satisfy the R-6 design standards and site plan standards. We do not believe that the proposed development meets these standards.

The affordable housing issue is critical throughout the City. Granting a 10' height bonus for a single "workforce" unit is counterproductive, particularly as it encourages demolition of existing housing to create the building lot. The Planning Board should exercise its discretion to decline to grant that maximum height bonus, particularly as the applicant is already proposing to stretch the limits of this dimensional standard and the type of housing to be provided is not meeting the need for affordable housing.

33-37 Montreal Street Proposed Development

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0 views



w.val...@munjoyhill.org 8:40 AM (1 hour ago)

to planni...@portlandmaine.gov, Andrew Tufts, Christine Grimando, Caitlin Cameron, Barbara Vestal, Barbara Vestal, Carol M. Connor, Carolyn Swartz, Clare LaVergne, Karen Snyder, Maggy Wolf, Mary Casale, Mike Hoover, Ned Chester, Ned Chester, Peter Blackstone, Peter Murray, Wayne Valzania, Wa...@redhookdesignalliance.com

Members of the Portland City Planning Board, Andrew, Christine, and Caitlin,

I am writing on behalf of The Munjoy Hill Neighborhood Organization, our members, our friends, and the Munjoy Hill residents who will be directly affected by this development. I will also touch on the revaluation because developments of this scale are inextricable linked as cause and effect.

My colleagues, Barbara Vestal, and Peter Murray have presented arguments that are statute and code based. That having been covered, I will present an argument that examines aesthetics and the humanity of people living in neighborhoods. I encourage you to visit the location of this proposal as I did yesterday, and to stand on the street corner of Willis and Montreal, slowly turn three hundred and sixty degrees and to carefully and quietly absorb the context in which you stand. It is quiet, beautiful, and Munjoy Hill at its finest. It is a place where residents care about their homes and their neighborhood. There is scale that is comforting and familiar. These are homes that are built with materials that bespeak a New England coastal neighborhood.

The proposed project for 33-37 Montreal Street is none of this. It is large, it is box like, and it is incongruous in this setting. It detracts rather than adds to the aesthetic, and it forever alters a neighborhood that has grown organically and is loved by its residents. There will be no wood, eaves, gables, or any of that nonsense, just tall flat facades and rooftop appurtenances that if allowed will rise forty-five plus feet above the neighboring houses.

So, who are the winners and losers in this proposal? The winners are, of course, the developers who stand to gain additional wealth, and an enhanced reputation in their community of developers. There will be an overlay of new residents who may or may not appreciate, or even understand the essence of a small closely knit neighborhood. In either case the population of the neighborhood will increase significantly and they will get to live on Munjoy Hill.

The losers are the long-term residents living in the neighborhood. The folks who have lived there, worked on their houses, invested in their neighborhood, and for years and years, paid their taxes to the City of Portland. Traffic on Willis and Montreal streets will increase. Garbage trucks and service vehicles will service the development and will bring frequent truck traffic to the neighborhood. Not the least affront is that long time invested residents now will be living in the shadow of a behemoth structure that will totally replace the essence of all that they have held dear and have paid for. The final blow will be the increased taxes that they, and the rest of us on Munjoy Hill will be assessed because of the further increase in property value, that has and will continue to be, exacerbated by unfettered development such as this proposed project.

At some point one would hope that some-one, some-many, and ideally, some-in official capacity, would seek the moral high ground and take a moment to consider what is best for all the residents of Munjoy Hill, and our city at large. The re-valuation is a shocking wake-up call that more than at any time in the past, reveals the connection between development and the live-ability of our city. While development creates opportunity for a few, it disaffects many. What is at stake here, is the long-term viability of affordable housing, affordable taxes, the security of being able to age in place for our elderly, and the provision of affordable workforce housing. This may seem to be a stretch, but the reality is, these elements are inextricable related.

Please consider all of this, and prevent this project from being built as proposed. I ask you to cast your vote for our neighborhoods.

Thank You for the work that you do on our behalf, and for your careful consideration of this request.

Respectfully Submitted,

Wayne Valzania

Wayne Valzania, President

Munjoy Hill Neighborhood Organization

Celebrating 40 Years of Community Service

92 Congress Street

Portland, ME 04101

207-274-4918

www.facebook.com/MunjoyHillNeighborhoodOrganization

Join Us !! www.MunjoyHill.org



PC11

Wayne@redhookdesignalliance.com <Wayne@redhookdesignalliance.c… 8:35 AM (1 hour ago)
to planningboard@portlandmaine.gov, Christine Grimando, Wayne@redhookdesignalliance.com

Chair Brandon Mazer and Planning Board Members

City of Portland

389 Congress Street

Portland, Maine 04101

Re: 19 Willis Street (f/k/a 33-37 Montreal Street)

Dear Chair Mazer and Planning Board Members:

I have spent the last hour doing an online search of travel magazines and newspaper articles, New York Times, Boston Globe and others. When I search for Portland Maine, I am presented with photos of old buildings in the Old Port, the quaint neighborhood streets of Munjoy Hill and it's small, perfect scale New England style houses, a working waterfront, and reviews of what were once well staffed restaurants and bars. There is not one photo of a glass office building, a parking garage on the waterfront, or giant out of scale luxury condo cube misplaced in a lovely Munjoy Hill neighborhood.

I will refer you to letters and documentation that you have received from my friends and neighbors, Peter Murray, Barbara Vestal, and Karen Snyder for legal opinion and factual data arguing that the proposed 19 Willis Street project has no place on Munjoy Hill. While the aesthetics should seem obvious, with the behemoth mass and scale of this building being totally out of context with what is presented in travelogues touting Portland as a great place to visit, live, and work, it is not even part of the conversation.

To preserve what we have requires that it be appreciated, valued, and protected by your agency. Please do the right thing for Portland and prevent this project from destroying the Willis Street neighborhood. With enough damage, Portland will no longer appear in the list of great places to visit and live and work.

From the New York Times:

What to do in Portland Maine This Summer:

Streets lined with galleries and shops. A working harbor. Outdoor dining at award-winning restaurants. The fleeting summertime pleasures of Longfellow's childhood home await.

Hmmmmm, no mention of high-rise expensive condos on quiet residential streets.


gettyimages
Nisian Hughes
1345892125

PC12

From: **Barbara Vestal** <vestal@chesterandvestal.com>
Date: Fri, Dec 10, 2021 at 10:35 AM
Subject: 19 Willis Street, Portland, Maine
To: <planningboard@portlandmaine.gov>, Christine Grimando <CDG@portlandmaine.gov>, Austen Torres Davis <austentd@portlandmaine.gov>

Chair Mazer and Planning Board Members:

I urge you not to approve the proposed development at 19 Willis Street as currently configured. I have four basic objections: 1) impermissible manipulation of the height properly address the site plan standard for compatibility with the adjacent historic district; 3) failure to justify the granting of the proposed 10 foot height bonus; and 4) fa standards.

HEIGHT MANIPULATION:

The calculation of height pursuant to Portland's land use code has always been somewhat problematic due to the absence of detailed regulations in the ordinance. This is steep slopes, which are present throughout Portland's peninsula. Some developers have taken advantage of the vagueness of the ordinance by bringing in fill to raise the e two, stretching the ordinance by applying height calculations based upon post-development grade.

The proposal for 19 Willis Street is even more aggressive in trying to secure additional height. This applicant has pushed the height calculation to the breaking point, beyc faced test. Rather than measuring elevation at weight-bearing corners, where the foundation pierces the ground upon which the structure rests, the applicant is apparent height of applied, non-weight bearing ornamental planters. The only similarity between the planters and the ground is that both contain dirt. They are functionally not at permitted to stand, would allow the applicant to gain several feet in height that should not otherwise be allowed pursuant to zoning dimensional standards. It would also developers to use to evade height standards.

IMPACT ON HISTORIC RESOURCES:

The proposed development at 19 Willis Street is immediately across Willis Street from the Munjoy Hill Historic District. There is a specific site plan standard, applicable to within 100 feet of a designated historic district. The standard is designed to ensure that the new development will be generally compatible with the adjacent historic reso does not yet seem to have been evaluated for compliance with that standard. I believe after proper evaluation it will be found not to satisfy that site plan standard.

This site plan standard for development adjacent to a historic district applies to this development. The Munjoy Hill Historic District was nominated on July 10, 2019. The a application until August 12, 2019. The historic preservation ordinance provisions on interim protection for nominations only excepts from the impact of the nomination ap (which this was not) and which had received review by the Planning Board prior to nomination. The first Planning Board review of this application was not until Septembe Hill Historic District nomination.

That site plan standard, 14.6.4.E(2) (formerly 14-526(d)(5), essentially identical) contains very specific guidance on how to determine whether a proposed development is character-defining elements of the landmark or portion of the district in the immediate vicinity of the proposed development. . . . For the purposes of this provision, 'com design which respects the established building patterns and visual characteristics that exist in a given setting and, at the same time, is a distinct product of its own time."

Moreover, to aid the Planning Board in its evaluation and deliberations, the site plan ordinance specifies that the "Historic Preservation staff ***shall*** provide a written analysi immediate context, identifying the major character defining elements and any established building patterns that characterize the context."

The required Historic Preservation staff analysis has not been provided to the public or to the Planning Board. The Planning Board is not yet in a position to deliberate on v standard. It is true that a prior version of the proposed development at 19 Willis Street, then known as 33-37 Montreal Street, was before the Historic Preservation Board entirely different context. Pursuant to the Munjoy Hill Neighborhood Conservation Overlay Zone (MHNCOZ), one of the three buildings the applicant proposed to demolis project was designated as "preferably preserved." That meant that the applicant could not demolish the building without waiting for one year unless the Historic Preserva proposed replacement building would be "acceptably contextual in the surrounding neighborhood." Not wanting to wait a year, the applicant sought a determination fron the structure that it sought to construct qualified for a reduction in the wait-time before demolition. The Historic Preservation Board made that decision, in a split 4-2 vote stay of demolition to be lifted on 37 Montreal Street, a preferably preserved building, provided that the applicant applied for a building permit consistent with the prelimir applicant demolished the building after waiting more than one year.)

This prior Historic Preservation Board review cannot substitute for the site plan review under 14.6.4.E(2) (or 14-526(d)(5) for several reasons:

- The standards that were applied under the MHNCOZ are different than the site plan standards for general compatibility with the adjacent historic district.
- The project reviewed then was different than the project proposed now; it included a primary entrance on Montreal Street.
- The review was done by the Historic Preservation Board, not the Historic Preservation staff.
- The Munjoy Hill Historic District designation had not then been finalized. In fact, the historic resources inventory, historic district designation report and precis to be considered under the site plan standard, were all finalized after December 19, 2018, the date of the Historic Preservation Board decision.
- The emphasis during the review was on the proposed structure rather than its broader compatibility with the adjacent historic district.

All of these differences require a fresh review by the Planning Board as part of this current review process, informed by a written analysis from Historic Preservation staff a issues outlined in the site plan ordinance.

10 FOOT HEIGHT BONUS:

Affordable housing is a major issue in Portland. The Munjoy Hill Neighborhood Conservation Overlay Zone (MHNCOZ) correctly reduced the general Munjoy Hill height lim match the context of the existing environment. But then it unwisely included a provision allowing heights that could go up to 45 feet if the applicant included at least one

At the time of drafting, then Planning Director Jeff Levine explained that it was not intended to be an automatic 10 foot height bonus in exchange for one unit of workforce was a maximum, and it would be up to the Planning Board to determine whether what the developer was proposing was sufficient to qualify for the bonus. The Planning I number of workforce units to be included, the need for workforce units, and whatever similar factors it found to be relevant in deciding whether to grant the maximum.

As this provision has been used in a handful of projects, it is becoming very clear that this height bonus is producing a **net loss** of affordable housing. Housing, generally af unit, is being torn down to create the building lot for the proposed new construction. And then the new construction offers the bare minimum – one unit – to grab an extr

In this case, the applicant is proposing to demolish 3 housing units. The application is somewhat unclear on what is being proposed for the workforce housing unit. Specif will be rental or sold, what restrictions will keep it affordable and for what period, and what provisions are intended so that an eventual occupant will be determined throu transaction (or series of transactions).

I believe the Planning Board should consider whether what the applicant is proposing is sufficient to justify 10 feet of additional height, the maximum bonus. And even if t reasonable to trade off 3 demolished units for one new workforce unit, it seems like the Board has a duty to make sure that the City's methodology is firmly established to unit will actually adhere to any deed restrictions, affordable housing covenants, standards for non-preferential treatment, and similar requirements necessary to produce t

FAILURE TO SATISFY DESIGN STANDARDS

I continue to have concerns about whether the proposed project, as originally proposed and as redesigned, meets the applicable Design Standards. The applicant asserts i based upon a 2018 analysis, prior to the redesign currently before the Planning Board. Particular areas of concern are: the overall context (it is not compatible with predo features of the neighborhood), massing (it looms over buildings to which it is supposed to relate rather than reflecting and reinforcing the traditional building character of street (the new Willis Street entry is constricted and not welcoming, and the new absence of any entrance on Montreal Street makes that entire façade suffer from a lack c proportion and scale (given the massing and scale, the resulting individual building elements human scaled).

Additional scrutiny of these important design elements is required. The design standards in the City of Portland Design Manual are incorporated by reference as part of th addition, the design standards subsection of the site plan ordinance directs that all residential development in the R-6 zone "shall integrate with and respect the character development in terms of architectural form, landscaping and open space, façade materials, roof pitch, massing, and height." 14.6.4.I(1)(e)(iv). The R-6 Design Standards (A Design Manual) are a more detailed explanation of how this is to be accomplished. They note that in determining whether a design is in compliance, "[s]pecial attention s both sides of the street within the block of the proposed site. If the building is on a corner lot, then buildings on the adjoining block shall also be considered." (Id.)

CONCLUSION

To gain approval, every applicant must be able to satisfy the dimensional standards of the zoning ordinance (including height limits), must meet site plan standards for com historic district, and must be able to meet the applicable design standards. These standards must be met simultaneously, with each being of equal importance. If it is not compatibility standards while maximizing dimensional characteristics, the dimensional maximums need to be modified to bring it into compliance with the other standard not to approve the project proposed for 19 Willis Street as currently configured.

--
Barbara A. Vestal, Esq.
Chester & Vestal, PA
107 Congress Street
Portland, Maine 04101
(207) 772-7426 - phone
(207) 761-5822 - facsimile

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--
Austen Torres Davis
Planner
Planning & Urban Development Department

389 Congress Street
Portland, Maine 04101

austentd@portlandmaine.gov | (207) 874-8632

Reply Forward

PC13

Murray, Peter <pmurray@law.harvard.edu> 11:01 AM (1 hour ago)

to planningboard@portlandmaine.gov, Murray, Peter, Davis Austen

Dear Planning Board -

Attached please find my written comments for your consideration prior to the upcoming public hearing on the above project scheduled for December 14. Included are two diagrams and one photograph, also attached.

For the reasons stated in the comments, it is respectfully submitted that the application for a level 3 site plan should be denied.

Can you please acknowledge receipt of these materials? Can you also please arrange for the recording of the December 14 public hearing on this application?

Thank you,

PLM
Peter Murray
104 North Street
Portland, ME 04101
pmurray@gwi.net



124' + 128.5 '+ 134' + 137.3' = 523.8'
523.8' / 4 = 130.95' average grade
130.95' = 45.0' = 175.96' max. bld. ht.

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Kaplan Thompson Architects
165 Ballpark Drive
Portland, ME 04102
207 761-0688
kta@kaplanthompson.com

PROJECT
19 WILLIS STREET

FORMERLY
1599 MONTREAL STREET
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CIVIL
DM Roma
PO Box 116
Windham, ME 04062
P: (207) 797-4848

STRUCTURAL
L & L Structural Engineering Services
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P: (207) 767-4848

LANDSCAPE
Soren Deniord Design Studio
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P: (207) 400-2450

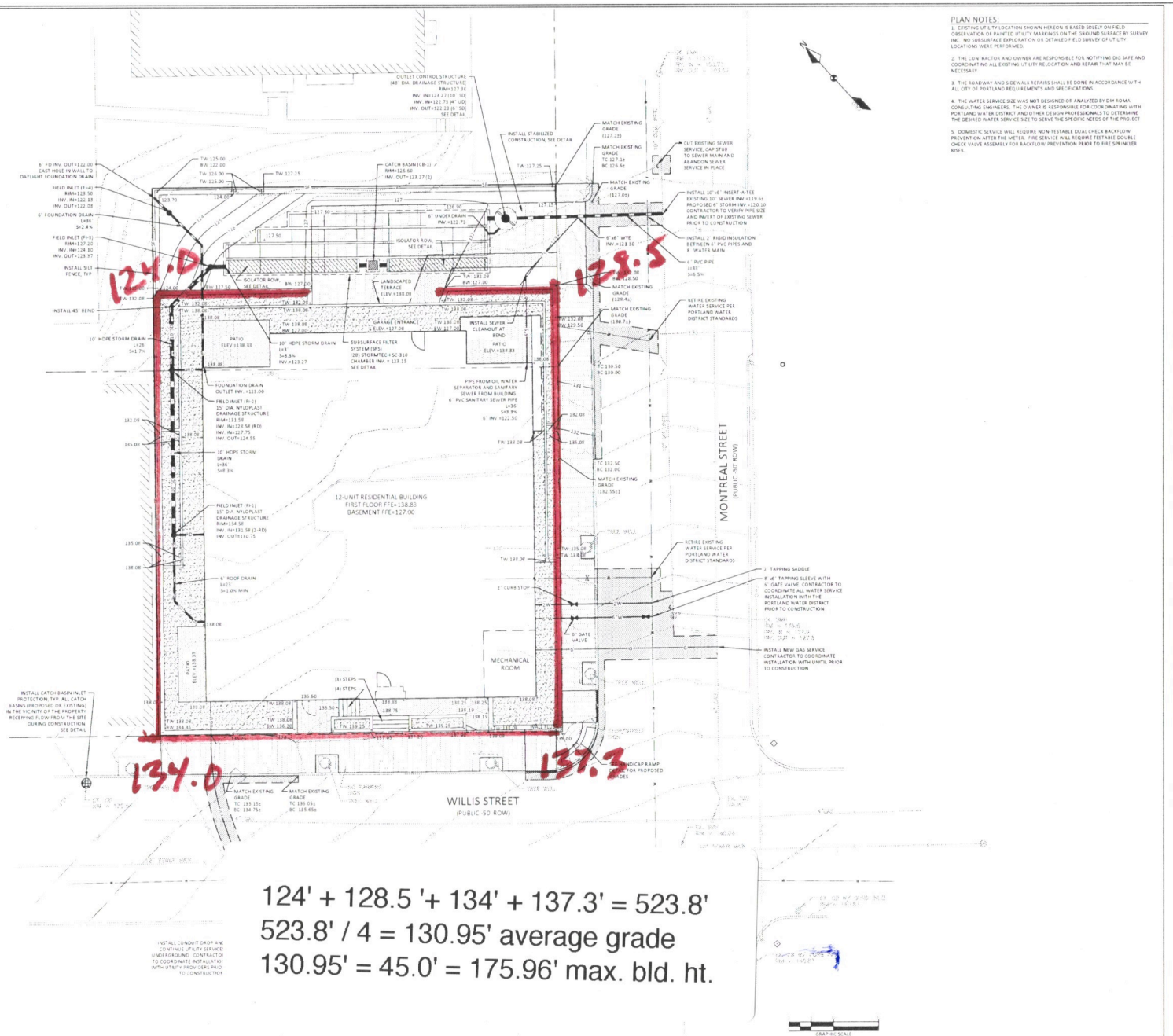
LICENSED ARCHITECT MATTHEW JESSE THOMPSON No. 3075 STATE OF MAINE

NOT FOR CONSTRUCTION

PROJECT	MTL
DATE	November 05, 2021
REVISED 1	
REVISED 2	
DRAWN BY	RL, BB
PHASE	For PB Review

MONTREAL ST ELEVATION

A-2.2



LEGEND

EXISTING	PROPOSED
PROPERTY LINE/R.O.W.	
ABUTTER PROPERTY LINE	
TIE LINE	
SETBACK	
EASEMENT LINE	
GRANITE MONUMENT	
IRON PIN/DRILL HOLE	
CENTERLINE	
BUILDING	
EDGE OF PAVEMENT/CURB	
EDGE OF GRAVEL	
EDGE OF CONCRETE	
EDGE OF WETLANDS	
CENTERLINE OF STREAM	
CONTOUR LINE	100 — 101
TREELINE	
CATCHBASIN	
DRAINAGE MANHOLE	
CULVERT/STORMDRAIN	
UNDERDRAIN	-UD-
SEWER MANHOLE	
SANITARY SEWER PIPE	S
FORCE MAIN	FM
WATER MAIN	W
WATER VALVE	
HYDRANT	
UTILITY POLE	
LIGHT POLE	
OVERHEAD UTILITIES	OHU
UNDERGROUND UTILITIES	UGU
TRANSFORMER PAD	
GAS MAIN	G
GAS VALVE	
RIPRAP	
SILT FENCE	

124' + 128.5 '+ 134' + 137.3' = 523.8'
523.8' / 4 = 130.95' average grade
130.95' = 45.0' = 175.96' max. bld. ht.

PLAN NOTES:

1. EXISTING UTILITY LOCATION SHOWN HEREON IS BASED SOLELY ON FIELD OBSERVATION OF PAINTED UTILITY MARKINGS ON THE GROUND SURFACE BY SURVEY INC. NO SUBSURFACE EXPLORATION OR DETAILED FIELD SURVEY OF UTILITY LOCATIONS WERE PERFORMED.

2. THE CONTRACTOR AND OWNER ARE RESPONSIBLE FOR NOTIFYING DIG SAFE AND COORDINATING ALL EXISTING UTILITY RELOCATION AND REPAIR THAT MAY BE NECESSARY.

3. THE ROADWAY AND SIDEWALK REPAIRS SHALL BE DONE IN ACCORDANCE WITH ALL CITY OF PORTLAND REQUIREMENTS AND SPECIFICATIONS.

4. THE WATER SERVICE SIZE WAS NOT DESIGNED OR ANALYZED BY DM ROMA CONSULTING ENGINEERS. THE OWNER IS RESPONSIBLE FOR COORDINATING WITH PORTLAND WATER DISTRICT AND OTHER DESIGN PROFESSIONALS TO DETERMINE THE DESIRED WATER SERVICE SIZE TO SERVE THE SPECIFIC NEEDS OF THE PROJECT.

5. DOMESTIC SERVICE WILL REQUIRE NON-TESTABLE DUAL CHECK BACKFLOW PREVENTION AFTER THE METER. FIRE SERVICE WILL REQUIRE TESTABLE DOUBLE CHECK VALVE ASSEMBLY FOR BACKFLOW PREVENTION PRIOR TO FIRE SPRINKLER RISER.

DM ROMA
CONSULTING ENGINEERS
PO BOX 1151
WINDHAM, ME 04062
(207) 310-0506

REV.	DATE	BY	DESCRIPTION
A	9.17.21	DMR	ISSUED FOR PERMITTING
B	10.11.21	DMR	REVISED PER CITY REVIEW
C	10.22.21	DMR	REVISED PER CITY REVIEW
D	11.3.21	DMR	REVISED PER CITY REVIEW

GRADING AND UTILITY PLAN
37 MONTREAL STREET
PORTLAND, MAINE
FOR APPLICANT
37 MONTREAL, LLC.
33 MONTREAL STREET
PORTLAND, ME 04101

18053	JOB NUMBER
1" = 10'	SCALE
11-3-2021	DATE
--	
C2.0	

104 North Street
Portland, Me 04101

December 8, 2021

Portland Planning Board
City Hall
Portland, ME 04101

Re: 19 Willis Street (formerly 33-37 Montreal Street) – Level 3 Site Plan Proceedings

Dear Chair and Members of the Portland Planning Board:

This is in anticipation of your December 14 Public Hearing on the above project. The undersigned, who lives approximately one block away from the project site, has participated both through written submissions and oral presentations at prior Workshops and other proceedings with respect to this project and prior versions of the condominium development here proposed. For the reasons set forth below, it is submitted that the proposed project is not in compliance with the requirements of the R-6 Zone and the Conservation Overlay on Munjoy Hill and is also not in compliance with the applicable Design Standards and the Site Plan Review Ordinance. The Site Plan Application should not be approved.

The concerns set forth herein were brought up at prior Workshops on this project. The relatively minor and cosmetic changes represented by the current revised submissions do not effectively meet these objections or the other objections raised by concerned residents at prior proceedings.

1. The Height of the Proposed Project Exceeds the Maximum Height Permitted by the Portland Zoning Ordinance.

The R-6 Zone and the Munjoy Hill Overlay require that any structure built in the Zone have a "height" of no more than 35 feet. In the Munjoy Hill Overlay Zone a "bonus" of up to 10 feet, which would raise the maximum height to 45 feet, can be made available by the Planning Board to structures having at least two dwelling units, of which one must be a "workforce" housing unit – otherwise the maximum height is 35 feet. The Project is apparently proposed to have one "workforce" unit and therefore claims the 45-foot height allowance. [1]

[1] It may be noted that the current submissions do not make reference to any workforce dwelling unit or the mechanisms by which the inclusion and maintenance of such a unit in the structure proposed will be assured. Without such a commitment and appropriate mechanisms, the project is not entitled to claim the 10' height bonus over the otherwise applicable R-6 height maximum of 35'.

The question raised by this proposal is, "From where is the 45-foot height to be measured?" Section 14-47 of the Portland Zoning Ordinance in effect at the time the Site Plan Application was filed (and which therefore governs this Application) defined a building's "height" as "[t]he vertical measurement from grade, or the predevelopment grade on the islands, to the highest point of the roof beams in flat roofs..." However the ordinance does not define "grade." Apparently the practice of the Portland Zoning Administrator was to measure a building's height from the average grade of the land at the four corners of the proposed structure (or at a number of points along its perimeter at the developer's option). On the Portland islands, it was understood that the measurement was to be made from the grade levels that existed before the year 2000. On the mainland, apparently measurements could be made from the grade of the building site as adjusted for the project. This practice apparently permitted mainland developers to fill or adjust site grades to some degree before determining the average grade from which their structures would be measured.[2]

The project is proposed to be sited on a sloping site with existing land grades above datum at the four corners of the proposed structure as follows:[3]

Northern Corner: 124.0'
Eastern Corner: 128.5'
Southern Corner: 137.3'
Western Corner: 134.0'

The average of the existing grades at the corners of the proposed condo block is 131 feet above datum. Based on the existing grades on the ground, the structure should extend no higher than 175.9 feet above datum.

The developer, however, claims a new artificial "average grade" around the entire building by heaping a fringe of earth around the entire structure and retaining it with concrete retaining walls creating flower and landscaping boxes to a height of 138.1 feet above datum on all sides of the structure. This new "average grade" is higher than the existing natural grade at all four corners of the building. The increase ranges from less than a foot at the southern corner, to 4 feet at the western corner, to 9 ½ feet at the eastern corner and to *14 feet* at the northern corner. The developer proposes to show its neighbor to the northwest a new artificial retaining wall extending from 4 to 14 feet

[2] This practice was codified in the Phase 1 Recode of the Portland Zoning Ordinance adopted by the City Council on November 9, 2020. The Phase 1 Recode was intended to reorganize and rationalize the structure of the ordinance without making substantive changes, which were reserved to Phase 2. The question of how grade should be determined for project height purposes is on the agenda for debate in the currently pending Phase 2 proceedings. One proposal is that throughout the city building height should be measured from pre-construction grade as it is on the islands and in other municipalities such as Bangor and Boston.

[3] See measurements and contour lines on "Grading and Utility Plan" dated 11/3/21 as filed by the Applicant. See also "Average Grade Calculation Plan" filed 12/3/21.

above the grade of the remainder of the project lot and the neighbor's immediately adjacent land.

The new landscaping or flowerboxes would extend from 2 - 9.5 feet above the sidewalk on Montreal Street. It should be noted that the dirt in the flowerboxes is no part of the support of the building, but is a narrow strip added outside the foundation after construction in order to claim a fictitious grade that is totally out of synch with the land contours in the surrounding neighborhood. In fact, the "average grade" flowerboxes would be installed above the door to the garage and some 12 feet above the real ground in that area. All of this is shown rather clearly in the elevations most recently filed by the Applicant.

By measuring from this fake "average grade" the developer proposes to build to a height of 183.1 feet above datum, or over 6 feet above what the real average grade would give it.

Attached is a markup of the Grading and Utility Plan highlighting the actual grades at the corner of the structure and the effect measuring from actual grade would have on the overall height of the structure in place.

While the recent practice of the Portland Zoning Administrator to measure from post-construction grades may permit developers some modest filling and grade alterations, this proposal is an egregious abuse of the practice to permit the developer to add, in effect, an additional story to its project thus increasing and compounding its overweening dissonance with the surrounding neighborhood as discussed below. The Site Plan Application should be denied based on the fact that the proposed building does not comply with the height allowed in the R-6 Munjoy Neighborhood Conservation Overlay Zone.

2. The Proposed Structure Does Not Comply with the Setback Requirements of the R-6 Zone and the Munjoy Hill Conservation Overlay

The current version of the plans for the proposed condominium block calls for the building to be girdled by a massive retaining wall extending around three of the four walls of the shell. This wall extends in places more than 13 feet above the grade of the lot and the neighboring property. This retaining wall is being built as part and parcel of the condominium block (and are being used to create an artificial "average grade" to impermissibly increase the allowable height claimed by the project – see above). According to the various site plans on file, these retaining walls are located right on northerly edge of the site lot without any discernable setback.

According to Section 14-47 of the Portland Zoning Code in force at the time the application was filed, the term "structure" comprises

> Anything constructed or erected of more than one (1) member which requires a fixed location on the ground or attached to something having a fixed location on the ground.

Massive retaining walls clearly fit this definition. There is no exception in the Code for structures of this type.[4]

In the R-6 Munjoy Hill Neighborhood Conservation Overlay Zone, a 45' building is required to maintain a setback of 10 feet along the side boundary. See Portland Land Use Code Table 7-A. This means that no structure can be built within 10 feet perpendicular to the side boundary line.[5] It is clear that the retaining walls portion of the proposed structure does not maintain this setback. The looming bulk of the building is brought right up to the lot line. It is a clear violation of the setback requirements of the Overlay Zone. The site plan application should be denied based on failure to comply with the dimensional requirements of the Zoning Ordinance.

3. The Overall Size and Bulk of the Proposed 9-Condominium Block Does Not Comply With Applicable Design Standards in the Context of its Surroundings.

The Montreal-Willis Street neighborhood is a relatively intact Munjoy Hill residential neighborhood consisting of 19th century wood frame 1 and 2 family houses on small lots. This building stock bespeaks the Hill's history as a working- and middle-class residential quarter in 19th century Portland. Most of the houses are 1½ - 2½ stories in height.

The proposed project would combine two lots to make one large lot on which the developers propose to erect a 4-5 story condominium block with 12 luxury dwelling units over a parking garage that would cover most of the combined lots. This structure would dwarf every one of the nearby buildings and dominate the entire Montreal-Willis area. It would destroy the harmonious rhythm of the buildings on the streets.

The Level 3 Site Plan Application should be rejected because the building does not comply with the basic Design Standards requiring the height, size and mass of a new building relate positively to the surrounding building stock. This building is simply too big, too long, too institutional to fit on the corner where it is sited.

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[4] The 2021 Recode is a little more explicit, defining "structure" as:

> Anything constructed or erected of more than one member having a permanent or semi-permanent location on another structure or in or on the ground, including without limitation buildings, fences, gazebos, signs, antennas, satellite sending or receiving dishes, and swimming pools. Stockpiles shall be considered structures for the purposes of dimensional requirements.

[5] See the definition of "Setback" which prohibits any kind of structure in the setback area, excepting only "fences, flagpoles, raised garden beds, and other similar structures." Concrete retaining walls extending up to 13 feet above the existing grade and that of the neighboring lots are scarcely "garden beds or other similar structures." Portland Code §14.7.2 "Setback."

The boundary of the Munjoy Hill Historic District located just across Willis and Montreal Streets and well within 100 feet from the site. According to §14.6.4(E)(2) of the City of Portland Zoning Code (as it existed at the time this application was filed and as it exists now):

> When any part of a proposed development is within 100 feet of any designated landmark, historic district, except the India Street Historic District, or historic landscape district, such development shall be generally compatible with the major character-defining elements of the landmark or portion of the district in the immediate vicinity of the proposed development. Character-defining elements of landmarks and historic districts are identified in the historic resources inventory and respective historic district designation reports. For the purposes of this provision, "compatible" design shall be defined as design which respects the established building patterns and visual characteristics that exist in a given setting and, at the same time, is a distinct product of its own time. To aid the review authority in its deliberations, Historic Preservation staff shall provide a written analysis of the proposed development's immediate context, identifying the major character- defining elements and any established building patterns that characterize the context.

Under this section, the proposed new structure "shall be" generally compatible with the "character defining elements of the …. portion of the district in the immediate vicinity of the proposed development." The key character-defining element of the Munjoy Hill Historic District is its stock of modest 19th century wood frame worker houses that remain remarkably intact on the very corner at which the proposed block is to be built. Such structures line the other side Willis Street along the edge of the Historic District closest to the Project. A photograph of this block of Willis Street is submitted herewith. There is no way by which this proposed condo block can be said to be "generally compatible" with these historic structures. Moreover, Section 14.6.4(E)(2) of the Site Plan Ordinance requires that the review authority obtain from the Historic Preservation Staff a "written analysis of the proposed development's immediate context, identifying the major character-defining elements and any established building patterns that characterize the context." This analysis has not been requested, prepared or submitted.[6]

The proposed site is the northern corner of the intersection of Willis and Montreal Streets. On the other corners are 1) on the southern corner, a 1½ story small 19th century mansard cottage, recently restored to approximate its original appearance; 2) on the western corner a small 1½ story 19th century house recently improved with a long dormer in the ell; 3) on the eastern corner, a 2½ story 19th century frame house similar in size and

[6] The developer cannot rely on the proceedings before the Historic Preservation Board in connection with the application to demolish the house at 37 Montreal Street as fulfilling this requirement. That application was for a different purpose and was based on a different standard. The requirements of Section 14.6.4(E)(2) are mandatory and must be complied with. Nor can the developer claim to be exempt from this requirement because the District was established by vote of the City Council after the developer's application for a predecessor project was filed. Protections based on a Historic District are in force from the time that the proposed Historic District was nominated at the Historic Preservation Board level by vote of at least two Board members. That vote took place on July 10, 2019 well before the initial application for the prior version of this project was filed on August 12, 2019.

type to the house that had stood on the proposed project site near the northern corner of the intersection, but which the developer recently demolished. There is no way that this full four-five story 12-unit condo block with parking underneath can reasonably resonate with housing stock of this kind.

The problem is exacerbated because the developer is not proposing to build on a single Munjoy Hill lot, which would by its small size tend to keep the project in relative proportion with the buildings on the neighboring small lots. Here the developer has combined two existing lots to make a large lot, which will physically accommodate a much larger structure than either of its constituent parts.

Another way to consider this is to compare the contained volume of the proposed condominium block with that of each of the residentials structures on the streets on which it fronts. According to an analysis of the approximate volume of a previous version of the current proposed condominium block as compared with the volumes of the 1½ - 2 story houses in its immediate neighborhood prepared by Karen Snyder, the volume of the proposed condominium block is 10 times as large as the average volume of the surrounding houses. A true elephant in a herd of zebras!

It is time to say "No." The existing R-6 zone, even with the Munjoy Hill Overlay, affords developers great dimensional latitude in permitting buildings extending up to 45 feet above a real average grade. However multi-unit residential buildings must also comply with the Design Standards, which require that new construction "be compatible with the predominant character defining architectural features of the neighborhood." Those same standards state that, "[s]pecial attention shall be given to the existing buildings on both sides of the street within the block of the proposed site." All of the buildings on Willis and Montreal Streets within the block of the proposed site are 11/2 and 2 story frame houses. In some areas of the Hill a building of this height can "fit in" and resonate positively with the surrounding housing stock. Not on the corner of Montreal and Willis. In this part of the neighborhood the Design Standards as well as the Site Plan Review provisions require that new construction adhere more closely to the relative size and scale of the existing residential structures on all sides.

If this block is permitted to be built it will be one of those buildings of which people will say for years to come, "How did they let that be built!"

It is submitted that the application must be denied.

Sincerely,



Peter L. Murray


41

JEAN MC MANAMY <NINIMAINE@aol.com> 11:07 AM (1 hour ago)

to planningboard@portlandmaine.gov

Chair Mazer and members of the Portland Planning Board:

We are neighbors of the proposed project at 19 Willis St and we are writing to urge you to send this project backfire rework to conform with existing zoning and the city comprehensive plan. Although the project has a new name, it is just as massive as it was when called 33-37 Montreal St. It sits on top of a pseudo-foundation which contrives to create a new base grade for the building in order to allow construction which exceeds the allowed 45 feet in height. It has lost its courtyard entry and the townhouse porches which promised to lead to interactions between new condo residents and their neighbors. It flies in the face of the policy goals behind the Conservation Overlay and Historic Districts for the Hill (it is within 100 feet of the Historic District). The preamble to the Conservation Overlay is specified in the code: “Section 8.7, Portland Land Use Code: The residential neighborhoods on Munjoy Hill are experiencing specific development pressures related to its location and the nature of existing housing stock…..In order to address the negative impacts of these pressures and create a positive framework for investment.” In no discernible way does this project meet the Comprehensive Plan’s focus on the affordable housing emergency—it simply ratchets up the cost of living in the immediate neighborhood, including rentals.

At the end of the day, this project is still inappropriately massive for its site. Its adjacent neighbors are seven one-family homes of 1 1/2 to two stories in height, plus one three-story building. The city’s Munjoy Hill Building Stock Survey, published in 2018 as part of the council-directed consideration of proposals for a historic district and zoning changes, found that the average building height on the Hill was 2.4 stories. On Montreal, Willis, and Walnut Streets, which bound the block where 19 Willis would be located, the average building height is less than 2 stories. The average building width on the Hill was found to be 30 feet. The proposed building vastly exceeds these measures, and even the large Portland Tower building on the next block, built before these zoning standards were adopted, is mitigated by very large setbacks and screening from the street by mature trees. (Building Stock Survey, https://www.portlandmaine.gov/DocumentCenter/View/20763/Presentation_Listening_Session_032418-Final?bidId=

This building could and should respect both city ordinances and its neighbors. It is the kind of forbidding and massive block which has led to recent zoning changes for the Hill. Design changes could produce a building more compatible with the streetscape and ordinances.

As near neighbors, we also have concerns about the construction process. The demolition carried out by the same developers released asbestos in the air and buried asbestos on the lot, necessitating a call by neighbors to the DEP and resulting in a stop-work order. Trees were also severely damaged. If and when you do determine the project is permit-ready, we request that you restrict contractor parking on our congested neighborhood streets, and that the developers provide for protection of the many children, including preschoolers, who walk on both the sidewalks and the street adjacent to the project. We also ask that you require removal of the contaminated soil and protection of existing mature trees. Finally, that HVAC equipment installed on the exterior be inaudible on adjacent properties and that no light spillage be permitted beyond the property line.

Respectfully,

Jean McManamy, 10 Willis Street
Oliver Murray, 55 Montreal Street
Kristina Minister, 101 North Street
Ann Landsberg, 105 North Street
Tim Baehr, 105 North Street

Carolyn Swartz <carolynswartz@gmail.com> 11:58 AM (2 minutes ago)
to planningboard@portlandmaine.gov, Christine Grimando

To Chair Brandon Mazer and members of the Portland Planning Board:

Living down-the-street from the proposed 19 Willis St development, I urge you not to allow grandfathered-in lack of zoning apply to this massive, deceptively measured project.

That this is yet another example of nearly identical, devoid-of-imagination buildings going up around Portland may be irrelevant. Taste is said to be negotiable, But other concerns are not:

- The building sits on top of faux grade, a baseline created by the developers with the express purpose of exceeding height restrictions.
- The building IS within 100 feet of the Historic District— thus flying the face of the Conservation Overlay code.
- In no way does the project fit the context of the neighborhood: not in style, massing or height.
- Nor does it respond to any emergency in affordable housing. In fact, it contributes to creating one.

That height has been calculated deceptively in order to exceed code should be reason enough for the Council to hit the "pause" button.

Sincerely,

Carolyn Swartz
27 Merrill Street

Maggy W <mswnola@gmail.com> 2:03 PM (4 minutes ago)
to Planning Board

Chair Mazer and members of the Planning Board,

I am asking you to vote against the latest proposal for the massive project at 19 Willis St. The building as currently presented exceeds height limitations and violates the standard of being compatible in mass and scale with the surrounding neighborhood. The developer may claim that he is adding housing units and urge you to turn a blind eye to these violations, but the type of housing that is proposed is not what Portland so desperately needs right now.

One of the major issues with this project is the artificial increase to the base grade from which height is calculated. It is one thing to add a retaining wall to stabilize a lot on a hillside; many properties on Portland's hills have utilized retaining walls to do exactly that - however this project spans several lots on a hill and is adding an entire story to the grade on the downhill side. This will be a monolithic eyesore for the downhill neighbors, above which the building will tower. With the current recode effort, many of us hillside residents of Portland will fight to get better restrictions on retaining walls, such as exist on the islands. But even with our current laws, a developer should not be granted this increase to grade. Even on the uppermost lot, the developer is proposing an above grade retaining wall, which is being called a "planter" to add even more height. This is an egregious cheat and if you allow it, it will set a precedent for any developer to disregard height limitations by erecting a "planter" to surround the building.

We all know we need more housing in Portland, but this is not a justification to allow developers to disregard current land-use ordinances.

Thank you,
Maggy Wolf
28 Saint Lawrence St.
Portland 04101

Karen Snyder <karsny@yahoo.com> 12:04 PM (1 minute ago)
to Planning Board, Planning and Urban Development

Dear Planning Board Members,

There continues to be many things wrong with this 19 Willis (formerly 33-37 Montreal) proposal.

This project should NOT be approved for the following reasons.

Point 1: Unidentified the Workforce Unit to Justify this Height Bonus to 45 ft.
If this latest proposal is now slotted for 12 units, it is NOT clear which unit will be workforce housing unit in order so they to build up to 45 ft since they are obviously going to take that 10 ft height bonus.

Point 2: The Incorrect Calculation of Building Height
It appears intentional by the City Planning Dept to NOT clarify the building height calculation which should be from pre-development grade (like Peaks Islands specificizes) rather than post-development grade manipulation. The developer is calculating an incorrect building height using false non-structural structures to inaccurately raise the height of the building.

Point 3: Unidentified the Required 2.4 Affordable Units Per Inclusionary Zoning

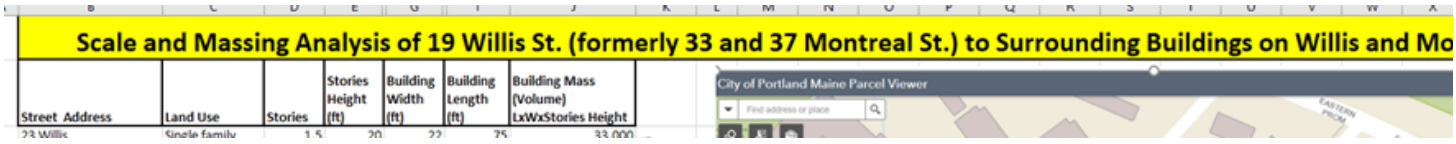
Because this latest proposal is 12 units, it is now under the inclusionary zoning that 20% of the project should have affordable units. In this case, 2.4 units are to be affordable housing. Is this developer planning to build another affordable unit or will they pay the paid in lieu instead to the Housing Trust? This is not clearly identified in their latest plans.

Point 4: Scale and Massing is incompatible to Neighborhood Context

In Zoning, it specifically references R6 Design Standards in Land Use Code Section 14.6.4.I(1).

As such, in the R6 Design Standards Appendix 7, it specifically states in Design Principles B-Massing, that the massing of the building reflects and reinforces the traditional building character of the neighborhood through a well composed form, shape, and volume? City of Portland, Maine Design Manual (portlandmaine.gov)

How is a big, massive cube box which is 10 times greater than the 1.5 story gabled houses compatible with abutters? Someone from the Planning Board needs to explain this


Scale and Massing Analysis of 19 Willis St. (formerly 33 and 37 Montreal St.) to Surrounding Buildings on Willis and Mo

Street Address	Land Use	Stories	Stories Height (ft)	Building Width (ft)	Building Length (ft)	Building Mass (Volume) LxWxStories Height
23 Willis	Single family	1.5	20	22	25	33,000

City of Portland Maine Parcel Viewer

26 Willis	Single family	1.5	20	20	43	17,200	est
24 Willis	Single family	1.5	20	20	43	17,200	
22 Willis	Single family	1.5	20	22	32	14,080	
20 Willis	Two family	2	25	15	48	18,000	
41 Montreal	Single family	2	25	22	51	28,050	
42 Montreal	Single family	1.5	20	22	55	24,200	
10 Willis	Two family	2.5	30	22	51	33,660	
9 Willis	Two family	2.5	30	23	58	40,020	
32 Montreal	Single family	1.5	20	22	56	24,640	
24 Montreal	Single family	2	25	22	45	24,750	
27 Montreal	Multi Unit	2	25	32	64	51,200	est
19 Montreal	Multi Unit	2	25	32	64	51,200	est
13 Montreal	Multi Unit	2	25	32	64	51,200	est
22 Montreal	Single family	1.5	20	18	34	12,240	
16 Montreal	Single family	1.5	20	25	30	15,000	
12 Montreal	Single family	1.5	20	18	36	12,960	
Surrounding Building	Average	2 Stories				27,565	cubic ft (es
33-37 Montreal:		vs				vs	
HPB Version-2018	14 Unit	4	45	105	80	378,000	cubic ft (es
PB Version-2019	9 Unit	4	45	80	72	259,200	cubic ft
PB Version-12/14/2021	12 unit	4	45	80	73	262,800	cubic ft
As of: 12/9/2021	(Building Scale)			(Building Massing)			
How much larger??		2.222	times higher		9.5	times larger	

Assumptions: Column headings starting with "City", building length and width was gathered from Portland Appraisor site for each building.
Calculations: 1) I assumed 10 feet per story but if it is gabled or half story, I rounded up to next story.
2) Massing is considered volume which the formula Volume = Length X Width x Height



Point 5: Required to go through HD review.

This project went to Historic Preservation Board in 2018 when it was NOT in the Historic District. This project for the last 3 years has gone through at least 9 different proposals. Below are the iterative design changes. This project is required to go to a public hearing in Historic Preservation Board since this project is a Level Site 3 plan and within 100 ft of the Munjoy Hill Historic District which was only implemented this past April 2021.



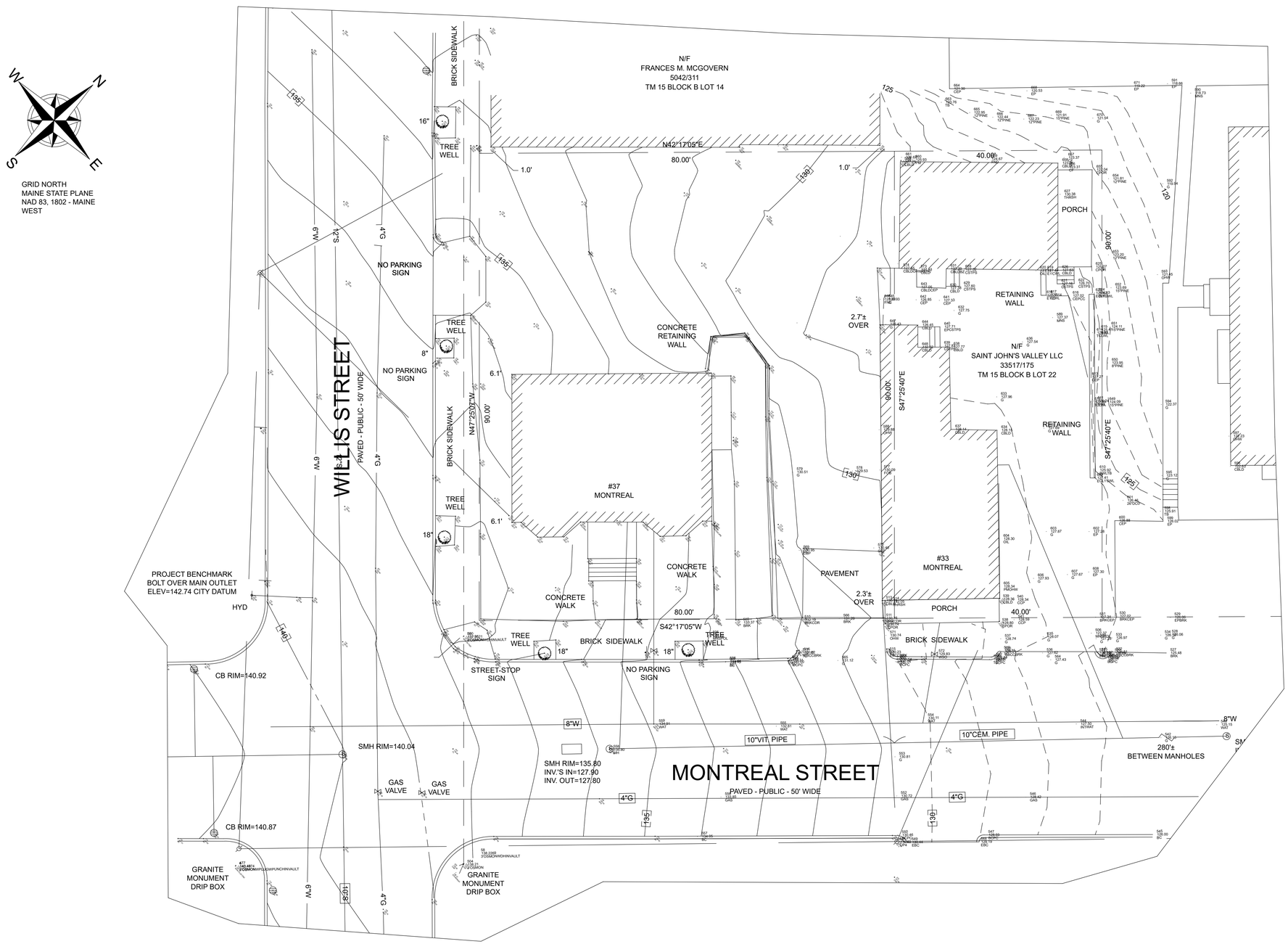
Conclusion:

Both zoning and design standards are REQUIRED to be met in order to be approved. This project is NOT meeting these standards per above and many more reasons

Therefore, please tell this developer to go back to HD and rework this massive square building that has nothing to do with Munjoy Hill. When so many members of the neighborhood object to this proposal, the Planning Board should take notice.

Regards,

Karen Snyder
72 Waterville St.



10 0 5 10 20

GRAPHIC SCALE
1"=10'

PLAN REFERENCES:

(1) A.P. MARSHALL'S PLAN OF LOTS DATED MAY 20, 1856 AND RECORDED IN PLAN BOOK 1 PAGE 41 IN THE CUMBERLAND COUNTY REGISTRY OF DEEDS.

(2) BOUNDARY AND TOPOGRAPHIC SURVEY AT 33 MONTREAL STREET PORTLAND, MAINE MADE FOR TIMOTHY WELLS DATED MAY 22, 2017 BY OWEN HASKELL, INC.

SURVEY NOTES:

(1) THE OWNERS OF RECORD ARE KEVIN JAMES CARTER AS DESCRIBED IN A DEED RECORDED IN BOOK 34283 PAGE 95 AND SAINT JOHN'S VALLEY LLC AS DESCRIBED IN A DEED RECORDED IN BOOK 33517 PAGE 175 IN THE CUMBERLAND COUNTY REGISTRY OF DEEDS.

(2) THE PARCELS ARE SHOWN AS LOTS 15 AND 22 BLOCK B ON THE CITY OF PORTLAND'S ASSESSOR'S MAP 15.

UTILITY NOTES:

PORTLAND WATER DISTRICT SKETCH OF 33 AND 37 MONTREAL STREET DATED FEBRUARY 20, 2018. 6 INCH CAST IRON WATER LINE (1913) IN WILLIS STREET AND 8 INCH CAST IRON WATER LINE (1913) IN MONTREAL STREET. 37 MONTREAL STREET HAS A 3/4 INCH COPPER WATER SERVICE LINE (1930) AND 33 MONTREAL STREET HAS A 3/4 INCH COPPER WATER SERVICE LINE (1941).

CITY OF PORTLAND DEPARTMENT OF PUBLIC WORKS SEWER TIE CARD FOR 37 MONTREAL STREET AND 31 MONTREAL STREET. 1882 CITY MAP SHEET 15 DEPICTS SEWER LINES IN MONTREAL STREET AS 10" VIT. AND 10" CEM. AS SHOWN. REFERENCE IS MADE TO PLANS ENTITLED "CITY OF PORTLAND, MAINE DEPARTMENT OF PUBLIC WORKS MONTREAL STREET SEWER AS-BUILT DATED 7-75" AND "CITY OF PORTLAND DEPARTMENT OF PUBLIC WORKS WILLIS STREET AS-BUILTS" WHICH DEPICTS THE LOCATION OF THE SEWER LINE AND GAS LINE AS SHOWN HEREON.

THERE NO CATCH BASINS OBSERVED IN MONTREAL STREET AT THE TIME OF THE FIELD SURVEY EXCEPT THE TWO SHOWN ON THE OTHER SIDE OF WILLIS STREET.

GAS SERVICE IS PROVIDED BY UNITIL. THE

CERTIFICATION:

I CERTIFY THAT THIS SURVEY CONFORMS TO THE STANDARDS OF THE MAINE BOARD OF LICENSURE FOR PROFESSIONAL LAND SURVEYORS AND IS CORRECT TO THE BEST OF MY KNOWLEDGE, INFORMATION AND BELIEF.

WILLIAM C. SHIPPEN P.L.S. 2118

BOUNDARY SURVEY

37 MONTREAL STREET
PORTLAND, MAINE

FOR: MCTIGUE CONSTRUCTION
184 MOUNTAIN ROAD
FALMOUTH, MAINE 04105
(CLIENT)

SURVEY BY: SURVEY, INC.
P.O. BOX 210
WINDHAM, ME 04062
(207) 892-2556
INFO@SURVEYINCORPORATED.COM

DWN: WCS CHK: BDK
DATE: AUGUST 2017 JOB NO. 17111



1 NEIGHBORHOOD CONTEXT - 1 BLOCK
SCALE: 1" = 20'

0 10' 20' 40'

Kaplan Thompson Architects
102 Exchange Street
Portland, ME 04101
(207) 842-2888
kaplanthompson.com

PROJECT
MONTREAL ST

Montreal St
Portland, ME 04101

NOT FOR CONSTRUCTION

PROJECT	MTL
DATE	08/06/2018
REVISED 1	
REVISED 2	
DRAWN BY	JT - RL - BB
PHASE	ALTERNATIVE DESIGN REVIEW

NEIGHBORHOOD CONTEXT

A-0.1



1 NEIGHBORHOOD CONTEXT - 3 BLOCKS
SCALE: 1" = 50'

0 20' 50' 100'

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MONTREAL ST

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Portland, ME 04101

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REVISED 1	
REVISED 2	
DRAWN BY	JT - RL - BB
PHASE	ALTERNATIVE DESIGN REVIEW

NEIGHBORHOOD CONTEXT

A-0.2


101 North Street


63


55


49


45


41


MacArthur Gardens 13-27







MONTREAL STREET ADJACENT West

MONTREAL STREET ADJACENT East


89 North Street


64-66


60


54-56


52


48-50


46


42

MONTREAL STREET FACING West


9 Wills Street


32


24


22


18

16


12


294 East Promenade

MONTREAL STREET FACING East


Promenade Towers 340 East Promenade


23


9

WILLIS STREET ADJACENT


51 Melbourne Street


10


42

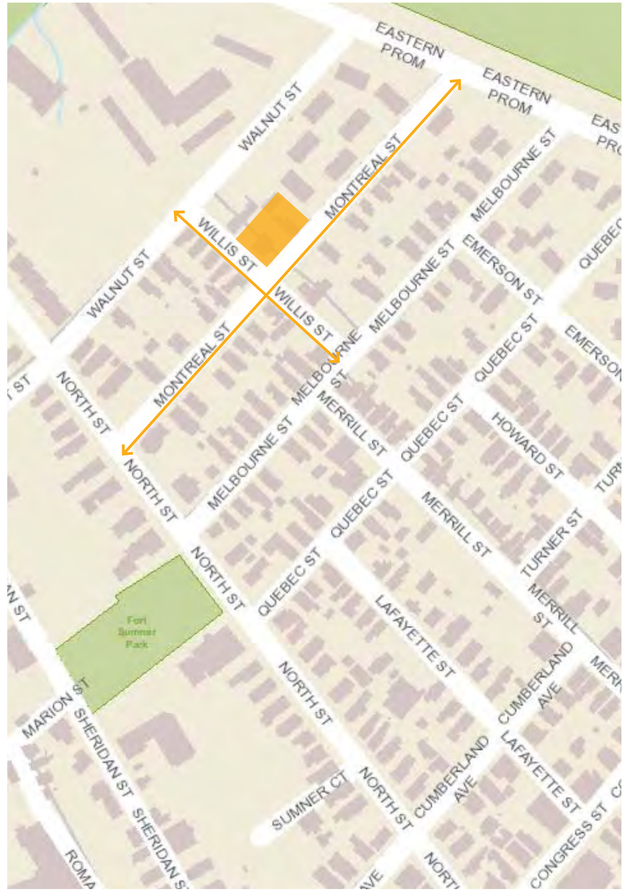

20


22


24


28

WILLIS STREET FACING



SITE LOCATION

Kaplan Thompson Architects
102 Exchange Street
Portland, ME 04101
(207) 842-2888
kaplanthompson.com

PROJECT

MONTREAL ST

Montreal St
Portland, ME 04101

NOT FOR CONSTRUCTION	
PROJECT	MTL
DATE	08/06/2018
REVISED 1	
REVISED 2	
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PHASE	ALTERNATIVE DESIGN REVIEW

NEIGHBORHOOD CONTEXT - STREETSCAPE

A-0.3


97 Sheridan Street


71 Quebec Street


59 Lafayette Street


128 Sheridan Street

ROOF FORM PRECEDENTS


118 Congress Street


98 Congress Street


119 Morning Street


16 Emerson Street


16 Cleeve Street


135 Sheridan Street


49 Morning Street


63 Emerson Street


80 North Street


58 North Street


55 Morning Street


63 Morning Street


70 Morning Street


34 Lafayette Street


101 North Street

SCALE PRECEDENTS



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PROJECT
MONTREAL ST

Montreal St
Portland, ME 04101

NOT FOR CONSTRUCTION	
PROJECT	MTL
DATE	08/06/2018
REVISED 1	
REVISED 2	
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PHASE	ALTERNATIVE DESIGN REVIEW

NEIGHBORHOOD CONTEXT - PRECEDENTS

A-0.4





Owner: Bartley A. Connolly
Address: 33-37 Montreal Street, East End - Munjoy Hill, Portland, Maine
Use: Dwelling - Single family
Local Code: Block 15B Lot 15 Book 51 Page 1
MMN item number: 63893





1 37 MONTREAL STREET - 1924 TAX PHOTO & JULY 2018 PHOTOS

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Portland, ME 04101
(207) 842-2888
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PROJECT
MONTREAL ST

Montreal St
Portland, ME 04101

NOT FOR CONSTRUCTION

PROJECT	MTL
DATE	08/06/2018
REVISED 1	
REVISED 2	
DRAWN BY	JT - RL - BB
PHASE	ALTERNATIVE DESIGN REVIEW

EXISTING BUILDING
37 MONTREAL ST.

A-0.5



1 33 MONTREAL STREET - FEBRUARY 2018





2 33 MONTREAL STREET - 1924 TAX PHOTO



3 33 MONTREAL STREET - 1924 TAX PHOTO

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102 Exchange Street
Portland, ME 04101
(207) 842-2888
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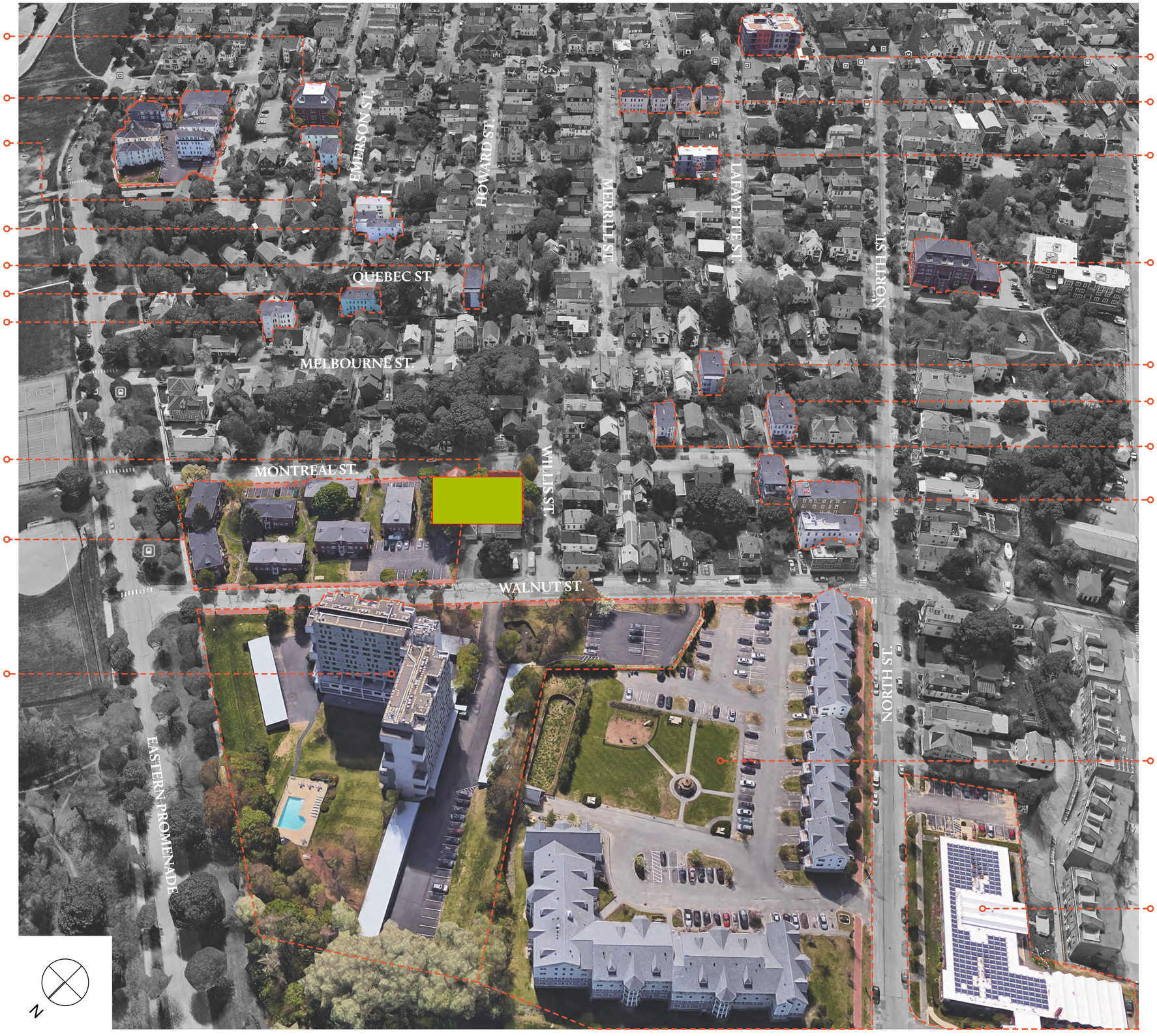
PROJECT
MONTREAL ST

Montreal St
Portland, ME 04101

NOT FOR CONSTRUCTION	
PROJECT	MTL
DATE	08/06/2018
REVISED 1	
REVISED 2	
DRAWN BY	JT - RL - BB
PHASE	ALTERNATIVE DESIGN REVIEW

EXISTING BUILDING
33 MONTREAL ST.

A-0.6



22 HOME "MUNJOY COMMONS" (BRICK)

3.5 DECKER (GROUP OF 8)

3 DECKER (GROUP OF 2)

3 DECKER (GROUP OF 2)

3 DECKER

3 DECKER

4 DECKER

33-37 MONTREAL ST.

57 HOME "MACARTHUR GARDENS" (BRICK)

81 HOME 14 STORY "PROMENADE TOWERS"

12 HOME 118 CONGRESS ST.

3 DECKER (GROUP OF 4)

6 HOME 4 STORY "MARQUIS LOFTS"

22 HOME "SHAILER SCHOOL" (BRICK)

3 DECKER

3 DECKER MONTREAL ST.

3 DECKER MONTREAL ST.

3 DECKER MONTREAL ST. (GROUP OF 3)

70 HOME 3 & 4 STORY "ISLAND VIEW"

1, 3 & 4 STORY ELDERLY HOUSING "BAYVIEW HEIGHTS" (BRICK)

Kaplan Thompson Architects
102 Exchange Street
Portland, ME 04101
(207) 842-2888
kaplanthompson.com

PROJECT
MONTREAL ST

Montreal St
Portland, ME 04101

NOT FOR CONSTRUCTION	
PROJECT	MTL
DATE	08/06/2018
REVISED 1	
REVISED 2	
DRAWN BY	JT - RL - BB
PHASE	ALTERNATIVE DESIGN REVIEW

AERIAL VIEW

A-9.5



Kaplan Thompson Architects

102 Exchange Street Portland, ME 04101
(207) 842-2888 kaplanthompson.com

TWO BLOCK RADIUS

MONTREAL ST

Montreal St Portland ME 04101



1 TURNER STREET #19 & #17



2 CORNER OF MONTREAL & WILLIS STREETS



3 MACARTHUR GARDENS & PROMENADE TOWERS



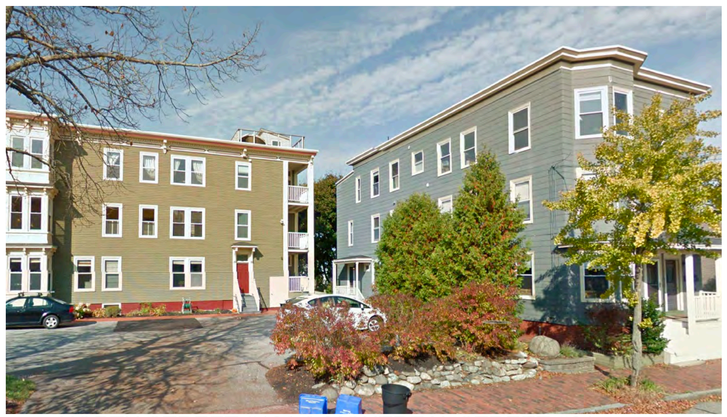
4 MONTREAL STREET #64



5 MONTREAL STREET #52 & #49



6 EMERSON STREET #60 & # 68



7 NORTH STREET #101 & MONTREAL STREET #61



8 WALNUT STREET #151 ISLAND VIEW APARTMENTS



9 ISLAND VIEW APARTMENTS

Kaplan
Thompson
Architects

102 Exchange Street Portland, ME 04101
(207) 842-2888 kaplanthompson.com

EXISTING CONTEXT: TWO-BLOCK RADIUS

33-37 MONTREAL
PORTLAND



1 MONTREAL STREET VIEW DOWNHILL



2 MONTREAL STREET VIEW UPHILL

EXISTING CONTEXT: MONTREAL

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MONTREAL ST
Montreal St Portland ME 04101



1 WALNUT STREET PERSPECTIVE



2 MONTREAL STREET PERSPECTIVE UPHILL

EXISTING CONTEXT: WALNUT & MONTREAL ST

Kaplan Thompson Architects

102 Exchange Street Portland, ME 04101
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MONTREAL ST

Montreal St Portland ME 04101



1 SITE PLAN
SCALE: 1" = 20'

0 10' 20' 40'

Kaplan Thompson Architects
102 Exchange Street
Portland, ME 04101
(207) 842-2888
kaplanthompson.com

PROJECT
19 WILLIS STREET

FORMERLY
33 - 37 MONTREAL STREET
PORTLAND, ME 04101

CIVIL
DM Roma
PO Box 1116,
Windham, ME 04062
P: (207) 310-050

LANDSCAPE
Soren Deniord Design Studio
43 Wellwood Road
Portland, ME 04103
P: (207) 400-2450

NOT FOR CONSTRUCTION	
PROJECT	MTL
DATE	November 03, 2021
REVISED 1	
REVISED 2	
DRAWN BY	RL, BB
PHASE	For PB Review

NEIGHBORHOOD CONTEXT
A-0.1

10'-0" SIDE SETBACK
(BUILDING > 35' H)

5'-0" FRONT SETBACK

PROPERTY LINE (FRONT)

DOG-WASH
25.58 sq ft

STORAGE
30.10 sq ft

STORAGE
30.10 sq ft

STORAGE
30.10 sq ft

STORAGE
30.10 sq ft

STORAGE
30.10 sq ft

STORAGE
35.49 sq ft

BIKE ROOM
187.53 sq ft

MECH. ROOM
142.00 sq ft

STAIR 01
127.98 sq ft

COMMON SPACE
97.74 sq ft

127'-10"

ELEVATOR
56.00 sq ft

TRASH ROOM
118.47 sq ft

STORAGE
117.94 sq ft

GARAGE
4,157.56 sq ft

2 4 6 8 10 12

1 3 5 7 9 11 13

18'-0"

26'-0" DRIVE AISLE

2'-0" 8'-0" (ACCESS AISLE) 9'-0" (ACCESSIBLE VAN SPACE) 9'-0" 9'-0" 9'-0" 9'-0" 9'-0" 10'-0"

10'-0" 9'-0" 9'-0" 9'-0" 9'-0" 9'-0" 9'-0" 10'-0"

STORAGE
33.83 sq ft

STORAGE
30.10 sq ft

STORAGE
30.10 sq ft

STORAGE
30.10 sq ft

STORAGE
30.10 sq ft

STORAGE
30.10 sq ft

STORAGE
35.49 sq ft

15'-0" REAR SETBACK
(BUILDING > 35' H)

15'-2 3/4"

5'-3 1/4"

STONE-FACED SITE WALL

OUTLINE OF 1ST FLOOR PATIO ABOVE

OUTLINE OF LANDSCAPE TERRACE ABOVE

16'-0"

127'-0"

EG.1

EG.2

7'-5"

5'-3 1/4"

10'-8 3/4"

DRIVEWAY

OUTLINE OF 1ST FLOOR PATIO ABOVE

STONE-FACED SITE WALL

4'-6"

3'-0" 11'-0"

5'-0" SIDE STREET SETBACK
(BUILDING > 35' H)

8'-0" 14'-0" 27'-0" 20'-0" 9'-0" 1'-0" 4'-0" 14'-0" 4'-0 1/4"

80'-0"

6'-0"

PROJECT TRUE

PROPERTY LINE (SIDE STREET)

0 2' 4' 8'

1 A-2.1 — 1 A-2.2 — 1 A-2.3 — 1 A-2.4

BASEMENT

SCALE: 1/4" = 1'-0"

Kaplan Thompson Architects
102 Exchange Street
Portland, ME 04101
(207) 842-2888
kaplanthompson.com

PROJECT
19 WILLIS STREET

FORMERLY
33 - 37 MONTREAL STREET
PORTLAND, ME 04101

CIVIL
DM Roma
PO Box 1116,
Windham, ME 04062
P: (207) 310-050

STRUCTURAL
L & L Structural Engineering Services
6 Q Street
South Portland, ME 04106
P: (207) 767-4830

LANDSCAPE
Soren Deniord Design Studio
43 Wellwood Road
Portland, ME 04103
P: (207) 400-2450

LICENSED ARCHITECT
JAMES JESSE THOMPSON
NO. 3275
STATE OF MAINE

NOT FOR CONSTRUCTION

PROJECT	MTL
DATE	November 03, 2021
REVISED 1	
REVISED 2	
DRAWN BY	RL, BB
PHASE	For PB Review

BASEMENT PLAN

A-1.1

PROPERTY LINE (SIDE)

A B C C.9 D D.5 E F

14'-0" 19'-0" 80'-0" 27'-0" 20'-0" 10'-0"

PATIO UNIT #14
99.34 sq ft

LANDSCAPED TERRACE

1 A-2.4

10'-0" SIDE SETBACK (BUILDING > 35' H)

PATIO UNIT #13
155.98 sq ft

LANDSCAPED TERRACE

BAY WINDOW ABOVE (SHOWN DASHED)

KIT./DIN./LIV.
298.78 sq ft

BEDROOM 02
147.68 sq ft

BEDROOM 01
226.45 sq ft

BEDROOM 03
185.48 sq ft

BATH 02
51.77 sq ft

BEDROOM 02
171.70 sq ft

HALLWAY
34.73 sq ft

UNIT 14
1,059.27 sq ft

HALLWAY
56.72 sq ft

BATH 03
51.77 sq ft

OUTLINE OF PORCH ROOF ABOVE

STONE-FACED PLANTER WALL

EGRESS EXIT

LANDING

HALLWAY
43.37 sq ft

LDRY
22.14 sq ft

BATH 02
46.46 sq ft

BATH 01
63.44 sq ft

BATH 04
18.18 sq ft

KIT./DIN./LIV.
522.65 sq ft

CORRIDOR
80.71 sq ft

HALLWAY
101.51 sq ft

UNIT 13
1,709.93 sq ft

ANDRAILS TO EACH SIDE OF STAIR

AY WINDOW ABOVE (SHOWN DASHED)

STAIR 01
155.46 sq ft

CL.
22.71 sq ft

STAIR 02
140.31 sq ft

CLOSET
21.46 sq ft

LAUNDRY
23.29 sq ft

PANTRY
23.04 sq ft

BEDROOM 01
249.53 sq ft

FIRE ALARM PANEL

138'-10"

SIDE WALK

ENTRY LANDING

FOYER
204.43 sq ft

BATH 04
20.06 sq ft

FLEX RM
52.79 sq ft

BATH 01
80.31 sq ft

KNOX BOX

KNOX BOX

CORRIDOR
73.64 sq ft

HALLWAY
115.91 sq ft

UNIT 12
1,507.74 sq ft

HANDRAILS TO EACH SIDE OF STAIR

OUTLINE OF PORCH ROOF ABOVE

1:12 RAMP UP < 6" RISE

ELEVATOR
74.87 sq ft

PACKAGE ROOM
87.61 sq ft

BTH 02
21.37 sq ft

W/D
LDRY.
7.33 sq ft

CL.
7.42 sq ft

HALLWAY
28.80 sq ft

CL.
6.07 sq ft

CL.
6.07 sq ft

PTRY
10.11 sq ft

LDRY
13.56 sq ft

W/D

KIT./DIN./LIV.
453.80 sq ft

STONE SEAT CAP TO PLANTER WALL

LANDING

BATH 01
47.33 sq ft

PTRY
14.18 sq ft

UNIT 11
622.47 sq ft

BATH 02
40.44 sq ft

BAY WINDOW ABOVE (SHOWN DASHED)

1:1.2 RAMP UP (48" RISE)

LANDING

BATH 03
39.17 sq ft

KIT./DIN./LIV.
257.43 sq ft

BATH 01
78.03 sq ft

BEDROOM 01
194.65 sq ft

PATIO UNIT #12
157.93 sq ft

BEDROOM 01
153.64 sq ft

BEDROOM 03
165.91 sq ft

BEDROOM 02
142.89 sq ft

PROPERTY LINE (FRONT)

5'-0" FRONT SETBACK

5'-0" SIDE STREET SETBACK (BUILDING > 35' H)

EXTERIOR DECK ABOVE (SHOWN DASHED)

LANDSCAPED TERRACE

LANDSCAPED TERRACE

LANDSCAPED TERRACE

15'-0" REAR SETBACK (BUILDING > 35' H)

15'-2 3/4"

5'-3 1/4"

16'-0"

7'3"-0"

5'-3 1/4"

10'-8 3/4"

4'-6"

DRIVEWAY BELOW

PROPERTY LINE (REAR)

1 A-2.1

1 A-2.3

1 A-2.2

1 1ST FLOOR
SCALE: 1/4" = 1'-0"

N PROJECT TRUE

0 2' 4' 8'

Kaplan Thompson Architects
102 Exchange Street
Portland, ME 04101
(207) 842-2888
kaplanthompson.com

PROJECT
19 WILLIS STREET

FORMERLY
33 - 37 MONTREAL STREET
PORTLAND, ME 04101

CIVIL
DM Roma
PO Box 1116,
Windham, ME 04062
P: (207) 310-050

STRUCTURAL
L & L Structural Engineering Services
6 Q Street
South Portland, ME 04106
P: (207) 767-4830

LANDSCAPE
Soren Deniord Design Studio
43 Wellwood Road
Portland, ME 04103
P: (207) 400-2450

LICENSED ARCHITECT
JAMES JESSE THOMPSON
No. 3275
STATE OF MAINE

NOT FOR CONSTRUCTION

PROJECT	MTL
DATE	November 03, 2021
REVISED 1	
REVISED 2	
DRAWN BY	RL, BB
PHASE	For PB Review

FIRST FLOOR PLAN

A-1.2



1 2ND FLOOR
SCALE: 1/4" = 1'-0"

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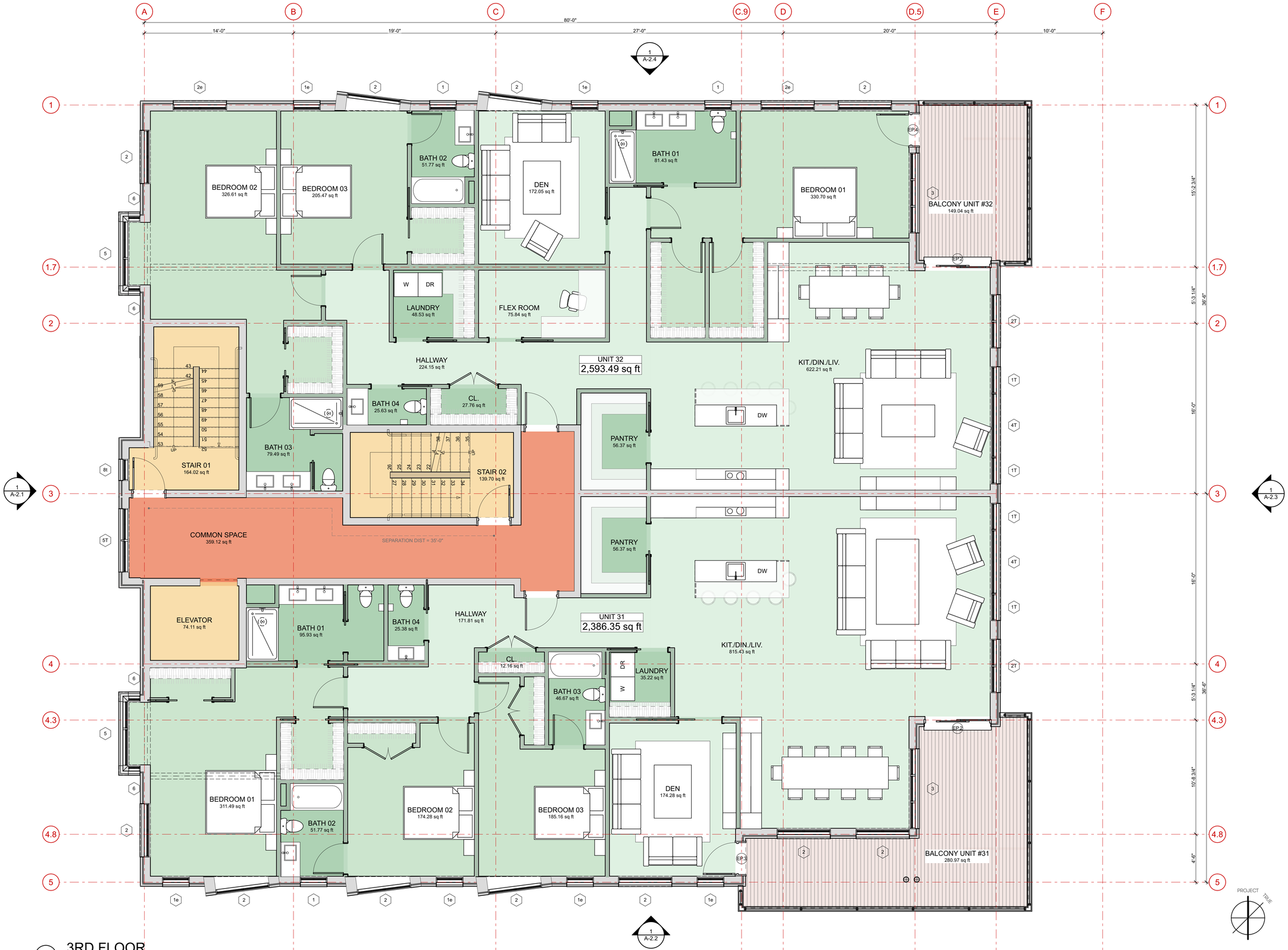
LANDSCAPE
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SECOND FLOOR PLAN
A-1.3



1 3RD FLOOR
SCALE: 1/4" = 1'-0"

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THIRD FLOOR PLAN

A-1.4



1 4TH FLOOR
SCALE: 1/4" = 1'-0"

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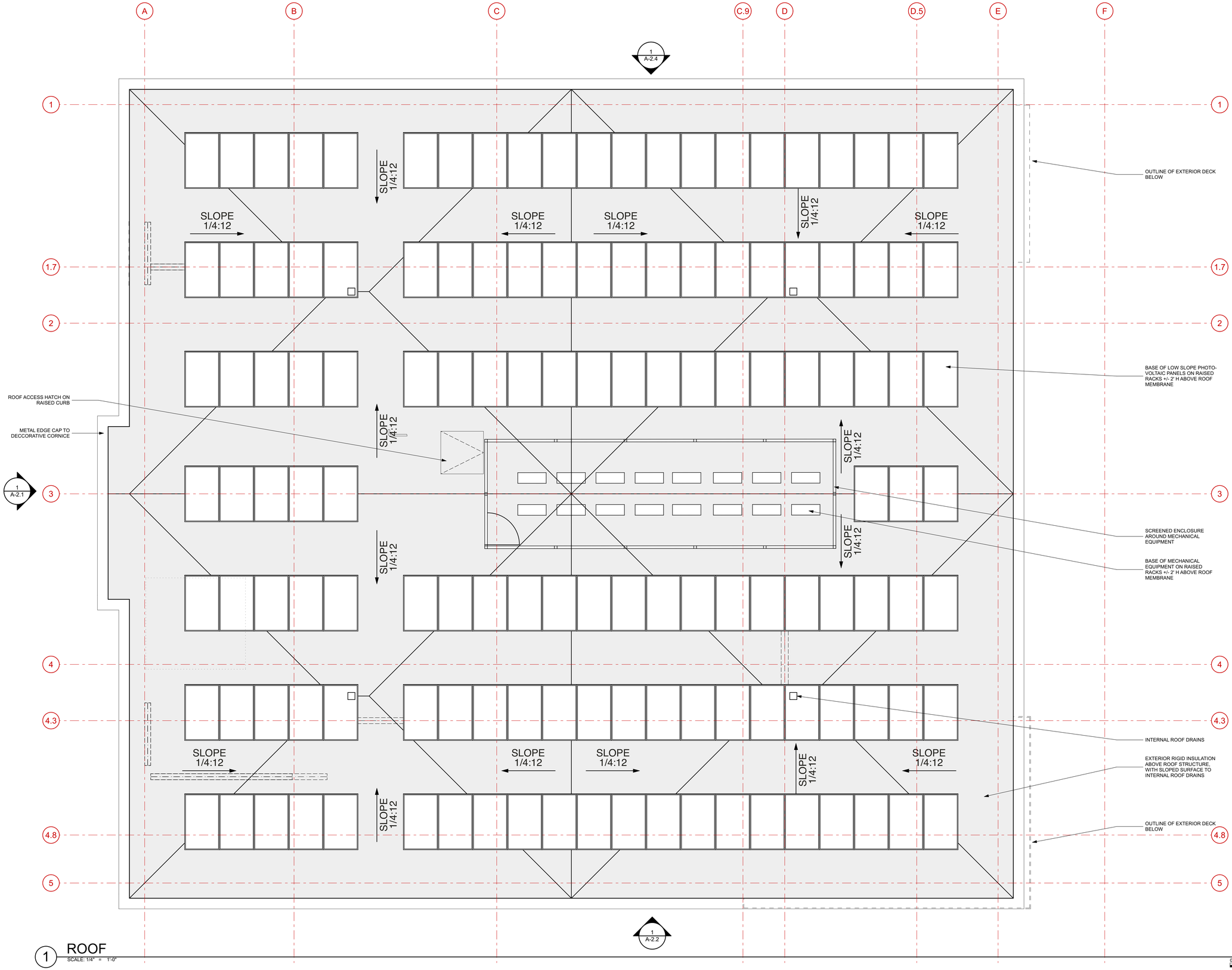
LICENSED ARCHITECT
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DATE	November 03, 2021
REVISED 1	
REVISED 2	
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FOURTH FLOOR PLAN

A-1.5



1 ROOF
SCALE: 1/4" = 1'-0"

0 2' 4' 8'

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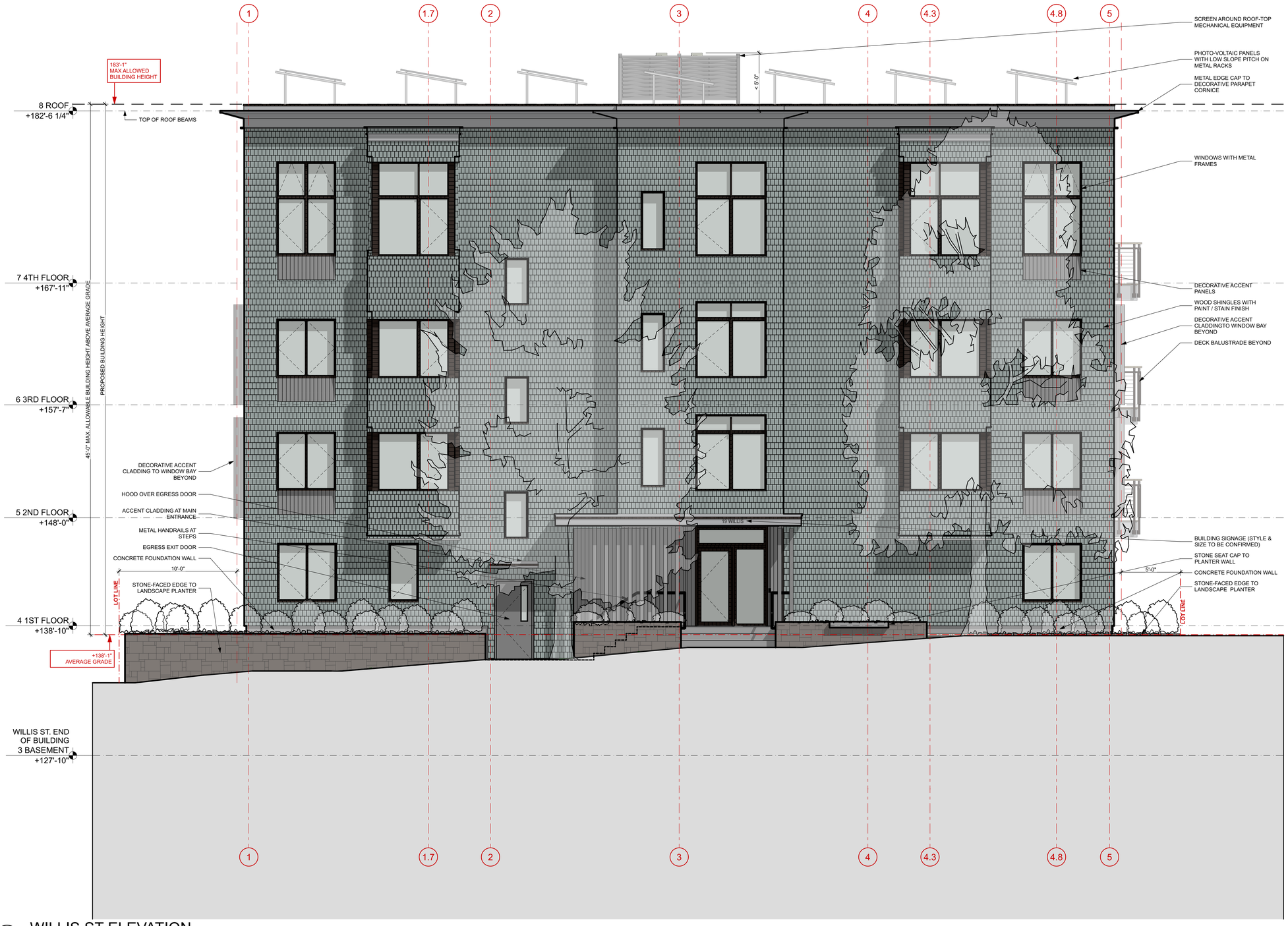
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ROOF PLAN

A-1.6



1 WILLIS ST ELEVATION

SCALE: 1/4" = 1'-0"

0 2' 4' 8'

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PROJECT

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LICENSED ARCHITECT
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PROJECT	MTL
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WILLIS ST ELEVATION

A-2.1



1 MONTREAL ST ELEVATION
SCALE: 1/4" = 1'-0"

0 2' 4' 8'

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PROJECT
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MONTREAL ST ELEVATION
A-2.2



1 NORTH-EAST ELEVATION (DOWNHILL)

SCALE: 1/4" = 1'-0"

0 2' 4' 8'

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PROJECT

19 WILLIS STREET

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NORTH-EAST ELEVATION

A-2.3



1 NORTH-WEST ELEVATION (WALNUT STREET)
SCALE: 1/4" = 1'-0"

0 2' 4' 8'

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PROJECT
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NORTH-WEST ELEVATION
A-2.4



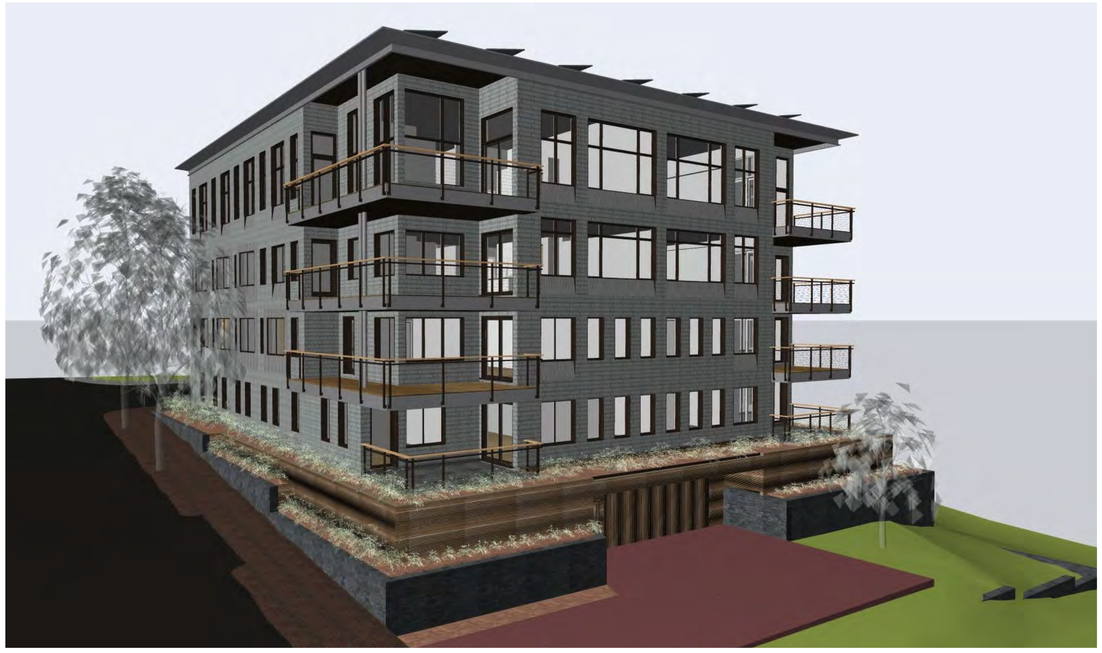
1 VIEW FROM WILLIS ST



2 VIEW FROM WILLIS & MONTREAL



3 VIEW FROM MONTREAL ST



4 VIEW OF SOUTH-EAST CORNER

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PROJECT
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PERSPECTIVES

A-10.1



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NOT FOR CONSTRUCTION	
PROJECT	MTL
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CORNER OF MONTREAL AND WILLIS

A-10.2



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PROJECT
19 WILLIS STREET

FORMERLY
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PORTLAND, ME 04101

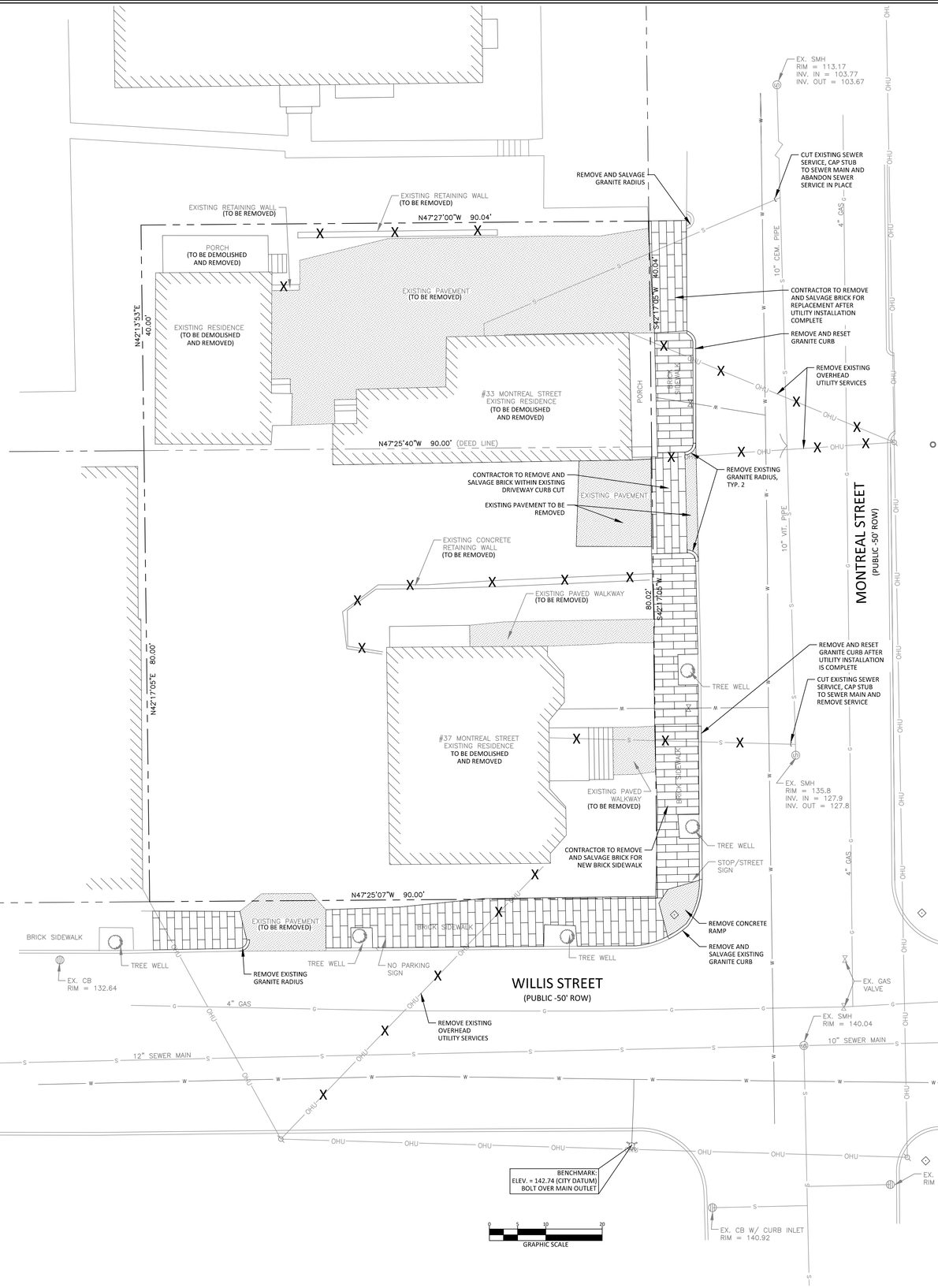
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NOT FOR CONSTRUCTION	
PROJECT	MTL
DATE	November 03, 2021
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PHASE	For PB Review

MONTREAL STREET

A-10.3



GENERAL NOTES:

1. THE OWNERS OF RECORD ARE KEVIN JAMES CARTER AS DESCRIBED IN A DEED RECORDED IN BOOK 34283 PAGE 95 AND SAINT JOHN'S VALLEY LLC AS DESCRIBED IN A DEED RECORDED IN BOOK 33517 PAGE 175 IN THE CUMBERLAND COUNTY REGISTRY OF DEEDS.
2. TOTAL AREA OF THE PARCELS IS APPROXIMATELY 0.25± ACRES.
3. PARCEL TAX MAP REFERENCE: CITY OF PORTLAND ASSESSORS MAP 15, BLOCK B, PARCELS 15 AND 22.
4. PLAN REFERENCES:
   A) "BOUNDARY SURVEY 37 MONTREAL STREET" PREPARED FOR MCTIGUE CONSTRUCTION, PREPARED BY SURVEY INC., DATED AUGUST 2017.
5. HORIZONTAL DATUM: MAINE STATE PLANE, WEST ZONE, NAD83, U.S. FEET.
6. VERTICAL DATUM: NORTH AMERICAN VERTICAL DATUM OF 1988 (NAVD88)
7. BOUNDARY SHOWN HEREON IS BASED ON PLAN REFERENCE A.
8. TOPOGRAPHIC CONTOURS SHOWN HEREON ARE BASED ON PLAN REFERENCE A.
9. THE PROPERTY IS LOCATED IN THE R-6 ZONING DISTRICT AS WELL AS THE MUNJOY HILL NEIGHBORHOOD CONSERVATION OVERLAY DISTRICT.

PLAN NOTES:

1. EXISTING UTILITY LOCATION SHOWN HEREON IS BASED SOLELY ON FIELD OBSERVATION OF PAINTED UTILITY MARKINGS ON THE GROUND SURFACE BY SURVEY INC. NO SUBSURFACE EXPLORATION OR DETAILED FIELD SURVEY OF UTILITY LOCATIONS WERE PERFORMED.
2. THE CONTRACTOR AND OWNER ARE RESPONSIBLE FOR NOTIFYING DIG SAFE AND COORDINATING ALL EXISTING UTILITY RELOCATION AND REPAIR THAT MAY BE NECESSARY.

LEGEND

EXISTING	PROPOSED
PROPERTY LINE/R.O.W.	
ABUTTER PROPERTY LINE	
SETBACK	
EASEMENT LINE	
GRANITE MONUMENT	
IRON PIN/DRILL HOLE	
BUILDING	
EDGE OF PAVEMENT/CURB	
-200- -201- CONTOUR LINE	
CATCHBASIN	
SEWER MANHOLE	
SANITARY SEWER PIPE	
WATER MAIN	
WATER VALVE	
HYDRANT	
UTILITY POLE	
LIGHT POLE	
OVERHEAD UTILITIES	
GAS MAIN	
GAS VALVE	
PAVEMENT REMOVAL	

STATE OF MAINE
JAYSON R. HASKELL
No. 13002
LICENSED PROFESSIONAL SURVEYOR
10-11-19

DM ROMA
CONSULTING ENGINEERS
P.O. BOX 1116
WINDHAM, ME 04062
(207) 310 - 0506

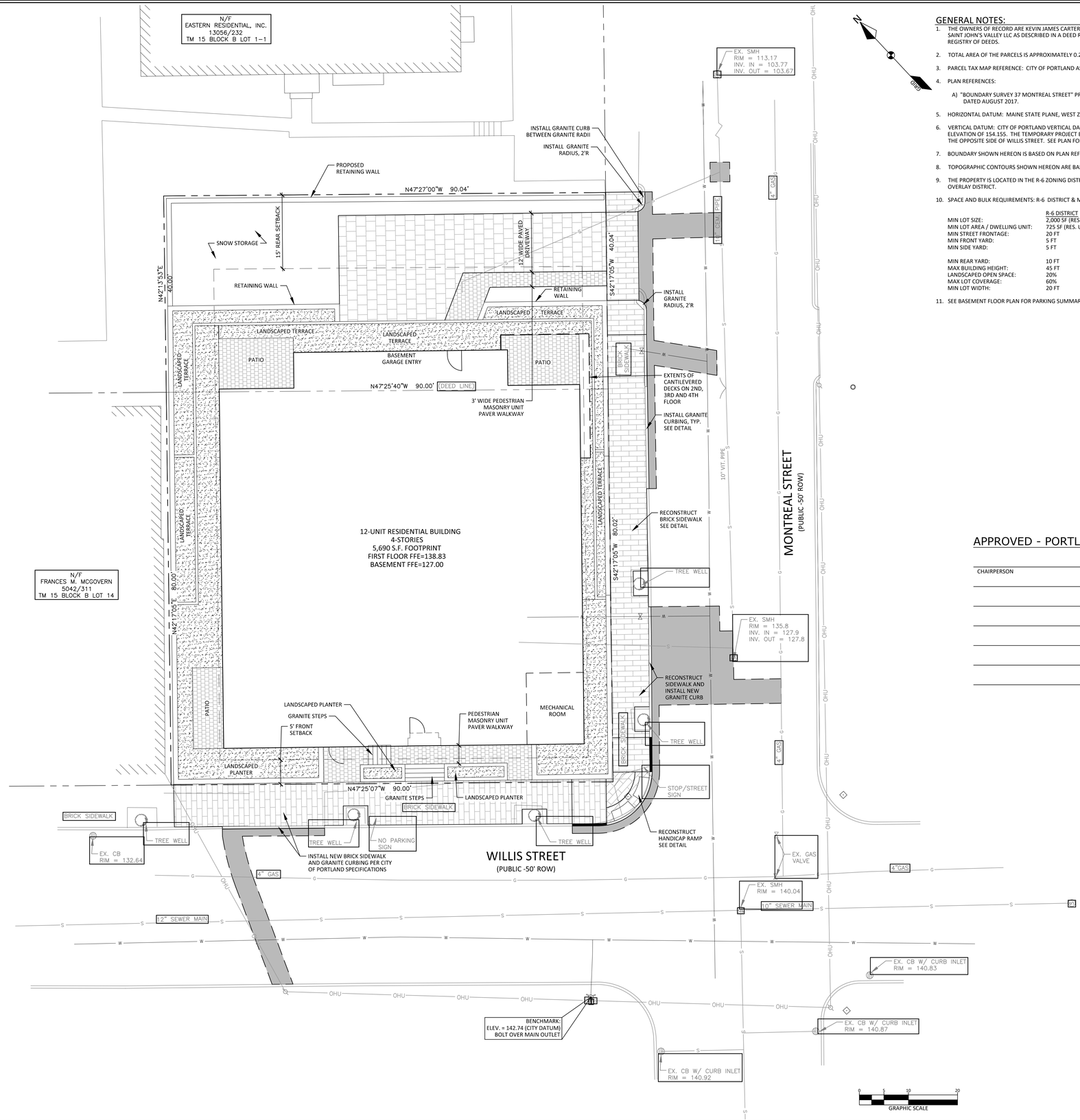
REV.	DATE	BY	DESCRIPTION
A	8-12-19	DMR	ISSUED FOR PERMITTING
B	10-11-19	DMR	REVISED PER CITY REVIEW

EXISTING CONDITIONS & DEMOLITION PLAN

37 MONTREAL STREET
PORTLAND, MAINE

FOR APPLICANT:
37 MONTREAL, LLC.
33 MONTREAL STREET
PORTLAND, ME, 04101

18053	JOB NUMBER:
1" = 10'	SCALE:
10-11-2019	DATE:
--	
C0.0	



LEGEND

EXISTING	PROPOSED
PROPERTY LINE/R.O.W.	
ABUTTER PROPERTY LINE	
SETBACK	
EASEMENT LINE	
GRANITE MONUMENT	
IRON PIN/DRILL HOLE	
BUILDING	
EDGE OF PAVEMENT/CURB	
CONTOUR LINE	
CATCHBASIN	
SEWER MANHOLE	
SANITARY SEWER PIPE	
WATER MAIN	
WATER VALVE	
HYDRANT	
UTILITY POLE	
OVERHEAD UTILITIES	
GAS MAIN	
GAS VALVE	

GENERAL NOTES:

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6. VERTICAL DATUM: CITY OF PORTLAND VERTICAL DATUM BASED ON MONUMENT T-108-73-2 WITH AN ELEVATION OF 154.155. THE TEMPORARY PROJECT BENCHMARK IS LOCATED ON A HYDRANT BOLT IN THE SIDEWALK ON THE OPPOSITE SIDE OF WILLIS STREET. SEE PLAN FOR LOCATION AND ELEVATION.
7. BOUNDARY SHOWN HEREON IS BASED ON PLAN REFERENCE A.
8. TOPOGRAPHIC CONTOURS SHOWN HEREON ARE BASED ON PLAN REFERENCE 4A.
9. THE PROPERTY IS LOCATED IN THE R-6 ZONING DISTRICT AS WELL AS THE MUNJOY HILL NEIGHBORHOOD CONSERVATION OVERLAY DISTRICT.
10. SPACE AND BULK REQUIREMENTS: R-6 DISTRICT & MHNOD

	R-6 DISTRICT	MHNCOD	PROVIDED
MIN LOT SIZE:	2,000 SF (RES. USES)		10,804 SF
MIN LOT AREA / DWELLING UNIT:	725 SF (RES. USES)		1,200 SF/UNIT
MIN STREET FRONTAGE:	20 FT		90 FT (WILLIS)
MIN FRONT YARD:	5 FT		5.0 FT
MIN SIDE YARD:	5 FT	10 FT (BLDG OVER 35' HEIGHT)	10.3 FT
		5 FT (SIDE STREET)	5.0 FT
MIN REAR YARD:	10 FT	15 FT BLDG OVER 35' HEIGHT)	31.5 FT
MAX BUILDING HEIGHT:	45 FT	45 FT (FOR 3 OR MORE UNITS)	44.5 FT
LANDSCAPED OPEN SPACE:	20%		26%
MAX LOT COVERAGE:	60%		53%
MIN LOT WIDTH:	20 FT		90 FT

11. SEE BASEMENT FLOOR PLAN FOR PARKING SUMMARY AND DIMENSIONS.

APPROVED - PORTLAND PLANNING BOARD:

CHAIRPERSON DATE

STATE OF MAINE
JAYSON R. HASKELL
No. 13108
LICENSED PROFESSIONAL ENGINEER
12-3-2021

DM ROMA
CONSULTING ENGINEERS
P.O. BOX 1116
WINDHAM, ME 04062
(207) 310 - 0506

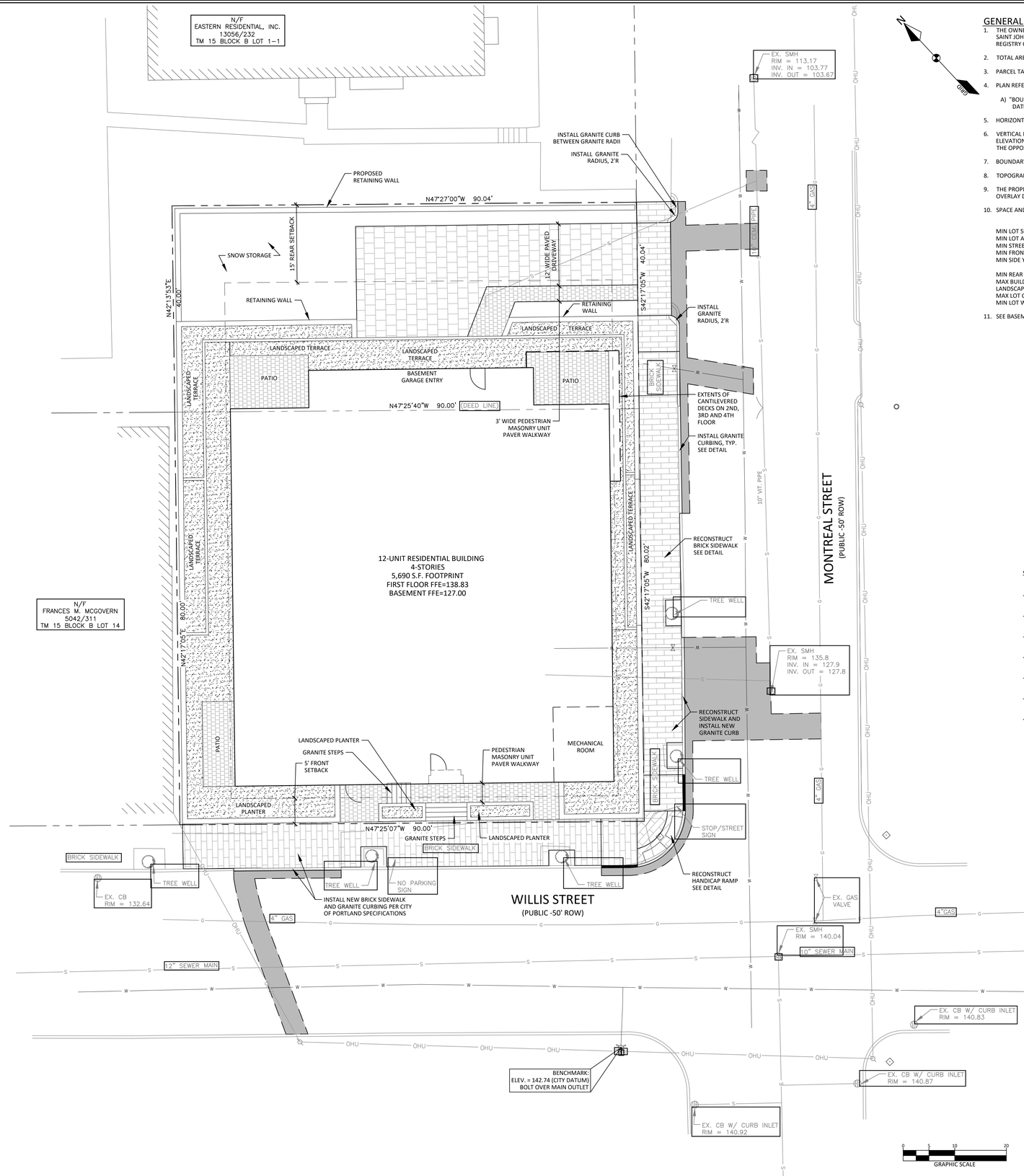
REV	DATE	BY	DESCRIPTION
A	8-12-19	DMR	ISSUED FOR PERMITTING
B	10-11-19	DMR	REVISED PER CITY REVIEW
C	10-22-19	DMR	REVISED PER CITY REVIEW
D	11-3-21	DMR	RE-ISSUED FOR CITY REVIEW
E	12-3-21	DMR	RE-ISSUED FOR CITY REVIEW

PROPOSED SITE PLAN

37 MONTREAL STREET
PORTLAND, MAINE

FOR APPLICANT:
37 MONTREAL, LLC.
33 MONTREAL STREET
PORTLAND, ME 04101

18053	JOB NUMBER:
1" = 10'	SCALE:
12-3-2021	DATE:
--	
C1.0	



GENERAL NOTES:

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MAX LOT COVERAGE:	60%		53%
MIN LOT WIDTH:	20 FT		90 FT

11. SEE BASEMENT FLOOR PLAN FOR PARKING SUMMARY AND DIMENSIONS.

LEGEND

EXISTING	PROPOSED
PROPERTY LINE/R.O.W.	
ABUTTER PROPERTY LINE	
SETBACK	
EASEMENT LINE	
GRANITE MONUMENT	■
IRON PIN/DRILL HOLE	●
BUILDING	
EDGE OF PAVEMENT/CURB	
200 201 CONTOUR LINE	
CATCHBASIN	
SEWER MANHOLE	
SANITARY SEWER PIPE	
WATER MAIN	
WATER VALVE	
HYDRANT	
UTILITY POLE	
OHU OVERHEAD UTILITIES	
GAS MAIN	
GAS VALVE	

APPROVED - PORTLAND PLANNING BOARD:

CHAIRPERSON DATE

STATE OF MAINE
_____ COUNTY SS. REGISTRY OF DEEDS
RECEIVED _____, 20___
AT _____h _____m _____M
AND RECORDED IN
PLAN BOOK _____ PAGE _____
ATTEST: _____
REGISTER

JAYSON R. HASKELL PE 13902 — WILLIAM C. SHIPPEN PLS 2118

STATE OF MAINE — JAYSON R. HASKELL No. 13902 — LICENSED PROFESSIONAL ENGINEER — 12-8-2021

DM ROMA
CONSULTING ENGINEERS
P.O. BOX 1116
WINDHAM, ME 04062
(207) 310 - 0506

REV	DATE	BY	DESCRIPTION
A	8-12-19	DMR	ISSUED FOR PERMITTING
B	10-11-19	DMR	REVISED PER CITY REVIEW
C	10-22-19	DMR	REVISED PER CITY REVIEW
D	11-3-21	DMR	RE-ISSUED FOR CITY REVIEW
E	12-3-21	DMR	RE-ISSUED FOR CITY REVIEW
F	12-8-21	DMR	REVISED PER CITY REVIEW

SUBDIVISION PLAT

37 MONTREAL STREET
PORTLAND, MAINE

FOR APPLICANT:
37 MONTREAL, LLC.
33 MONTREAL STREET
PORTLAND, ME 04101

18053
JOB NUMBER:

1" = 10'
SCALE:

12-8-2021
DATE:

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C1.1

PLAN NOTES:

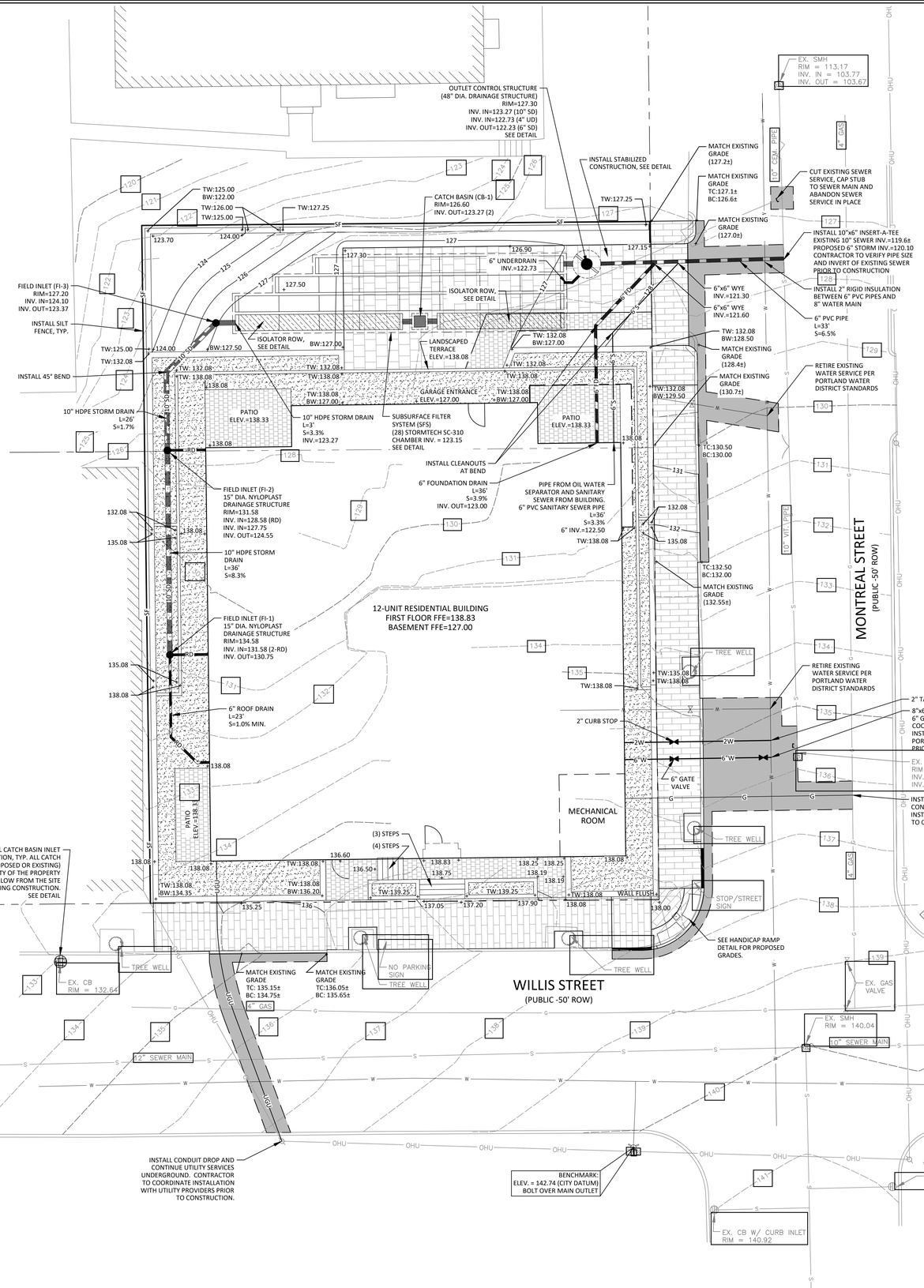
1. EXISTING UTILITY LOCATION SHOWN HEREON IS BASED SOLELY ON FIELD OBSERVATION OF PAINTED UTILITY MARKINGS ON THE GROUND SURFACE BY SURVEY INC. NO SUBSURFACE EXPLORATION OR DETAILED FIELD SURVEY OF UTILITY LOCATIONS WERE PERFORMED.

2. THE CONTRACTOR AND OWNER ARE RESPONSIBLE FOR NOTIFYING DIG SAFE AND COORDINATING ALL EXISTING UTILITY RELOCATION AND REPAIR THAT MAY BE NECESSARY.

3. THE ROADWAY AND SIDEWALK REPAIRS SHALL BE DONE IN ACCORDANCE WITH ALL CITY OF PORTLAND REQUIREMENTS AND SPECIFICATIONS.

4. THE WATER SERVICE SIZE WAS NOT DESIGNED OR ANALYZED BY DM ROMA CONSULTING ENGINEERS. THE OWNER IS RESPONSIBLE FOR COORDINATING WITH PORTLAND WATER DISTRICT AND OTHER DESIGN PROFESSIONALS TO DETERMINE THE DESIRED WATER SERVICE SIZE TO SERVE THE SPECIFIC NEEDS OF THE PROJECT.

5. DOMESTIC SERVICE WILL REQUIRE NON-TESTABLE DUAL CHECK BACKFLOW PREVENTION AFTER THE METER. FIRE SERVICE WILL REQUIRE TESTABLE DOUBLE CHECK VALVE ASSEMBLY FOR BACKFLOW PREVENTION PRIOR TO FIRE SPRINKLER RISER.



LEGEND

EXISTING	PROPOSED
PROPERTY LINE/R.O.W.	
ABUTTER PROPERTY LINE	
TIE LINE	
SETBACK	
EASEMENT LINE	
GRANITE MONUMENT	
IRON PIN/DRILL HOLE	
CENTERLINE	
BUILDING	
EDGE OF PAVEMENT/CURB	
EDGE OF GRAVEL	
EDGE OF CONCRETE	
EDGE OF WETLANDS	
CENTERLINE OF STREAM	
200 201 CONTOUR LINE	200 201
TREELINE	
CATCHBASIN	
DRAINAGE MANHOLE	
CULVERT/STORMDRAIN	
UNDERDRAIN	UD
SEWER MANHOLE	
SANITARY SEWER PIPE	S
FORCE MAIN	FM
WATER MAIN	W
WATER VALVE	
HYDRANT	
UTILITY POLE	
LIGHT POLE	
OVERHEAD UTILITIES	OHU
UNDERGROUND UTILITIES	UGU
TRANSFORMER PAD	T
GAS MAIN	G
GAS VALVE	
RIPRAP	
SILT FENCE	SF

DM ROMA
CONSULTING ENGINEERS
P.O. BOX 1116
WINDHAM, ME 04062
(207) 310 - 0506

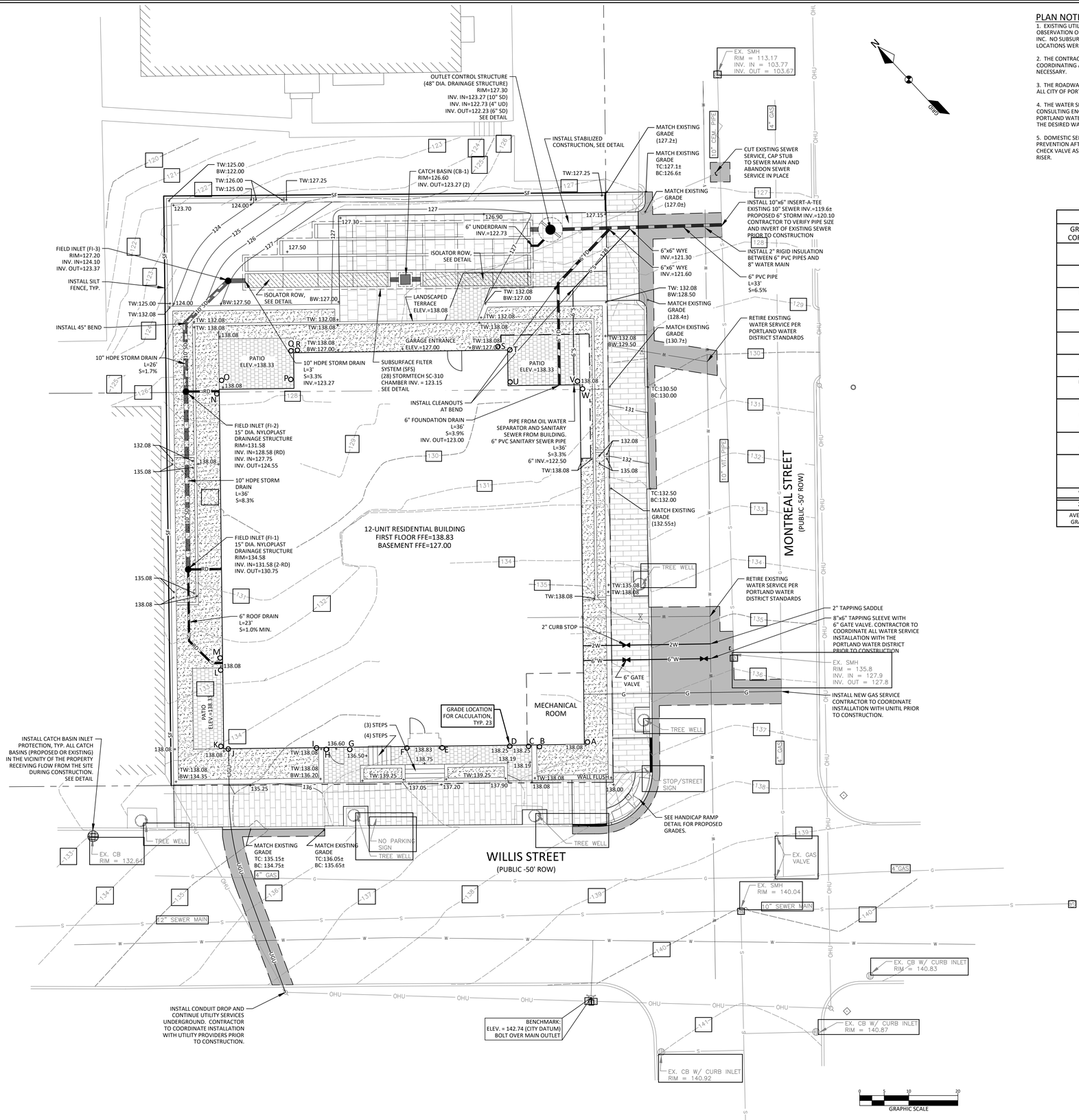
REV	DATE	BY	DESCRIPTION
A	8-12-19	DMR	ISSUED FOR PERMITTING
B	10-11-19	DMR	REVISED PER CITY REVIEW
C	10-22-19	DMR	REVISED PER CITY REVIEW
D	11-3-21	DMR	RE-ISSUED FOR CITY REVIEW
E	12-3-21	DMR	RE-ISSUED FOR CITY REVIEW
F	12-8-21	DMR	REVISED PER CITY REVIEW

GRADING AND UTILITY PLAN

37 MONTREAL STREET
PORTLAND, MAINE

FOR APPLICANT:
37 MONTREAL, LLC.
33 MONTREAL STREET
PORTLAND, ME, 04103

18053 JOB NUMBER:
1" = 10' SCALE:
12-8-2021 DATE:
--
C2.0



PLAN NOTES:

1. EXISTING UTILITY LOCATION SHOWN HEREON IS BASED SOLELY ON FIELD OBSERVATION OF PAINTED UTILITY MARKINGS ON THE GROUND SURFACE BY SURVEY INC. NO SUBSURFACE EXPLORATION OR DETAILED FIELD SURVEY OF UTILITY LOCATIONS WERE PERFORMED.

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4. THE WATER SERVICE SIZE WAS NOT DESIGNED OR ANALYZED BY DM ROMA CONSULTING ENGINEERS. THE OWNER IS RESPONSIBLE FOR COORDINATING WITH PORTLAND WATER DISTRICT AND OTHER DESIGN PROFESSIONALS TO DETERMINE THE DESIRED WATER SERVICE SIZE TO SERVE THE SPECIFIC NEEDS OF THE PROJECT.

5. DOMESTIC SERVICE WILL REQUIRE NON-TESTABLE DUAL CHECK BACKFLOW PREVENTION AFTER THE METER. FIRE SERVICE WILL REQUIRE TESTABLE DOUBLE CHECK VALVE ASSEMBLY FOR BACKFLOW PREVENTION PRIOR TO FIRE SPRINKLER RISER.

GRADE CALCULATION

GRADE CORNER	GRADE ELEV.	DESCRIPTION
A	138.08	TYP. GRADE
B	138.08	
C	137.90	LANDING
D	137.90	
E	138.83	ENTRY
F	138.83	
G	136.60	EGRESS DOOR
H	136.60	
I	138.08	TYP. GRADE
J	138.08	
K	138.33	PATIO
L	138.33	
M	138.08	TYP. GRADE
N	138.08	
O	138.33	PATIO
P	138.33	
Q	138.33	
R	138.08	TYP. GRADE
S	138.08	
T	138.33	PATIO
U	138.33	
V	138.33	
W	138.08	TYP. GRADE
23	3,176.02	TOTAL
AVERAGE GRADE=	138.09 (138'-1")	

LEGEND

EXISTING	PROPOSED
PROPERTY LINE/R.O.W.	
ABUTTER PROPERTY LINE	
TIE LINE	
SETBACK	
EASEMENT LINE	
GRANITE MONUMENT	
IRON PIN/DRILL HOLE	
CENTERLINE	
BUILDING	
EDGE OF PAVEMENT/CURB	
EDGE OF GRAVEL	
EDGE OF CONCRETE	
EDGE OF WETLANDS	
CENTERLINE OF STREAM	
CONTOUR LINE	
TREELINE	
CATCHBASIN	
DRAINAGE MANHOLE	
CULVERT/STORMDRAIN	
UNDERDRAIN	UD
SEWER MANHOLE	
SANITARY SEWER PIPE	S
FORCE MAIN	FM
WATER MAIN	W
WATER VALVE	
HYDRANT	
UTILITY POLE	
LIGHT POLE	
OVERHEAD UTILITIES	OHU
UNDERGROUND UTILITIES	UGU
TRANSFORMER PAD	
GAS MAIN	G
GAS VALVE	
RIPRAP	
SILT FENCE	SF

STATE OF MAINE
JAYSON R. HASKELL
No. 13428
LICENSED PROFESSIONAL ENGINEER
12-8-2021

DM ROMA
CONSULTING ENGINEERS
P.O. BOX 1116
WINDHAM, ME 04062
(207) 310 - 0506

REV	DATE	BY	DESCRIPTION
A	12-8-21	DMR	ISSUED FOR PERMITTING

AVERAGE GRADE CALCULATION PLAN

37 MONTREAL STREET
PORTLAND, MAINE

FOR APPLICANT:
37 MONTREAL, LLC.
33 MONTREAL STREET
PORTLAND, MAE 04103

18053	JOB NUMBER:
1" = 10'	SCALE:
12-8-2021	DATE:
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C2.1	

EROSION AND SEDIMENTATION CONTROL NOTES:

EXCAVATION AND EARTHWORK SHALL BE COMPLETED SUCH THAT NO MORE THAN 1 ACRE OF THE SITE IS WITHOUT STABILIZATION AT ANY ONE TIME. LIMIT THE EXPOSED AREA TO THOSE AREAS IN WHICH WORK IS TO OCCUR DURING THE FOLLOWING 15 DAYS AND THAT CAN BE MULCHED IN ONE DAY.

IN ORDER TO EFFECTIVELY PREVENT AND CONTROL EROSION RELATED TO SOIL DISTURBANCE, THE FOLLOWING BEST MANAGEMENT PRACTICES (BMPS) SHALL BE EMPLOYED:

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 p'pDISCHARGES 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.

2. TEMPORARY SOIL STABILIZATION BMPS

TEMPORARY MULCHING SHALL BE APPLIED IMMEDIATELY TO ANY AREAS THAT HAVE BEEN TEMPORARILY OR PERMANENTLY SEEDED. ANY DISTURBED SOIL WITHIN 75' OF A STREAM, WATER BODY OR WETLAND MUST RECEIVE TEMPORARY MULCH WITHIN 48 HOURS FOLLOWING DISTURBANCE AND BEFORE ANY STORM EVENT. ALL OTHER AREAS SHALL RECEIVE TEMPORARY MULCH WITHIN 7 DAYS OF DISTURBANCE. AREAS WHICH CANNOT BE SEEDED DURING THE GROWING SEASON SHALL BE MULCHED FOR OVER-WINTER PROTECTION. THE FOLLOWING ARE ACCEPTABLE TEMPORARY MULCHING METHODS:

HAY OR STRAW MULCHES NEED TO BE AIR-DRIED, FREE OF UNDESIRABLE SEEDS AND COARSE MATERIALS. APPLICATION RATE MUST BE 2 BALES (70-90 POUNDS) PER 1000 SQ FT OR 1.5 TO 2 TONS (90-100 BALES) PER ACRE TO COVER 75-90% OF THE GROUND SURFACE. HAY OR STRAW CAN BE DRIVEN INTO THE GROUND WITH TRACKED EQUIPMENT IF SLOPES ARE LESS THAN 3%, OR CAN BE ANCHORED WITH JUTE, WOOD FIBER OR PLASTIC NETTING ON STEEPER SLOPES.

EROSION CONTROL MIX BERM MUST CONSIST PRIMARILY OF ORGANIC MATERIAL AND WILL INCLUDE ANY OF THE FOLLOWING: SHREDDED BARK, STUMP GRINDINGS, COMPOSTED BARK OR OTHER ACCEPTABLE PRODUCTS BASED ON A SIMILAR RAW SOURCE. WOOD OR BARK CHIPS, GROUND CONSTRUCTION DEBRIS OR REPROCESSED WOOD PRODUCTS ARE NOT ACCEPTABLE. EROSION CONTROL MIX CAN BE USED AS A STAND-ALONE REINFORCEMENT ON SLOPES OF 2 HORIZONTAL TO 1 VERTICAL OR LESS AND DRAINING IN SHEET FLOW. IT CAN BE PLACED WITH A HYDRAU'pLIC BUCKET, WITH A PNEUMATIC BLOWER OR BY HAND, AND MUST PROVIDE 100% SOIL COVERAGE.

EROSION CONTROL MIX SHALL MEET THE FOLLOWING SPECIFICATIONS:
-ORGANIC MATTER CONTENT SHALL BE BETWEEN 80-100% DRY WEIGHT BASIS.
-PARTICLE SIZE BY WEIGHT SHALL BE 100% PASSING A 6 IN. SCREEN AND BETWEEN 70-85% PASSING 0.75 IN. SCREEN
-ORGANIC PORTION NEEDS TO BE FIBROUS AND ELONGATED
-LARGE PORTIONS OF SILTS, CLAYS OR FINE SANDS ARE NOT ACCEPTABLE IN THE MIX

WHEN USED AS MULCH, THE THICKNESS OF THE EROSION CONTROL MIX IS BASED UPON THE FOLLOWING:

LENGTH OF SLOPE	3:1 SLOPE OR LESS	BETWEEN 2:1 AND 3:1 SLOPE
LESS THAN 20 FT	2.0 IN.	4.0 IN.
BETWEEN 20 - 60 FT	3.0 IN.	5.0 IN.
BETWEEN 60 - 100 FT	4.0 IN.	6.0 IN.

CHEMICAL MULCHES AND SOIL BINDERS MAY BE USED AS DIRECTED BY THE ENGINEER. THE CONTRACTOR SHALL CONSULT WITH THE MANUFACTURER TO DETERMINE ADEQUATE APPLICATION RATES AND METHODS.

EROSION CONTROL BLANKETS AND MATS SHALL BE USED ON SLOPES STEEPER THAN 3:1 AND IN THE BOTTOM OF GRASSED WATERWAYS, OR AS OTHERWISE DIRECTED BY THE ENGINEER. THE MAT SHALL BE INSTALLED WITH FIRM CONTINUOUS CONTACT WITH THE SOIL AND STAPLED ACCORDING TO THE MANUFACTURER'S RECOMMENDATIONS.

TEMPORARY MULCH SHALL BE INSPECTED FOLLOWING ANY SIGNIFICANT RAINFALL EVENT. IF LESS THAN 90% OF THE SOIL SURFACE IS COVERED BY MULCH, ADDITIONAL MULCH SHALL BE IMMEDIATELY APPLIED. EROSION CONTROL MATS AND MULCH ANCHORING MUST BE INSPECTED AFTER RAINFALL EVENTS FOR DISLOCATION OR FAILURE, AND REPAIRED IMMEDIATELY. INSPECTIONS SHALL TAKE PLACE UNTIL 95% OF THE SOIL SURFACE IS COVERED WITH PERMANENT VEGETATION. WHERE MULCH IS USED WITH ORNAMENTAL PLANTINGS, INSPECT PERIODICALLY THROUGHOUT THE YEAR TO DETERMINE IF MULCH IS MAINTAINING COVERAGE OF THE SOIL SURFACE, AND REPAIR AS NEEDED.

TEMPORARY VEGETATION SHALL BE ESTABLISHED ON SOILS THAT WILL NOT BE BROUGHT TO FINAL GRADE FOR A PERIOD OF MORE THAN 30 DAYS. IF TEMPORARY VEGETATION CANNOT BE ESTABLISHED PRIOR TO OCTOBER 15, TEMPORARY MULCH SHALL BE APPLIED THROUGH THE WINTER AND TEMPORARY VEGETATION SHALL BE PLANTED AT THE BEGINNING OF THE GROWING SEASON THE FOLLOWING YEAR. TO PREPARE THE SEEDBED, THE CONTRACTOR SHALL APPLY FERTILIZER AT A RATE OF 600 POUNDS PER ACRE OF 10-10-10 (N-P2O5-K20) OR EQUIVALENT AND LIMESTONE AT A RATE OF 3 TONS PER ACRE, IF NECESSARY. LOOSEN SOIL TO A DEPTH OF 2 INCHES IN AREAS THAT HAVE BEEN COMPACTED BY CONSTRUCTION ACTIVITIES. GRASS SEED SHALL BE SELECTED BASED UPON THE TIME OF YEAR THE PLANTING WILL TAKE PLACE AS SUMMARIZED IN THE FOLLOWING TABLE:

SEED	LB. PER ACRE	RECOMMENDED SEEDING DATES
WINTER RYE	112	8/15 - 10/1
OATS	80	4/1 - 7/1 8/15 - 9/15
ANNUAL RYEGRASS	40	4/1 - 7/1

TEMPORARY SEEDING SHALL BE PERIODICALLY INSPECTED TO MAINTAIN AT LEAST 95% VEGETATIVE COVER OF SOIL SURFACE. IF ANY EVIDENCE OF EROSION OR SEDIMENTATION IS APPARENT, REPAIRS SHALL BE MADE AND OTHER TEMPORARY MEASURES SHALL BE USED IN THE INTERIM SUCH AS TEMPORARY MULCH, FILTER BARRIERS, ETC.

3. SEDIMENT BARRIER BMPS

PRIOR TO CONSTRUCTION TEMPORARY SEDIMENT BARRIERS SHALL BE INSTALLED AT THE DOWNGRADIENT EDGE OF ANY AREA TO BE DISTURBED AND ADJACENT TO ANY DRAINAGE CHANNELS WITHIN THE DISTURBED AREA . SEDIMENT BARRIERS INCLUDE ANY OF THE FOLLOWING:

FILTER BARRIER FENCE, ALSO CALLED SILT FENCE, SHALL BE INSTALLED WHERE SHOWN ON THE PLANS AND IN ACCORDANCE WITH MANUFACTURERS RECOMMENDATIONS. THE FILTER FABRIC SHALL BE A PERVIOUS SHEET OF PROPYLENE, NYLON, POLYESTER OR ETHYLENE YARN AND SHALL PROVIDE A MINIMUM OF 6 MONTHS USABLE CONSTRUCTION LIFE INCLUDING PROTECTION AGAINST ULTRA-VIOLET LIGHT. THE HEIGHT OF THE FENCE SHALL NOT EXCEED 36 INCHES INSTALLED AND POST SPACING SHALL NOT EXCEED 6 FEET. JOINTS IN THE FENCE SHALL BE AVOIDED TO THE EXTENT POSSIBLE, AND IF NECESSARY SHALL BE SPLICED TOGETHER AT A SUPPORT POST WITH A MINIMUM 6 INCH OVERLAP. A TRENCH SHALL BE EXCAVATED APPROXIMATELY 4 INCHES WIDE AND 4 INCHES DEEP, AND THE BOTTOM 6-8 INCHES OF FABRIC SHALL BE "TOED-IN" TO THE TRENCH AND COMPACTED. THE TRENCH SHOULD BE UPHILL OF THE FABRIC PRIOR TO BURIAL.

STRAY/HAY BALES SHALL BE INSTALLED WHERE SPECIFIED ON THE PLANS IN A SINGLE ROW WITH THE ENDS OF ADJACENT BALES TIGHTLY ABUTTING ONE ANOTHER. ALL BALES SHALL BE EITHER WIRE-BOUND OR STRING-TIED. THE BARRIER SHALL BE ENTRENCHED AND BACKFILLED TO A DEPTY OF AT LEAST 4 INCHES, AND THE BALES SHALL BE SECURED WITH AT LEAST TWO WOODEN STAKES OR STEEL REBAR PER BALE. STAKES SHALL BE DRIVEN IN A DIRECTION TO PUSH THE BALES TOGETHER. GAPS BETWEEN BALES SHALL BE CHINKED WITH HAY.

EROSION CONTROL MIX BERMS ARE LINEAR BARRIERS COMPOSED OF EROSION CONTROL MIX AS SPECIFIED ABOVE. THE BERM MUST BE A MINIMUM OF 12 INCHES TALL AND 24 INCHES WIDE AT THE BASE IF UPHILL SLOPES ARE LESS THAN 5%. STEEPER SLOPES OR SLOPES GREATER THAN 20 FEET LONG MAY REQUIRE A LARGER WIDTH BERM. EROSION CONTROL MIX BERMS AT THE BASE OF A LONG OR STEEP SLOPE MAY ALSO REQUIRE A FILTER FENCE TO BE INSTALLED ON THE DOWNHILL SIDE OF THE BERM TO PROVIDE ADDITIONAL STABILIZATION AGAINST HIGH RUNOFF FLOWS. EROSION CONTROL MIX BERM IS NOT INTENDED TO BE INSTALLED AT THE BOTTOM OF SLOPES 8% OR STEEPER OR WITH FLOWING WATER.

CONTINUOUS CONTAINED BERMS, WHICH ARE ALSO REFERRED TO AS A FILTER SOCK, PROVIDES ADDITIONAL STABILITY TO AN EROSION CONTROL MIX BERM AND SHOULD BE USED IN FROZEN GROUND CONDITIONS OR IN AREAS THAT RECEIVE CONCENTRATED FLOW.

SEDIMENT BARRIERS SHOULD BE INSTALLED DOWNGRADIENT OF SOIL OR SEDIMENT STOCKPILES AND STORMWATER PREVENTED RUNNING ONTO THE STOCKPILE. SEDIMENT BARRIERS SHALL BE INSPECTED AFTER ANY SIGNIFICANT RAINFALL EVENT AND REPAIRED IMMEDIATELY IF THERE ARE ANY SIGNS OF EROSION OR SEDIMENTATION BELOW THE BARRIERS. IF THERE ARE SIGNS OF UNDERCUTTING AT THE CENTER OR EDGES OF THE BARRIER, OR IF LARGE VOLUMES OF WATER ARE IMPOUNDED BEHIND THE BARRIER, IT MAY BE NECESSARY TO REPLACE THE BARRIER WITH A TEMPORARY STONE CHECK DAM. SEDIMENT SHALL BE REMOVED ONCE IT REACHES HALF THE BARRIER HEIGHT. AFTER THE BARRIER IS REMOVED, ANY REMAINING SILT SHALL EITHER BE REMOVED OR GRADED TO CONFORM WITH THE EXISTING TOPOGRAPHY AND VEGETATED.

4. TEMPORARY CHECK DAMS

STONE CHECK DAMS SHALL BE INSTALLED IN SWALES OR DRAINAGE DITCHES TO REDUCE STORMWATER VELOCITIES AS SHOWN ON THE PLANS. STONE CHECK DAMS ARE NOT EFFECTIVE IN REMOVING SEDIMENT AND SHOULD BE USED IN CONJUNCTION WITH SEDIMENT BARRIERS IDENTIFIED ABOVE. TEMPORARY CHECK DAMS MAY BE LEFT IN PLACE PERMANENTLY IN MOST CASES. CHECK DAMS SHOULD BE NO HIGHER THAN 24 INCHES, AND THE CENTER OF THE CHECK DAM MUST BE AT LEAST 6 INCHES LOWER THAN THE OUTSIDE EDGES. CHECK DAMS SHOULD BE SPACED SUCH THAT THE CREST OF THE DOWNSTREAM CHECK DAM IS AT THE SAME ELEVATION AS THE TOE OF THE UPSTREAM CHECK DAM. CHECK DAMS IN A DRAINAGE DITCH OR WATERWAY SHOULD BE INSTALLED PRIOR TO DIRECTING RUNOFF TO THEM.

5. STORM DRAIN INLET PROTECTION

STORM DRAIN INLETS THAT ARE MADE OPERATIONAL BEFORE THEIR DRAINAGE AREA IS STABILIZED SHALL BE PROTECTED WITH A FILTER UNTIL THE DRAINAGE AREA IS EITHER PAVED OR STABILIZED WITH 95% VEGETATIVE GROWTH. THE FOLLOWING ARE ACCEPTABLE BMPS ASSOCIATED WITH STORM DRAIN INLET PROTECTION:

HAY BALE OR SILT FENCE INLET STRUCTURE CONSISTS OF HAY BALES OR SILT FENCE CONFIGURED AROUND A CATCH BASIN INLET FRAME AND INSTALLED ACCORDING TO THE METHODS OUTLINED ABOVE. THIS METHOD IS SUITABLE FOR OPEN PIPE (CULVERT) INLETS, FIELD INLETS OR ROAD INLETS THAT HAVE NOT YET BEEN PAVED.

MANUFACTURED SEDIMENT FILTERS ARE THE PREFERRED METHOD FOR PROTECTING CATCH BASIN INLETS IN PAVED OR GRAVEL ROADWAYS. THE FILTERS TYPICALLY CONSIST OF A FABRIC OR OTHER PERVIOUS MATERIAL THAT IS PLACED ABOVE OR BELOW THE GRATE THAT TRAPS SEDIMENT ON THE SURFACE AND ALLOWS WATER TO FLOW THROUGH THE GRATE. CONSIDERATIONS SUCH AS WEATHER CONDITIONS, SLOPES, TRIBUTARY WATERSHED AREA AND EXPECTED SEDIMENT ACCUMULATION SHOULD BE FACTORED INTO MAKING A DECISION ON ANY PARTICULAR PRODUCT, AND THE MANUFACTURER'S RECOMMENDATIONS ON INSTALLATION AND MAINTENANCE SHALL BE STRICTLY ADHERED TO.

6. STABILIZED CONSTRUCTION ENTRANCE/EXIT

TO REDUCE THE TRACKING OF SEDIMENT ONTO ROADWAYS, A STABILIZED CONSTRUCTION EXIT SHALL BE INSTALLED AT ALL POINTS OF EGRESS WHERE VEHICLES MAY TRAVEL FROM THE PROJECT SITE TO A PUBLIC ROAD OR OTHER PAVED AREA. THE STONE PAD SHALL CONSIST OF A MINIMUM 6-INCH DEPTH OF 2-3 INCH CRUSHED STONE, AND SHALL BE PLACED ON A GEOTEXTILE FABRIC. THE PAD SHALL EXTEND AT LEAST 50 FEET INTO THE PROJECT SITE AND BE A MINIMUM OF 10 FEET WIDE. THE EXIT SHALL BE MAINTAINED IN A CONDITION THAT WILL PREVENT TRACKING OF SEDIMENT ONTO PUBLIC RIGHTS-OF-WAY, AND THE CONTRACTOR SHALL SWEEP PAVEMENT AT EXITS THAT HAVE EXPERIENCED ANY MUD-TRACKING. MAINTAIN THE PAD UNTIL ALL DISTURBED AREAS ARE STABILIZED. IF TRACKING OF SEDIMENT ONTO PUBLIC RIGHTS-OF-WAY OCCURS THE CONTRACTOR SHALL BE RESPONSIBLE FOR SWEEPING THE AFFECTED AREAS IMMEDIATELY, AND THEREAFTER WEEKLY AT A MINIMUM AND PRIOR TO ANY SIGNIFICANT RAINFALL EVENT.

7. DUST CONTROL

THE CONTRACTOR IS RESPONSIBLE FOR CONTROLLING DUST ON THE PROJECT SITE AND ON ADJACENT ROADWAYS. EXPOSED SOIL SURFACES SHALL BE MOISTENED PERIODICALLY WITH ADEQUATE WATER TO CONTROL DUST. GRAVEL SURFACES SHALL EITHER BE TREATED WITH AN APPLICATION OF CALCIUM CHLORIDE OR COVERED WITH CRUSHED STONE IF DUST CONTROL BECOMES DIFFICULT WITH NORMAL WATER APPLICATIONS.

8. LAND GRADING AND SLOPE PREPARATION

GRADING SHALL BE PLANNED SO AS TO MINIMIZE THE LENGTH OF TIME BETWEEN INITIAL SOIL EXPOSURE AND FINAL GRADING. ON LARGE PROJECTS THIS SHOULD BE ACCOMPLISHED BY PHASING THE OPERATION AND COMPLETING THE FIRST PHASE UP TO FINAL GRADING AND SEEDING BEFORE STARTING THE NEXT PHASE. ANY EXPOSED AREA THAT WILL NOT BE FINISH GRADED WITHIN 14 DAYS SHALL BE TREATED WITH MULCH OR PLANTED WITH TEMPORARY VEGETATION. PROVISIONS SHALL BE MADE TO SAFELY CONVEY SURFACE RUNOFF TO STORM DRAINS, PROTECTED OUTLETS OR TO STABLE WATER COURSES TO ENSURE THAT SURFACE RUNOFF WILL NOT DAMAGE SLOPES OR OTHER GRADED AREAS. CUT AND FILL SLOPES SHALL NOT EXCEED 1.5:1. CUT AND FILL SLOPES THAT ARE TO BE STABILIZED WITH GRASS SHALL NOT BE STEEPER THAN 3:1; CUT AND FILL SLOPES STEEPER THAN 3:1 SHALL BE STABILIZED WITH EROSION CONTROL BLANKETS OR MATS; CUT AND FILL SLOPES STEEPER THAN 2:1 SHALL BE STABILIZED WITH RIP RAP OR AN APPROVED EQUIVALENT. AREAS TO BE FILLED SHALL BE CLEARED, GRUBBED AND STRIPPED OF TOPSOIL TO REMOVE TREES, VEGETATION, ROOTS OR OTHER OBJECTIONABLE MATERIALS. AREAS SHALL BE SCARIFIED TO A MINIMUM DEPTH OF 3 INCHES PRIOR TO PLACEMENT OF TOPSOIL. ALL FILLS SHALL BE COMPACTED AS REQUIRED TO REDUCE EROSION, SLIPPAGE, SETTLEMENT, SUBSIDENCE OR OTHER RELATED PROBLEMS. FILL INTENDED TO SUPPORT BUILDINGS, STRUCTURES AND CONDUITS, ETC. SHALL BE COMPACTED IN ACCORDANCE WITH LOCAL REQUIREMENTS OR CODES. ALL FILLS SHALL BE PLACED AND COMPACTED IN LAYERS NOT TO EXCEED 8 INCHES IN THICKNESS. FILL MATERIAL SHALL BE FREE OF STUMPS, BUILDING DEBRIS AND OTHER OBJECTIONABLE MATERIALS THAT WOULD INTERFERE WITH OR PREVENT CONSTRUCTION OF SATISFACTORY LIFTS. FROZEN MATERIAL OR SOFT, MUCKY OR HIGHLY COMPRESSIBLE MATERIALS SHALL NOT BE INCORPORATED INTO FILL SLOPES OR STRUCTURAL FILLS. FILL SHALL NOT BE PLACED ON A FROZEN FOUNDATION. SEEPS OR SPRINGS ENCOUNTERED DURING CONSTRUCTION SHALL BE HANDLED APPROPRIATELY. ALL GRADED AREAS SHALL BE PERMANENTLY STABILIZED IMMEDIATELY FOLLOWING FINISHED GRADING.

9. TOPSOIL

IF POSSIBLE, TOPSOIL SHALL BE STOCKPILED ON THE PROJECT SITE AND REUSED. HIGH QUALITY TOPSOIL SHALL BE FRIABLE AND LOAMY (LOAM, SANDY LOAM, SILT LOAM, SANDY CLAY LOAM, CLAY LOAM), AND SHALL BE FREE OF DEBRIS, TRASH, STUMPS, ROCKS, ROOTS AND NOXIOUS WEEKS. AFTER THE AREAS TO BE TOPSOILED HAVE BEEN BROUGHT TO GRADE, AND IMMEDIATELY PRIOR TO SPREADING THE TOPSOIL, THE SUBGRADE SHALL BE LOOSENED BY SCARIFYING TO A DEPTH OF AT LEAST 2 INCHES TO ENSURE BONDING WITH SUBSOIL. THE TOPSOIL SHALL BE UNIFORMLY DISTRIBUTED TO A MINIMUM COMPACTED DEPTH OF 4 INCHES. ANY IRREGULARITIES IN THE SURFACE RESULTING FROM TOPSOILING OR OTHER OPERATIONS SHALL BE CORRECTED IN ORDER TO PREVENT THE FORMATION OF DEPRESSIONS OR WATER POCKETS. IT IS NECESSARY TO COMPACT THE TOPSOIL ENOUGH TO ENSURE GOOD CONTACT WITH THE UNDERLYING SOIL, BUT UNDUE COMPACTION IS TO BE AVOIDED.

10. PERMANENT SOIL 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, SODDING OR THROUGHOUT USE OF ORGANIC MULCH, OR OTHER METHODS. FOR LONG-TERM OTHER VEGETATION AND 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.

SEEDED AREAS: TO PREPARE THE SEEDBED, APPLY 10-20-20 FERTILIZER AT A RATE OF 800 POUNDS PER ACRE AND GROUND LIMESTONE AT A RATE OF 3 TONS PER ACRE. WORK THE FERTILIZER AND LIMESTONE INTO THE TOPSOIL TO A DEPTH OF 4 INCHES AND REMOVE ANY STONES, ROOTS OR OTHER VISIBLE DEBRIS. SELECT A SEED MIXTURE THAT IS APPROPRIATE FOR THE SOIL TYPE AND MOISTURE CONTENT AS FOUND AT THE SITE, AND FOR THE AMOUNT OF SUN EXPOSURE AND FOR LEVEL OF USE. REFER TO THE USDA SOIL CONSERVATION SERVICE OR THE LOCAL SOIL AND WATER CONSERVATION DISTRICT FOR APPROPRIATE SEED MIXTURES. APPLY SEED UNIFORMLY IN ACCORDANCE WITH SUPPLIER RECOMMENDATIONS AND IMMEDIATELY COVER WITH MULCH AS DESCRIBED IN THE TEMPORARY MULCHING SECTION OF THIS PLAN.

HYDROSEEDING SHALL BE DONE IN ACCORDANCE WITH SUPPLIERS RECOMMENDATIONS. FOR SEEDED AREAS TO BE PERMANENTLY STABILIZED, 90% OF THE DISTURBED SOIL SHALL BE COVERED WITH MATURE HEALTHY PLANTS WITH NO EVIDENCE OF WASHING OR RILLING OF THE TOPSOIL.

SOD STRIPS SHALL BE LAID AT RIGHT ANGLES TO DIRECTION OF SLOPE OR FLOW OF WATER STARTING AT LOWEST ELEVATION. JOINTS SHALL BE STAGGERED, AND ALL STRIPS SHALL BE ROLLED OR TAMPED INTO PLACE. ON SLOPES, SOD SHALL BE ANCHORED WITH STAPLES, WIRE OR PINS. IRRIGATE SODDED AREA IMMEDIATELY AFTER INSTALLATION. FOR SODDED AREAS TO BE PERMANENTLY STABILIZED, THE ROOTS OF THE SOD MUST BE COMPLETELY BOUND INTO THE UNDERLYING SOIL WITH NO SLUMPING OF THE SOD OR DIE-OFF.

PERMANENT MULCH IS A LONG TERM COVER THAT PROVIDES A GOOD BUFFER AROUND DISTURBED AREAS. THE EROSION CONTROL MIX SHALL CONSIST PRIMARILY OF ORGANIC MATERIAL AND MAY INCLUDE SHREDDED BARK, STUMP GRINDINGS OR COMPOSTED BARK. WOOD CHIPS, GROUND CONSTRUCTION DEBRIS, REPROCESSED WOOD PRODUCTS OR BARK CHIPS ARE NOT ACCEPTABLE. THE EROSION CONTROL MIX SHALL CONTAIN A WELL-GRADED MIXTURE OF PARTICLE SIZES AND MAY CONTAIN ROCKS LESS THAN 4 INCHES IN DIAMETER. EROSION CONTROL MIX MUST BE FREE OF REFUSE, PHYSICAL CONTAMINANTS AND MATERIAL TOXIC TO PLANT GROWTH.

RIPRAP STONE SHALL CONSIST OF SUB-ANGULAR FIELD STONE OR ROUGH UNEVEN QUARRY STONE OF APPROXIMATELY RECTANGULAR SHAPE. THE DEPTH OF STONE SHALL BE A MINIMUM OF 2.2 TIMES THE MAXIMUM STONE DIAMETER. A GRAVEL OR GEOTEXTILE FILTER BLANKET SHALL BE PLACED BETWEEN THE RIPRAP AND UNDERLYING SOIL SURFACE. GRAVEL FILTER BLANKETS SHALL MEET TYPE-C UNDERDRAIN MATERIAL SPECIFICATIONS AND BE AT LEAST 6 INCHES THICK. GEOTEXTILE FILTER BLANKETS SHALL BE SPECIFIED BASED ON SITE CONDITIONS. RIPRAP SLOPES SHALL BE TOED INTO THE BASE OF THE EMBANKMENT BY EXCAVATING A TRENCH AT THE BOTTOM OF THE SLOPE AND INSTALLING A STABLE BASE OF RIPRAP TO GRADE.

DITCHES, CHANNELS AND SWALES ARE CONSIDERED PERMANENTLY STABILIZED WHEN THE CHANNEL HAS 90% COVER OF HEALTHY VEGETATION WITH A WELL GRADED RIPRAP LINING, EROSION CONTROL BLANKET, 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 BANKS, OR DOWNCUTTING OF THE CHANNEL.

11. STORMWATER CHANNELS

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.

12. INSPECTION & MAINTENANCE

THE CONTRACTOR SHALL BE RESPONSIBLE TO ENSURE ALL CONSTRUCTION OPERATIONS COMPLY WITH THE INSPECTION AND MAINTENANCE PROCEDURES FOR THE PROJECT, INCLUDING, BUT NOT LIMITED TO THOSE INCLUDED IN THIS PLAN SET, THE "INSPECTION, MAINTENANCE, AND HOUSEKEEPING PLAN", AND THE "MAINE EROSION AND SEDIMENTATION CONTROL PRACTICES FIELD GUIDE FOR CONTRACTORS".

INSPECTION SHALL OCCUR ON ALL DISTURBED AND IMPERVIOUS AREAS, EROSION CONTROL MEASURES, MATERIAL STORAGE AREAS, AND CONSTRUCTION VEHICLE ENTRANCE(S) AND OR EXIT(S). THESE AREAS SHALL BE INSPECTED AT LEAST ONCE PER WEEK, AS WELL AS 24 HOURS BEFORE AND AFTER A STORM EVENT, AND PRIOR TO COMPLETING PERMANENT STABILIZATION MEASURES. INSPECTIONS ARE TO BE CONDUCTED BY A PERSON WITH KNOWLEDGE OF EROSION AND STORMWATER CONTROL, INCLUDING STANDARDS AND CONDITIONS IN THE PERMIT.

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 BARE SPOTS. AN ESTABLISHED VEGETATIVE COVER MEANS A MINIMUM OF 85% OF AREAS VEGETATED WITH VIGOROUS GROWTH.

WINTER EROSION AND SEDIMENTATION CONTROL NOTES:

THE WINTER CONSTRUCTION PERIOD TYPICALLY BEGINS IN EARLY NOVEMBER AND ENDS IN MID APRIL. IF A CONSTRUCTION SITE IS NOT STABILIZED WITH PAVEMENT, A ROAD GRAVEL BASE, 75% MATURE VEGETATION COVER OR RIPRAP BY NOVEMBER 15 THEN THE SITE NEEDS TO BE PROTECTED WITH OVER-WINTER STABILIZATION. WINTER EXCAVATION AND EARTHWORK SHALL BE COMPLETED SUCH THAT NO MORE THAN 1 ACRE OF THE SITE IS WITHOUT STABILIZATION AT ANY ONE TIME. LIMIT THE EXPOSED AREA TO THOSE AREAS IN WHICH WORK IS TO OCCUR DURING THE FOLLOWING 15 DAYS AND THAT CAN BE MULCHED IN ONE DAY PRIOR TO ANY SNOW EVENT. AN AREA SHALL BE CONSIDERED DENUDED UNTIL THE SUBBASE GRAVEL IS INSTALLED IN THE ROADWAY AREAS OR THE AREAS OF FUTURE LOAM AND SEED HAVE BEEN LOAMED, SEEDED AND MULCHED. A COVER OF EROSION CONTROL MIX IS THE PREFERRED TEMPORARY MULCH DURING WINTER CONDITIONS.

1. NATURAL RESOURCE PROTECTION

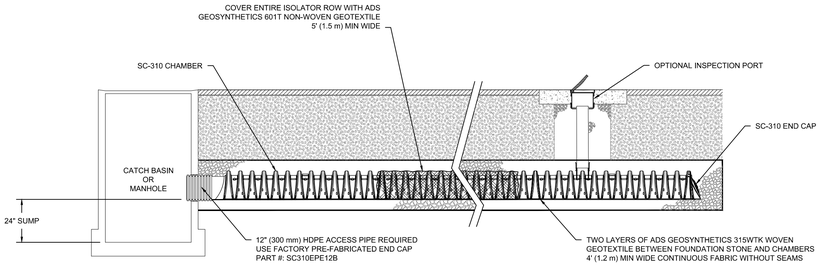
ANY AREAS WITHIN 75 FEET FROM ANY REGULATED NATURAL RESOURCES, IF NOT STABILIZED WITH A MINIMUM OF 75% MATURE VEGETATION CATCH, SHALL BE MULCHED BY DECEMBER 1 AND ANCHORED WITH PLASTIC NETTING OR PROTECTED WITH AN EROSION CONTROL COVER. DURING WINTER CONSTRUCTION, A DOUBLE ROW OF SEDIMENT BARRIERS (FOR EXAMPLE, SILT FENCE BACKED WITH HAY BALES OR EROSION CONTROL MIX) WILL BE PLACED BETWEEN ANY REGULATED NATURAL RESOURCE AND THE DISTURBED AREA. PROJECTS CROSSING THE REGULATED 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.

2. SEDIMENT BARRIERS

DURING FROZEN CONDITIONS, SEDIMENT BARRIERS MAY CONSIST OF EROSION CONTROL MIX BERMS OR ANY OTHER RECOGNIZED SEDIMENT BARRIERS AS FROZEN SOIL PREVENTS THE PROPER INSTALLATION OF HAY BALES OR SILT FENCES.

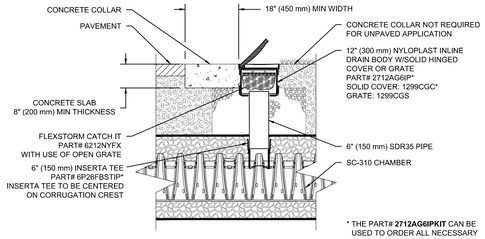
3. MULCHING

ALL AREAS SHALL BE CONSIDERED TO BE DENUDED UNTIL SEEDED AND MULCHED. HAY AND STRAW MULCH SHALL BE APPLIED AT A RATE OF 3 TONS PER ACRE (TWICE THE NORMAL ACCEPTED RATE) AND SHALL BE PROPERLY ANCHORED. EROSION CONTROL MIX MUST BE APPLIED WITH A MINIMUM 4 INCHES THICKNESS. MULCH SHALL NOT BE SPREAD ON TOP OF SNOW. SNOW MUST BE REMOVED DOWN TO A ONE-INCH DEPTH PRIOR TO APPLICATION. AFTER EACH DAY OF FINAL GRADING, THE AREA WILL BE PROPERTY STABILIZED WITH ANCHORED HAY OR STRAW OR EROSION CONTROL MATTING. AN AREA SHALL BE CONSIDERED TO HAVE BEEN STABILIZED WHEN EXPOSED SURFACES HAVE BEEN EITHER MULCHED OR ADEQUIATELY ANCHORED SO THAT GROUND SURFACE IS NOT VISIBLE THROUGH THE MULCH. BETWEEN THE DATES



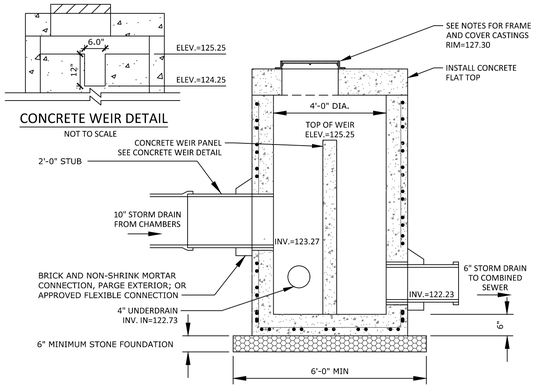
SC-310 ISOLATOR ROW SECTION

NOT TO SCALE



SC-310 6" INSPECTION PORT DETAIL

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CONCRETE WEIR DETAIL

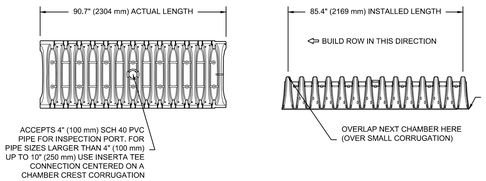
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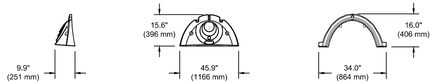
NOTES:

1. LARGER DIAMETER STRUCTURES MAY BE REQUIRED DUE TO SIZE OR GEOMETRY OF PIPE CONNECTIONS AT MANHOLE. WALL THICKNESS TO INCREASE BY 1" FOR EACH 1'-0" DIA. INCREASE. PROVIDE SHOP DRAWINGS.
2. DRAINAGE STRUCTURES TO BE DESIGNED FOR H-20 LOADING.
3. CAST IRON SOLID COVER AND FRAME SHALL BE EQUAL TO NEENAH FOUNDARY PRODUCT NO. R-1556-A - MANHOLE FRAME, SOLID LID - HEAVY DUTY OR EQUAL. SUBMIT CATALOG SHEETS TO ENGINEER FOR APPROVAL.

OUTLET CONTROL STRUCTURE DETAIL

NOT TO SCALE





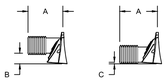
MATERIAL LOCATION		DESCRIPTION	AASHTO MATERIAL CLASSIFICATIONS	COMPACTION / DENSITY REQUIREMENT
D	**FINAL FILL:** FILL MATERIAL FOR LAYER 'D' STARTS FROM THE TOP OF THE 'C' LAYER TO THE BOTTOM OF FLEXIBLE PAVEMENT OR UNPAVED FINISHED GRADE ABOVE. NOTE THAT PAVEMENT SUBBASE MAY BE PART OF THE 'D' LAYER	ANY SOIL/ROCK MATERIALS, NATIVE SOILS, OR PER ENGINEER'S PLANS. CHECK PLANS FOR PAVEMENT SUBGRADE REQUIREMENTS.	N/A	PREPARE PER SITE DESIGN ENGINEER'S PLANS. PAVED INSTALLATIONS MAY HAVE STRINGENT MATERIAL AND PREPARATION REQUIREMENTS.
C	**INITIAL FILL:** FILL MATERIAL FOR LAYER 'C' STARTS FROM THE TOP OF THE EMBEDMENT STONE ('B' LAYER) TO 18" (450 mm) ABOVE THE TOP OF THE CHAMBER. NOTE THAT PAVEMENT SUBBASE MAY BE A PART OF THE 'C' LAYER.	GRANULAR WELL-GRADED SOIL/AGGREGATE MIXTURES, <35% FINES OR PROCESSED AGGREGATE. MOST PAVEMENT SUBBASE MATERIALS CAN BE USED IN LIEU OF THIS LAYER.	AASHTO M145[1] A-1, A-2-4, A-3 OR AASHTO M43[1] 3, 357, 4, 467, 5, 56, 57, 6, 67, 68, 7, 78, 8, 89, 9, 10	BEGIN COMPACTIONS AFTER 12" (300 mm) OF MATERIAL OVER THE CHAMBERS IS REACHED. COMPACT ADDITIONAL LAYERS IN 6" (150 mm) MAX LIFTS TO A MIN. 95% PROCTOR DENSITY FOR WELL GRADED MATERIAL AND 95% RELATIVE DENSITY FOR PROCESSED AGGREGATE MATERIALS. ROLLER GROSS VEHICLE WEIGHT NOT TO EXCEED 12,000 lbs (53 kN). DYNAMIC FORCE NOT TO EXCEED 20,000 lbs (89 kN).
B	**EMBEDMENT STONE:** FILL SURROUNDING THE CHAMBERS FROM THE FOUNDATION STONE ('A' LAYER) TO THE 'C' LAYER ABOVE.	CLEAN, CRUSHED, ANGULAR STONE	AASHTO M43[1] 3, 357, 4, 467, 5, 56, 57	NO COMPACTION REQUIRED.
A	**FOUNDATION STONE:** FILL BELOW CHAMBERS FROM THE SUBGRADE UP TO THE FOOT (BOTTOM) OF THE CHAMBER.	CLEAN, CRUSHED, ANGULAR STONE	AASHTO M43[1] 3, 357, 4, 467, 5, 56, 57	PLATE COMPACT OR ROLL TO ACHIEVE A FLAT SURFACE. [2 3]

PLEASE NOTE:
1. THE LISTED AASHTO DESIGNATIONS ARE FOR GRADATIONS ONLY. THE STONE MUST ALSO BE CLEAN, CRUSHED, ANGULAR. FOR EXAMPLE, A SPECIFICATION FOR #4 STONE WOULD STATE: "CLEAN, CRUSHED, ANGULAR NO. 4 (AASHTO M43) STONE".
2. STORMTECH COMPACTION REQUIREMENTS ARE MET FOR 'A' LOCATION MATERIALS WHEN PLACED AND COMPACTED IN 6" (150 mm) (MAX) LIFTS USING TWO FULL COVERAGES WITH A VIBRATORY COMPACTOR.
3. WHERE INFILTRATION SURFACES MAY BE COMPROMISED BY COMPACTION, FOR STANDARD DESIGN LOAD CONDITIONS, A FLAT SURFACE MAY BE ACHIEVED BY RAKING OR DRAGGING WITHOUT COMPACTION EQUIPMENT. FOR SPECIAL LOAD DESIGNS, CONTACT STORMTECH FOR COMPACTION REQUIREMENTS.

NOMINAL CHAMBER SPECIFICATIONS

SIZE (W X H X INSTALLED LENGTH)	34.0" X 16.0" X 85.4"	(864 mm X 406 mm X 2169 mm)
CHAMBER STORAGE	14.7 CUBIC FEET	(0.42 m³)
MINIMUM INSTALLED STORAGE*	31.0 CUBIC FEET	(0.88 m³)
WEIGHT	35.0 lbs.	(16.8 kg)

*ASSUMES 6" (152 mm) ABOVE, BELOW, AND BETWEEN CHAMBERS



STUBS AT BOTTOM OF END CAP FOR PART NUMBERS ENDING WITH "B"
STUBS AT TOP OF END CAP FOR PART NUMBERS ENDING WITH "T"

PART #	STUB	A	B	C
SC310EPE06T / SC310EPE06TPC	6" (150 mm)	9.6" (244 mm)	5.8" (147 mm)	---
SC310EPE06B / SC310EPE06BPC			---	0.5" (13 mm)
SC310EPE08T / SC310EPE08TPC	8" (200 mm)	11.9" (302 mm)	3.5" (89 mm)	---
SC310EPE08B / SC310EPE08BPC			---	0.6" (15 mm)
SC310EPE10T / SC310EPE10TPC	10" (250 mm)	12.7" (323 mm)	1.4" (36 mm)	---
SC310EPE10B / SC310EPE10BPC			---	0.7" (18 mm)
SC310EPE12B	12" (300 mm)	13.5" (343 mm)	---	0.9" (23 mm)

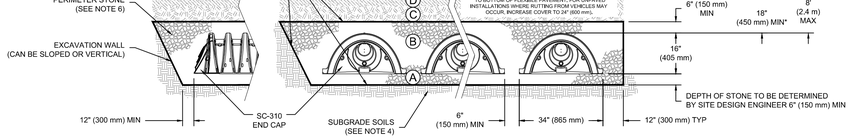
ALL STUBS, EXCEPT FOR THE SC310EPE12B ARE PLACED AT BOTTOM OF END CAP SUCH THAT THE OUTSIDE DIAMETER OF THE STUB IS FLUSH WITH THE BOTTOM OF THE END CAP. FOR ADDITIONAL INFORMATION CONTACT STORMTECH AT 1-888-892-2694.

* FOR THE SC310EPE12B THE 12" (300 mm) STUB LIES BELOW THE BOTTOM OF THE END CAP APPROXIMATELY 0.25" (6 mm). BACKFILL MATERIAL SHOULD BE REMOVED FROM BELOW THE N-12 STUB SO THAT THE FITTING SITS LEVEL.

NOTE: ALL DIMENSIONS ARE NOMINAL

STORMTECH SC-310 TECHNICAL SPECIFICATION

NOT TO SCALE

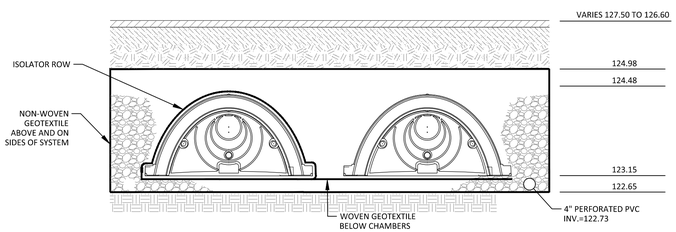


NOTES:

1. SC-310 CHAMBERS SHALL CONFORM TO THE REQUIREMENTS OF ASTM F2418 "STANDARD SPECIFICATION FOR POLYPROPYLENE (PP) CORRUGATED WALL STORMWATER COLLECTION CHAMBERS", OR ASTM F2922 "STANDARD SPECIFICATION FOR POLYETHYLENE (PE) CORRUGATED WALL STORMWATER COLLECTION CHAMBERS".
2. SC-310 CHAMBERS SHALL BE DESIGNED IN ACCORDANCE WITH ASTM F2787 "STANDARD PRACTICE FOR STRUCTURAL DESIGN OF THERMOPLASTIC CORRUGATED WALL STORMWATER COLLECTION CHAMBERS".
3. "ACCEPTABLE FILL MATERIALS" TABLE ABOVE PROVIDES MATERIAL LOCATIONS, DESCRIPTIONS, GRADATIONS, AND COMPACTION REQUIREMENTS FOR FOUNDATION, EMBEDMENT, AND FILL MATERIALS.
4. THE SITE DESIGN ENGINEER IS RESPONSIBLE FOR ASSESSING THE BEARING RESISTANCE (ALLOWABLE BEARING CAPACITY) OF THE SUBGRADE SOILS AND THE DEPTH OF FOUNDATION STONE WITH CONSIDERATION FOR THE RANGE OF EXPECTED SOIL MOISTURE CONDITIONS.
5. PERIMETER STONE MUST BE EXTENDED HORIZONTALLY TO THE EXCAVATION WALL FOR BOTH VERTICAL AND SLOPED EXCAVATION WALLS.
6. ONCE LAYER 'C' IS PLACED, ANY SOIL/MATERIAL CAN BE PLACED IN LAYER 'D' UP TO THE FINISHED GRADE. MOST PAVEMENT SUBBASE SOILS CAN BE USED TO REPLACE THE MATERIAL REQUIREMENTS OF LAYER 'C' OR 'D' AT THE SITE DESIGN ENGINEER'S DISCRETION.

STORMTECH SC-310 CROSS SECTION

NOT TO SCALE



DURING CONSTRUCTION INSPECTION NOTES:

1. CONSTRUCTION OVERSIGHT: THE CHAMBER SYSTEM MUST BE INSTALLED IN ACCORDANCE WITH THE MANUFACTURER'S WRITTEN INSTRUCTIONS FOR INSTALLATION. INSPECTION DURING AND AFTER CONSTRUCTION AND UNTIL THE SITE IS STABILIZED MUST BE PERFORMED BY THE MANUFACTURER'S REPRESENTATIVE.

POST CONSTRUCTION INSPECTION NOTES:

1. INSPECT EVERY 6 MONTHS DURING THE FIRST YEAR OF OPERATION. ADJUST THE INSPECTION INTERVAL BASED ON PREVIOUS OBSERVATIONS OF SEDIMENT ACCUMULATION AND HIGH WATER ELEVATIONS.
2. CONDUCT JETTING AND VACTORING ANNUALLY OR WHEN INSPECTION SHOWS THAT MAINTENANCE IS NECESSARY.

SUBSURFACE CHAMBER SYSTEM - SECTION DETAIL

NOT TO SCALE

MANUFACTURER'S GENERAL NOTES

1. STORMTECH REQUIRES INSTALLING CONTRACTORS TO USE AND UNDERSTAND STORMTECH'S LATEST INSTALLATION INSTRUCTIONS PRIOR TO BEGINNING SYSTEM INSTALLATION.
2. OUR TECHNICAL SERVICES DEPARTMENT OFFERS INSTALLATION CONSULTATIONS TO INSTALLING CONTRACTORS. CONTACT OUR TECHNICAL SERVICES REPRESENTATIVE AT LEAST 30 DAYS PRIOR TO SYSTEM INSTALLATION TO ARRANGE A PRE-INSTALLATION CONSULTATION. OUR REPRESENTATIVES CAN THEN ANSWER QUESTIONS OR ADDRESS COMMENTS ON THE STORMTECH CHAMBER SYSTEM AND INFORM THE INSTALLING CONTRACTOR OF THE MINIMUM INSTALLATION REQUIREMENTS BEFORE BEGINNING THE SYSTEM'S CONSTRUCTION. CALL **1-888-892-2694** TO SPEAK TO A TECHNICAL SERVICES REPRESENTATIVE OR VISIT **WWW. STORMTECH.COM** TO RECEIVE A COPY OF OUR INSTALLATION INSTRUCTIONS.
3. STORMTECH'S REQUIREMENTS FOR SYSTEMS WITH PAVEMENT DESIGN (ASPHALT, CONCRETE PAVERS, ETC.):MINIMUM COVER IS 18" [457 mm] NOT INCLUDING PAVEMENT; MAXIMUM COVER IS 96" [2438 mm] INCLUDING PAVEMENT. FOR INSTALLATIONS THAT DO NOT INCLUDE PAVEMENT, WHERE RUTTING FROM VEHICLES MAY OCCUR, MINIMUM REQUIRED COVER IS 24" [610 mm], MAXIMUM COVER IS 96" [2.438 m].
4. THE CONTRACTOR MUST REPORT ANY DISCREPANCIES WITH CHAMBER FOUNDATION MATERIALS BEARING CAPACITIES TO THE DESIGN ENGINEER.
5. AASHTO M288 CLASS 2 NON-WOVEN GEOTEXTILE (FILTER FABRIC) MUST BE USED AS INDICATED IN THE PROJECT PLANS.
6. STONE PLACEMENT BETWEEN CHAMBERS ROWS AND AROUND PERIMETER MUST FOLLOW INSTRUCTIONS AS INDICATED IN THE MOST CURRENT VERSION OF STORMTECH'S INSTALLATION INSTRUCTIONS.
7. BACKFILLING OVER THE CHAMBERS MUST FOLLOW REQUIREMENTS AS INDICATED IN THE MOST CURRENT VERSION OF STORMTECH'S INSTALLATION INSTRUCTIONS.
8. THE CONTRACTOR MUST REFER TO STORMTECH'S INSTALLATION INSTRUCTIONS FOR A TABLE OF ACCEPTABLE VEHICLE LOADS AT VARIOUS DEPTHS OF COVER. THIS INFORMATION IS ALSO AVAILABLE AT STORMTECH'S WEBSITE: **WWW.STORMTECH.COM**. THE CONTRACTOR IS RESPONSIBLE FOR PREVENTING VEHICLES THAT EXCEED STORMTECH'S REQUIREMENTS FROM TRAVELING ACROSS OR PARKING OVER THE STORMWATER SYSTEM. TEMPORARY FENCING, WARNING TAPE AND APPROPRIATELY LOCATED SIGNS ARE COMMONLY USED TO PREVENT UNAUTHORIZED VEHICLES FROM ENTERING SENSITIVE CONSTRUCTION AREAS.
9. THE CONTRACTOR MUST APPLY EROSION AND SEDIMENT CONTROL MEASURES TO PROTECT THE STORMWATER SYSTEM DURING ALL PHASES OF SITE CONSTRUCTION PER LOCAL CODES AND DESIGN ENGINEER'S SPECIFICATIONS.
10. STORMTECH PRODUCT WARRANTY IS LIMITED. SEE CURRENT PRODUCT WARRANTY FOR DETAILS. TO ACQUIRE A COPY CALL STORMTECH AT **1-888-892-2694** OR VISIT **WWW.STORMTECH.COM**

STORMWATER CHAMBER SPECIFICATIONS

1. CHAMBERS SHALL BE STORMTECH SC-310 OR APPROVED EQUAL.
2. CHAMBERS SHALL BE MANUFACTURED FROM VIRGIN POLYPROPYLENE OR POLYETHYLENE RESINS TESTED USING ASTM STANDARDS.
3. CHAMBERS SHALL BE DESIGNED IN ACCORDANCE WITH ASTM F2787, "STANDARD PRACTICE FOR STRUCTURAL DESIGN OF THERMOPLASTIC CORRUGATED WALL STORMWATER COLLECTION CHAMBERS".
4. CHAMBER ROWS SHALL PROVIDE CONTINUOUS, UNOBSTRUCTED INTERNAL SPACE WITH NO INTERNAL SUPPORT PANELS.
5. THE STRUCTURAL DESIGN OF THE CHAMBERS, THE STRUCTURAL BACKFILL AND THE INSTALLATION REQUIREMENTS SHALL ENSURE THAT THE LOAD FACTORS SPECIFIED IN THE AASHTO LRFD BRIDGE DESIGN SPECIFICATIONS, SECTION 12.12 ARE MET FOR: 1) LONG-DURATION DEAD LOADS AND 2) SHORT-DURATION LIVE LOADS, BASED ON THE AASHTO DESIGN TRUCK WITH CONSIDERATION FOR IMPACT AND MULTIPLE VEHICLE PRESENCE.
6. ONLY CHAMBERS THAT ARE APPROVED BY THE ENGINEER WILL BE ALLOWED. THE CONTRACTOR SHALL SUBMIT (3 SETS) OF THE FOLLOWING TO THE ENGINEER FOR APPROVAL BEFORE DELIVERING CHAMBERS TO THE PROJECT SITE:
   a. A STRUCTURAL EVALUATION BY A REGISTERED STRUCTURAL ENGINEER THAT DEMONSTRATES THAT THE LOAD FACTORS SPECIFIED IN THE AASHTO LRFD BRIDGE DESIGN SPECIFICATIONS, SECTION 12.12 ARE MET. THE 50-YEAR CREEP MODULUS DATA SPECIFIED IN ASTM F2922 MUST BE USED AS A PART OF THE AASHTO STRUCTURAL EVALUATION TO VERIFY LONG-TERM PERFORMANCE.
7. CHAMBERS SHALL BE PRODUCED AT AN ISO 9001 CERTIFIED MANUFACTURING FACILITY.
8. ALL DESIGN SPECIFICATIONS FOR CHAMBERS SHALL BE IN ACCORDANCE WITH THE MANUFACTURER'S LATEST DESIGN MANUAL.
9. THE INSTALLATION OF CHAMBERS SHALL BE IN ACCORDANCE WITH THE MANUFACTURER'S LATEST INSTALLATION INSTRUCTIONS.

MAINTENANCE NOTES:

STEP 1) INSPECT ISOLATOR ROW FOR SEDIMENT
- A. INSPECTION PORTS
  - A.1. REMOVE/OPEN LID ON NYLOPLAST DRAINAGE STRUCTURE OR 24"x24" F-BASIN
  - A.2. REMOVE AND CLEAN FLEXSTORM FILTER IF INSTALLED
  - A.3. USING A FLASHLIGHT AND STADIA ROD, MEASURE DEPTH OF SEDIMENT AND RECORD ON MAINTENANCE LOG
  - A.4. LOWER A CAMERA INTO ISOLATOR ROW FOR VISUAL INSPECTION OF SEDIMENT LEVELS (OPTIONAL)
  - A.5. IF SEDIMENT IS AT, OR ABOVE, 3" (80 mm) PROCEED TO STEP 2. IF NOT, PROCEED TO STEP 3.
- B. ALL ISOLATOR ROWS
  - B.1. REMOVE COVER FROM STRUCTURE AT UPSTREAM END OF ISOLATOR ROW
  - B.2. USING A FLASHLIGHT, INSPECT DOWN THE ISOLATOR ROW THROUGH OUTLET PIPE
    - i) MIRRORS ON POLES OR CAMERAS MAY BE USED TO AVOID A CONFINED SPACE ENTRY
    - ii) FOLLOW OSHA REGULATIONS FOR CONFINED SPACE ENTRY IF ENTERING MANHOLE
  - B.3. IF SEDIMENT IS AT, OR ABOVE, 3" (80 mm) PROCEED TO STEP 2. IF NOT, PROCEED TO STEP 3.

STEP 2) CLEAN OUT ISOLATOR ROW USING THE JETVAC PROCESS
- A. A FIXED CULVERT CLEANING NOZZLE WITH REAR FACING SPREAD OF 45° (1.1 m) OR MORE IS PREFERRED
- B. APPLY MULTIPLE PASSES OF JETVAC UNTIL BACKFLUSH WATER IS CLEAN
- C. VACUUM STRUCTURE SUMP AS REQUIRED

STEP 3) REPLACE ALL COVERS, GRATES, FILTERS, AND LIDS; RECORD OBSERVATIONS AND ACTIONS.

STEP 4) INSPECT AND CLEAN BASINS AND MANHOLES UPSTREAM OF THE STORMTECH SYSTEM.

JAYSON R. HASKELL
No. 13002
STATE OF MAINE
REGISTERED PROFESSIONAL ENGINEER
10-11-19

DM ROMA
CONSULTING ENGINEERS
P.O. BOX 1116
WINDHAM, ME 04062
(207) 310 - 0506

REV	DATE	BY	DESCRIPTION
A	8-12-19	DMR	ISSUED FOR PERMITTING
B	10-11-19	DMR	REVISED PER CITY REVIEW

DETAILS

37 MONTREAL STREET
PORTLAND, MAINE

FOR APPLICANT:
37 MONTREAL, LLC.
33 MONTREAL STREET
PORTLAND, ME, 04101

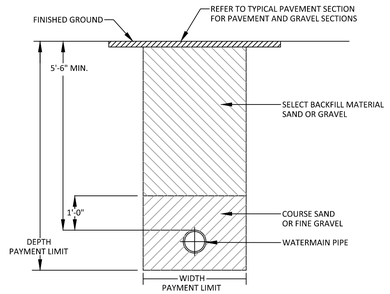
18053
JOB NUMBER:

AS NOTED
SCALE:

10-11-2019
DATE:

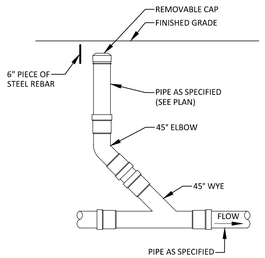
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C3.1



WATERMAIN TYPICAL TRENCH CROSS-SECTION

NOT TO SCALE

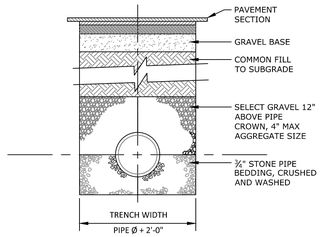


NOTES:

1. IF CLEANOUT IS LOCATED IN PAVEMENT, INSTALL CLEANOUT BOX ASSEMBLY OVER CLEANOUT AND SET AT FINISHED PAVEMENT GRADE. BOX ASSEMBLY TO BE PRODUCT NO. 00156452W01 AS MANUFACTURED BY EAST JORDAN IRON WORKS, INC. OR APPROVED EQUAL.

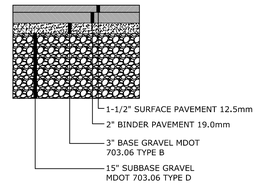
SANITARY/UNDERDRAIN CLEANOUT DETAIL

NOT TO SCALE



TYPICAL TRENCH SECTION

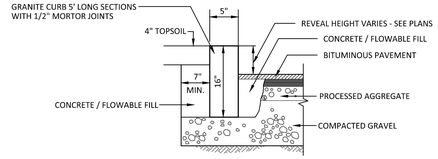
NOT TO SCALE



TYPICAL PAVEMENT REPAIR SECTION

(MONTREAL STREET & WILLIS STREET)

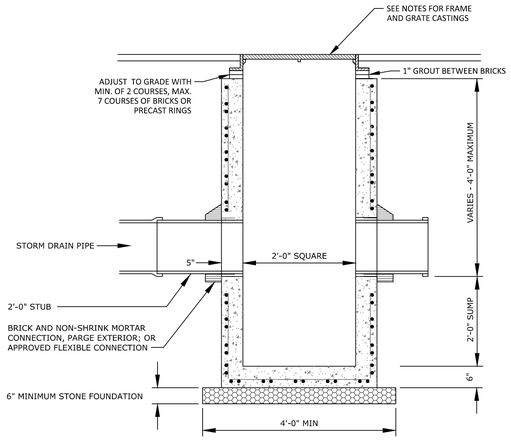
NOT TO SCALE



VERTICAL GRANITE CURB

MDOT CURB TYPE 1

NOT TO SCALE

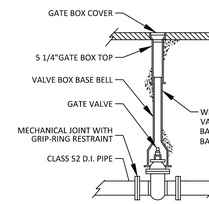


NOTES:

1. CAST IRON FRAME SHALL BE EQUAL TO EAST JORDAN IRON WORKS, PRODUCT NO. 45622011, REVERSIBLE FRAME AND GRATE SHALL BE EQUAL TO EAST JORDAN IRON WORKS, PRODUCT NO. 4562531, HEAVY DUTY GRATE.
2. SUBMIT SHOP DRAWINGS AND CASTING SPECIFICATIONS TO ENGINEER FOR APPROVAL.

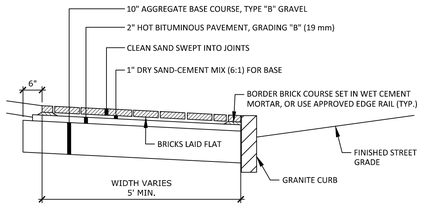
PRECAST CONCRETE CATCH BASIN STRUCTURE - TYPE F

NOT TO SCALE



GATE VALVE

NOT TO SCALE



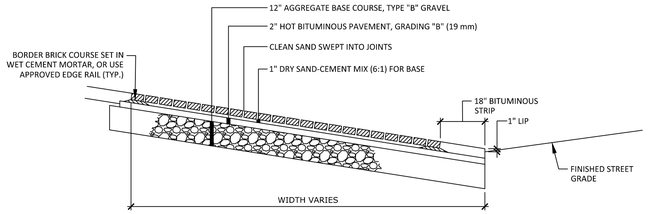
BRICK SIDEWALK WITH BITUMINOUS BASE

NOT TO SCALE

BRICKS TO BE USED:

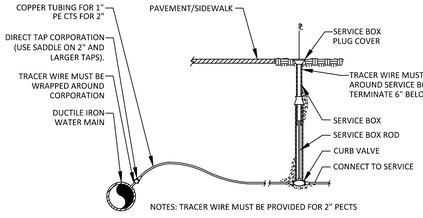
NEW CONSTRUCTION:
4"x8" PINE HALL PATHWAY PAVER BRICK, MFG. BY PINE HALL BRICK CO., MADISON, NORTH CAROLINA. LACHANCE ITEM# 193623, PINE HALL PATHWAY PAVER BRICK.

REPAIR/MAINTENANCE TO EXISTING BRICK SIDEWALKS: VERMONT PAVER; SUPPLIED BY GAGNE AND SONS. SPECIFICATION NUMBER: "VERMONT BACKER BRICK", ITEM NUMBER VBBB.



BRICK DRIVEWAY WITH BITUMINOUS BASE

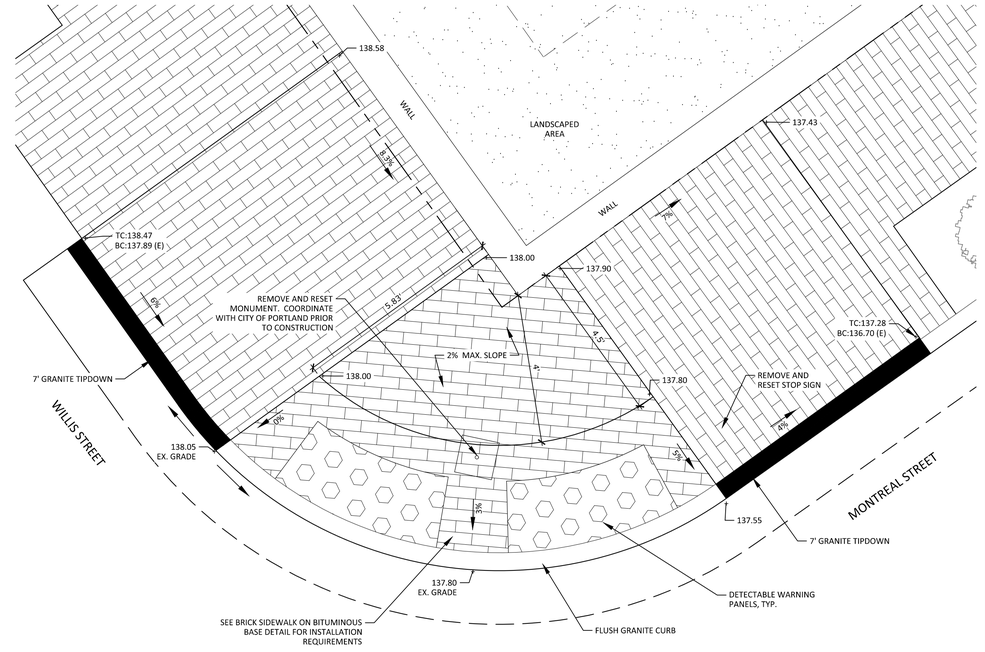
NOT TO SCALE



NOTES: TRACER WIRE MUST BE PROVIDED FOR 2" PECTS

SERVICE DETAIL

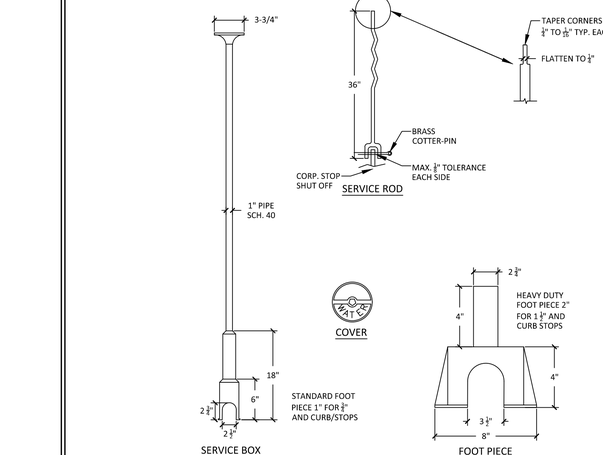
NOT TO SCALE



HANDICAP RAMP DETAIL

(MONTREAL STREET & WILLIS STREET)

SCALE: 1" = 2'



VALVE BOX & COVER

NOT TO SCALE

DM ROMA
CONSULTING ENGINEERS
P.O. BOX 1116
WINDHAM, ME 04062
(207) 310 - 0506

STATE OF MAINE — JAYSON R. HASKELL — No. 13002 — LICENSED PROFESSIONAL ENGINEER — 10-22-19

REV	DATE	BY	DESCRIPTION
A	8-12-19	DMR	ISSUED FOR PERMITTING
B	10-11-19	DMR	REVISED PER CITY REVIEW
C	10-22-19	DMR	REVISED PER CITY REVIEW

DETAILS

37 MONTREAL STREET
PORTLAND, MAINE

FOR APPLICANT:
37 MONTREAL, LLC.
33 MONTREAL STREET
PORTLAND, ME. 04101

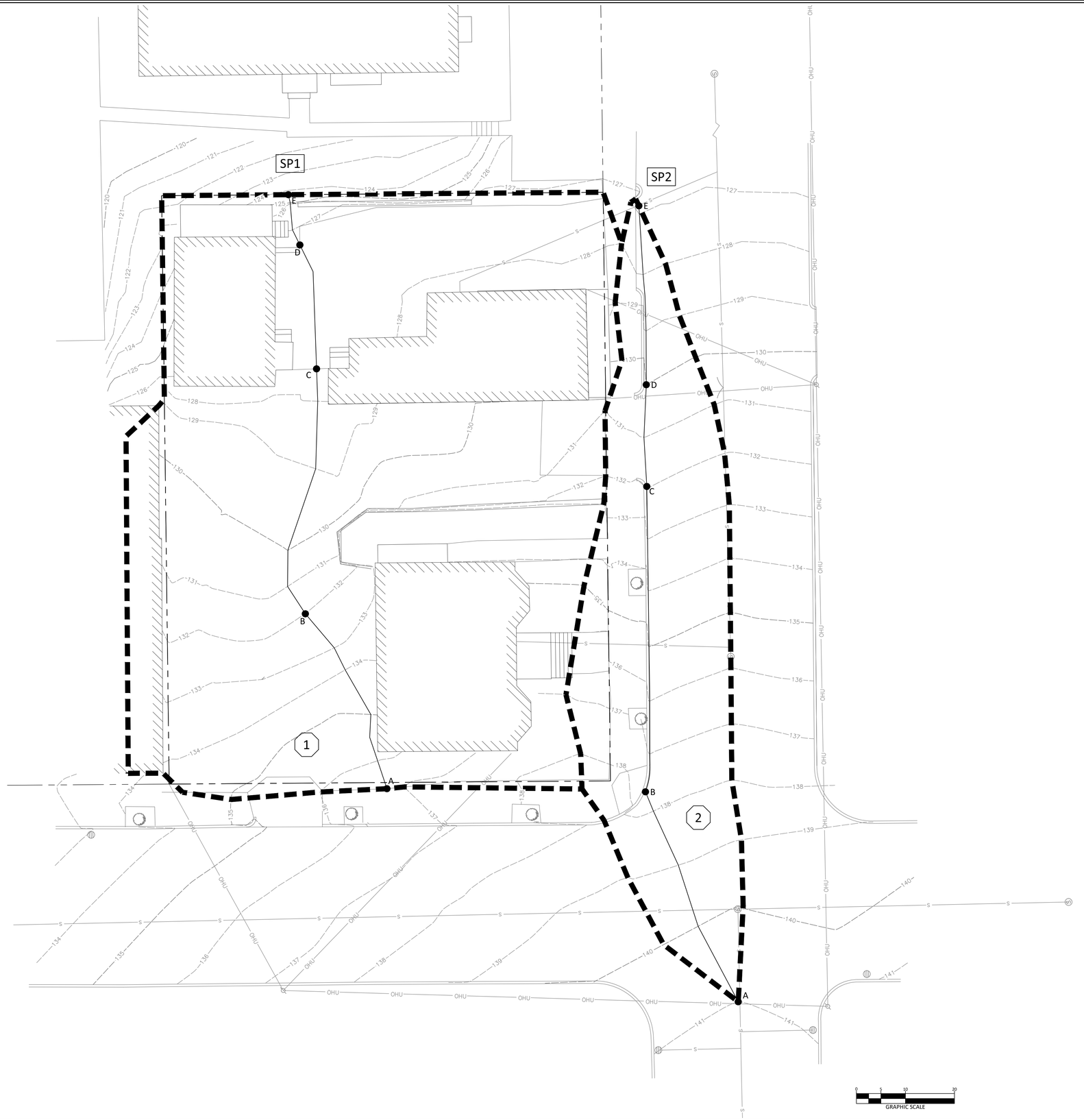
18053
JOB NUMBER:

AS NOTED
SCALE:

10-22-2019
DATE:

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C3.2



LEGEND

- 1 — WATERSHED NO.
- SP1 — REACH/STUDY POINT
- P1 — POND
- WATERSHED BOUNDARY
- A — B — TIME OF CONCENTRATION
- REACH PATH
- SOIL BOUNDARY

LEGEND

EXISTING		PROPOSED
	PROPERTY LINE/R.O.W.	
	ABUTTER PROPERTY LINE	
	SETBACK	
	EASEMENT LINE	
	GRANITE MONUMENT	
	IRON PIN/DRILL HOLE	
	CENTERLINE	
	BUILDING	
	EDGE OF PAVEMENT/CURB	
200 201	CONTOUR LINE	
CB	CATCHBASIN	
DMH	DRAINAGE MANHOLE	
	CULVERT/STORMDRAIN	
	UNDERDRAIN	UD
SMH	SEWER MANHOLE	
S	SANITARY SEWER PIPE	S
FM	FORCE MAIN	FM
W	WATER MAIN	W
	WATER VALVE	
	HYDRANT	
	UTILITY POLE	
	LIGHT POLE	
OHU	OVERHEAD UTILITIES	OHU
UGU	UNDERGROUND UTILITIES	UGU
	TRANSFORMER PAD	T
G	GAS MAIN	G
	GAS VALVE	
	RIPRAP	
	SILT FENCE	SF

DM ROMA
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P.O. BOX 1116
WINDHAM, ME 04062
(207) 310 - 0506

STATE OF MAINE — JAYSON R. HASKELL — No. 13002 — LICENSED PROFESSIONAL ENGINEER — 8-12-19

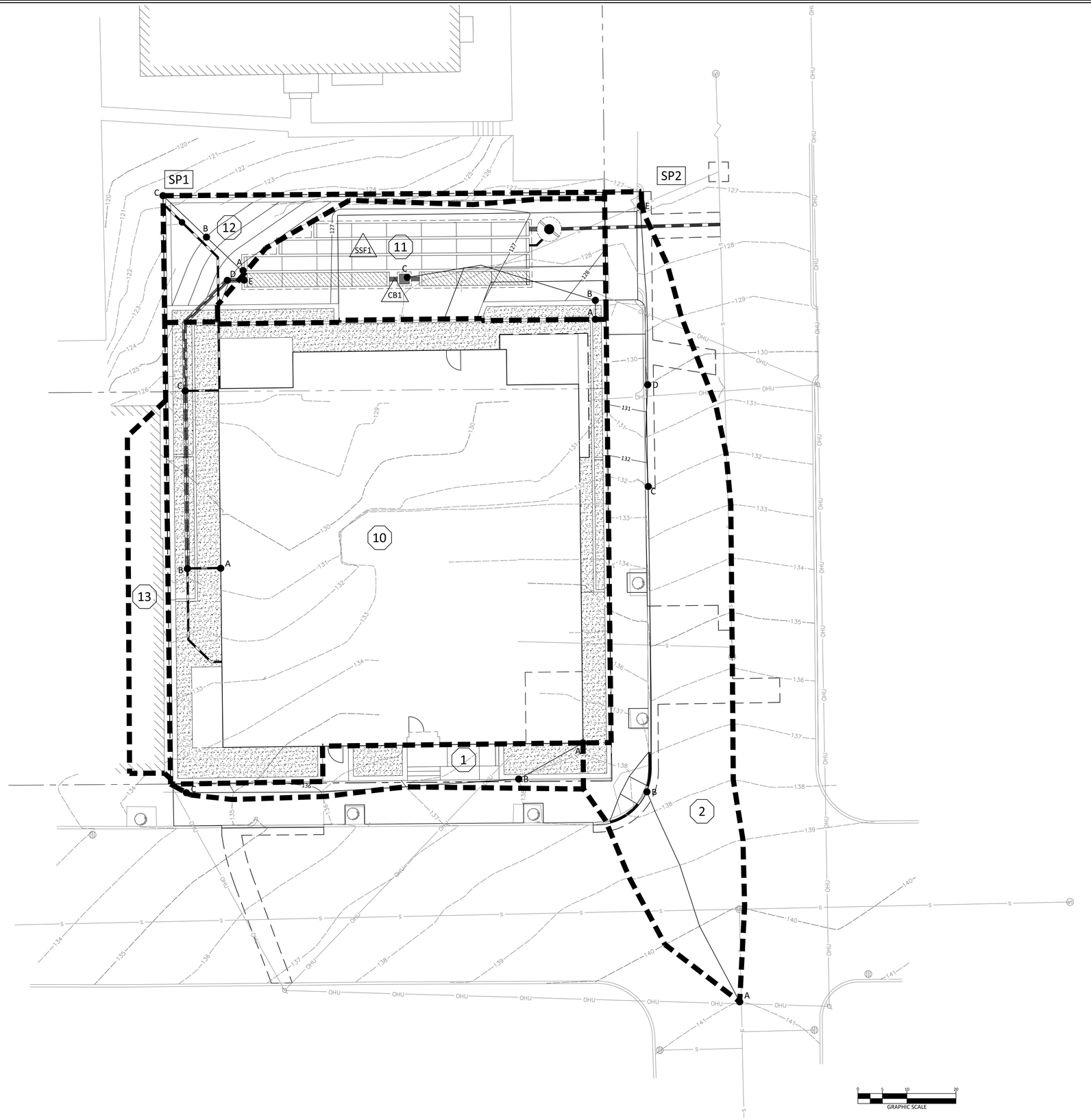
REV	DATE	BY	DESCRIPTION
A	8-12-19	DMR	ISSUED FOR PERMITTING

WATERSHED MAP - EXISTING CONDITION

37 MONTREAL STREET
PORTLAND, MAINE

FOR APPLICANT:
MCTIGUE CONSTRUCTION
184 MOUNTAIN ROAD
FALMOUTH, ME, 04105

18053	JOB NUMBER:
1" = 10'	SCALE:
8-12-2019	DATE:
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C4.0	



LEGEND

- 1 — WATERSHED NO.
- SP1 — REACH/STUDY POINT
- P1 — POND
- A — B — WATERSHED BOUNDARY / TIME OF CONCENTRATION / REACH PATH / SOIL BOUNDARY

LEGEND

EXISTING	PROPOSED
PROPERTY LINE/R.O.W.	
ABUTTER PROPERTY LINE	
SETBACK	
EASEMENT LINE	
GRANITE MONUMENT	
IRON PIN/DRILL HOLE	
CENTERLINE	
BUILDING	
EDGE OF PAVEMENT/CURB	
CONTOUR LINE	
CATCHBASIN	
DRAINAGE MANHOLE	
CULVERT/STORMDRAIN	
UNDERDRAIN	UD
SEWER MANHOLE	
SANITARY SEWER PIPE	S
FORCE MAIN	FM
WATER MAIN	W
WATER VALVE	
HYDRANT	
UTILITY POLE	
LIGHT POLE	
OVERHEAD UTILITIES	OHU
UNDERGROUND UTILITIES	UGU
TRANSFORMER PAD	T
GAS MAIN	G
GAS VALVE	
RIPRAP	
SILT FENCE	SF

STATE OF MAINE — JAYSON R. HASKELL No. 13002 — LICENSED PROFESSIONAL ENGINEER — 10-11-19

DM ROMA
CONSULTING ENGINEERS
P.O. BOX 1116
WINDHAM, ME 04062
(207) 310 - 0506

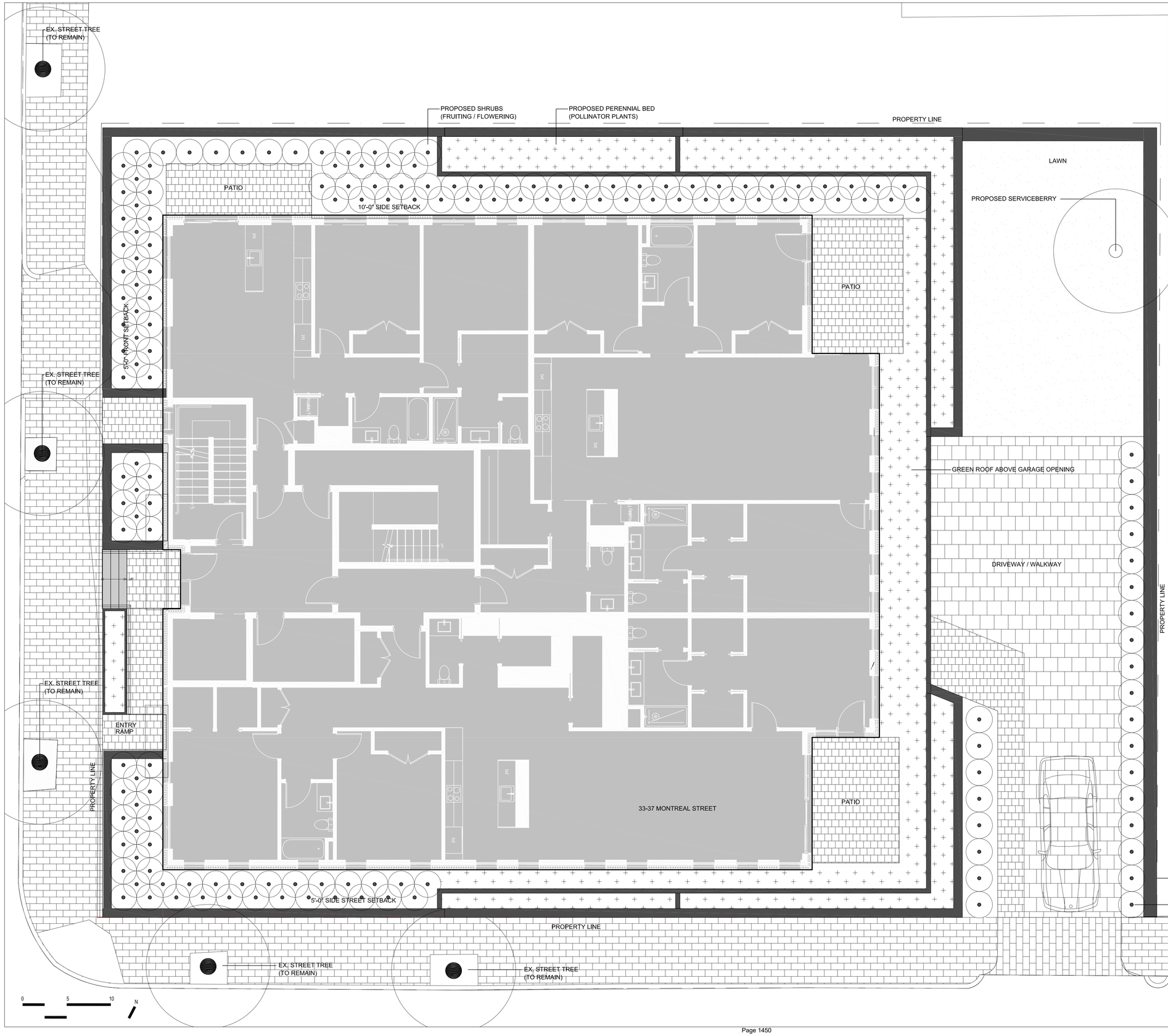
REV	DATE	BY	DESCRIPTION
A	8-12-19	DMR	ISSUED FOR PERMITTING
B	10-11-19	DMR	ADDITION OF WS-13

WATERSHED MAP - DEVELOPED CONDITION

37 MONTREAL STREET
PORTLAND, MAINE

FOR APPLICANT:
MCTIGUE CONSTRUCTION
184 MOUNTAIN ROAD
FALMOUTH,ME, 04105

18053	JOB NUMBER:
1" = 10'	SCALE:
10-11-2019	DATE:
--	
C4.1	



PLANT SCHEDULE

ID	BOTANICAL NAME	COMMON NAME	QTY	SIZE
DECIDUOUS TREES				
AC	AMELANCHIER CANADENSIS	SERVICEBERRY (SINGLE)	12	10'–12'
AR	ACER RUBRUM	ARMSTRONG MAPLE	10	3" CAL
TO	THUJA OCCIDENTALIS	AM.ARB. GREEN GIANT	10	8"
PERENNIALS / GRASSES / GROUND COVER / BULBS				
VC	VACCINIUM CORYMBOSUM	HIGHBUSH BLUEBERRY	X	5 GAL.
VA	VACCINIUM ANGUSTIFOLIUM	LOWBUSH BLUEBERRY	X	1 GAL.
CS	CORNUS SERICEA	KELSEY DWARF REDTWIG	X	5 GAL.
IV	ILEX VERICILLATA	WINTERBERRY HOLLY	X	7 GAL.
NR	NEPETA RACEMOSA	CATMINT 'WALKERS LOW'	X	1 GAL.
MS	MISCANTHUS SINENSIS	'GRACILLIMUS' SILVERI	X	2 GAL.
PV	PANICUM VIRGATUM	SWITCH GRASS	X	1 GAL.
PA	PEROVSKIA ATRIPLICIFOLIA	RUSSIAN SAGE	X	1 GAL.
TURF LAWN (4" NEW LOAM)				

SYMBOLS LEGEND

HARDSCAPE

- MYSTIC MOUNTAIN GRANITE STEPS
- VEHICULAR MASONRY UNIT PAVER
- PEDESTRIAN MASONRY UNIT PAVER
- CITY BRICK SIDEWALK PER CITY OF PORTLAND STANDARDS
- MASONRY RETAINING WALL

PLANTS

- PROPOSED DECIDUOUS TREE
- EX. DECIDUOUS TREE
- PROPOSED SHRUB
- PERENNIAL PLANTING BED
- LAWN

NOT FOR CONSTRUCTION

Soren deNiord Design Studio
43 Wellwood Road
Portland, ME
04103
T: 207-400-2450
E: soren@sorendeniord.com

33-37 MONTREAL STREET

MUNJOY HILL
PORTLAND, MAINE

PLANNING BOARD REVIEW

No:	Revision / Submission	Date:
1	SEPTEMBER 20, 2019	

revisions:
date: AUGUST 07, 2019
scale: As Noted
drawn: XX
checked: XX

L1.0

LANDSCAPE PLAN

PLAN NOTES:

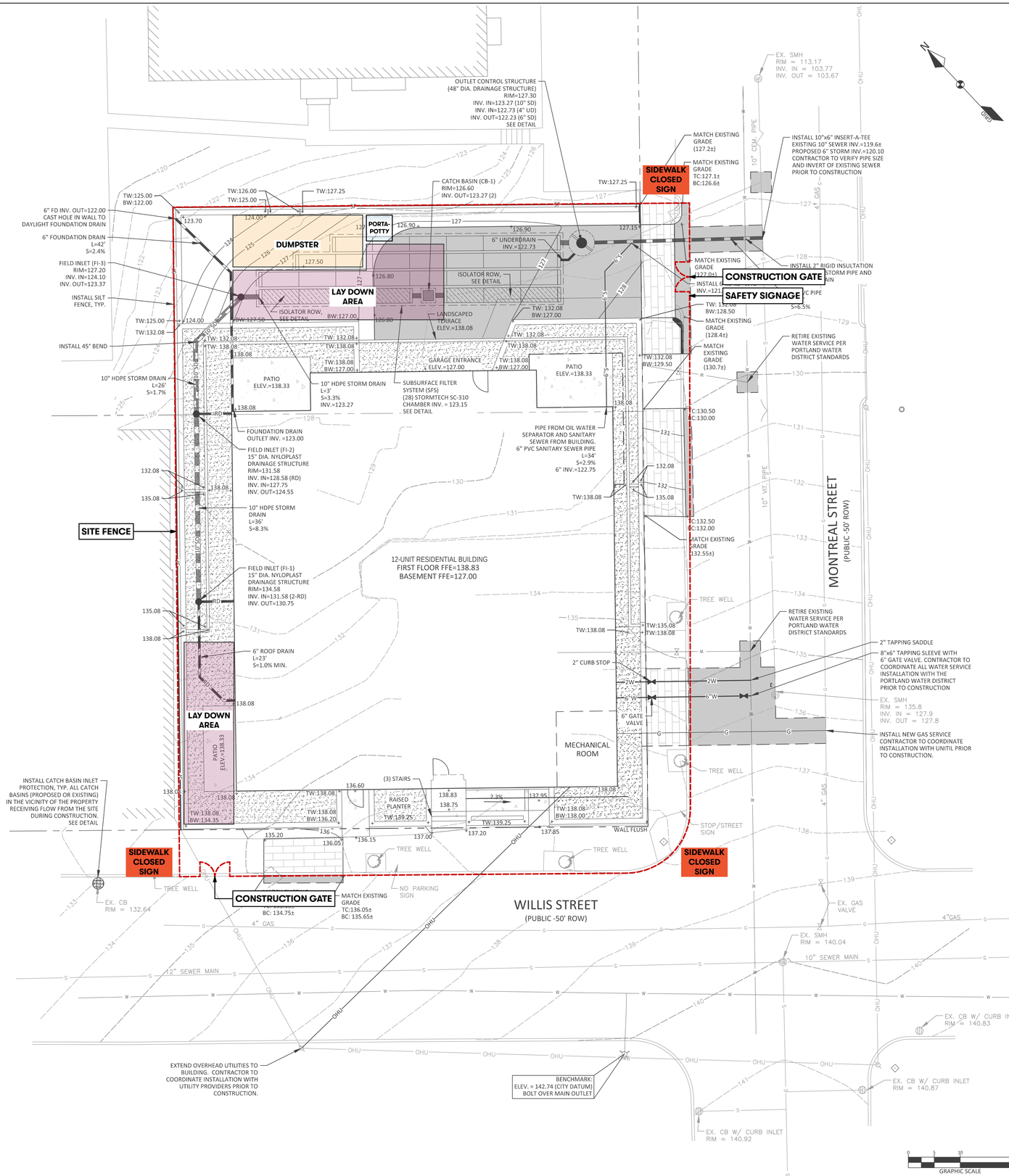
1. EXISTING UTILITY LOCATION SHOWN HEREON IS BASED SOLELY ON FIELD OBSERVATION OF PAINTED UTILITY MARKINGS ON THE GROUND SURFACE BY SURVEY INC. NO SUBSURFACE EXPLORATION OR DETAILED FIELD SURVEY OF UTILITY LOCATIONS WERE PERFORMED.

2. THE CONTRACTOR AND OWNER ARE RESPONSIBLE FOR NOTIFYING DIG SAFE AND COORDINATING ALL EXISTING UTILITY RELOCATION AND REPAIR THAT MAY BE NECESSARY.

3. THE ROADWAY AND SIDEWALK REPAIRS SHALL BE DONE IN ACCORDANCE WITH ALL CITY OF PORTLAND REQUIREMENTS AND SPECIFICATIONS.

4. THE WATER SERVICE SIZE WAS NOT DESIGNED OR ANALYZED BY DM ROMA CONSULTING ENGINEERS. THE OWNER IS RESPONSIBLE FOR COORDINATING WITH PORTLAND WATER DISTRICT AND OTHER DESIGN PROFESSIONALS TO DETERMINE THE DESIRED WATER SERVICE SIZE TO SERVE THE SPECIFIC NEEDS OF THE PROJECT.

5. DOMESTIC SERVICE WILL REQUIRE NON-TESTABLE DUAL CHECK BACKFLOW PREVENTION AFTER THE METER. FIRE SERVICE WILL REQUIRE TESTABLE DOUBLE CHECK VALVE ASSEMBLY FOR BACKFLOW PREVENTION PRIOR TO FIRE SPRINKLER RISER.



LEGEND

EXISTING	PROPOSED
PROPERTY LINE/R.O.W.	
ABUTTER PROPERTY LINE	
TIE LINE	
SETBACK	
EASEMENT LINE	
GRANITE MONUMENT	
IRON PIN/DRILL HOLE	
CENTERLINE	
BUILDING	
EDGE OF PAVEMENT/CURB	
EDGE OF GRAVEL	
EDGE OF CONCRETE	
EDGE OF WETLANDS	
CENTERLINE OF STREAM	
CONTOUR LINE	200 — 201
TREELINE	
CATCHBASIN	
DRAINAGE MANHOLE	
CULVERT/STORMDRAIN	
UNDERDRAIN	UD
SEWER MANHOLE	
SANITARY SEWER PIPE	S
FORCE MAIN	FM
WATER MAIN	W
WATER VALVE	
HYDRANT	
UTILITY POLE	
LIGHT POLE	
OVERHEAD UTILITIES	OHU
UNDERGROUND UTILITIES	UGU
TRANSFORMER PAD	T
GAS MAIN	G
GAS VALVE	
RIPRAP	
SILT FENCE	SF

DM ROMA
CONSULTING ENGINEERS
P.O. BOX 1116
WINDHAM, ME 04062
(207) 310 - 0506

JAYSON R. HASKELL No. 13002 — STATE OF MAINE — REGISTERED PROFESSIONAL ENGINEER — 8-12-19

REV	DATE	BY	DESCRIPTION
A	8-12-19	DMR	ISSUED FOR PERMITTING

GRADING AND UTILITY PLAN

37 MONTREAL STREET
PORTLAND, MAINE

FOR APPLICANT:
McTIGUE CONSTRUCTION
184 MOUNTAIN ROAD
FALMOUTH,ME. 04105

18053
JOB NUMBER:

1" = 10'
SCALE:

8-12-2019
DATE:

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C2.0

CONSTRUCTION MANAGEMENT PLAN